

## **Karl Marx on physiocracy**

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How long is it since economy discarded the Physiocratic illusion, that rents grow out of the soil and not out of society?

(Karl Marx, *Capital* I: 86)

### **1. Introduction**

François Quesnay was born in 1694. Two centuries later, in 1894, Friedrich Engels edited the third volume of Karl Marx's *Das Kapital*. This paper commemorates these two events in terms of an investigation of Marx's reading of the physiocrats, in particular Quesnay, and the way he absorbed physiocratic concepts in his own analysis. The paper is on Marx *on* physiocracy rather than on Marx *and* physiocracy. That is, our concern is first and foremost with what *Marx thought* that the physiocrats had done or had aimed at doing and to what extent he benefited from what *he saw* in their works. With such a perspective it is of secondary importance whether his views on the physiocrats are faithful to their writings. (We shall however take the opportunity to comment on some problems of Marx's interpretation of the physiocrats). What matters is the productive use Marx made of the physiocratic doctrines *as he understood them*. It should be kept in mind that Marx, a foremost historian of economic thought, was not so much interested in the history of economic thought for its own sake. He rather conceived of a careful and critical study of earlier political economists as an indispensable task in the development of a coherent analysis of modern society. He entertained the view that he or she who wanted to promote economic analysis had to study the history of the subject as well as the history of the subject matter, that is, economic and social history.

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The existence of a number of remarkable parallels and striking similarities between Marx's system of political economy and that of the physiocrats has often been noticed.<sup>1</sup> It has also been widely acknowledged that Marx was the first to point out the importance of the physiocrats' achievements in analysing the capitalist process of reproduction as a whole and that we owe to him the resurrection (and further development) of Quesnay's *Tableau économique*, see Samuelson (1982: 46). Marx's assessment of the physiocrats' approach to the explanation of value and distribution, on the other hand, has met with much less approval and was indeed criticized by several authors.<sup>2</sup>

The purpose of this essay is to discuss what we consider to be the central elements of Marx's interpretation of the political economy of *les économistes* and to point out the analytical importance of certain physiocratic doctrines for the evolution of his own conceptualization of the process of production of capital. It will be argued that physiocratic ideas stood godfather to crucial elements of Marx's own system of economic thought. This is also the deeper reason why Marx showed so much admiration for the achievements of the physiocrats. In the course of tracing back major concepts used by Marx to the contributions of the French *secte* we shall also take the opportunity to question some received views on the relationship between the two.

Since we are predominantly interested in Marx's reception, transformation and eventual absorption of the ideas of the physiocrats in his own analysis, it is important to be clear about the sources he actually used. In order not to disrupt the main argument of the paper this is done in the Appendices. While Appendix A provides a brief chronological account of Marx's studies of the physiocratic writings available to him, Appendix B focuses attention on his attempts to come to grips with Quesnay's *Tableau économique*. The chronological account also throws some light on the question of lacunas and omissions in Marx's interpretation. Although there is reason to presume that the material available to us does not fully document Marx's discussion of physiocracy and the sources he used, the following can be said. From the very beginning of his studies in political economy he considered the physiocrats the 'true fathers' of that new scientific subject. Given the openly displayed admiration for their work it comes as no surprise that he made several efforts to come to grips with their doctrines. In his view there was a direct lineage from their conception of the capitalist process of production via Adam Smith and David Ricardo to his: what they had begun and Smith and Ricardo had continued, Marx sought to complete.

The structure of the paper is as follows. Section 2 deals with what Marx appears to have considered the essence of the physiocratic theory of income distribution, centred around the concept of the *produit net*, or surplus product. In addition, we shall discuss Marx's view that in the writings of the physiocrats we encounter both elements of a material-based and a labour-based approach

to the theory of value. Section 3 points out the importance of the *Tableau* in the development of Marx's schemes of simple and extended reproduction; the reader might want to read this section together with the summary statement of Marx's interpretation of the *Tableau* in Appendix B. It is then shown in section 4 that the *Tableau's* conceptualization of the process of production and distribution in the economy as a whole played also a significant role in Marx's approach to the determination of the general rate of profit and prices of production. Section 5 contains some concluding observations.

## **2. The concept of surplus and the problem of value and distribution**

As is well known, Marx was critical of most economists: few were in moderate and only a handful in high esteem with him. David Ricardo is perhaps the one author whom Marx respected most, notwithstanding Marx's many objections to Ricardo's analysis. Adam Smith, too, is variously credited for what he wrote; yet more often he is discredited for the same reason and also for what he did not write. The deeper reason why Marx was so critical of Smith was that in his view the Scotsman bore a large responsibility for the decline of classical political economy in the first half of the nineteenth century. The 'exoteric' parts of his analysis submerged the classical core of his theory of value and distribution. Unconsciously Smith thus lent authority to approaches to that theory which Marx dubbed 'vulgar'. The questions Marx put to himself were: Why and when did the story go wrong? Why did classical political economy gradually decay and finally fall into oblivion? What had to be done to resurrect that theory and develop its full potential? An answer to these questions necessitated, among other things, a careful investigation of Smith's doctrine and the doctrines of his precursors. In the course of his 'excavation' of the roots of classical political economy Marx arrived at the conclusion that 'The analysis of capital, within the bourgeois horizon, is essentially the work of the physiocrats. It is this service that makes them the true fathers of modern political economy' (*Theories of Surplus Value (TSV)* 1: 44). Hence, a proper understanding of the contribution of the physiocrats was a major requirement in the task of reconstructing classical political economy. A clear perception of the merits and demerits of their analysis and the way it was received and absorbed in later contributions was at the same time seen to hold the key to an explanation of the decline of classical political economy.

### *2.1. Laws of production, real wages and surplus*

According to Marx the linchpin of the classical approach to the theory of value and distribution is the concept of 'surplus product', that is, all shares

of income other than wages, and its relationship to the real wage rate. Taking the methods of production employed and thus the productivity of labour and the length and intensity of the working day as given, the higher the real wage rate, the smaller is the surplus product, and vice versa. This idea constituted also the nucleus of the elaborate form of the classical argument in Ricardo with its emphasis on the inverse relationship between the *rate of profit* on the one hand and the real wage rate or rather the total amount of labour needed to produce the wage commodities on the other.

In Marx's view the physiocrats, and especially Turgot, are to be credited with having anticipated the concept of surplus. They started from the assumption of 'a given productivity of labour' and took the day's labour 'to be a fixed quantity' (*TSV* I: 49 and 51). Most important, they recognized that the basis for the development of capitalist production was the emergence of a separate commodity, 'labour power', the *value* of which was ascertained in physical terms as the minimum amount of use-values or means of subsistence needed 'for the existence of the worker as a worker'. Marx expounded:

The foundation of modern political economy, whose business is the analysis of capitalist production, is the conception of the *value of labour-power* as something fixed, as a given magnitude – as indeed it is in practice in each particular case. The *minimum of wages* therefore correctly forms the pivotal point of Physiocratic theory. They were able to establish this although they had not yet recognised the nature of value itself, because this *value of labour-power* is manifested in the price of the necessary means of subsistence, hence in a sum of definite use-values.  
(*ibid.*: 45; similarly, 50–1)

The fact that, in Marx's opinion, the physiocrats considered this minimum of wages – the 'pivotal point' of their theory – an unchangeable magnitude, 'determined by nature and not by the stage of historical development' (as, for example, in Smith, Ricardo and Marx himself), counts for little: 'this in no way affects the abstract correctness of their conclusions, since the difference between the value of labour-power and the value it creates does not at all depend on whether the value is assumed to be great or small' (*ibid.*). In other words, whether the real wage rate is high or low is relevant for the question of whether shares of income other than wages are low or high, but does not affect the truth of the statement that these shares exist if and only if there is a surplus product.

In order to develop the notion of surplus the physiocrats had to solve several problems. First, they had to come to grips with 'the various *material components* in which capital exists and into which it resolves itself in the course of the labour-process.' We owe the physiocrats a clear distinction between the different forms which capital assumes, including the distinction between circulating and fixed capital, and a study of 'the connection between the

process of circulation and the reproduction process of capital' (ibid.: 44). Secondly, we owe the physiocrats the distinction between 'productive' and 'unproductive' labour: 'Quite correctly they lay down the fundamental principle that only that labour is *productive* which creates a *surplus-value*, in whose product therefore a higher value is contained than the sum of the values consumed during the production of this product' (ibid.: 46).<sup>3</sup> That is, the value of the product,  $p$ , must be larger than the value of raw materials, machinery, etc. used up,  $c$  (constant capital), plus the value of labour-power,  $v$  (variable capital), which is taken to be equal to the minimum of wages, that is,

$$p > c + v$$

As regards the determination of value, Marx saw elements of two different, but not necessarily contradictory theories in the physiocratic writings: a material-based and a labour-based determination of value. While the former is said to be characteristic of the earlier authors, the latter is particularly attributed to Turgot. We shall come back to this question in the following subsection. Here it is to be pointed out that Marx was aware of the fact that in the physiocrats an explanation of income distribution in terms of the surplus product did *not* require a labour-based concept of value, indeed, it seemed, any concept of value at all. The physiocrats, Marx argued, could do without such a concept because of their 'general view of the nature of value, which to them is not a definite social mode of existence of human activity (labour), but consists of material things – land, nature, and the various modifications of these material things' (ibid.: 46). In their system, the generation of surplus can be *directly* seen. It

appears most palpably, most incontrovertibly, of all *branches of production*, in *agriculture*, the primary branch of production. . . . In agriculture it shows itself directly in the surplus of use-values produced over use-values consumed by the labourer, and can therefore be grasped without an analysis of value in general, without a clear understanding of the nature of value.

(ibid.: 46; similarly, 51 and *TSV* 3: 115–16)

In contradistinction, in manufacture where 'the workman is not generally seen directly producing either his means of subsistence or the surplus in excess of his means of subsistence', the analysis of value is indispensable for an understanding of the generation of surplus (*TSV* 1: 46; similarly, 51 and *TSV* 3: 115–16).

This reasoning would only be correct if agriculture produced (and reproduced) all products that are needed in agriculture as means of production or as means of subsistence in support of the agricultural labourers, that is, if agriculture were totally independent of the manufacturing sector as a supplier

of capital goods or necessities. This is, of course, not generally true and it is not even true with regard to the physiocratic system as represented by the *Tableau économique* (see Appendix B).<sup>4</sup> Marx was perfectly aware of this. However, he thought that such an abstraction was or at any rate should have been at the back of their minds: in accordance with their attempt to locate the genesis of the surplus in the sphere of production rather than in the sphere of circulation the physiocrats 'necessarily begin . . . with that branch of production which *can be thought of in complete separation from and independently of circulation, of exchange*; and which presupposes exchange not between man and man but only between man and nature' (ibid.: 49, emphasis added; similarly, 50).<sup>5</sup> It was 'the great and specific contribution of the Physiocrats' that they engaged in these kinds of abstraction, that they *thought* of agriculture as a branch in which the selfsame commodity and only it figures both as input and output. The importance of this abstraction can hardly be exaggerated since, in Marx's view, it formed the starting point of classical political economy.<sup>6</sup>

There is a second reason why the need to develop a theory of value was felt less strongly, and consequently was given less prominence in their analytical edifice, by the physiocrats relative to their classical successors. With some notable exceptions, especially Turgot, the physiocrats knew essentially only one type of non-wage income. For them

agricultural labour is the only *productive labour*, because it is the only labour that *produces a surplus-value*, and *rent* is the *only form of surplus-value* which they know. . . . *Profit* on capital in the true sense, of which rent itself is only an offshoot, therefore does not exist for the Physiocrats. Profit is seen by them as only a kind of higher wages paid by the landowners, which the capitalists consume as revenue.

