



Centro di Ricerche
e Documentazione
"Piero Sraffa"

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Centro Sraffa Working Papers
n. 65

May 2024

ISSN: 2284 -2845
Centro Sraffa working papers
[online]

What remains valid of the first chapter of Marx's *Capital*

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Abstract

What of the first chapter of Marx's *Capital* remains valid if one adopts Sraffian price theory? More than one might think, given that the thesis that labour is the substance of value must be abandoned; the two main new clarifications the chapter intended to contribute, namely the analysis of fetishism (with that of the forms of value which is its necessary premise), and the concrete labour/abstract labour distinction, remain valid. The reason why the first pages of the chapter are unclear and aprioristic is traced to Marx's decision to postpone to Volume III the 'compensation-of-deviations' argument with its premise that commodities do *not* exchange in proportion to embodied labour, a decision which obliges him to assume in this chapter a strict labour theory of value without explanation of why it holds. Böhm-Bawerk's interpretation of the 'only-one-property-remains' argument is criticised. Marx's persuasion that when things are quantitatively comparable relative to a common quality there must be a common 'substance' in them determining that comparability is discussed. The need to 'reduce' labour to homogeneity clarifies the meaning of abstract labour but contradicts Marx's insistence on the notions of 'human labour in general' and 'equality and equivalence of all kinds of labour'.

Keywords: Marx; Labour theory of value; fetishism; heterogeneous labour; Böhm-Bawerk

JEL Codes: B14; B51

1. Aims and contents of the paper¹

With Dmitriev, Bortkiewicz, Seton, Sraffa, Okishio, Garegnani, Steedman and then many others, it has become clear that the magnitudes (normal technical coefficients, and real

¹ This paper originates in reflections stimulated by the lively discussions at the Conference "Marx 1818-2018. New Developments on Karl Marx's Thought and Writings", held in Lyon, 27-29 September 2017, a praiseworthy initiative of professors Gilbert Faccarello and my dear friend Heinz D. Kurz. Shortly after

wages), implicitly taken as given by Ricardo and Marx in order to determine embodied labours, allow a direct determination of the rate of profits and of normal relative product prices that makes no use of quantities of embodied labour i.e. of ‘values’ as defined by Marx. This has generated a debate on whether important elements of Marx’s analysis of capitalism are lost if one replaces his theory of value with the price equations one finds in the abovementioned authors, equations to be called ‘Sraffian’ in what follows. The present paper intends to contribute to this debate by re-examining the difficult and in many ways unclear chapter 1 of Volume I of Marx’s *Capital* in its definitive version (essentially, the one of the second edition, 1873); for short I refer to it simply as Chapter 1.² I ask two questions:

- what does this chapter intend to *add* to what the chapter assumes to be known and accepted by the reader?
- what of this chapter can be maintained in the light of the modern advances in the theory of the rate of profits and prices of production?

In order to answer the first of these two questions, some re-interpretation of Chapter 1 appears necessary (Section 2). The arguments in this chapter become clearer if one distinguishes what the chapter *takes for granted* and not needing proof at that stage, from the new clarifications the chapter *intends to add* to what the reader is assumed to already know and accept, namely, that exchange-value is determined by embodied labour. The paper argues that there are two new clarifications: fetishism, and the difference between concrete and abstract labour; and that both survive the replacement of Marx’s labour theory of value with ‘Sraffian’ price equations. To operate the distinction, the paper confronts Chapter 1 with the first chapter of *A Contribution to the Critique of Political Economy* (1859; simply *A Contribution* from now on) and with the first chapter of the first edition of *Capital*, derives some clarifications from the confrontation, and concludes that Marx assumes that the reader is familiar with, and accepts, the theory that normal exchange ratios are determined by embodied labour. The thesis, that the new ‘only-one-property-remains’ argument which appears in Chapter 1 is an attempted *proof* that labour is the substance of value, is found doubtful because the argument is absent in *A Contribution* and in the first edition of *Capital*, and because of the weaknesses of such a ‘proof’. The foundation of Marx’s edifice was rather Ricardo (as admitted in *A Contribution* and in the Postface to the second edition of *Capital*) integrated by Marx’s

that conference I wrote a draft of those reflections, on which I received comments from Heinz together with two stimulating papers of his on the same question: a 2017 manuscript, *Marx on Aristotle and the problem of the ‘common third’*, and Kurz (2018). Further work on the topic made me change my views more than once, and at present on one point my reflections have reached conclusions perhaps different from Heinz’s (see Section 2); in submitting them to discussion let me stress that I owe triple thanks to Heinz, for the stimulus of the Conference, his comments, and his papers. I thank an anonymous referee for useful suggestions.

² I use the more recent English translation by Ben Fowkes (1976, Penguin), having been convinced by his argument (see Translator’s Preface, p. 87) that Engels’ interventions rendered the Moore-Aveling translation not always faithful to Marx’s text.

conclusion that the deviations of prices of production from ‘values’ compensate one another and so value is indeed created by labour.

What remains a puzzle is why Marx decided to identify value and embodied labour in Chapter 1, i.e. to assume normal exchange ratios proportional to embodied labours, while providing *no hint at all* in that chapter (and only a few incidental and unclear hints in the entire Volume I) that the assumption is in fact untenable and will be modified later. The result of this decision is a discussion of value in Chapter 1 which must be admitted to be aprioristic. One has to wait for almost 200 pages before discovering in a rather cryptic footnote a shocking declaration (unaccompanied by any further explanation) that in fact normal exchange ratios are *not* proportional to embodied labours, an admission that questions the legitimacy of all analyses in Volume I. Section 3 interrogates this puzzle and finds the answer in a 1867 letter by Marx to Engels: Marx was certain that the ‘transformation of values into prices of production’ based on the reciprocal compensation of the deviations of prices-of-production from labour-values was a solid thesis, but was persuaded that the thing could be explained only in Volume III. The question remains, whether Marx’s decision to postpone *all* explanation so much was a felicitous one, and my answer is negative; Marx *could* have been more explicit and more reassuring to readers, but, as Marx renders evident in a well-known letter to Kugelmann, he somewhat arrogantly overestimated the absence of “a necessity to demonstrate the notion of value” in the face of an already widespread rejection, at the time, of the labour theory of value.

After this digression that helps to make sense of many aspects of Chapter 1, the paper comes to the second question, what of Chapter 1 remains valid. Section 4 argues that the thesis that labour is the substance of value must be replaced with the *physical cost structure* as what determines rate of profits and values in the traditional meaning of normal prices. The question is posed, whether with this meaning of ‘value’ one can still look for a ‘substance’ determining value, and the conclusion is negative. The Section ends by arguing that Marx was not clear that quantitative comparability of objects according to a common quality does *not* imply a common ‘substance’ in these objects.

Sections 5 and 6 argue that to accept the physical cost structure as the determinant of value does not undermine the *additions* that Chapter 1 intends to make to what readers are assumed to be familiar with. Section 5 argues it about the origin of fetishism: nothing in the Sraffian theory denies the difficulty with perceiving the *social* process determining normal prices, a process experienced as impersonal and dominating individuals as much as a natural force, bringing individuals to interpret its results as natural qualities of commodities.

Section 6 argues that the distinction between ‘concrete’ and ‘abstract’ labour remains valid too, once abstract labour is interpreted as the aspect of labour, common to *all* wage labour homogeneous or heterogeneous, that enters the determination of values in the sense of normal prices: *its being a cause of wage costs*. This simple interpretation comes out to be the natural one when one considers the way Marx ‘reduces’ heterogeneous labour to homogeneity. This ‘reduction’ is argued to be incompatible with Marx’s insistence on the notion of quantity of “human labour in general”, which appears

impossible to define but also unnecessary to the determination of values in the sense of normal prices.

2. Clarifying the first pages of Chapter 1 and assessing the “only-one-property-remains” argument

It seems to be widely agreed (by me too) that, when he writes the first volume of *Capital*, Marx knows perfectly well that a uniform rate of profits implies that the relative normal exchange ratios (relative prices of production) toward which market prices continually gravitate *differ* from relative embodied labours; the distinction between constant and variable capital—a very significant analytical progress—and the connected notion of organic composition of capital have allowed him to see that prices proportional to embodied labour would entail a higher-than-average rate of profits for commodities produced with a lower-than-average organic composition of capital, and conversely a lower-than-average rate of profits for commodities with a higher-than-average organic composition of capital; and he has already reached (in the manuscripts written between *A Contribution* and the first edition of *Capital*)³ the conclusion and examples that will appear in the third volume of *Capital* concerning the ‘transformation’ of labour values into prices of production. Relative to prices proportional to embodied labours, he has reasoned, a uniform rate of profits needs a price decrease relative to advanced capital for the first kind of commodities, and a price rise relative to advanced capital for the second; this need for a change of the price of a commodity relative to its advanced capital would not arise for an ‘average’ commodity with such an average organic composition of capital as already yielding the average rate of profits in terms of embodied labour. Given that Ricardo’s argument about the irrelevance of luxury industries for the determination of the rate of profits escaped Marx, it was natural for Marx to conclude that this ‘average’ commodity does exist and is the social product, whose organic composition is average by definition.⁴ Hence, Marx has concluded, the average or normal rate of profits is

3 It is essentially from these manuscripts that Engels compiled Volumes II and III of *Capital*. It is well known that already in the *Grundrisse* (1857-8), that is, before *A Contribution*, one finds it stated in a few scattered passages that total profit is nothing but total surplus-value and that competition redistributes it so as to yield a uniform rate of profits, but with no further detail or examples.