(ibid.: 46–7)

Since they had no concept of profits they also had no concept of the general *rate of profit*, that is, the relationship, in physical terms, between two bundles of heterogeneous goods: the social surplus exclusive of the rent of land and the capital employed in production. Had the physiocrats developed the concept of the *rate of profit*, they of necessity would have had to face 'the question of valuation' in order to render commensurable the two bundles. By identifying the social surplus with the rent of land they evaded a major problem the classical economists were concerned with.

## 2.2. *Material-based and labour-based concepts of value*

While the need to develop a theory of value was not felt with the same urgency as in later authors, the physiocrats saw, of course, that in a system characterized by a division of labour, private property, etc., agricultural and manufactured products had to circulate as *commodities*. And Marx was

aware of at least some of their attempts to tackle the problem of value.<sup>7</sup> He was clear about the fact that his depiction of 'agriculture' as a sphere of production which is independent of exchange involved some bold abstraction. He justified it in the interest of bringing out what he thought was the essence of the physiocratic doctrine. However, useful as it may have been in order to illustrate the principle of surplus generation in pure and simple terms, the abstraction contradicted an indisputable fact of life: the heterogeneity of commodities. How did the physiocrats cope with this problem and did it affect the basic structure of their approach? Broadly speaking, Marx discerned elements of two explanations of value in physiocratic authors: a *material*-based one and a *labour*-based one.<sup>8,9</sup> According to Marx both explanations are, in principle, in perfect harmony with the explanation of non-wage incomes in terms of a surplus product. However, the former is said to meet with serious difficulties and therefore cannot be sustained. The labour-based theory of value is taken to belong predominantly to Turgot, who is credited with having provided 'a deeper analysis of capitalist relations' (TSV I: 54).

It is a characteristic feature of the *material*-based explanations that the exchange values of primary products, on which attention focused, were somehow taken to be given, springing *directly* from the conditions of production. Indeed, Marx attributed to the physiocrats the idea that the different products, containing different *concrete* materials such as specified qualities of corn, iron, coal and wood, can be reduced to some common denomination: material *in genere*, or, to apply an adjective that played an important role in Marx's own theory of value, *abstract* material. He wrote:

Their error was that they confused the *increase of material substance*, which because of the natural processes of vegetation and generation distinguishes agriculture and stock-raising from manufacture, with the *increase of exchange-value*. Use-value was their starting point. *And the use-value of all commodities, reduced, as the scholastics say, to a universal, was the material substance of nature as such, whose increase in the same form occurs only in agriculture.*

(ibid.: 62–3; the last emphasis is ours)

While Marx was critical of this approach to the problem of value, interestingly his criticism was moderate. The underlying idea of *tertium comparationes* was not dismissed by him as an old-fashioned and wrong idea of Aristotelian descent which ought to be exorcized from economic reasoning. On the contrary, in chapter I, 'Commodities', of volume I of *Capital* (C), Marx himself was to rely on this idea. His investigation there can be interpreted, *inter alia*, as echoing his discussion of the material-based view of value of the physiocrats. As is well known, his search for a 'common factor' of commodities led him to conclude:

This common ‘something’ cannot be either a geometrical, a chemical, or any other natural property of commodities. Such properties claim our attention only in so far as they affect the utility of those commodities, make them *use-values*. But the exchange of commodities is evidently an act characterised by a total abstraction from use-value.

(C I: 45; emphases added)

The *tertium comparationes*, we are told, is *abstract* human labour.<sup>10</sup>

Marx’s discussion of elements of a *labour-based* reasoning in the physiocrats is concentrated in sections 2 and 3 of chapter II of *TSV* I. His main message is well captured in the title of section 2: ‘Contradictions in the System of the Physiocrats: the Feudal Shell of the System and Its Bourgeois Essence: the Twofold Treatment of Surplus-Value’. Marx’s argument proceeds in two steps. He first tries to establish that the physiocratic attempt to explain the rent of land in terms of a ‘free gift of nature’ is inherently contradictory. Scrutinizing carefully the texts of Quesnay, Mirabeau and especially Turgot shows that any surplus product is finally to be traced back to agricultural surplus labour, that is, it has its origin not in the productivity of land, or nature, but in the ‘productivity’ of the agricultural labourer who produces more than he gets in the form of wages. In a second step Marx attempts to show that it is not only labour employed in agriculture which is productive in the sense specified, but also labour employed in the manufacturing sector.

Marx stresses that

The first condition for the development of capital is the separation of landed property from labour – the emergence of land, the primary conditions of labour, as an independent force, a force in the hands of a separate class, confronting the free labourer. Feudalism is thus portrayed and explained from the viewpoint of bourgeois production.

(*TSV* I: 50)

The crucial historical precondition of the development of the physiocratic doctrine is thus seen to be the emergence of wage-labour, with the labourer owning nothing but his labour-power and with the wage rate fixed on some minimum level, ‘the *strict nécessaire*’ (ibid.: 51).

The contradictions in the economic doctrine of the physiocrats are said to be clearly seen in their advocacy of *La Grande Culture*, in Marx’s terms: ‘large-scale capitalist agriculture’. Commenting on some passage in Quesnay’s *Maximes générales du gouvernement économique d’un royaume agricole*, Marx expounds that there

Quesnay admits that the increased productivity of agricultural labour accrues to the ‘net revenue’, and therefore in the first place to the landowner, i.e., the owner of surplus-value, and that the relative increase of the latter arises not from the land but from the social and other arrangements for raising the productivity of labour.

(ibid.: 65)



However, Marx claims, it is only with Anne Robert Jacques Turgot that ‘the Physiocratic system is presented as the new capitalist society prevailing within the framework of feudal society. This therefore corresponds to bourgeois society in the epoch when the latter breaks its way out of feudal society.’ With Turgot the ‘illusion disappears completely’ that agriculture is the branch in which ‘capitalist production – that is, the production of surplus-value – exclusively appears’ (ibid.: 50). Hence it is to Turgot’s writings, in particular his *Réflexions sur la formation et la distribution des richesses*, written in 1766 but not published till 1769–70 in serial form in the *Ephémérides*, that one has to turn in order to see the good harvest which grew by necessity out of the good seed sown by Dr Quesnay and his followers. This is what Marx does in section 3 of the chapter on ‘The Physiocrats’.

The good harvest referred to was of course, in Marx’s perspective, the gradual emergence of a labour-based theory of value which complemented the older material-based conception. This development is insolubly intertwined with – and is indeed only another expression of – the shift from the notion of social surplus as a *pur don de la nature* to the notion of surplus as the product of surplus labour, *unpaid labour*:

[With] Turgot [the Physiocratic system is] most fully developed. In some passages in his writings the pure gift of nature is presented as surplus-labour, and on the other hand the necessity for the labourer to yield up what there is in excess of his necessary wage [is explained] by the separation of the labourer from the conditions of labour, and their confronting him as the property of a class which uses them to trade with.

(ibid.: 54)

Marx puts forward some evidence from the *Réflexions* that ‘this pure gift of nature becomes imperceptibly transformed into the surplus-labour of the labourer which the landowner has not bought, but which he sells in the products of agriculture’ (ibid.: 55). Marx quotes approvingly, and italicizes, Turgot’s observation that ‘*The proprietor has nothing except through the labour of the cultivator*’ and adds, in brackets: ‘therefore not through a pure gift of nature’ (ibid.: 57). Hence in Turgot the surplus approach to the theory of value and distribution is at the crossroads. There is a clear perception that the surplus product is due to surplus labour and yet the ‘productivity’ of agricultural labour is explained in terms of a material-based reasoning: nature is taken to ‘give back’ to the agricultural labourer more ‘material’ than is ‘used up’ by him (as food, seed, etc.)

We may conclude that in Marx’s view the theory of value is *instrumental* to an explanation of the sharing out of the product amongst the different classes of society. If the physiocrats had succeeded in elaborating a satisfactory explanation of the exchange ratios of commodities based on real physical costs

of production in terms of some use-value *in genere*, it may be conjectured that Marx would have accepted it. He rejected the physiocratic material-based view because of its failure to perform that instrumental role. To Marx the labour theory of value was not fundamental in the sense that it was considered ‘true’ *independently* of whether it served the purpose of providing a logically coherent foundation of the theory of income distribution. Marx endorsed the labour theory of value precisely because he was convinced that it would offer that foundation, that is, allow one to elaborate a logically unassailable theory of the general rate of profit. He held the physiocrats in high esteem also because it was another achievement of theirs which he thought had paved the way to the development of such a theory. The achievement under consideration is the *Tableau économique*.

### **3. Marx’s schemes of reproduction and the *Tableau économique***

#### *3.1. Marx on the significance of the Tableau*

Marx was full of praise for the *Tableau* ever after he had carefully studied it in 1862–3 (see also Appendix B). In the section ‘Significance of the *Tableau Économique* in the History of Political Economy’ in volume 1 of *TSV* he calls it ‘an extremely brilliant conception, incontestably the most brilliant for which political economy has up to then been responsible’ (*TSV* 1: 344; similarly in *MEGA* I.27 (Text): 214). Marx explains:

In fact it was an attempt to portray the whole production process of capital as a *process of reproduction*, with circulation merely as the form of this reproductive process; and the circulation of money only as a phase in the circulation of capital; at the same time to include in this reproductive process the origin of revenue, the exchange between capital and revenue, the relation between reproductive consumption and final consumption; and to include in the circulation of capital the circulation between consumers and producers (in fact between capital and revenue); and finally to present the circulation between the two great divisions of productive labour – raw material production and manufacture – as phases of this reproductive process; and all this depicted in a *Tableau* which in fact consists of no more than five lines which link together six points of departure or return.

(*TSV* 1: 344)

In Marx’s view the *Tableau* had been unduly neglected by the English political economists so that an important achievement of economic analysis had been lost sight of for almost an entire century. Adam Smith, Marx claims,

in fact only took over the inheritance of the Physiocrats and classified and specified more precisely the separate items in the inventory. But his exposition and interpretation of the movement as a whole was hardly as correct as its presentation in outline in the *Tableau économique*, in spite of Quesnay's false assumptions.

(*ibid.*)

Marx's appreciation of the physiocrats permeates also his later works. The importance of the *Tableau* is emphasized, for example, in chapter XIX of volume II of *Capital*: 'Quesnay's *Tableau Économique* shows in a few broad outlines how the annual result of the nation production, representing a definite value, is distributed by means of circulation in such a way that, other things being equal, simple reproduction, i.e., reproduction on the same scale, can take place' (C II: 363). Marx credits Quesnay with developing the *Tableau* in terms of 'great functionally determined economic classes of society' and with striking upon 'the main thing, thanks to the limitation of his horizon, within which agriculture is the only sphere of investment of human labour producing surplus-value, hence the only really productive one from the capitalist point of view.' It is a characteristic feature of agriculture that in it the economic process of reproduction, 'whatever may be its special social character, always becomes intertwined . . . with a natural process of reproduction. The obvious conditions of the latter throw light on those of the former, and keep off a confusion of thought which is called forth by the mirage of circulation' (*ibid.*).

Marx calls the system of the physiocrats 'the first systematic conception of capitalistic production' (*ibid.*: 363; similarly, C I: 554). This judgement is justified as follows: 'The representative of industrial capital – the class of tenants – directs the entire economic movement. Agriculture is carried on capitalistically, that is to say, it is the enterprise of a capitalist farmer on a large scale; the direct cultivator of the soil is the wage-labourer.' Marx then turns to the problem of the generation and appropriation of a social surplus: 'Production creates not only articles of use but also their value; its compelling motive is to the procurement of surplus-value, whose birth-place is the sphere of production, not of circulation' (C II: 364). As to the roles performed by the classes other than the class of workers in this 'social process of reproduction' he writes: 'the immediate exploiter of productive labour, the producer of surplus-value, the capitalist farmer, is distinguished from those who merely appropriate the surplus value' (*ibid.*).

### *3.2. The schemes of reproduction*

Quesnay's *Tableau* was the foil against which Marx developed his own schemes of reproduction (see, in particular, C II: part III). The schemes are

concerned with the distribution of labour amongst the different sectors of the economy. That distribution was envisaged by Marx to depend on the socially dominant techniques of production, the distribution of income between wages and profits, and the expenditures out of these incomes, especially whether or not parts of profits are saved and invested, that is, accumulated. Hence, the schemes were essentially an attempt to come to grips with the *quantity* system of the economy under consideration. In principle the quantity system could be studied without any recourse to the problem of valuation. However, Marx chose to provide both a description of the requirements of (simple or extended) reproduction in physical terms, that is, with reference to use-values, and in value terms, that is, with reference to labour values. (In addition he was concerned with the problem of money circulation). Thus he intended to show that the physical reproduction of capital and its value reproduction are two aspects of the same thing, two sides of a single coin. However, Marx was aware of the fact that what matters as regards the value aspect of capital reproduction was that the single items constituting social capital fetched 'prices of production' and not labour values, that is, prices including the normal rate of profit on the capital advanced in each line of production. His explicit assumption that commodities are exchanged according to labour values was considered a legitimate device to simplify a piece of analysis in which the problem of value and distribution played at best a side role.<sup>11</sup> Yet once Marx turned to a proper discussion of that problem that device had to be abandoned because it contradicted the idea that in conditions of free competition a tendency towards the establishment of a uniform rate of profit would make itself felt. Interestingly, Marx entertained the view that the scheme of reproduction, or quantity system of the economy, provided also the framework within which a theory of 'prices of production' could be developed (see, in particular, C III: Part II). In this section we shall deal with the quantity aspect and in the next one with the price aspect.

An early version of the scheme of simple reproduction was elaborated in Marx's letter to Engels of 6 July 1863.<sup>12</sup> He wrote to Engels: 'If it is possible in this heat, please look carefully at the enclosed "*Tableau Économique*" which I have put in the place of Quesnay's Tab[leau] and let me know any deliberations [Bedenken] you may have. It encompasses the entire process of reproduction' (MEW 30: 362). The scheme (including the handwritten version of it by Marx) is given in Figure 1. The importance Marx attributed to, and the inspiration he derived from, Quesnay's *Tableau* is also reflected in the fact that he reproduced the latter underneath his alternative construction.

Marx divides the economy into two 'classes' or 'categories': class I represents the production of the means of subsistence, class II that of the means of production, that is, commodities 'which enter as raw materials, machinery etc. in the process of production'; the latter commodities 'form the

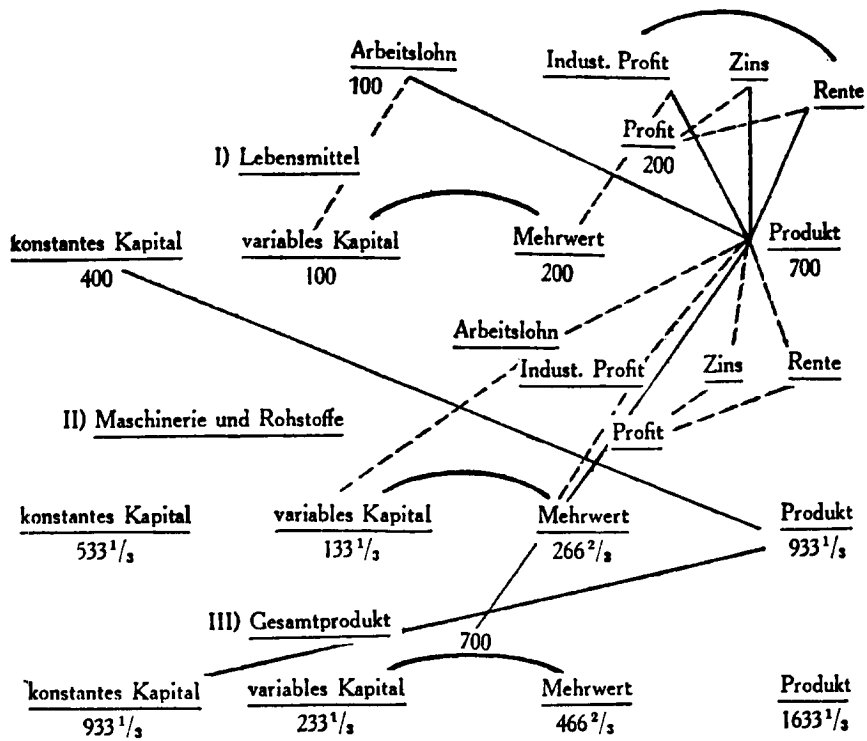


Tableau Économique des Dr. Quesnay

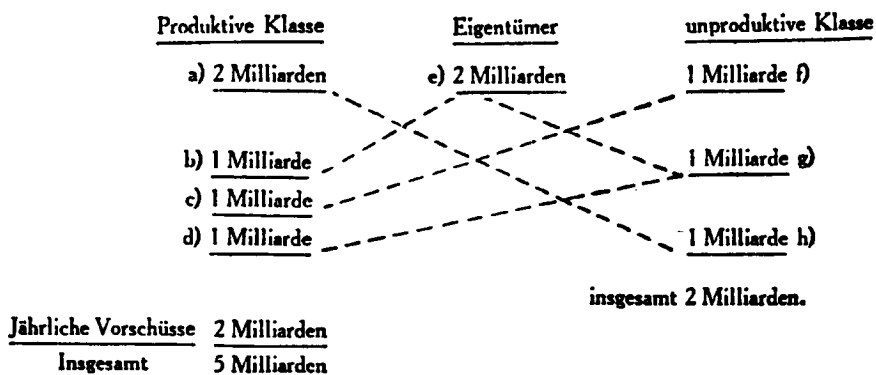


Figure 1a

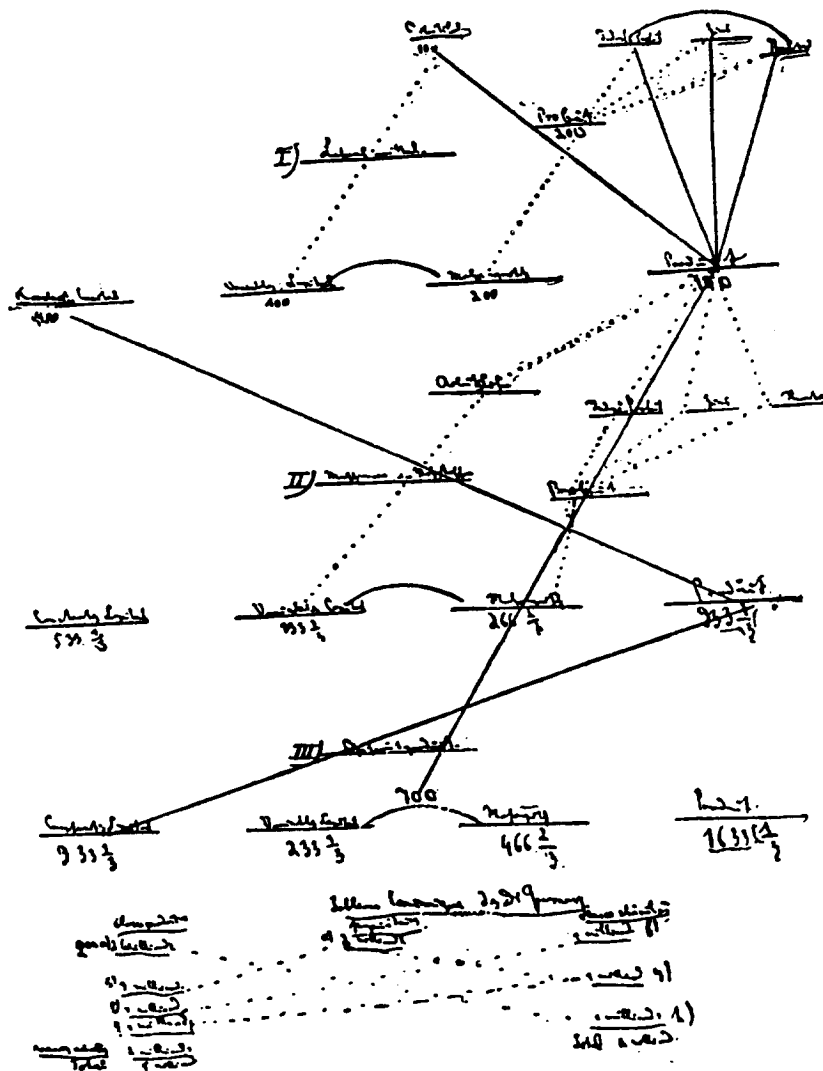


Figure 1b

*constant capital* (MEW 30: 363). (In volume II of *Capital* the numbering of departments is reversed.) Marx emphasizes that the two classes or departments represent productive *aggregates* in a special sense.<sup>13</sup> This becomes clear with regard to agriculture, in which ‘a part of the same products (e.g. corn) forms means of subsistence, whereas another part (e.g. corn) enters again as a raw material in its natural form (e.g. as *seeds*) into the reproduction. This does not change things, since according to one characteristic these branches of production belong in class II and according to the other in class I’ (ibid.). The broken lines indicate payments by industrial capitalists to workers (wages), monied men (interest) and landlords (rent), the solid lines expenditures by the different income recipients on means of consumption and means of production.

The numerical example of Figure 1 can be rewritten in a form which became prominent with volume II of *Capital* (C II: ch. XX), i.e.

$$\text{class I:} \quad 700 = 400_c + 100_v + 200_s$$

$$\text{class II:} \quad 933\frac{1}{3} = 533\frac{1}{3}_c + 133\frac{1}{3}_v + 266\frac{2}{3}_s,$$

where the subscripts *c*, *v* and *s* stand for ‘constant capital’, ‘variable capital’ and ‘surplus value’, respectively. Simple reproduction requires that the constant capitals used up in both sectors ( $400_c + 533\frac{1}{3}_c$ ) are equal to the total product of class II ( $933\frac{1}{3}$ ); and that the variable capitals, or wages bills ( $100_v + 133\frac{1}{3}_v$ ),<sup>14</sup> plus the surplus values, or profits ( $200_s + 266\frac{2}{3}_s$ ), of the whole system are equal to the total product of class I (700). Accordingly, simple reproduction involves (using again the notation employed in volume II of *Capital*)

$$\text{I} (400_c) = \text{II} (133\frac{1}{3}_v + 266\frac{2}{3}_s).$$

Marx stresses that the constant capitals include only ‘that part of working material which enters the yearly product as *dechet* [wear and tear]; the non-consumed part of machinery etc. does *not* figure in the table’. He also points out that as regards the ratio of variable capital to surplus value ‘it is assumed that the worker works  $\frac{1}{3}$  of the working day for himself and  $\frac{2}{3}$  for his natural superiors’. Hence, the rate of surplus value in both classes is taken to be 200 per cent. In addition it is assumed that the entire surplus value is realized as profit, which in turn is taken to split up ‘in *industrial profit* (including the *commercial* one), then *interest*, which the industrial capitalist pays in money, and rent, which he also pays in money’ (ibid.: 363–4). With simple reproduction all the money paid for industrial profit, interest and rent is ‘unproductively

used' (C II: 401), that is, spent on consumption goods, and thus flows back to the capitalists in class I.