4 In Marx a reciprocal compensation is explicitly mentioned in Volume III, where Marx admits that the numerical table he has used to illustrate the ‘transformation’ would require correction because it does not ‘transform’ the labour value of advanced capital into prices of production, but concludes: “However, this always resolves itself to one commodity receiving too little of the surplus-value while another receives too much, so that the deviations from the value which are embodied in the prices of production compensate one another” (*Capital*, Volume III, chapter 9, fifteenth paragraph, p. 119 of the marxists.org online version of the translation published by Institute of Marxism-Leninism, International Publishers, New York, 1959). Marx’s certainty of a perfect compensation may suggest some dogmatism, but the idea of a reciprocal compensation of the deviations of relative prices from relative labour values is already in James Mill, is very explicit in McCulloch (see Whitaker, 1904, pp. 69-70), and traces of it can also be found in Ricardo’s search for a standard of value capable of obtaining that, in Sraffa’s words, “the average price of all

determined by the equation $r = S/(C + V)$ where S , C , V are the labour-values of the economy's overall surplus product, constant capital and variable capital. This rate of profits, applied to advanced capital, will then allow the determination of prices of production.

This theory of how the average rate of profits and normal prices (natural prices, prices of production) are determined implies that *ultimately* it is embodied labours that determine the average rate of profits and hence normal exchange ratios, and that it is necessary to start from exchanges in proportion to embodied labour in order to obtain the aggregates which determine the rate of profits. In this way, Marx concludes, the contradiction between 'law of value' (exchange ratios proportional to embodied labour, value 'produced' by labour) and uniform rate of profits is revealed to be only apparent: value and surplus value *are* 'produced' by labour and surplus labour, the thing is only obscured by the redistribution of surplus value required by the uniform rate of profits.

But Marx decided that this conclusion could only be explained in Volume III of *Capital*: it required the grasp of too many "intermediate steps". So in Volume I he assumes a straightforward labour theory of value; but he cannot justify this assumption by reference to the market-price/natural-price distinction and the operation of competition, this would oblige him to admit, with Smith and Ricardo, that generally commodities do *not* tend to exchange in proportion to embodied labour. This explains the aprioristic character of the first pages of the first chapter of Volume I of *Capital* in all editions: that value is embodied labour is stated apodictically, as if not needing proof. Marx does not even repeat what he had stated in Note A to chapter 1 of *A Contribution*, namely, that it is on the authority of Ricardo that he assumes exchanges in proportion to embodied labour. Some obscurities (e.g. what does Marx intend by exchange value?) are surmounted by a comparison with chapter 1 of *A Contribution*, but others remain: these first pages remain difficult and disconcerting for the attentive reader, as discussed at greater length in Section 3.

The comparison with *A Contribution* also helps to assess the main novelty appearing in Chapter 1 relative to the same first chapter in the first edition of *Capital*: a new argument that has been interpreted as an attempt to *prove*, on the basis of *purely qualitative* considerations, that no other 'common factor', except the labour by which commodities are produced, can be found capable of rendering commodities comparable as exchange values, and therefore the substance of value cannot but be embodied labour. This is the argument that this 'common factor' cannot be a concrete aspect of commodities as use-values since any such aspect is never common to all commodities: "If then we disregard the use-value of commodities, only one property remains, that of

commodities, and their aggregate value, would remain unaffected by a rise or fall of wages" because "some commodities would fall and others rise in terms of this standard" (pp. xliv-xlv of Sraffa's Introduction to Ricardo's *Principles*); so it seems to have been a rather spontaneous supposition for people who tried to explain normal prices as deviations from labour-values; it is also the idea Lexis, Fireman, Schmidt have recourse to in order to answer Engels' challenge to anticipate Marx's solution to the 'transformation problem' before the publication of Volume III of *Capital*.

being products of labour” (128, 2).⁵ Marx continues: because we are disregarding use-value, this labour counts only for its pure quantity with no regard for what concretely the worker does and which use-values he produces; it counts as “human labour in the abstract” (128, 3); and commodities as exchange-values appear as “merely congealed quantities of homogeneous human labour” (128, 4). Marx calls *values* these quantities of embodied labour that manifest themselves in exchange values; and then states that value so defined is “the common factor” behind exchange ratios, because it is what remains if one abstracts from use-value: “As crystals of this social substance, which is common to them all, they [the commodities] are values ... when commodities are in the relation of exchange, their exchange-value manifests itself as something totally independent of their use-value. But if we abstract from their use-value, there remains their value, as it has just been defined. The common factor in the exchange relation, or in the exchange-value of the commodity is therefore its value.” (128, 4-5)

These statements can be interpreted in two different ways. A first interpretation is: Marx is taking for granted in the reader the acceptance of the thesis that exchange ratios (exchange values) are proportional to embodied labour, and wants to stress that the aspect of labour which enters in this determination of exchange ratios is not as concrete labour i.e. as producer of objects having use-value, but simply as quantity of labour time.⁶ Why so, he does not explain; and the reason is the one already indicated, any attempt to *justify* the labour theory of value would have got him into having to admit that the labour theory of value is, at least at first sight, wrong; so Marx decides to assume that on value the readers are naive Ricardians who accept the labour theory of value and neglect Ricardo’s cautions and qualifications, and he skips all reference to competition, cost minimization, rate of profit, and normal price, because these imply a proportionality between profits and total capital *prima facie* contradicting the labour theory of value. But for Marx the labour theory of value is correct in explaining the origin of surplus value and thus exploitation and accumulation—the themes of Volume I—, and in the end it is indeed embodied labour that determines the magnitude of social product and of profits, so Marx feels he is perfectly authorised to proceed as he does.

The second interpretation is the one advanced by Böhm-Bawerk first, and then Wicksteed and Pareto; they observed that the claim, that if one abstracts from use-value the *only* remaining common property of commodities is their being products of labour, is undemonstrated and indemonstrable, and therefore the conclusion, that the common

⁵ References like this one, consisting of just two numbers separated by a comma, refer to the Penguin, 1976, edition of *Capital* Vol. I, and indicate page and paragraph in the page. My quotation does not perfectly correspond to the one in Kurz (2018, p. 49) because he quotes from the Moore-Aveling translation.

⁶ Marx insists on *abstract* labour (pure quantity of labour time, with no attention to – that is, *abstracting* from – what the worker does in this time) as the substance of value because, as pointed out by Garegnani (2018, §23, pp. 19-22), he cared enormously for the distinction between concrete and abstract labour, he saw it as dispelling the idea that it is ‘concrete’ labour that contributes to the value of products by giving products their useful specificities, their usefulness: this idea of value as deriving from usefulness, which would finally find more precise analytical justification with the marginal revolution, left room for other ‘concrete’ contributions (e.g. of land, or of capital goods) to value, favouring the vulgar economists’ “adding-up” view of natural price that Marx harshly fought.

element that renders commodities commensurable as exchange values can *only* be the labour contained in them, does not stand up. This criticism is based on assuming that in Chapter 1 up to paragraph 8 Marx is *not* taking it for granted that commodities exchange in proportion to embodied labour; that what determines exchange values is, according to Marx, still to be ascertained when he writes “This common element cannot be a geometrical, physical, chemical or other natural property of commodities” (127, 4); that Marx concludes that no ‘common element’ other than labour can be found; that therefore, in view also of the lack of any other proof, the ‘only-one-property-remains’ argument is Marx’s proof that labour is the substance of value. If this interpretation is accepted, the criticism is no doubt correct: Böhm-Bawerk lists, as other common properties, that commodities are rare relative to needs; that they are objects of supply and demand; that they belong to someone; that contributions of natural forces enter their production. I would add that commodities also have in common that their production causes costs, and that normal price must cover these costs and, at least under capitalism, it must also generate normal profits proportional to the entire advanced capital and not only to its variable part, a fact that *prima facie* denies that normal exchange values are proportional to embodied labour.⁷ So, as an attempt to *prove* that exchange value is determined by embodied labour independently of any analysis of the working of competition, clearly the argument must be rejected; its weakness then suggests an *a priori* certainty in Marx that it is labour that ‘creates’ exchange value, which suggests extra-scientific, ideological reasons behind such a certainty.