While the capitalists in class I can realize their revenue in terms of the products produced in that class, this is not so with regard to the capitalists in class II: they have to buy consumption goods from class I. Conversely, while the capitalists in class II can replace the used up parts of their constant capital in terms of the products produced in that class, this is not so with regard to the capitalists in class I: they have to buy investment or capital goods from class II. The total effective demand for products of class I coming from agents (capitalists and workers) in class II amounts to  $(133\frac{1}{3}_r + 266\frac{2}{3}_s)$ , whereas the total effective demand for products of class II coming from agents (capitalists) of class I amounts to  $(400_c)$ : the *intersectoral* exchange is *balanced*. 'The movement partly within category I, partly between category I and II, shows at the same time how the money with which they pay anew the wages of labour, interest and ground rent flows to the respective industrial capitalists in both categories' (ibid.: 364). In 'category III' Marx also gives the aggregate figures for the economy as a whole.

In contrast to Quesnay's *Tableau*, here the labour performed in both sectors is taken to be productive, that is, generating a surplus value which is appropriated by the industrial capitalists and then shared out between themselves, the financial capitalists and the landowners.<sup>15</sup> The criteria according to which total surplus value is split up into industrial (and commercial) profit, interest and rent are not expounded in Marx's letter. Emphasis is on what Marx considered to be the crucial point: *all* kinds of non-wage incomes, whether profit, interest or rent, have a common source – '*unpaid surplus labour*'. It is labour applied capitalistically, not nature, which generates a surplus. It is also assumed that commodities exchange according to the quantities of labour needed (directly and indirectly) in their production, that is, the labour theory of value holds as a theory of relative prices. Since the 'organic composition of capital' differs between the two sectors, with a uniform rate of surplus value the sectoral rates of profit are necessarily unequal. (As Samuelson (1974: 271) has emphasized, Marx assumed equal organic composition of capital in his analysis of 'simple reproduction' in volume II of *Capital*.)

Both Quesnay's *Tableau*, as seen by Marx, and Marx's own scheme of reproduction share the following features. First, they start from the same set of data: the system of production in use, defined in terms of (1) the (average) methods of production employed to produce (2) given levels of (aggregate) output; and (3) a given real wage rate. Second, all shares of income other than wages are explained in terms of the surplus product (representing a certain surplus value), or residual, left after the means of subsistence in the support of labourers, and what is necessary for the replacement of the used-up means of production have been deducted from the annual output. Hence,



the distributive variables are treated *asymmetrically*: the wage rate is taken to be an *exogenous* variable, whereas the (rate of) rent in the case of Quesnay and the rate of profit (and also the interest and rent rates) in the case of Marx are *endogenous* variables.<sup>16</sup> Third, and closely related to what has just been said, both the physiocrats and Marx conceive of any surplus product that may exist as *generated* in the sphere of production and only *realized* in the sphere of circulation (cf. also *TSV* I: 45). Fourth, it is assumed in both representations that the process of circulation works out smoothly. This involves, *inter alia*, the existence of a system of *relative* prices which support the process of reproduction (see also the following section), and a system of *absolute* prices compatible with the stock of money available in the system and the going habits of payment. Fifth, both schemes distinguish between fixed and circulating capital, where both kinds of capital relate to productive capital only. Exclusively those parts of capital which are used up during the process of production and have to be replaced periodically are taken into account in the tables. This presupposes that the stocks of durable means of production employed in the different sectors, their modes of utilization and thus their patterns of wear and tear (and therefore depreciation) are known. Sixth, in both versions reference is to some 'normal' levels of output, defined in terms of some average of the conditions of production over a sequence of years.

While in the *Tableau* the problem of accumulation of capital is set aside, it is well known that Quesnay was concerned with the sources of economic growth and stressed the role of accumulation.<sup>17</sup> In Marx the problem of balanced growth of the two departments in the absence of technological change is dealt with in his schemes of extended reproduction (cf. *C* II: XXI) which provide a theory of the relationship between quantities, or sectoral proportions, and the rate of growth of the economic system as a whole.

#### 4. Prices of production

After having studied Ricardo's labour-based approach to the theory of value and profits Marx felt the need to go back once more to the physiocrats and particularly the *Tableau* and investigate the implications of that approach within a *general* framework of the analysis.<sup>18</sup> He hoped within that framework to be able to consistently determine the general rate of profit. While Ricardo deserved the credit for having had a clear view of the inverse relationship between the rate of profit and the real wage rate, he had failed to show how the level of the rate of profit was actually ascertained, given the real wage rate.<sup>19</sup> Marx saw that the data on which Ricardo's argument was based were essentially the same as the data (1)–(3) underlying the *Tableau*. There was a single important difference between the physiocratic and the classical scheme:

the rule according to which the social surplus is distributed – as rent in the case of the physiocrats, and as rent and profits in the case of the classical economists from Smith to Ricardo. It was indeed the determination of the general rate of profit which became a major focus of classical analysis.<sup>20</sup> The question was close at hand whether Ricardo's labour-based approach could be integrated with an appropriately modified *Tableau*. This reformulation had to leave the basic structure of the approach defined in terms of the *exogenous variables*, or givens, untouched. Marx's theory of the general rate of profit and prices of production in part II of volume III of *Capital* can indeed be interpreted as an amalgamation and elaboration of insights Marx owed first and foremost to the physiocrats, Smith and Ricardo. There the problem of the rent of land is set aside altogether. The entire surplus is assumed to accrue in the form of profits, which, in conditions of free competition, are distributed at a uniform rate on the capitals invested in the different sectors of the economy. In chapter X of that part, 'Equalisation of the General Rate of Profit through Competition', Marx informs the reader about his sources and also about what he intends to achieve beyond the contributions of his precursors:

The price of production includes the average profit. We call it price of production. It is really what Adam Smith calls *natural price*, Ricardo calls *price of production*, or *cost of production*, and the physiocrats call *prix nécessaire*, because in the long run it is a prerequisite of supply, of the reproduction of commodities in every individual sphere.

He adds: 'But none of them has revealed the difference between price of production and value' (C III: 198). It was precisely this problem Marx took pride to have solved: 'this intrinsic connection is here revealed for the first time' (ibid.: 168). The solution consisted of a combination of Ricardo's labour-based valuation of commodities and a modified version of the physiocratic description of the system of production of the economy as a whole.

A brief summary statement of Marx's analysis must suffice. He makes it clear that a determination of the general rate of profit and relative prices presupposes a *general* framework of the analysis, taking into account the 'total social capital' and its distribution in the different 'spheres of production' (ibid.: 158 and 163). Marx's two-step procedure was aptly dubbed 'successivist' (as opposed to 'simultaneous') by Ladislaus von Bortkiewicz (1906–7: 38). In a first step he specifies the general rate of profit as the ratio between the (labour) value of the economy's surplus product, or 'surplus value', and the (labour) value of social capital, consisting of a 'constant capital' (means of production) and a 'variable capital' (wages). In a second step the (value) rate of profit is then used to calculate prices. We may illustrate his procedure as follows. Marx starts from a description of the economic system divided into several sectors

or spheres of production, each of which is represented by an equation giving the value of the sectoral output ( $\lambda_i$ ) as the sum of the sectoral constant capital ( $c_i$ ), its variable capital ( $v_i$ ) and the surplus value ( $s_i$ ) generated in the sector (cf. C III: ch. IX). This description involves, of course, given methods of production in the sectors and a given real wage rate. Otherwise it would be impossible to derive the labour-value magnitudes. With a given and uniform real wage rate and a given and uniform length of the working day (reflecting, *inter alia*, free competition in the labour market), the rate of surplus value is uniform across sectors. The larger the real wage rate, the larger is the variable capital and the smaller is the sectoral surplus value. Assuming only two sectors in order to facilitate a comparison with the *Tableau* and setting aside the problem of fixed capital, we have

$$\lambda_I = c_I + v_I + s_I \quad (1a)$$

$$\lambda_{II} = c_{II} + v_{II} + s_{II} \quad (1b)$$

where sector I produces means of production and sector II means of subsistence. It is Marx's contention that from this system *alone*, reflecting the set of data specified above, both the general rate of profit and prices of production can be determined.<sup>21</sup> Setting aside the problem of fixed capital, the rate of profit,  $\rho$ , is taken to be determined by the following equation:

$$\rho = \frac{s_I + s_{II}}{c_I + v_I + c_{II} + v_{II}} = \frac{\sum_i s_i}{\sum_i (c_i + v_i)} \quad (2)$$

In Marx's view it is here that the labour theory of value is indispensable, because it allegedly allows the determination of the rate of profit *independently of, and prior to*, the determination of relative prices.

In a second step this 'value' rate of profit,  $\rho$ , is then used to discount forward sectoral costs of production, or 'cost prices', measured in terms of labour values (cf. *ibid.*: 164). This is the (in)famous problem of the 'Transformation of Values of Commodities into Prices of Production' (C III: part II). With  $p_i$  as the value-price transformation coefficient applied to the product of department  $i$ ,  $i = I, II$ , we have, following Marx's procedure,

$$\lambda_I p_I = (1 + \rho)(c_I + v_I) \quad (3a)$$

$$\lambda_{II} p_{II} = (1 + \rho)(c_{II} + v_{II}). \quad (3b)$$

Counting the number of equations and that of the unknowns, there are two

equations with two unknowns: the value-price transformation coefficients  $p_I$  and  $p_{II}$ . Hence, the 'prices of production' seem to be fully determined.<sup>22</sup>

Here there is no need to enter into a detailed discussion of why Marx's 'successivist' procedure to determine the general rate of profit and relative prices cannot be sustained. A few critical remarks must suffice (see also Garegnani 1987). A first and obvious error concerns the fact that in the above price equations (3) the constant and variable capitals ought to be expressed in price terms rather than in value terms. Marx was aware of this slip in his argument (cf. *C* III: 164–5 and 206–7), but apparently he was convinced that it could easily be remedied. Reckoning the two kinds of capital advances in price terms would not, he thought, contradict the labour-based determination of the general rate of profit in equation (2). It is basically this conviction that made him rely on the labour theory of value. The latter was taken to provide a coherent foundation of the theory of distribution, that is, was seen to allow a logically consistent determination of the key variable of the capitalist economy: the general rate of profit. Had Marx seen that the labour-based theory of value failed to perform the instrumental role it was devised for, he would have had to reject it as he rejected the physiocrats' material-based view of value.

Wherein consists the flaw of Marx's argument? Once the necessary corrections suggested by Marx himself are carried out, that is, the two types of capital advances are expressed in price terms, it becomes clear that it cannot generally be presumed that the 'transformation' of values into prices of production is relevant with regard to single commodities only, while it is irrelevant with regard to commodity aggregates, such as the surplus product or the social capital, the ratio of which gives the rate of profit. In other words, it cannot generally be excluded that the assumed 'redistribution' of the surplus value involves a deviation of the price expressions of the surplus product and the social capital from their value expressions in the same way as it involves a deviation of the prices of single commodities from their values. Hence, there is no presumption that the 'price' rate of profit equals the 'value' rate of profit,  $p$ . Marx's equation (2) cannot, therefore, be correct in general. Since the rate of profit cannot be determined before knowing the prices of commodities, and since the prices cannot be determined before knowing the rate of profit, the rate of profit and prices have to be determined *simultaneously* rather than successively.