This second interpretation has been proposed again (if I have not misunderstood) in a recent formulation which argues that this argument “forms the core of Marx’s entire analytical enterprise. All the rest follows from it: His accounting in terms of labour time in the rest of *Capital*, his interpretation of socio-economic history in terms of the labour value-based analytical apparatus he elaborated, the so-called ‘transformation problem’ of labour values in prices of production, and so on.” (Kurz, 2018, p. 49)

I will argue that the first interpretation is more plausible, that Marx’s “entire analytical enterprise” was rather founded on the theory of the rate of profits and prices of production he had reached—much before the ‘only-one-property-remains’ argument—via the addition, to the labour theory of value, of the thesis of a reciprocal compensation of deviations. The appearance of the new ‘only-one-property-remains’ argument in the second edition of *Capital* remains to be explained (on this more research appears necessary); but the evidence in support of the first interpretation is strong. It consists of the absence of the ‘only-one-property-remains’ argument in *A Contribution* and in the

⁷ Marx admits already in Volume I the contradiction between profits proportional to the entire advanced capital and surplus value proportional only to variable capital, but defers to the intended Volume 4 the proof that the contradiction is only apparent: “For the solution of this apparent contradiction, many intermediate terms are still needed ... We shall see later² how the school of Ricardo came to grief on this stumbling block” (421, 2; in the attached footnote 2 one reads: “This point will be examined more closely in Book 4.”). More on this in Section 3.

first edition of *Capital*, and of the logical weakness of this supposed ‘proof’, which actually presupposes what it wants to prove.

In the first chapter of *A Contribution*, when he comes to specifying the magnitude of exchange value, Marx simply *takes for granted* that the substance of exchange value is labour:

Use-value is the immediate physical entity in which a definite economic relationship -- exchange-value -- is expressed. Exchange-value seems at first to be a quantitative relation, the proportion in which use-values are exchanged for one another. In this relation they constitute equal exchangeable magnitudes... Considered as exchange-value, one use-value is worth just as much as another, provided the two are available in the appropriate proportion... Quite irrespective, therefore, of their natural form of existence, and without regard to the specific character of the needs they satisfy as use-values, commodities in definite quantities are congruent, they take one another's place in the exchange process, are regarded as equivalents, and despite their motley appearance have a common denominator.

Use-values serve directly as means of existence. But, on the other hand, these means of existence are themselves the products of social activity, the result of expended human energy, *materialized labour*. As objectification of social labour, all commodities are crystallisations of the same substance. The specific character of this substance, i.e., of labour which is embodied in exchange-value, has now to be examined.

Let us suppose that one ounce of gold, one ton of iron, one quarter of wheat and twenty yards of silk are exchange-values of equal magnitude. As exchange-values in which the qualitative difference between their use-values is eliminated, they represent equal amounts of the same kind of labour. (Marx 1999, ch01, 2)

In these lines no need is felt to *prove* that exchange value is determined by embodied labour, the thing is enunciated as totally uncontroversial, only “the specific character” of the labour which is the “substance” of exchange value is presented as requiring further examination. The examination is then performed, and the conclusion is that “as exchange-values they [the use-values] represent the same homogeneous labour, i.e., labour in which the individual characteristics of the workers are obliterated. Labour which creates exchange-value is thus *abstract general labour*.” (*ibid.*)

The statement that exchange value is determined by labour appears therefore dogmatic, apodictic, but only until one reaches Note A, “Historical Notes on the Analysis of Commodities”, an appendix to the first chapter, where one reads:

David Ricardo, unlike Adam Smith, neatly sets forth the determination of the value of commodities by labour-time, and demonstrates that this law governs even those bourgeois relations of production which apparently contradict it most decisively.” (Marx 1999, ch01a, 5)⁸

⁸ In fact, Ricardo does *not* prove that labour time determines the value of commodities, he knows and openly admits that commodities generally do *not* exchange in proportion to embodied labour, and uses the labour theory of value as a makeshift solution which, he believes, for his purposes sufficiently approximates natural prices and a rate of profits which he is unable rigorously to determine. The short passage on Ricardo of Note A in *A Contribution* does not make clear how far Marx was conscious that he was misrepresenting

Nothing of substance changes with the first edition of Volume I of *Capital*. Marx announces in the Preface the accord of the book with the theses of *A Contribution*,⁹ and adds that Note A has been “of course” removed: clearly not because of disagreements with the content of that Note, but because *Capital* will explain in detail what that Note only briefly sketched (Marx’s plan for *Capital* included a Volume IV on the history of economic theory). For the first 8 paragraphs, that is, up to and including the example of the area of triangles, the first chapter is very similar to the one to appear in the second edition, but then in place of the paragraph in the second edition that starts with “This common element cannot be a geometrical ...” (127, 3) and of the four following ones, i.e. in place of the ‘only-one-property-remains’ argument, one reads (Marx, 1867, pp. 3, 4; italics in the original):¹⁰

The exchange relation of commodities shows immediately that the substance of exchange value is something totally distinct from and totally independent of the physically tangible existence of the commodity, that is, its existence as use-value. This exchange relation is characterized precisely by its abstraction from use-value. Considered in terms of exchange value one commodity is just as good as any other, provided only that it is present in the appropriate quantity.

Leaving aside then their exchange relation or the *form* in which they pose themselves explicitly as *exchange values*, commodities must be first examined as simply *values*.

As objects for use or goods, commodities are concretely different things. Their character of having value, to the contrary, constitutes their unity. This unity does not spring out of nature, but out of society. The *common social substance*, which must only represent itself in different ways in different use-values, is labour.

As values, commodities are nothing but crystallized labour.

In these passages, that the substance of exchange-value is labour is stated as apodictically as in the first pages of *A Contribution*. The claim remains now totally unproven, because the reference to Ricardo’s authority has been removed; but Note A has not been rejected, it is omitted only because of the plan to explain the thing in detail later; so it is still on the authority of Ricardo that Marx is assuming the reader to be already familiar with the labour theory of value and ready to accept it at least provisionally.

Ricardo. Actually, how well not only in that case but more generally Marx understands Ricardo on value and the rate of profits is an issue deserving further research. In particular, Marx seems never to have grasped that only the direct and indirect conditions of production of *wage goods* are relevant for the determination of the rate of profits: in the section “Formation of the general rate of profits” of ch. 16 of *Theories of Surplus Value* (in the Institute of Marxism-Leninism edition which respects the original ms; in the heavily rearranged Kautsky edition, see Vol. II, Part I, ch. 4, *b*) Marx is very clear that the average rate of profits results from a weighted average of the rates of surplus value of *all* sectors, in spite of having quoted shortly before, in ch. 15 (in the Kautsky edition: Vol II, Part I, ch. 4, *a*), very explicit passages from Ricardo’s *Principles* (p. 118 of the Sraffa ed.) on the irrelevance of luxury industries for the determination of the rate of profits. Had he fully grasped this thesis of Ricardo, Marx would have found it difficult to determine the average rate of profits as he did.

9 This accord is evident in the Preface’s statement (89) that “The substance of that early work is summarized in the first chapter of this volume”.

10 The translation has been kindly supplied by prof. Christian Gehrke, of Graz University.

Thus it is Ricardo, and not the only-one-property-remains argument (of which no trace appears in these two texts), the reason why in 1867 Marx feels authorized to claim *without proof* that exchange value is proportional to embodied labour. Unless some convincing evidence to the contrary emerges, there seems to be no reason why Marx should have changed his mind about the right to make this claim in the second edition, which by the way reproduces unchanged the Preface to the first.

Why then does Marx introduce in the second edition the new ‘only-one-property-remains’ argument? Being unable to read German, I can only pose the question and hope that others will find a plausible answer in Marx’s manuscripts and letters of the period between the two editions. It is known that Marx was dissatisfied with the first pages of the first chapter in the first edition, which were being misinterpreted by some readers; but I must leave to others the search for clearer reasons specifically for this new argument.

I am reasonably confident that nothing will be found suggesting that Marx felt that with that argument he had found a new way to *prove* that exchange ratios are determined by embodied labour. This is because upon attentive examination the capacity of the ‘only-one-property-remains’ argument to support Marx’s identification of embodied labour and value is non-existent, the argument implicitly *assumes* that normal exchange ratios are determined by embodied labour (appropriately measured). To see this, for the sake of argument let us concede that if one disregards use-value, indeed “only one property remains, that of being products of labour”. Remembering that we are looking for the ‘common factor’ in the exchange values of different commodities, what measurable ‘common factor’ relevant for the explanation of exchange values can we derive from the fact that all commodities are products of labour? The quantity of homogeneous labour embodied in them, says Marx. *Homogeneous* labour? Labour is heterogeneous in multiple different aspects, e.g. skills and the time needed to acquire them, hours worked per day, physical effort, wage, bargaining power (e.g. capacity to sabotage the productive process without being discovered), and so on. To say that behind all commodities there is labour, and that what different labours produce is irrelevant for the explanation of exchange values, does not imply that labour can be treated as homogeneous, there is a logical jump here. Furthermore, if one can connect quantities of labour with exchange values, it must be because some *quality* of labour, susceptible of quantitative determination, is relevant for the determination of exchange values. *One must already have a theory of what determines exchange values in order to arrive at deciding what quality of labour is relevant.* It is labour *time*, says Marx. But why this aspect of labour and not other ones? Clearly, because Marx *already has it clear* that exchange value is proportional to embodied labour time. Without this previously reached conclusion, *by itself* the fact that commodities are products of labour would not tell us how to homogenise labour. This is confirmed by the fact that the homogeneous labour time which is the ‘common factor’ is labour time not as directly measurable, but as rescaled so as to mean a uniform wage per time unit. This will be more extensively discussed in Section 6, but to anticipate, why does Marx ‘reduce’ heterogeneous labour time to homogeneity on the basis of relative wages per hour? Because this ‘reduction’ is the one required by the labour theory of value;

but apart from wanting to get to that theory it is unclear why the correct ‘reduction’ should be the one assumed by Marx.

So in no way can the ‘only-one-property-remains’ reasoning be seen as *proving* that quantity of labour determines exchange value, the certainty of such a determination is prior to the reasoning.

The preferable first interpretation, which does not require Marx to have been blind to the tendentiousness and logical jumps in the supposed ‘proof’, is that Marx did *not* consider the reasoning a proof, but only a way to help the reader to grasp what aspect of labour (abstract, *not* concrete labour) is relevant, given the premise that it is labour that determines exchange value. That is, Marx was here taking for granted as much as in *A Contribution* and in the first edition of *Capital* that the reader either agreed on exchange value determined by embodied labour or was ready provisionally to go along with it; but then, as clearly stated in *A Contribution*, the reader needed further explanation only on the “specific character” of such labour.¹¹ In support of this interpretation: it is unclear how otherwise Marx could state so apodictically, in a short single sentence with no additional supporting consideration, that, neglecting use-value, “only one property remains, that of being products of labour”: skeptical readers would have required to be *persuaded* of the truth of such an easily disputable claim.

I conclude that in Chapter 1 too Marx assumes the readers to adhere to the thesis that exchange value is determined by embodied labour, or at least to be ready provisionally to accept it while waiting for proof; and the proof is consciously postponed to Volume III. A letter to Engels, to be quoted in the next Section, suggests that Marx knew that this might cause misunderstandings and mistaken criticisms, but he viewed this even with favour, as preparing the ground for showing the incompetence of the critics.

Given that in my view the ‘only-one-property-remains’ argument is only an attempt better to introduce to the notion of abstract labour, I see it as part of one of the two *new clarifications* that Chapter 1 intended to *add* to the understanding of the labour theory of value that Marx implicitly assumes readers already have: the distinction between concrete and abstract labour. The other one is the analysis of the different forms of value, aimed at explaining commodity fetishism.

But before discussing whether these two additions survive the replacement of the labour theory of value with Sraffian equations, it seems worthwhile to attempt a more detailed explanation for the exposition in the first pages of *Capital*, found difficult and unclear by many readers, and not without reason.

¹¹ Marx insists on *abstract* labour (pure quantity of embodied labour time, treated as simply labour time, with no attention to – that is, abstracting from – what the worker does in this time) as the substance of value because, as pointed out by Garegnani (2018, §23, pp. 19-22), he cared enormously for the distinction between concrete and abstract labour, he saw it as dispelling the idea that it is ‘concrete’ labour that contributes to the value of products by giving products their concrete useful specificities, their usefulness: this idea left room for other ‘concrete’ contributions (e.g. of land, or of capital goods) to value, and favoured in this way the vulgar economists’ “adding-up” view of natural price that Marx harshly fought.

3. Was Marx's expository choice a felicitous one?

Chapter 1 does not make for easy reading. To a modern mind accustomed to ask for clarity and precise definitions, its first pages can cause considerable irritation. But sense can be made of many aspects of those first pages, if one views the exposition as conditioned by a refusal by Marx to discuss issues that normally are part of any introduction to the notion of value, because these would have raised problems that Marx did not want to discuss before Volume III. This has been briefly argued in Section 2 but here I supply further details.

An example of the difficulties thus caused to the reader is the term 'exchange value', introduced as if the reader were clear as to its meaning, that is, *not* defined. In particular, Marx does not explain that the notion of exchange-value refers to *normal* exchange ratios, not to the day-by-day observable ones. Were it not for the comparison with *A Contribution*, one might have doubts on this, when reading in the second page of Chapter 1: "Exchange-value ... changes constantly with time and place. Hence exchange-value appears to be something accidental and purely relative" (126, 3): the reader might interpret this exchange value as any observed exchange ratio, influenced by accidental and temporary factors, a ratio of market prices. This misinterpretation is avoided if one reads in *A Contribution* that exchange-value *determined by embodied labour* changes continually: "if the amount of labour required for the production of commodities remained constant, their exchange-value would also remain unchanged. But the facility or difficulty of production varies continually." (Marx 1999 ch01, 6). So the exchange-value that "changes constantly with time and place" is the exchange-value determined by labour-time, which means that 'exchange-value' refers to *normal* exchange ratios, because if one assumes the validity of the labour theory of value (as this chapter assumes), exchange ratios as determined by that theory only indicate the averages, the centres of gravitation, of relative market prices. This was indeed at the time the generally accepted meaning of exchange value or simply value in economic literature, so Marx implicitly assumes the reader to have a familiarity with economic theory sufficient to render unnecessary an explicit reference to Smith's distinction between market price and natural price.¹² But, since Marx wanted his theory to be absorbed also by workers, why did he leave the less competent reader so unattended?

The meaning of 'value' is also not easy to grasp: it is *defined* as (or more precisely – see below – as numerically equal to) the labour embodied in the commodity, with no mention at all of any connection with the traditional notion of centre of gravitation of market prices; but the term has a tradition that the reader (who, we have seen, is assumed to know some economic theory) certainly knows, so the reader cannot but be disconcerted by the absence of any explanation as to whether or not in *Capital* 'value' means the same as in Smith and Ricardo, where the term 'value' is synonymous with natural price (i.e. centre of gravitation of market prices) and is *not* defined as equal to embodied labour

¹² That Marx assumes some previous familiarity of the reader with economic theory is also revealed by the absence of explanation of the term 'embodied labour'.

(even in Ricardo labour value is only a sufficient *approximation* to the true values or natural relative prices, which Ricardo admits he is unable rigorously to determine). Why doesn't Marx say anything on the issue?

I propose to trace the reason to Marx's decision to render his overall argument clear only with Volume III, keeping it *secret* up to then, and *revealing* only in that volume that one needs to start from exchanges in proportion to embodied labour in order to grasp where surplus value comes from, and how the origin of profit in surplus value (i.e. in surplus labour) is *hidden* behind the deviations of prices of production from labour-values, deviations which *seem* to deny the 'law of value'. This decision brings Marx to remain silent in Volume I about his own conclusion that the 'law of value' (exchanges in proportion to embodied labour¹³) is actually *false* and reveals its usefulness as an indispensable starting point only when one comes to how the uniform rate of profits is determined by aggregate surplus value, via the reciprocal compensation of deviations that surmounts the apparent contradiction with exchanges at 'values'. The same decision explains the absence in Chapter 1 of the notion of market price and of any reference to competition and gravitation to motivate the assumption that commodities exchange in proportion to embodied labour: the discussion of those notions would have obliged Marx to admit the *prima facie* falseness of the 'law of value', obliging him immediately to introduce the analysis of the tendency of the rate of profits toward uniformity, and the thesis of a reciprocal compensation of deviations, themes which in his view required so many preliminary explanations as to be impossible to tackle before Volume III.

The result of this decision, however, is to create considerable difficulties to the attentive reader. Chapter 1 does *not* explain why exchange-value is determined by embodied labours; value at first appears *defined* as embodied labour (128, 4: "As crystals of this social substance ... they are values"), but three paragraphs later one reads that "the value of a commodity *is determined by* the quantity of labour expended to produce it" (129, 2, my italics), which means that embodied labour and value are numerically of equal magnitude but are not conceptually identical; but then what does Marx mean by value? No clear answer is supplied (see below, Section 4, for my own answer). The chapter, and the entire Volume I, treats the 'law of value' as indubitable, *except* for one rather cryptic footnote appearing after almost 200 pages:

If prices actually differ from values, we must first reduce the former to the latter, i.e. regard this situation as an accidental one in order to observe the phenomenon of the formation of capital on the basis of the exchange of commodities in its purity, and to prevent our observations from being interfered with by disturbing incidental circumstances which are irrelevant to the actual course of the process ...The continual oscillations in prices, their rise and fall, compensate each other, cancel each other out, and carry out their own reduction to an average price which is their internal regulator. This average price is the guiding light of the merchant or the manufacturer in every undertaking of a lengthy nature. The manufacturer knows that if a long period of time is

13 In Volume I this is the meaning of 'law of value'; in Volume III it is reformulated as 'value is *created* by labour, but then redistributed by the tendency of rates of profits toward uniformity', then 'value' is no longer directly indicative of normal exchange ratios.

considered, commodities are sold neither over nor under, but at, their average price. If, therefore, he were at all interested in disinterested thinking, he would formulate the problem of the formation of capital as follows: How can we account for the origin of capital on the assumption that prices are regulated by the average price, i.e. ultimately by the value of the commodities? I say ‘ultimately’ because average prices do not directly coincide with the values of commodities, as Adam Smith, Ricardo, and others believe.” (269, fn. 24)¹⁴