Does Marx's blunder also falsify his intuition that starting from the set of data (1)–(3), which he had discerned in the *Tableau* and Ricardo, relative prices and the rate of profit can be determined in a logically coherent way, assuming a capitalist economy in which the problem of the rent of land is set aside? The answer is no. This has been shown, explicitly or implicitly, within various analytical frameworks which differ in terms of generality by authors

such as Vladimir K. Dmitriev, Ladislaus von Bortkiewicz, Georg von Charasoff, Wassily Leontief, John von Neumann and Piero Sraffa (cf. Kurz and Salvadori 1995: ch. 13).

We may summarize our findings as follows. Marx was convinced that the determination of the rate of profit and relative prices could only be approached in a *general* framework of the analysis, allowing for the interdependencies of the different spheres of production in the economy. He thought he could accomplish this task in terms of a *set of data* which he had encountered, or so he thought, at least *in nuce*, in the *Tableau économique*. These data would be sufficient to determine the labour values of the different commodities and, given the real wage rate, also the aggregate magnitudes of 'surplus value', 'variable capital' and 'constant capital', and thus the general rate of profit. With the latter as a known magnitude, prices of production could be calculated.

## 5. Conclusion

We have seen how much Marx owed the physiocrats for the development of his own views on the laws of production, distribution and circulation governing a capitalist economy. This is the deeper reason why Marx spoke so respectfully of Dr Quesnay and the physiocrats. After all, *les économistes* were amongst the true forerunners of his own analysis which was in important respects but a metamorphosis and development of theirs. He appears to have been particularly fascinated by the fact that in the physiocratic system, as he saw it, the theory of quantities and growth and the theory of prices and distribution do have a common origin in the concepts of social surplus and production as a circular flow. Marx can indeed be said to have seen through the lens of the physiocratic writings the essence of the *duality* relationship between the two sets of variables emphasized by later theorists and particularly by John von Neumann.<sup>23,24</sup> Hence it may be argued that there exists a direct lineage from physiocracy to modern formulations of the classical theory.

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## Notes

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Paul Samuelson, Ian Steedman and two anonymous referees of this journal. It goes without saying that all remaining errors and misconceptions are our responsibility. Translations of sources of which no English version was available are ours.

- 1 See, for example, Moride (1908), Schumpeter (1914: 48; 1954: 238), Bénard (1958), Fox-Genovese (1976), Schicchi (1978), Malle (1979), Rieter (1983) and particularly Meek (1962: 27).
- 2 See more recently the contributions by Cartelier (1976), Gilibert (1977) and Vaggi (1987).
- 3 We may note here that in Quesnay's writings there is not only the well-known distinction between 'classe productive' and 'classe stérile', but also the distinction between 'travail productif' and 'travail stérile': 'Les cultivateurs . . . partagent le produit de leurs travaux avec le souverain et les propriétaires des terres; mais il n'y a que les travaux productifs qui puissent se défrayer eux-mêmes, et fournir de plus le surcroît de richesse qui forme le revenu des nations, c'est par ces avantages qu'ils diffèrent essentiellement des travaux stériles dont on paye les frais, et qui ne rapportent rien au-delà des frais' (Quesnay 1958: 829, in the original the italicized part is capitalized; see also *ibid.*: 911).
- 4 There are however passages in the writings of major physiocrats which point in the direction of agriculture as a self-contained or vertically integrated sector of the economy. Quesnay's *Dialogue sur les travaux des artisans*, which Marx had excerpted, contains the following statement: 'Ainsi l'origine, le principe de toute dépense, et de toute richesse, est la fertilité de la terre, dont on ne peut multiplier les produits que par ces produits mêmes. C'est elle qui fournit les avances au cultivateur qui la fertilise, pour la faire produire davantage. L'artisan n'y peut contribuer que par la formation de quelques instruments nécessaires pour remuer la terre, et qu'au défaut d'artisans, le cultivateur formerait lui-même. Qu'importe qui en soit l'ouvrier . . . ' (Quesnay 1958: 892; emphasis added). Compare this with Marx's statement in Engels' *Anti-Dühring*: 'Finally, recall that during Quesnay's time in France, as more or less everywhere in Europe, the own home industry of the farmer's family supplied by far the greater part of the needs and wants that did not belong to the class of the means of subsistence, and which therefore will be assumed as the obvious accessories [selbstverständliches Zubehör] of agriculture' (*MEW* 20: 231).
- 5 Marx's interpretation of the physiocrats bears a close resemblance to Sraffa's 'corn model' interpretation of Ricardo's early theory of profits. According to Sraffa's interpretation 'in agriculture the same commodity, namely corn, forms both the capital . . . and the product' (Sraffa 1951: xxxi). Hence, whether or not a surplus is generated in agriculture, as well as the absolute size of that surplus and its size relative to the capital advanced (seed corn and corn wages), can be ascertained 'without any question of valuation' (*ibid.*). Sraffa himself notes that Ricardo's view 'thus appears to have a point of contact with the Physiocratic doctrine of the "produit net" in so far as the latter is based, as Marx has pointed out, on the "physical" nature of the surplus in agriculture which takes the form of an excess of food produced over the food advanced for production; whereas in manufacturing, where food and raw materials must be bought from agriculture, a surplus can only appear as a result of the sale of the product' (Sraffa 1960: 93). (Sraffa refers to two passages in volumes 1 and 3 of *TSV*.)
- 6 As Marx pointed out later, it was however wrong to set aside the fact that 'the owners of the conditions of labour and the labourers . . . confront each other as owners of commodities, and consequently there is no assumption here of production independent of exchange' (*ibid.*: 58).

- 7 It should be noted, however, that Quesnay's article *Hommes*, which contains perhaps the most elaborate account of physiocratic price concepts, was not accessible to Marx. None the less Marx could hardly have overlooked the existence of such concepts, given his intensive and careful study of Daire's *Physiocrates* edition. There are indeed several passages in his writings in which he discusses such concepts; see, for example, *TSV* I: 46–7, 59, 60; *C* II: 215–16; *C* III: 198.
- 8 Therefore, the view occasionally to be found in the literature that Marx denied that the physiocrats had a theory of value is difficult to sustain; see, for example, Cartelier (1976: 78) and Gilibert (1989: 125). Some authors interpret the physiocrats as advocating a land theory of value, with relative prices proportional to the direct and indirect land requirements in production; see in particular Samuelson (1959).
- 9 Recently, Francis Seton (1992: 28) used the distinction between 'cost-based' and 'use-based' approaches to the theory of value to classify, among others, the contributions by Marx and the physiocrats, both of which are said to represent different 'monomanias'. While Marx's theory of value is said to represent a 'mono cost-fetishistic approach', because it allegedly recognizes only one cost element, labour, the physiocrats' theory is said to represent a 'mono use-fetishistic approach', because it allegedly recognizes the usefulness of only one output element, 'grain'. In our view both characterizations are dubious: neither did Marx consider labour to be the only cost or input element nor did the physiocrats consider 'grain' to be the only proceeds or output element.
- 10 Ironically, Eugen von Böhm-Bawerk in his frontal assault on Marx's analysis after the publication of the third volume of *Capital* accused Marx of having left out of consideration other candidates for the role of the 'common factor': following Marx's line of reasoning, commodities could with the same right be said to 'exchange in proportion to the quantity of material incorporated in them' (Böhm-Bawerk 1949: 85). The purpose of the suggested material-based theory of value was to ridicule Marx's procedure by pointing out its arbitrariness. However, as we have seen, Marx had taken this option into account and had rejected it. It should be noted that in Böhm-Bawerk's view the source of value was to be sought neither in labour nor in some material input, but in the marginal value in use of commodities. Böhm-Bawerk's criticism of Marx owes much to his former teacher Karl Kries who in 1873 had put against Marx's concept of 'abstract labour' that of 'a value in use *in genere*' (cf. Kries 1885: 160). See also Kurz (1995: section 5).
- 11 See, in particular, *C* II: 397–8; we shall come back to the significance of this passage at the beginning of section 4.
- 12 Prior to this Marx had developed the scheme in a manuscript entitled 'Reproduktion' in May or early June 1863; see *MEGA* II.3.6 (Text): 2,271. See also Appendix B.
- 13 As in the *Tableau* the concept of an 'industry', 'sector' or 'department' is an analytical one. Yet while in Quesnay the dividing line between the two departments is whether a line of production is 'productive' or not, in Marx the dividing line is whether it produces means of production or means of consumption.
- 14 At that time Marx called the variable capital also the 'wage fund' (Fonds des Arbeitslohns) (*ibid.*: 364).
- 15 On the similarities and differences between the conceptions of production as a circular flow in Marx and Quesnay, see the appendix by Tsuru in Sweezy (1942).
- 16 This asymmetric treatment of the distributive variables distinguishes the analyses of Quesnay and Marx, and also those of the classical economists from Adam Smith

- to David Ricardo, from later marginalist (or 'neoclassical') analyses which attempt to determine all distributive variables symmetrically in terms of supply and demand in regard to the 'services' of the 'factors of production': labour, land and capital. See on this Kurz and Salvadori (1995: chs 1, 13 and 14).
- 17 Quesnay was also clear about the importance of technological and organizational improvements of the production process. On Quesnay's contribution to the theory of economic growth, see Eltis (1975).
  - 18 In this context it is to be noted that a first formulation of the transformation of values into prices of production is to be found in a 'Digression' on Rodbertus' theory of rent (cf. *TSV* 2: 64–71) which was written in mid-June 1862 (cf. *MEGA* II.3.1 (Apparat): 13), that is, shortly after the 'Digression' on Quesnay's *Tableau*. In December 1862, after he had written the major part of the *TSV* (notebooks VI–XV), Marx produced a draft of a section entitled 'Capital und Profit' which contained the original form of the argument of the first parts of volume III of *Capital*. He then returned to a study of the *Tableau économique* in 1863, from which emerged his schemes of reproduction of volume II of *Capital* (see section 4 above). Part II of the third volume of *Capital* was drafted shortly afterwards in 1864–5 (cf. *MEGA* II.3.5 (Text): 7<sup>++</sup>–32<sup>++</sup>; see also Oakley 1983: 82–105). It is also known that Marx then revised his earlier draft on the schemes of reproduction. His new findings in the theory of value and distribution are echoed in the introductory paragraph of chapter XX of the second volume of *Capital*: 'It is . . . assumed that products are exchanged at their values . . . The fact that prices diverge from values cannot, however, exert any influence on the movements of the social capital. On the whole, there is the same exchange of the same quantities of products, although the individual capitalists are involved in value-relations no longer proportional to their respective advances and to the quantities of surplus-value produced singly by every one of them' (*C* II: 397). In the manuscript 'Reproduktion' of May or early June 1863 (cf. note 12 above) Marx touched upon the value-price problem. He wrote on the margin of the manuscript in large letters 'Profitrate' to indicate that there was a problem waiting to be solved; see *MEGA* II.3.6 (Text): 2,246. This evidence suggests that Marx's work on the schemes of reproduction and on the 'transformation problem' were intimately intertwined and bore a joint fruit.
  - 19 Marx's criticism of Ricardo reads: 'He presupposes a *general rate of profit* . . . Instead of *postulating this general rate of profit*, Ricardo should rather have examined how far its *existence* is in fact consistent with the determination of value by labour-time, and he would have found that instead of being consistent with it, *prima facie*, it *contradicts* it, and that its existence would therefore have to be explained through a number of intermediary stages, a procedure which is very different from merely including it under the law of value.' Marx continues: 'He would then have gained an altogether different insight into the nature of profit and would not have identified it directly with surplus-value' (*TSV* 2: 174).
  - 20 It was noted in section 2 that Turgot's analysis of value and distribution anticipated partly classical political economy. Faccarello (1990: 69–78) has pointed out that especially in one respect Marx's transformation of values into prices of production bears a close resemblance to the analyses of Turgot and his disciples, Condorcet and Roederer. These latter authors started from the physiocratic doctrine that only the agricultural sector of the economy is productive, that is, capable of generating a surplus value. At the same time it was clear to them that in competitive conditions a uniform rate of profit on the capital advanced in the different sectors must obtain. Hence there is the idea of the *redistribution* of a



*predetermined* aggregate surplus value in proportion to the capital advanced in the various spheres of production. It may be conjectured that Marx got this idea from these authors and that he generalized it to all spheres of production in which surplus labour is performed.

- 21 This set of data fits well with the 'naturalistic' or 'materialist' points of view of the physiocrats and Marx, since all the exogenous variables referred to in order to determine the endogenous ones can be observed and measured.
- 22 There is no need to assume simple reproduction in order to be able to 'transform' values into prices of production, as Bortkiewicz (1907) maintained; see on this Garegnani (1960: appendix C).
- 23 It should be noted that prior to Marx Robert Torrens had displayed a clear understanding of the duality relationship, and there is evidence that Marx had benefited from Torrens' work. On the historical origins of the concept of duality, see also Kurz and Salvadori (1994: ch. 13).
- 24 Morishima (1973: 8) has stressed: 'It is indeed a great surprise to find that many of von Neumann's novel ideas were clearly stated in *Capital*'.

## Appendix A: On Marx's studies of physiocracy and his sources

Since Marx studied, and commented on, physiocratic authors in different phases of his life, extending over a period of more than 30 years, it may be useful to provide the reader with a brief overview of major stages in the development of Marx's studies of physiocracy. To begin with, some general remarks about the character of Marx's own writings seem appropriate.

One of the principal sources for Marx's views on physiocracy is the first part of the *Theories of Surplus Value* (TSV1) – a manuscript written in 1862–3 which contains Marx's 'working notes', and which was not meant to be published in its present form. The same applies also to Marx's *Economic & Philosophic Manuscripts of 1844* (EPM 1844), to his *Grundrisse* manuscript of 1857–8 (*Grundrisse*), and to the *Marx-Engels-Correspondence* (MEW 30).<sup>1</sup> The reader is therefore asked to keep in mind that any exposition of Marx's views on physiocracy relies to a large extent on material that Marx had not prepared for publication. It should also be emphasized that Marx's first and foremost objective in all these manuscripts, including those of the TSV, was *self-clarification*. With regard to the sources used by Marx in his assessment of physiocracy, it must first be noted that Marx did not have access to all the writings of the physiocrats that are available to us. Moreover, in some cases some of the material, though available in principle, was not at his disposal when he was writing (cf. TSV 1: 484, n. 88).

The first time Marx came into contact with physiocratic ideas appears to have been during his stay in Paris, where – most probably in 'early 1844' (cf. Oakley 1983: 23; see also MEGA IV.2 (Apparat): 714) – he started to study systematically the works of political economists. Marx recorded his work in a series of notebooks (now known as the *Paris Notebooks*), containing his excerpts, summaries and commentaries. Among the 16 authors from whose works Marx took excerpts, there is none that would be considered a physiocrat (cf. MEGA IV.2 (Apparat): 710–24). However, in the so-called *Economic & Philosophic Manuscripts of 1844* – frequently also referred to as the *Paris Manuscripts* (1844) – which emerged from Marx's attempt to collate the material collected in the notebooks and to clarify his views on political economy, he included a discussion relating to physiocracy of roughly one page length. Marx provides no

hints as to the sources on which he based his following characterization of the 'physiocratic doctrine':

The physiocratic doctrine of Dr. *Quesnay* forms the transition from the mercantile system to Adam Smith. *Physiocracy* represents in political economy directly the decomposition of feudal property, but it therefore just as directly represents its *metamorphosis* and restoration . . . All wealth is resolved into *land* [*Erde*] and *cultivation* (agriculture). Land is not yet *capital*: it is still a special mode of its existence . . . Yet land is a general natural *element*, whilst the mercantile system admits the existence of wealth only in the form of *precious metal*. Thus the *object* of wealth – its matter – has [straightaway] obtained the highest degree of generality within the *bounds of nature*, in so far also as nature is its immediate objective wealth. And land only exists for *man* through labor, through agriculture. Hence the subjective essence of wealth has already been transferred to labor. But at the same time agriculture is the *only productive* labor. Hence, labor is not yet grasped in its generality and abstraction . . . Physiocracy denies *particular*, external, merely objective wealth by declaring labor to be the *essence* of wealth.

(EPM 1844: 130–1)

Marx was thus already familiar with physiocratic ideas when he first set out the basic conceptions of 'historical materialism' in *Die deutsche Ideologie* (*The German Ideology*), written in collaboration with Friedrich Engels in 1845–6. But apart from a side remark, in which *les économistes* are credited with having originated the science of political economy,<sup>2</sup> there are no other references to physiocratic writers.

According to Marguerite Kuczynski (1976: 18–20; cf. also Oakley 1983: 31), Marx first took excerpts from *Quesnay*'s writings in the autumn of 1846, when he planned to rewrite the manuscript for his contracted book entitled *Kritik der Politik und National-ökonomie* (*Critique of Politics and Political Economy*). Kuczynski also reports that Marx had emphasized, in the draft of a letter to the publisher K. W. Leske, the necessity of 'now' having to include 'a thorough examination of Daire's edition of the *Physiocrates* (1846)', which had just been published (but which Marx had not yet received). Marx's study of Daire's volume resulted in extensive excerpts from two articles of *Quesnay* that he collected under the heading 'Quesnay, François: a) Le droit naturel; b) Analyse du tableau économique. In: Physiokrates [sic]. Quesnay, Du Pont de Nemours . . .', in the (unpublished) 'Exzerptheft XII, 1846'.<sup>3</sup>

The revision of the manuscript for *Critique of Politics and Political Economy* was, however, not carried out.<sup>4</sup> Some traces of Marx's examination of Daire's volume can be detected in *Misère de la philosophie* (1847), which he wrote from December 1846 to April 1847. Section '1. The Method' of 'Chapter II. The Metaphysics of Political Economy' was divided by Marx into seven 'Observations', in analogy with the structure used by *Quesnay* in summarizing the main ideas of his *Analyse* in seven 'Observations importantes'. And in the paragraph preceding this section Marx refers to *Quesnay* as the leading economist of France, who had 'turned political economy into a science' (MEW 4: 125).

A decade later, in the *Grundrisse der Kritik der Politischen Ökonomie, Rohentwurf 1857–8* (*Foundations of the Critique of Political Economy (Rough Draft 1857–58)*), Marx again characterizes the physiocrats as 'the fathers of modern political economy' (*Grundrisse*: 234). Almost all of Marx's comments on physiocracy in the *Grundrisse* are contained in the section 'The chapter on capital. – Production process. Theories of surplus value' (*Grundrisse*: 232–5) and most of them reappear (in very similar formulations) in chapter

2 of *TSV* 1. The first text that was to emerge from Marx's subsequent revision and further elaboration of the *Grundrisse* manuscript, *Zur Kritik der Politischen Ökonomie* (*A Contribution to the Critique of Political Economy*), first published (in German) in 1859, contains only a brief passage on physiocracy (cf. *Critique*: 57–8).<sup>5</sup>

We may thus conclude that from his first contact with physiocratic ideas onwards Marx spoke very respectfully of the physiocrats, and in particular of Quesnay, although there is no evidence that he had thoroughly examined Daire's *Physiocrates*, or the writings of other physiocrats, other than that from 1846.

From August 1861 to July 1863 Marx then wrote a set of economic manuscripts, the greater part of which was later to become the *TSV*; another part was re-drafted in 1863–5 for *Capital*. Marx collected these manuscripts in altogether 23 notebooks. The chapter on 'The Physiocrats' in *TSV* 1, originally contained in notebook VI, was written in March 1862 (cf. *MEGA* II.3.1 (Apparat): 12). It is remarkable that in this chapter almost all the quotations provided by Marx in order to substantiate his characterization of physiocracy are from Turgot's *Réflexions* (1844 [1766]).<sup>6</sup> Other physiocratic or secondary sources used by Marx include Mercier de la Rivière's *L'ordre naturel* (1767), Schmalz's *Économie politique* (1826) and Blanqui's *Histoire de l'économie politique* (1839). There is no indication that Marx consulted the texts in Daire's *Physiocrates* while he was writing the chapter on 'The Physiocrats'.

Chapter 6 of *TSV* 1, the original German title of which is 'Abschweifung [Digression] *Tableau économique* suivant Quesnay', is based on a manuscript that Marx had first put in a 'separate notebook' (which then, however, he re-labelled 'notebook X').<sup>7</sup> It was written in April or in May 1862,<sup>8</sup> and it is based on the exposition of Quesnay's *Tableau* in Schmalz's *Économie politique*, the French translation of the German original (cf. Schmalz 1826: 329). The fact that there are hardly any quotations from the physiocrats 'leads to the conclusion that when he was writing his "Digression" Marx did not have by him the works of Quesnay and of the other authors mentioned' (*TSV* 1: 484, n. 88).

A first formulation of the transformation of values into prices of production is to be found in a 'Digression' on Rodbertus' theory of rent in notebook X of the economic manuscripts of 1861–3. This 'Digression', which was later to appear in volume 2 of the *TSV* (cf. *TSV* 2: 64–71), was written in mid-June 1862 (cf. *MEGA* II.3.1 (Apparat): 13), that is, shortly after the 'Digression' on the *Tableau économique*. In this analysis Marx calculates an average rate of profit by aggregating the sectoral value rates of profit and then averaging them out, or, alternatively, by forming the ratio of the aggregated sectoral surplus values to the aggregated capital advances (in value terms). As Oakley (1985: 85–8) has noted, this analysis anticipates the presentation in chapter 9 of volume III of *Capital*, except that Marx here 'made no comment on the fact that the total surplus value equals the total profit and the total immediate exchange value equals the total average price' (Oakley 1985: 87).

In December 1862, after he had finished notebook XV (that is, almost all of the manuscripts that were later to appear in vols 1–3 of the *TSV*), Marx began to work on a manuscript that includes a section entitled 'Capital und Profit', which contains the original form of the argument of the first parts of volume III of *Capital*. A central piece of analysis of part II of the third volume of *Capital*, i.e. the 'Transformation of Values of Commodities into Prices of Production', is, however, not developed in this manuscript (cf. *MEGA* II.3.5 (Text): 1,598–1,674).<sup>9</sup>

In the period from May to July 1863<sup>10</sup> Marx took extensive excerpts from Quesnay's *Le Droit naturel* from the *Analyse du Tableau économique*,<sup>11</sup> from Quesnay's two *Encyclopédie* articles, 'Fermiers' and 'Grains', from the two *Dialogues*, from the (*Premier*) *Problème économique* and from the *Maximes générales* as found in Daire (1846). During this period

Marx was working on manuscripts he collected in notebooks XXII and XXIII. Notebook XXIII contained a discussion of Quesnay's *Tableau économique*, entitled 'Addendum to the Chapters on the Physiocrats' which was later to appear in volume 1 of the *TSV* (cf. *TSV* 1: 378–80).<sup>12</sup> In the same notebook Marx also collected comments on some passages from John Gray's *The Essential Principles of the Wealth of Nations* (1797), which were later also included in *TSV* 1 (cf. *TSV* 1: 382–6).<sup>13</sup> We may therefore conclude that Marx has intensively studied physiocratic authors, and in particular Quesnay's *Tableau économique*, in the period from May to July 1863.