This footnote is the sole place in Volume I of *Capital* that mentions the distinction between day-by-day prices (not even here called ‘market prices’) and ‘average prices’ (i.e. natural prices or prices of production, as made clear by the mention of their coincidence with values according to Smith and Ricardo), and that indicates the analytical role of the latter prices as centres of gravitation of market prices. Having at last mentioned these notions, Marx unexpectedly announces that value *as he has defined it* (proportional to embodied labour) differs from ‘average price’, and supplies no further explanation in spite of the shock this announcement must cause to attentive readers. Marx asks his readers for an *enormous* amount of trust: page after page, he has assuredly stated that commodities exchange at ratios determined by their values as defined by him, numerically equal to embodied labours; he has even described (although not very clearly) these values as having the analytical role he is now assigning to ‘average prices’: “in the midst of the accidental and ever-fluctuating exchange relations between the products, the labour-time socially necessary to produce them asserts itself as a regulative law of nature” (168, 1); then the reader minimally conversant with Smith and Ricardo naturally interprets Marx’s value and exchange value¹⁵ as having the same meaning as in those two authors, the meaning of centre of gravitation of market prices that Marx attributes in this footnote to ‘average price’; but now Marx reveals that value as defined by him does *not* correspond to ‘average price’, so is *not* the same notion of value (= natural price) as in Smith or Ricardo.¹⁶ This cannot but raise doubts in the poor reader about the right and the meaning of assuming exchanges at these ‘values’ which are neither market prices nor natural prices; but Marx leaves the thing at that, without even one word to reassure the reader that this non-correspondence does not undermine the analyses of Volume I and that the

14 This is the last page of Chapter 5, ‘Contradictions in the General Formula’, of the Penguin edition of *Capital*; in the fourth German edition this chapter is included in Chapter 4 as its second Section, and the footnote is in the last page of that Section. Another cryptic hint that price and value do not coincide, this time with at least a mention of Volume III, is in footnote 9 of chapter 9 (p. 320). And then there is the passage on p. 421 quoted above in footnote 6.

15 The distinction between ‘value’ and ‘exchange value’ in Chapter 1 is that the value of a commodity is a single quantity (numerically equal to the quantity of labour embodied in the commodity), the exchange value of a commodity is the number of units of *another* commodity with which normally the first commodity can be exchanged, a number that changes depending on which other commodity is exchanged with the first, and is equal to the ratio between the value of the first commodity and the value of the other commodity.

16 I will try to keep the two meanings of value distinct by using ‘labour-value’ or ‘Marxian value’ to mean value in the sense of Marx, and ‘value’ without adjectives or ‘traditional value’ to mean value in the sense of Smith and Ricardo and Sraffa.

thing will be clarified in a later volume.¹⁷ I cannot deny a feeling of irritation vis-à-vis so little attention to the readers' need for help.

Garegnani (2018, §10, pp. 9-11) has suggested that it seems plausible to attribute Marx's decision, to postpone all clarification to Volume III, to Marx's belief that

- (i) anyway one had to start from 'value' thus defined in order to determine the rate of profits and prices of production, through the idea of reciprocal compensation;
- (ii) it was neither necessary nor opportune to explain all this at the beginning of *Capital*, because
 - (ii.a) knowledgeable readers would accept that value was determined by embodied labour, since this was still the dominant scientific theory as shown for example by John Stuart Mill's *Principles*, and no other respectable theory was around (marginalist theory was not yet a recognizable general alternative to Ricardo even at the time of the second edition, 1873, of *Capital*);
 - (ii.b) an explanation of the whole thing at the beginning of the book was unnecessary for the main purposes of Volume I, which were to show the origin of profit in surplus labour, to expose the conflict between capital and labour, and to start analysing capitalist accumulation, issues for which the analysis was unaffected by commodities exchanging according to prices of production rather than according to quantities of embodied labour;
 - (ii.c) the explanation of how to pass from labour values to prices of production, and the proof that to reformulate the analysis in terms of prices of production would change very little in the analysis, required the explanation of so many intermediate terms that to give it in the first volume would have required 'to give the science before the science' (as Marx puts it in a famous letter to Kugelmann that is further discussed below). Garegnani notes here Marx's methodological opinion that to construct a science one goes from the concrete to the abstract, but to present it one must go the opposite direction: this meant, given Marx's theory of the rate of profits, to start from the magnitudes (labour-values) which allowed its determination, and to explain only later the notion of prices of production.

I will argue that point (ii.a) in Garegnani's argument is not very convincing, but even conceding his entire argument, it remains unclear why Marx did not feel the need to reassure the reader on the validity of the analysis and on the provisional nature of the assumption, in fact false, that normal exchange ratios are determined by embodied labour. He *could* have introduced in Chapter 1 an admission that Ricardo had conceded that relative natural prices (Marx's 'average prices') actually deviate from relative embodied labours, followed by some sentence like: "but the fully worked out analysis will show

¹⁷ A hint that subsequent volumes will add something is in footnote 33 of Chapter 1 which starts with: "The insufficiency of Ricardo's analysis of the magnitude of value – and his analysis is by far the best – will appear from the third and fourth book of this work" (173). But whether this alludes to the problem hinted at in the footnote on p. 269 is not made clear, the remainder of footnote 33 only discusses the inability of classical political economy to grasp the distinction between labour as producer of use-value and as producer of exchange-value.

that these deviations in no way question that normal exchange ratios and the rate of profits are *ultimately* determined by values, defined as equal to embodied labours; an initial assumption that normal exchange ratios are proportional to embodied labours, i.e. to values, renders the origin of the surplus value which allows the existence of profits immensely clearer and easier to grasp, and the later abandonment of this assumption, coupled with the explanation of why normal relative prices deviate from relative embodied labours, will show that the relevant conclusions reached under that initial assumption remain perfectly valid: it is surplus value that determines profits and the rate of profits. Some patience is asked of the reader because the passages required to clarify all this are many and must be carefully explained, which will require many pages, in fact, two more volumes”.

Such a declaration would not have contradicted Marx’s methodological persuasions. But Marx did not introduce any such announcement, and preferred to leave readers in the dark and Volume I of *Capital* open to criticisms such as the one of a German reviewer of the first edition of *Capital* to be discussed shortly.

The announcement I regret Marx did not make would not have been in contradiction with how Marx justified his expositional choices in a very clear 1867 letter to Engels. The latter, on reading the printer’s proofs of the chapter of the first edition of *Capital* that discusses the transformation of surplus value into capital, wrote to Marx on 24 June 1867 that at that point a refutation would have been opportune of the inevitable vulgar economist’s objection that the capitalist pays as wages *all* the labour time he utilises and only the value of wages enters the cost that price must cover so surplus value must come from some other contribution to value. A long quote from Marx’s reply of 27 June is opportune:

How is the value of a commodity transformed into its price of production, in which:

1. the *whole labour appears as paid* in the form of wages,
2. while surplus labour, or surplus value, takes on the form of a *price increase* in the form of interest, profit, etc., *on top of the cost price* (price of the constant part of capital + wages).

The answer to these questions presupposes:

- I. that the *transformation* of, for example, *the daily value of labour power* is represented by *wages or price of daily labour*. This is demonstrated in chapter V of this volume.
- II. That the transformation of surplus value is represented by *profit*, and that of *profit* by *average profit* etc. This presupposes a previous presentation of the *process of circulation of capital*, since the turnover of capital etc. plays a role here. This question can thus only be presented in Book III (*Volume 2* contains Books II and III). Here it will be shown whence the *mode of thought* of the philistines and the vulgar economists derives, that is, from the fact that only the immediate *form of appearance* of relations is reflected in their brains, but not in their *inner connectedness*. Incidentally, if the latter were to be true, what need for a *science* at all?

Now if I wished to *pre-empt* all these objections, then I would ruin the whole dialectical method of argument. To put it another way. This method has the advantage that it

continually traps these fellows and provokes them to an untimely exhibition of their donkey-headedness. (Letter to Engels 27 June 1867; in Marx and Engels 1984).¹⁸

This letter confirms Garegnani's point (ii.c). But the possibility and opportunity of the announcement I have hypothesized is not refuted. The last paragraph in the quote perhaps explains why Marx did not consider this possibility. It suggests that pre-emptying the objections was *not* felt by Marx to be impossible, but Marx preferred his dialectical method of argument, not least because it would provoke the critics "to an untimely exhibition of their donkey-headedness".

One immediate counterargument, which Engels did not advance as far as I know, was that Marx's expositional plan would leave the readers without defence against the critics' objections for many years,¹⁹ with a danger of losing them because of increasing doubts regarding the starting point of Marx's analysis: the claim, unproven in Volume I and apparently in contradiction with a uniform rate of profits, that labour is the substance of value (in the sense of normal exchange ratios).

Attention to such a danger should have been enhanced by the 1868 review of the first edition of *Capital* that prompted Marx to write the mentioned letter to Ludwig Kugelmann.²⁰

The anonymous Leipzig reviewer writes that the "axiom" that value is determined by socially necessary labour is "a Ricardian dogma" which "even in Ricardo was circumscribed, and now, at least in Germany, has been completely abandoned", and that Marx's colourful language "seems aimed at dazzling and confounding the reader to make him forget to ask for the proof of the fundamental axiom".²¹

In his letter to Kugelmann, Marx disdainfully exclaims that "only the most complete ignorance both of the subject under discussion and of the method of science" can explain why the reviewer insists on "the necessity to demonstrate the notion of value". He seems to deny this necessity, since he argues that "even if there were no chapter on 'value' at all in my book, the analysis I give of the real relations would contain the proof and demonstration of the real value relation". But this does not reject the reviewer's right to complain that "the proof of the fundamental axiom" is missing, because the required proof could be provided only by Marx's *complete* "analysis of the real relations" inclusive of the parts to appear in Volumes II and III; indeed, later in the letter Marx stresses the need first to develop a series of categories, without which it would be impossible to prove that apparent violations of the 'law of value' in fact do not violate it: in this way he admits that these categories (for example, rate of profits) are still missing in Volume I of *Capital*; and by stating that one cannot "give the science before the science" he postpones the

18 I take this quote from Desai (1991, p. 7) who also quotes Engels' letter to which Marx replies.

19 That the writing of Volumes II and III would take many years was an easy guess.

20 See Marx's letter to Kugelmann in Hanover, 11 July 1868, first published in "Die Neue Zeit" in 1902, available e.g. in Marx and Engels (1943, p. 246).

21 I translate into English from the Italian translation by Augusto Graziani published in *Note Economiche*, 1983 (1). The review (signed 'h') had come out on 4 July 1868 in the Leipzig periodical *Literarisches Centralblatt für Deutschland*, no. 28, pp. 754-6.

proof of the ultimate validity of the law of value to subsequent volumes. But then how could the reviewer not have doubts about the validity of the “fundamental axiom”? He should have known what only Marx knew and had not yet revealed! So Marx had no right to accuse the reviewer of “the most complete ignorance”, the latter’s request for proof was legitimate. Marx lacked objectivity in this case, and his unjustified disdain blinded him to the need not to neglect an important observation of the Leipzig reviewer: Marx spends not one word on the reviewer’s claim that the labour theory of value had been *completely* abandoned in Germany; even though possibly exaggerated, this claim needed comment, because it implied (against Garegnani’s point (ii.a)) that Marx could not take the acceptance of the labour theory of value for granted, and therefore a different, more motivated introduction to his approach to value was needed. Also, the reviewer remembers that Ricardo had “circumscribed” the validity of the labour theory of value;²² this should have made Marx conscious, if he was not already, that there was a danger that the readers of *Capital* might doubt the solidity of his analyses because of his apparent refusal to admit problems with the labour theory of value when even Ricardo had recognised limits to its validity; the quoted footnote 24 of p. 269 (present already in the first edition) was clearly insufficient to deter this danger.

But in the second edition the only significant modification on value is the introduction of the ‘only-one-property-remains’ reasoning, which is not concerned with supplying “the proof of the fundamental axiom”.

My conclusion is that, probably because of his intellectual isolation which rendered having a clear picture of the theoretical situation and receiving competent criticisms more difficult, and possibly because of a tendency to excessive self-assurance, Marx overestimated the right to take a general acceptance of the labour theory of value for granted, and felt little urgency about confirming the capacity of his compensation-of-deviations approach to defend, and improve upon, Ricardo. Which with hindsight was not necessarily a bad thing for us, it allowed Marx to develop his rich analyses, while probably an attempt to prepare for publication a definitive exposition of the ‘transformation’ argument would have revealed difficulties which might have discouraged and blocked him.

4. Labour the substance of value? The physical cost structure

The modern theory of prices of production has shown that the data from which Marx starts in order to determine embodied labours and through them the rate of profits

²² John Stuart Mill too does not accept a strict labour theory of value, only admitting that the value of commodities depends *principally* on the quantity of labour required to produce them, but then noticing, first, the influence on value of differences in profit rates required by differences in the risk and unpleasantness of investment in different industries, and second, the influence on value, even if the profit rate is uniform, of “the unequal lengths of time for which profit is due.” (*Principles of Political Economy*, 6th ed., Book III, §5) This raises additional doubts about Garegnani’s point (ii.a).

(namely, real wages, quantities produced, socially necessary methods of production) are indeed sufficient correctly to determine the rate of profits and prices of production under very general conditions, and therefore the surplus approach is solid, profits are the result of the exploitation of labour in the same sense in which the revenue of feudal lords results from the exploitation of serfs;²³ but Marx's 'compensation-of-deviations' argument is mistaken. One way to show it is that Marx did not realize that if the rate of profits is uniform, and therefore prices are prices of production, then a change in the relative size of industries with no change in production methods nor in real wages does not change the rate of profits: hence (neglecting land rent) the rate of profits does *not* depend on the relative size of industries, while it does in Marx's $r = S/(C + V)$; therefore the formula $r = S/(C + V)$ can be correct only by a fluke, and this, by refuting the idea of a compensation of deviations, undermines the view of value as 'produced' by labour even for the big aggregates determining the rate of profits in Marx's approach.²⁴ Then prices of production – the values of commodities in the sense of Ricardo – cannot be seen as redistributed quantities of labour.²⁵

The point is confirmed by Dmitriev's observation ((1898) 1974, p. 63) that prices of production and profits can be logically conceived to exist even in a science-fiction completely automated economy where labour does not enter production at all because machines produce outputs and reproduce themselves without any use of human labour.

The Sraffian determination of prices and rate of profits can be rendered formally identical to the price equations that would hold for Dmitriev's science-fiction no-labour economy, by replacing in each price equation wage costs (wage rate times quantity of labour) with the value of the quantities of goods that workers buy or could buy with their wages. This makes it clear that it is the material matrix of commodity inputs thus obtained that actually determines normal prices and the rate of profits.

What are we to do, then, with the first chapter of *Capital*, that appears permeated from beginning to end by the thesis that labour is the substance of value? Since this thesis must be rejected, does this mean that all the analyses of the chapter are undermined?

My answer is no; the new contributions that Chapter 1 intends to *add* to the thesis that normal exchange ratios are determined by embodied labours still hold in their essentials if one replaces the view of value as determined by embodied labour with the view of the determinants of value suggested by Sraffian equations. As a premise to the defence of this

23 See Petri (2015) for more on the issue.

24 Another way of explaining why Marx was mistaken is that, since normal relative prices differ from relative embodied labours, apart from special flukes this will also be the case for the relative price of any two heterogeneous bundles of commodities, and the rate of profits is precisely one such relative price, of physical profits (the vector of commodities other than wage goods in the physical net product vector) relative to the physical capital vector. Also see footnote 8.

25 Of course a purely nominalistic arbitrary decision so to view them is always possible, as in the New Interpretation of Duménil and Foley, which consists of attaching to the money value of a good, however determined, a label declaring that this value 'represents' a quantity of labour (the same percentage of total labour employment as the percentage of the total money value of the economy's net product represented by that good's money value), a nominalistic labelling equivalent to wearing rose-tinted glasses, that reveals nothing as to what determines anything (Petri, 2015).

claim in Sections 5 and 6, I discuss now what must replace the view of labour as the substance of value.

I pass now to using the term ‘value’ to mean its traditional meaning, i.e. normal (or natural) relative price, price of production, distinguishing it from its determinants. The value of a commodity is its normal capacity to exercise a claim to—a purchasing power over—other commodities, a claim that competition assigns to each commodity on the basis of the dominant socially necessary production methods, and of the given ‘cost’ of human participation in the productive process (the several real wages).

Sraffian price equations (best formulated with heterogeneous labour and heterogeneous wages, so as better to deal with the issue of heterogeneous labour to be discussed in Section 6) give concreteness to this definition, showing that values have a multiplicity of determinants: their determination requires the disaggregate specification of all the magnitudes (technical coefficients, real wages) which Marx implicitly takes as given in order to determine the labour-values of commodities and of labour-powers; plus of course the assumption of a uniform rate of profits. A synthetic way of indicating these determinants of value can be to call them the ‘*physical cost structure*’; the term ‘structure’ intends to stress the need to consider the entire matrix of direct and indirect production methods involved in the determination of the normal price of a commodity; and ‘physical cost’ refers to the fact that ultimately it is the physical goods needed to produce the several commodities, as means of production or as recompense for the heterogeneous human contribution, that determine exchange values and the rate of profits.²⁶

What remains then of the idea of a ‘substance’ of value? This term in Marx expresses the strict proportionality Marx views between value and what determines it, embodied labour; labour is the “value-forming substance” (129, 1). As noted, at first Marx appears to *define* value as the abstract labour embodied in the commodity: “As crystals of this social substance...they are values” (128, 4); but shortly afterwards Marx expresses himself in a way that implies that the relationship is not one of conceptual identity but instead of *causation*, by writing that “the value of a commodity *is determined by* the quantity of labour expended to produce it” (129, 2, my italics). But then what is Marxian ‘value’ if it is not *conceptually identical* with ‘quantity of embodied labour’? I supply my answer in the next two paragraphs. What is clear is that, as Marx admits in the footnote quoted in Section 3 (fn. 24 on p. 269 of *Capital*), ‘value’ as he measures it is not the traditional notion of value as natural price, price of production. This introduces a complication in trying to understand what ‘being the substance of value’ can mean. The water contained in blocks of ice can be considered the ‘substance’ determining their

²⁶ From the writings of economists who have studied Sraffa’s unpublished manuscripts I infer that my view and my terminology appear to be very close to his, but I have not studied those manuscripts so I cannot express any more precise opinion on the issue. The term ‘physical cost structure’ needs anyway qualification if one admits given persistent differences between the rates of profits in different industries, due to the reasons indicated e.g. by Adam Smith; these differences cannot be expressed in terms of physical goods before values are determined.

weight because the weight of blocks of ice can be independently ascertained and confronted with the quantity of water crystallized in them, and the resulting strict proportionality establishes the right to consider the amount of water contained in them as the ‘substance’ determining their weight. The same procedure would be possible for the substance of the Marxian value of commodities if this value were defined and measurable independently of the labour embodied in the commodities; but this is not the case.