Marx again studied the articles in Daire's *Physiocrates* edition, and particularly Quesnay's *Analyse*, in 1877, when he was engaged in preliminary work for his contribution to Engels' *Anti-Dühring*. As is well known, Marx drafted the whole of chapter X of part II of Friedrich Engels' *Herrn Eugen Dühring's Umwälzung der Wissenschaft* (*MEW* 20: 210–38). The work on this manuscript was largely done in the period from January to March 1877 (*MEGA* I.27 (Apparat): 856–8), and in March 1877 Marx sent his draft of the chapter to Engels. However, Marx had encountered difficulties in his exposition of Quesnay's *Tableau économique*, and in August 1877 he sent Engels a supplementary note entitled 'Das Tableau économique mit einigen Randglossen [The Tableau économique with some marginal comments]' (*MEGA* I.27 (Text): 210–14). The final version of chapter X was then written by Engels in November 1877.

## Appendix B: Marx's discussion of the *Tableau économique*

Since Marx's examination of and elaboration on Quesnay's *Tableau économique* is of particular interest in this paper, it seems appropriate to provide also a short chronological outline specifically referring to Marx's intensive and repeated studies of it.<sup>14</sup> It was already mentioned in Appendix A that Marx first took excerpts from the *Analyse* in 1846 (cf. Kuczynski 1976: 74–5). Quesnay's *Tableau* seems immediately to have fascinated Marx, although he was apparently still rather unclear about its meaning, as can be inferred from a side-remark in *Misère de la philosophie* (1847): 'We must therefore seek to clarify the method of Mr. Proudhon which is at least as dark as the "*Tableau économique*"' (*MEW* 4: 125–6). The *Tableau* was then taken up neither in the *Grundrisse* manuscript nor in the *Critique*, and there is no indication that Marx had attempted an 'illumination' of it before he wrote the 'Abschweifung [Digression] *Tableau économique* suivant Quesnay', which was later to become chapter 6 of *TSV* 1, in 1862.

Within this 'Digression' of some 40 pages there are several other digressions, so that only the smaller part of the chapter is actually devoted to the *Tableau* and its *problématique*. It is obvious that Marx's foremost interest in this manuscript was to clarify his own, incompletely worked-out ideas on 'the capitalist process of reproduction as a whole'. Reading through the chapter gives one the impression that Quesnay's 'brilliant conception' (*TSV* 1: 344) has caused Marx considerable headache.<sup>15</sup>

Marx first reproduces the *Tableau* from Schmalz's *Économie politique* (cf. Schmalz 1826: 329), adding small letters (a, b, c and d) and signs (' and ") to indicate the starting points of economic transactions (see figure 2a; figure 2b gives Marx's handwritten version of it). He then subdivides his discussion into four parts, contained in subsections 2 to 5, respectively.

The first part refers to 'Circulation between Farmers and Landowners. The Return Circuit of Money to the Farmers, Which Does not Express Reproduction'. According to Marx, the farmer<sup>16</sup> first pays 2 milliards in money as rent to the landlord, the

# Abschweifung

## Tableau Économique suivant Quesnay

5000 millions de produit brut annuel (livres tournois)

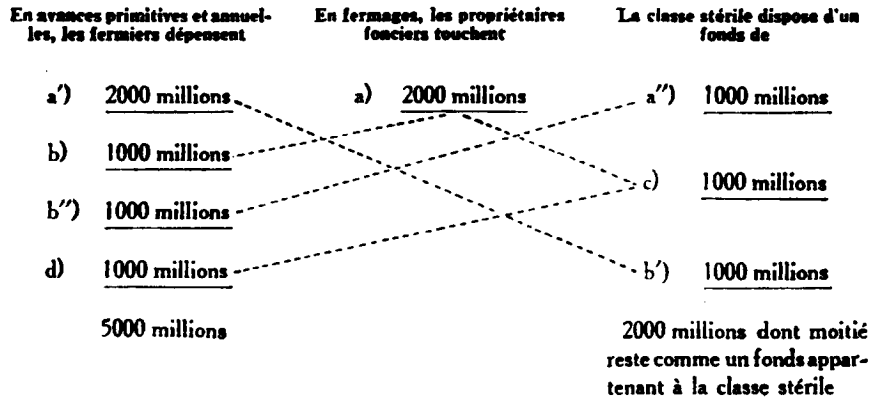


Figure 2a

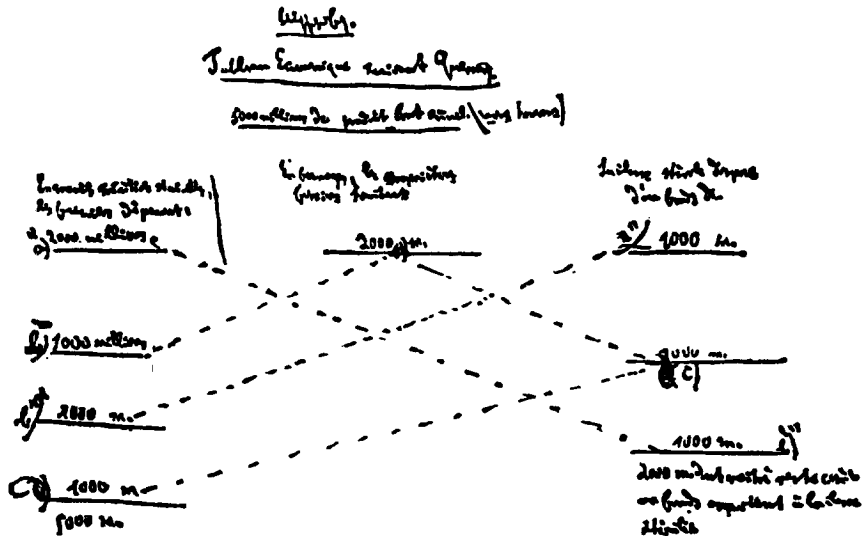


Figure 2b

*propriétaire*, which the latter then spends entirely and in equal proportion to buy from the farmer means of subsistence and from the 'sterile class' manufactured commodities. By selling his commodities to the landlord the farmer, Marx observes, 'in fact . . . only pays back the money with which he paid the landlord the rent. . . . He [the landlord] pays the farmer with the money which he has received from the farmer without any equivalent' (ibid.: 310). Marx then counterposes the circulation between farmer and landowner to the *M-C-M* circuit of simple commodity production in which the flowing back of the money to its starting-point expresses continuous reproduction, and notes: 'In contrast with this, in the case given above no reproduction process takes place when the money flows back from the landlord to the farmer' (ibid.: 311).

The *second* part, largely a digression within the 'Digression', is 'On the Circulation of Money between Capitalist and Labourer', and consists of two subsections. There is no *direct* reference to Quesnay or any other physiocrat. In the first subsection Marx indeed expounds his own theory of surplus value (in the literary form of a dialogue between a capitalist and his workers), and attempts to reject the idea, also present in the physiocratic concept of *avances annuelles*, that the capitalist 'advances' money or rather that part of the product which is the labourers' share as wages, and that the profits he pockets are a reward for the risk that he takes on (ibid.: 315). The second subsection is concerned with 'Commodities Which the Labourer Buys from the Capitalist'. The main point Marx wants to establish is that a re-transformation of money-wages into commodities signifies an *M-C-M* circuit from the capitalist's, and a *C-M-C* circuit from the labourer's point of view: the former buys with money labour-power, and with the product of labour-power 'he buys money' (ibid.: 321); the latter sells labour-power, and with the money he buys commodities that allow him to reproduce his labour-power.

After several further digressions Marx finally turns to the *third* part, that is, to the 'Circulation between Farmer and Manufacturer according to the *Tableau Économique*'. The landlord, or, for short, *L*, spends half of his rent, i.e. 1 milliard, on manufactures sold by the sterile class, *S*. With this amount of money *S* buys means of subsistence from the farmer, *F*. Comparing this transaction to the first one, in which *L* is buying commodities from *F*, Marx observes: 'This retransformation of the 1 milliard into means of subsistence expresses, in the case of *L*, mere consumption, but in the case of *S* it expresses industrial consumption, reproduction; for he retransforms a part of his commodity into one of the elements in its production – means of subsistence' (ibid.: 329). *F* has now received back the 2 milliards in money initially paid out as rent to *L*, and buys commodities for 1 milliard from *S* 'to replace his annual and original advances, in so far as these consist partly of tools, etc., and partly of manufactured goods which he consumes during the process of production' (ibid.: 331). This is a 'simple process of circulation', Marx stresses, and 'On both sides there is metamorphosis of capital' (ibid.): *F* reconverts 1 milliard in money into elements of production needed in reproduction, and *S* is thereby enabled to obtain the elements of production needed for reproduction in his sphere. The reconversion of the money into raw materials channels the 1 milliard in money back to *F*.

Marx then summarizes what has happened with total agricultural production: 'one-fifth goes into reproduction for the farmer, and does not come into circulation; the landlord consumes one-fifth (that makes two-fifths); *S* gets two-fifths; in all, four-fifths' (ibid.). At this point Marx thinks he has detected 'an obvious gap in the explanation' (ibid.). He explains:

Quesnay seems to reckon like this: *F* gives *L* (line a-b) 1 milliard (one-fifth) in means of subsistence. With 1 milliard of his raw materials he replaces *S*'s fund (a"–b").

And 1 milliard in means of subsistence form wages for *S*, which he adds as value to the commodities and consumes in food while he is doing it (c-d). And 1 milliard remains in reproduction (a'), not entering into circulation. Finally, 1 milliard of the product replaces advances (a'-b').

(TSV 1: 332)

Then follows his criticism: 'Only he overlooks the fact that *S* buys for the 1 milliard in manufactured goods, neither means of subsistence nor raw materials from the farmer, but pays back to him his own money' (ibid.: 332).<sup>17</sup> Next Marx maintains that Quesnay has wrongly excluded the products of the manufacturing sector from the gross annual production, which correctly amounts to 7 milliards (i.e. 5 milliards in agricultural and 2 milliards in industrial product), rather than 5 milliards, as in Quesnay (ibid.: 332).<sup>18</sup>

The *fourth* part of Marx's 'Digression' contains a (tedious) discussion of 'Different Cases in which the Money Flows Back to its Starting-Point'. The cases dealt with differ with respect to the starting-points of the money flows, the number of transactions carried out between the three parties and the question of whether or not all the transactions can be carried out with the existing 2 milliards in money. In some of the cases a 'development of credit, and consequently economy in payments', must be assumed (ibid.: 337). Marx then uses the *Tableau* to check some of his own ideas developed elsewhere, and arrives at the conclusion: 'the cases set out above do not contradict the law explained earlier: "that with a given rapidity of circulation of money and a given total sum of prices of commodities the quantity of the circulation medium is determined"' (ibid.: 341).<sup>19</sup> Marx concludes this part with a remark which shows that he had not yet fully understood the money and commodity circuit implied in a process of 'simple reproduction': what is not explained in Quesnay's *Tableau*, Marx notes, is the fact that 'the capitalist draws more money out of circulation than he threw into it' (ibid.: 343), reflected in the famous formula *M-C-M'*.

It is interesting to note that shortly after Marx had written the 'Digression' in April or May 1862, he made the following request in a letter to Engels (from 18 June 1862):

Apropos! If it can be done in all briefness, without making heavy demands on you, I would wish a paradigm (plus an explanation) of Italian book-keeping. It would be useful in the illumination of the "Tableau Economique" of Dr. Quesnay.