Natural prices (prices of production, traditional values) are, at least theoretically, independently defined and determinable as the exchange values that competition tends to establish in the long period; then one can in principle compare them with quantities claimed to be their ‘substance’. Marxian values do *not* allow such an independent determination, they are *defined as the exchange values²⁷ that would rule if exchanges were in proportion to embodied labour*, and therefore are numerically equal to (although not conceptually identical with) embodied labours *by definition*. Actually in *A Contribution* and in the entire Volume I of *Capital* (apart from the footnote discussed in Section 3) Marxian values are treated as if synonymous with traditional values, i.e. as if exchanges in proportion to embodied labour reflected the normal average operation of markets; but since this is not generally the case and Marx knew it, their role is different.

Marxian values define *hypothetical* rates of exchange among commodities, that competition does *not* tend to impose except in very special cases, but that (according to Marx) render the picture of certain aspects of capitalism easy to grasp, in particular the origin of profit in the surplus value generated by surplus labour time; according to Marx the correctness of this picture of the origin of profit, obtained under the *assumption* of exchanges according to embodied labour, is then confirmed, when that assumption is removed, by the reciprocal compensation of the deviations of relative prices of production from relative labour values. (That this origin of profits does not openly manifest itself and requires in order to be revealed the two-stage determination of value, first as Marxian value, and then as transformed or redistributed Marxian value in the form of prices of production, is the reason why Marx so often insists on the importance of his analysis as *dispelling appearances* and revealing the hidden ‘inner connection’ that spontaneous consciousness and vulgar economists are unable to grasp.)

This means that it is only at the level of the overall economy, in the determination of the rate of profits as ratio between the Marxian values of the economy-wide aggregate profit and aggregate capital, that labour can possibly confirm being indeed ultimately the substance of the values that competition tends to impose;²⁸ this requires the correspondence between normal exchange ratios and ratios of embodied labours at least for those two aggregates. As we know, this correspondence does not obtain, which confirms that labour cannot be seen as the substance of value. But this has no negative

²⁷ In terms of a numéraire embodying one unit of labour.

²⁸ It is understandable then that, before the publication of Volume III of *Capital*, Marx’s claim that labour is the substance of value could be considered pure dogma motivated by ethical intents, since it was known that the labour theory of value was, rigorously speaking, *wrong* as a theory of normal exchange ratios but Marx appeared to forget it.

implication for Marx's overall approach to capitalism: in order to be persuasive, that approach must show itself capable of explaining the rate of profits and normal prices on the basis of the social forces which, in that approach, determine real wages and technical coefficients; Marx implicitly starts precisely from given real wages and technical coefficients in order to determine embodied labours and through them the rate of profits and normal prices; the Sraffian equations show that from exactly the same givens a more direct and correct explanation of the rate of profits and normal prices is possible, with no negative implications for Marx's analyses of what determines those givens, in particular, what keeps real wages below their potential maximum (Petri, 2015).²⁹

One can nevertheless ask whether it is possible to find a 'substance' of value in the more correct theory of prices supplied by Sraffian equations. Clearly the determinants of value included in the 'physical cost structure' result in a 'social force', a capacity of commodities to have purchasing power, which is of equal 'intensity' for commodities of equal value. But it seems impossible to reduce this 'social force' to a single determinant: normal relative prices and rate of profits generally change if any one of the coefficients in the equations defining the 'physical cost structure' changes, so all of them should appear as determinants of this 'social force', and it seems impossible to translate this complex determination into the language of a single 'substance'.

Nor, when objects are commensurable relative to a common quality, is the existence of a single 'substance' behind the magnitude of this quality a *logical necessity*. Marx seems to have thought otherwise. Paragraphs 6-8 of Chapter 1 (unchanged from the first edition) discuss the nature of exchange-value in terms which – as shown by the example of the area of triangles – are considered applicable to all instances in which two objects are commensurable: "exchange-value *cannot be anything other than* the mode of expression, the 'form of appearance', of a content distinguishable from it ... a common element of identical magnitude exists in two different things ... Each of them, so far as it is exchange-value, must therefore be reducible to this third thing" (127, 1-2; my italics). These lines express a clear belief that commensurability *must* reflect the existence in two commensurable objects of *a common single element distinct from, and that determines the magnitude of, the quality* relative to which the two objects are commensurable. The example of the area of triangles shows that the belief applies in general and not only to exchange-value. It is this premise that authorizes Marx's search for the "third thing", the "common element" in exchange-values. But commensurability of certain objects relative to a common quality does not *require* the presence in them of a single "third thing" determining the magnitude of that quality; it only requires that the quality be measurable. The "third thing" can exist in some cases (e.g. water determining the weight of blocks of ice), but it need not exist. Thus objects commensurable on the basis of length have in common simply that they have length; that their length can be measured does not imply that behind length one can find a single "third thing" determining it, length can be due to the most varied determinants. Or suppose you have several water melons, each one tied

²⁹ Also see Petri (2021, pp. 54-55) on how Sraffian equations in no way deny the conditions of subjugation and alienation of workers under capitalism.

with a string to a different balloon filled with helium and hence pulling the melon upwards but, let us assume, not enough to compensate the melon's weight; these melons-attached-to-balloon are objects with a positive weight, and are commensurable on that basis; but it seems impossible to see their weights as due to a single 'substance' contained in them, the weight of each is the result of the combined effect of different forces, the downward push of gravity on the melon's mass, and the upward pull of the balloon in turn dependent on several elements.

Analogously, that two objects are commensurable as exchange-values tells us only that both have exchange-value, nothing is revealed by this fact on whether what determines their exchange-values is a single "common element" or not.

Against Marx's intentions, his example of the area of triangles (127, 3) confirms the above considerations: if in order to compare the areas of two geometrical figures one determines these areas by splitting the figures into triangles whose areas one calculates as the numbers "half the product of the base and the altitude", this only indicates how to *measure* areas, in no way does it suggest that behind area there is a "third thing", *different* from area, which is the "common element" in two figures having the same area.³⁰ Marx seems not to have been very clear here on what he was attempting to argue. The effort to be more 'popular' on value that Marx describes in the Preface ("I have popularized the passages concerning the substance of value and the magnitude of value as much as possible" (89, 3)) backfired into a lack of clarity and rigour, probably inevitable given Marx's refusal to render his true argument (the compensation of deviations) explicit.

Marx also had problems with perceiving how solid his true argument was: on the reciprocal compensation of deviations of prices from labour-values he had no proof, only an intuition, in fact mistaken.³¹ But as remembered by Kurz (2018, p. 41), "humans are

30 Actually, it is difficult to make sense of what Marx writes in this paragraph, namely, that in order to compare areas "the triangle itself is reduced to an expression totally different from its visible shape: half the product of the base and the altitude. In the same way the exchange values of commodities must be reduced to a common element, of which they represent a greater or lesser quantity." (127, 3) It is unclear in what sense the number that measures the area of a triangle 'reduces' triangles to a "common element" which, let us remember, must be a "third thing" *different from* area and determining its numerical magnitude; the numbers measuring areas reveal no such "common element" in two figures of equal area except that both have an area and in fact the same area; but this cannot be what Marx intended to point out, because then the example would imply that the "common element" in two commodities of equal exchange-value is simply that they have equal exchange-value, with no indication of what determines this equality and in particular no confirmation that behind exchange-value there is a "third thing", "a content distinguishable from it".

31 Of course to prove or disprove this intuition would have required analytical instruments not yet developed at the time (Kurz, 2018, p. 57); but Marx did tend to be too self-assured about his conclusion, mistaking an intuition for a certainty. This justifies a mixed assessment of Marx's analytical rigour, defective on this issue and also – as shown – at some points in Chapter 1, but capable of significant analytical progress relative to Ricardo on other fronts, for example on perceiving the constant-capital/variable-capital distinction and the connected "emphatic rejection of the claim of Adam Smith and of others after him that the price of every commodity 'either immediately or ultimately' resolves itself entirely...into wages, profit and rent" (Sraffa 1960 p. 94) with its implications: that the value of the yearly total social product is greater than wages + profits + rents because it also includes the value of the replacement of constant-capital consumption; that the rate of profits depends not only (as in Ricardo) on the real wage but also on the organic composition of capital; that there is a maximum rate of profits.

fallible, and Marx was a human. To treat his analytical hypotheses and propositions as if they contained eternal truths, as it has often been done (and still is in some circles), reflects a fundamental misunderstanding of how science advances.”