(MEW 30: 249)

However, Marx was only to examine the *Tableau* again in the period from May to July 1863, when he worked on the notebooks XXII and XXIII of the 'Economic manuscripts of 1861-1863'. The 'Addendum to the Chapters on the Physiocrats' (TSV 1: 378-80), written in June 1863,<sup>20</sup> gives a short but much clearer exposition of the *Tableau*. Its content and its composition suggest that it was mainly a record of what Marx had, and had not yet, been able to clarify with regard to Quesnay's *Tableau économique*. Marx first reproduces the *Tableau* as found in Quesnay's *Analyse* (in Daire (1846)), and adds: 'This is the simplest form of the *Tableau Économique*'. Marx's exposition begins with: '1. *Money circulation*. . . . The money circulation starts out from the spending class, the landlords' (ibid.: 378), and after a brief account of the succession of the various transactions depicted in the *Tableau* Marx arrives at the result: 'In this way the [2] milliards in money have flowed back to the productive class' (ibid.: 379). Next Marx again notes, and again leaves out for later investigation, the problem of what happens to the last *one-fifth* of the agricultural gross produce. Then follows a new aspect that is

first (and last) mentioned in the 'Addendum'. It is Quesnay's alleged omission of the existence of fixed capital items in the manufacturing sector, an aspect which Marx at this time apparently considered an important criticism of the physiocrat's construction:<sup>21</sup>

Even from Quesnay's point of view, according to which the whole sterile class in fact consist[s] only of wage-labourers, the falsity of the assumptions made is evident from the *Tableau* itself. The original advances (fixed capital) made by the productive class are assumed to be five times the size of the annual advances. In the case of the sterile class this item is not mentioned at all – which naturally does not prevent it from existing.

(TSV 1: 379)

Another problem that Marx first notes in the 'Addendum' (and that he again mentions in his later account of the *Tableau*),<sup>22</sup> is the question how the sterile class can provide itself with manufactures when it buys foodstuff and raw materials for 2 milliards, adds no additional value in the production process, and then sells the whole of its annual production, amounting to a value of 2 milliards, to the other two classes. In the 'Addendum' Marx follows the Abbé Baudeau's 'Explication', according to which the sterile class holds back an appropriate portion of its total production while it sells the larger part of it to the other classes for 2 milliards, that is, 'above its value' (ibid.: 379). This explanation clearly amounts to a return to mercantilistic habits of thought, as Marx immediately points out, and re-introduces the notion of 'profit upon alienation'. In the following section of the 'Addendum' Marx then records, without any comment, four statements from Quesnay's writings about the exchange of equivalents in the market, that is, about the impossibility of a creation of value in exchange (ibid.: 380).

The available material suggests that Marx, after a first attempt in 1862, worked intensively on and with the *Tableau économique* during the (hot) summer of 1863 – after he had written the main contents of notebooks VI to XV, that is, almost all of the material that was later to appear in volumes 1–3 of the TSV, and before he drafted the manuscript version of part II of volume III of *Capital* in 1864–5.

Finally, two further remarks are in order. First, it should be noted that Marx presumably only knew Quesnay's *Tableau* in the version of the *Analyse* (as contained in Daire (1846)), and not in the earlier zig-zag version. His remark in the 'Addendum' – 'This is the simplest form of the *Tableau Économique*' (TSV 1: 378; emphasis added) – was in all probability not meant to refer to Quesnay's earlier zig-zag version but to another exposition of the *Tableau* that was known to him: the one contained in Schmalz's volume (cf. also Gilibert 1977: 53). Second, it must be noted that of the different versions of Marx's interpretation of the *Tableau* the only one published during his lifetime was the one contained in chapter 10 of Engels' *Anti-Dühring*.

## Notes to the appendices

- 1 It also applies, though perhaps in a lesser degree, to the Marx–Engels manuscript *The German Ideology* of 1845–6 and to vols II and III of *Capital*. On the other hand, the works that Marx managed to get published during his lifetime, with the exception of his contribution to Engels' *Anti-Dühring*, contain only comparatively little that is of direct relevance to our theme: see the passages referred to below



- from *Misère de la philosophie* of 1847, from *A Contribution to the Critique of Political Economy* of 1859, and from vol. I of *Capital* of 1867.
- 2 'Political economy . . . was only raised by the Physiocrats to a distinctive science and since them has been treated as such' (*MEW* 3: 397).
  - 3 Marx's excerpts are reproduced in full length in the editor's notes of M. Kuczynski's (German) edition of Quesnay's writings (cf. Quesnay 1971/76).
  - 4 According to Oakley (1983: 36) it is doubtful whether Marx had even begun with the drafting of a publishable manuscript when the book contract was finally cancelled in February 1847; Marx may therefore also not have completed his 'thorough examination' of Daire's *Physiocrates* edition.
  - 5 The *Critique* includes, however, an argument relating to the physiocrats' alleged failure to understand 'the true nature of value' that was not presented again in the *TSV*: 'But for both the Physiocrats and their opponents the crucial issue was not what kind of labour creates *value* but what kind of labour creates *surplus value*. They were thus discussing a complex form of the problem before having solved its elementary form' (*Critique*: 57).
  - 6 Cf. the references on pp. 54–65 of *TSV* 1. Marx had extensively excerpted from Turgot's work in January 1860 (*MEGA* II.3.2 (Apparat): 80). In this context it must also be noted that the version of Turgot's *Réflexions* used by Marx was that of Daire's 1844 re-edition of the *Œuvres de Turgot* (first edited by Dupont), which does not give Turgot's original text of 1766 but contains the alterations that Dupont had introduced into the *Ephémérides* version (cf. the translator's introduction in Turgot 1971 [1770]: viii–x). Chapter II of *TSV* 1 contains only four quotations from Daire's volume, three of which are from Quesnay's *Maximes générales* and one of which is from the *Analyse*. For these quotations Marx used 'short excerpts' which he had taken in connection with his study of Turgot's *Réflexions* in early 1860 (cf. *MEGA* II.3.2 (Apparat): 80).
  - 7 This may be taken as an indication that this manuscript was different in character from the others and perhaps not meant to be combined with the other material of the *TSV*.
  - 8 According to the editors of *TSV*, Marx had in all probability written almost the whole of the 'Digression' in April 1862, during his stay in Manchester (cf. *TSV* 1: 484, n. 88). There is, however, some evidence which suggests that the 'Digression' was only written in May 1862, that is, after Marx had returned to London (cf. *MEGA* II.3.2 (Apparat): 13).
  - 9 It is perhaps noteworthy that Marx first labelled the notebook which contains his manuscript 'Heft [notebook] ultimum', and only later re-labelled it 'Heft XVI'.
  - 10 In the last phase of his work on the 'Economic manuscripts of 1861–1863' Marx started eight separate 'supplementary notebooks' with excerpts ('supplementary notebooks A–H'). The material contained was only used in the manuscripts of notebooks XXII and XXIII, which Marx wrote from May to July 1863 (*MEGA* II.3.1 (Apparat): 17). The excerpts from the physiocrats are mainly contained in the 'supplementary notebook C'; quotations from some of the articles appear in the 'Addendum to the Chapters on the Physiocrats' (*TSV* 1: 378–80).
  - 11 According to M. Kuczynski (1976: 19) it is unclear whether for some reason the excerpts from 1846 were not at Marx's disposal in 1863, or whether there was any other reason for this repetition. (The excerpts from all the articles are reproduced in the editor's notes of Quesnay 1971/76.)
  - 12 A section on 'Reproduktion' in a manuscript in notebook XXII, written in May or June 1862, contains a first version of Marx's own reproduction schemes (cf.

- MEGA II.3.6 (Text): 2,271–83). This version is identical with the one that Marx included in his letter to Engels from 6 July 1863 (see above, section 3.2).
- 13 According to Marx Gray's work 'contains a very excellent and compressed resumé of the Physiocratic doctrine' (TSV 1: 382).
  - 14 The following account of Marx's discussion of the *Tableau économique* concentrates mainly on the 1862 to 1863 period, because it was then that Marx made productive use of it. Due to limitations of space we cannot provide a full account of Marx's later discussion of Quesnay's *Tableau* in his contributions dating from 1877. However, occasionally we will take note of some aspects which had troubled Marx during his earlier studies and which he was able to clarify, at least to his own satisfaction, in his later ones.
  - 15 In view of this Marx's polemic against Dühring in Friedrich Engels' *Herrn Eugen Dühring's Umwälzung der Wissenschaft* (cf. MEW 20: 227–37) is somewhat ironic. Engels' opinion that Marx's 'clarification' of the *Tableau* in his contribution to the *Anti-Dühring* could be regarded as the final solution of 'this enigma of the sphinx [Sphinxrätsel] which proved unsolvable to modern economics' (MEW 20: 15) is questionable. For a succinct account of the interpretative problems of the *Tableau* see Meek (1962: 265–96).
  - 16 While Marx refers to farmer, landlord, labourer and capitalist, what he means are the respective classes, 'of course' (TSV 1: 322).
  - 17 The problem arises because Marx had assumed that only *one-fifth* of the total agricultural production does not enter into circulation. He notes this problem again in the 'Addendum' (cf. TSV 1: 379). In his contribution to Engels' *Anti-Dühring* Marx writes: 'the money value of the part of the [agricultural] gross produce taken out in advance equals two milliards. This part therefore does not enter into general circulation' (MEW 20: 231). Marx apparently only clarified this point in his preliminary work for Engels' *Anti-Dühring* (cf. MEGA I.27 (Text): 210–14); in a letter to Engels he blames the Abbé Baudeau's 'Explication du Tableau Économique' for having caused this and other 'misunderstandings' (cf. MEGA I.27 (Text): 214).
  - 18 The same criticism is again put forward in the 'Addendum' (cf. TSV 1: 379). It is not to be found in Marx's contribution to Engels' *Anti-Dühring*.
  - 19 Denoting with  $M$  the amount of money needed in order to circulate  $n$  commodities the sum total of prices of which equals

$$Y = \sum_{i=1}^n q_i p_i$$

(where  $q_i$  denotes the quantity of commodity  $i$  and  $p_i$  its unit price), given the velocity of circulation of money,  $U$ , gives

$$M = \frac{Y}{U},$$

which is a well-known relationship.

- 20 A first version of Marx's own reproduction schemes is contained in a manuscript entitled 'Reproduktion', drafted in May or June 1863 (cf. MEGA II.3.6 (Text):

- 2,271–83). The scheme developed there is identical with the one that Marx included in his letter to Engels of 6 July 1863 (see above, section 3.2).
- 21 In Marx's contribution to Engels' *Anti-Dühring* of 1878 we read: 'The operating capital expended by the "sterile" class in the course of the entire year (avances annuelles) consists of raw material in the value of one milliard – only raw material, because tools, machinery etc. belong to the products of this class itself. The multifarious roles which such products assume in the operation of the industries themselves, however, are equally none of the Tableau's concern as is the commodity and money circulation that only takes place within this group' (*MEGA* I.27 (Text): 516–17).
- 22 The relevant passage was omitted in the first two editions of Engels' *Anti-Dühring*; it therefore only appears in the third edition (cf. *MEGA* I.27 (Text): 417–25 and 517).

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## Abstract

The paper discusses Marx's views on physiocracy. In his attempt to 'excavate' the roots of 'classical' political economy, Marx saw that the physiocrats had anticipated the analytical structure of the classical theory of value and distribution from Adam Smith to Ricardo, centred around the concept of surplus product. Marx also discerned, or so he thought, elements of a material-based and a labour-based explanation of value in the physiocrats. Quesney's *Tableau économique* is shown to be of importance not only for Marx's theory of reproduction but also for his determination of the general rate of profit and prices of production.

## Keywords

Marx, physiocracy, *Tableau économique*, theory of value and distribution, theory of capital