5. The additions Marx intended to make in Chapter 1 to previous value theory remain valid: first, fetishism

It would not be impossible to re-write Chapter 1 replacing embodied labour as the (ultimate) determinant of value with the '*physical cost structure*' while maintaining all considerations of the chapter that such a replacement would not undermine. This will not be attempted here. But if one re-reads Chapter 1 while making in one's mind this replacement where necessary, one realizes that, apart from the argument that behind exchange value there is embodied labour, the analysis remains solid. Some statements that remain valid are only repetitions of things which any one with some familiarity with Smith and Ricardo would have found obvious: of course it is false that the value of a commodity is the greater “the more unskilful and lazy the worker who produced it”; of course the labour that counts in the determination of value is not actually expended labour but socially necessary labour (129, 2); of course value changes with changes in the productivity of labour (130, 2). But other additions are original and remain valid.

Let us consider the analysis of fetishism. Here the basic message is independent of what determines values (= relative normal exchange ratios) because it derives directly from what normal exchange ratios mean and how they express themselves. In his analysis of the relative and the equivalent forms of value, Marx notes that when 20 yards of linen are worth one coat, “as soon as the coat takes up the position of the equivalent in the value expression, the magnitude of value ceases to be expressed quantitatively. On the contrary, the coat now figures in the value equation merely as a definite quantity of some article” (147, 2): the physical, concrete form of the coat – a use-value – becomes the representation of the value of the 20 yards of linen (143, 148): a use-value comes to represent a quantity of value, hiding the fact that it can so function only because it has itself value. This is the basis to understand commodity money: gold in its equivalent form is like coat to the value of linen, it is a use-value which represents value i.e. represents a social relation, but the thing remains mysterious to spontaneous consciousness, opening the door to fetishism. This analysis is independent of the claim that the value of the 20 yards of linen represented in the coat or in gold equals the labour embodied in the linen; the analysis continues to hold if one puts in place of embodied labour the complex circumstances determining the value of linen and of coat, or of gold as a produced money commodity: the physical cost structure.³² The message of sections 3 and 4 of Chapter 1

³² The analysis is less convincing regarding money, which seems capable of functioning as universal equivalent also for exchanges at market prices, and also for exchanges of goods whose price has no connection with production costs such as rare works of art etc. The commodity or symbol used as money

can be re-expressed so as to make it clear that it rests simply on the *nature* of value (the average and centre of gravitation of market prices) whatever its determinants; now I summarize this message, not in order to add anything new, but to make it clear that it applies to Sraffian value too. Value is a social relationship, the result of (historically specific and not eternal) social institutions, and not something natural, but this is made difficult to grasp by how value presents itself. Marx's main purpose in discussing the forms of value is to prepare the ground for the discussion of fetishism in section 4 of the chapter, where he explains how "a social formation in which the process of production has mastery over man, instead of the opposite" (175, 1) makes men view exchange ratios between commodities as natural properties of the commodities themselves instead of as resulting from human relations. This fetishism, Marx argues, is natural and spontaneous owing to the fact that value is determined by a process perceived by each individual as an impersonal, dominating force similar to natural forces³³; and it is favoured by the fact that the value of a commodity is expressed by a physical quantity of another commodity (a quantity of gold, in the price form): a relationship between two material things. Therefore there is nothing in the concrete manifestation of the value of a commodity that makes its origin clear and denounces that it is in fact a social relation; values appear "as objective characteristics of the products of labour themselves, as the socio-natural properties of these things" (164-5). It is therefore impossible to penetrate how the process works, and to grasp the ultimate determinants of value, except on the basis of a deep analysis that goes beyond spontaneous perceptions.

There is nothing in this reasoning that does not equally apply to Sraffa-determined normal prices with behind them the physical cost structure.

6. Second, abstract labour. And heterogeneous labour

Let us initially assume that labour is homogeneous. In Chapter 1 Marx repeatedly insists that in its role of determining exchange-values labour counts for its pure quantity as abstract labour, labour time, not for what the worker does during this time. The influence of the quantity of labour is specified as 'value equals embodied labour'. However, Marx's overall analysis aims at explaining the rate of profits and prices of production, and for that the quantities of embodied abstract labour alone are insufficient: one needs the real wage too, to determine surplus value; and one also needs the organic composition of capital in the several industries in order to determine how surplus value in its form as

does not seem to need to have a value determined by the 'physical cost structure', or by embodied labour, in order to function as money. But the elements determining the purchasing power of gold are as impersonal and independent of the actions of any single individual (apart from the decision makers in the Central Bank) as the elements determining the value of commodities, so fetishism will arise for gold too.

33 "The value character of the products of labour becomes firmly established only when they act as magnitudes of value. These magnitudes vary continually, independently of the will, foreknowledge and action of the exchangers. Their own movement within society has for them the form of a movement made by things, and these things, far from being under their control, in fact control them." (167, 2)

profits redistributes itself among products to produce a uniform rate of profits. In fact, as Marx notes in his discussion of the ‘transformation’ of values into prices of production in Volume III, his numerical example is defective in not ‘transforming’ the value of capital too into prices of production; and it is evident, although Marx does not attempt it, that such a ‘transformation’ would require explicit consideration of the disaggregated composition of capital in each industry, since the deviation of price from embodied labour is different for different goods.

When this is kept in mind, the similarity with the influence of labour on prices and rate of profits in Sraffian price equations is striking: in these equations too, it is labour *time* that counts; besides that, what is needed is the real wage, and the disaggregated production methods that determine, in each industry, not only the labour needed per unit of output but also the capital goods it must be associated with. What workers concretely do in their labour time in each industry need not be specified. The way these data determine the rate of profits and prices is different from Marx’s, it is more direct, there is no need to pass through a previous determination of embodied labour, and Marx’s $r=S/(C+V)$ comes out to be generally incorrect, but the influence of labour on rate of profits and prices passes through the same determinants as in Marx. It seems therefore legitimate to say that in the Sraffian equations too *labour in its aspect of an influence on the determination of relative prices is abstract labour*, this influence is via the quantity of it required in the several industries and the wage costs it causes, not via what workers concretely do. Relative to Marx, abstract labour so conceived is no longer the producer of value in proportion to its quantity, but remains the aspect of the presence of labour in production that influences normal prices.

The Sraffian equations permit a clearer focus on this influence by showing that, given the technical coefficients, the influence of labour on prices and rate of profits depends entirely and only on the *wage cost per unit of output* that the presence of labour causes in the several industries. If in an industry the quantity of labour per unit of output doubles but the wage paid to workers in that industry is cut in half, prices and rate of profits remain unchanged. As the solution of the equations shows, these wage costs (together with the matrix of coefficients) also determine the rate of profits; so this other influence on prices comes out to be again due to the influence of labour on prices via the wage costs per unit of output that it causes in each industry. So the meaning we can give to-day to the notion of abstract labour is that *it refers to labour in its aspect of contributor to the determination of normal relative prices and rate of profits because a cause of wage costs*.

This meaning of abstract labour, discussed up to here under an assumption of homogeneous labour, fits perfectly with how Marx ‘reduces’ labour heterogeneity to homogeneity, an issue that raises the question of the consistency between this ‘reduction’, and Marx’s notion of ‘human labour in general’ on which the first chapter of *Capital* greatly insists.

The idea that exchange values are ratios between quantities of a common ‘substance’ contained in commodities implies the homogeneity of this ‘substance’. Marx does insist on the homogeneity of all labour as producer of value: “the labour that forms the

substance of value is equal human labour, the expenditure of identical human labour-power” (129, 2); “all labour is an expenditure of human labour-power, in the physiological sense, and it is in this quality of being equal, or abstract, human labour that it forms the value of commodities” (137, 2); “The secret of the expression of value, namely the equality and equivalence of all kinds of labour because and in so far as they are human labour in general” (152, 1).

However, Marx adds that not all hours of labour time produce the same quantity of value: “More complex labour counts only as *intensified*, or rather *multiplied* simple labour, so that a smaller quantity of complex labour is considered equal to a larger quantity of simple labour” (135, 1). Now, this *denies* “the equality and equivalence of all kinds of labour”, and raises not only the question of what determines the multiplication coefficients, but also the deeper question of what is the homogeneity that allows Marx to *add* labour times of different kinds of labour, although after multiplying them by different coefficients.

In some contributions in the 1970s a clever attempt was made to surmount this difficulty and re-establish a true “equality and equivalence of all kinds of labour” as creators of labour-value, by interpreting “complex labour” as simple labour plus what in modern language would be called human capital (Roncaglia, 1973; Rowthorn, 1974; it is also Hilferding’s idea). In these contributions it is assumed that the labour-value added to the product by one hour of complex labour time is the labour-value created by 1 hour of simple labour time, plus an opportune fraction of the excess value of that complex labour power over the value of simple labour power: extra labour time (that is, in excess of the labour time embodied in the labour value of simple labour power) goes into making a labourer capable of performing complex labour (extra schooling, training etc.); this extra labour time redistributes itself into the value of the commodities produced by the complex labour power during its average life, analogously to the labour time embodied in a durable capital good. So all labour time *creates* the same amount of labour-value per hour as simple labour power does, but complex labour transfers, in addition, part of the labour time accumulated into its labour power in excess of that contained in the value of simple labour power.

But this interpretation is contradicted by Marx, who in Chapter 1 (135, 1) seems not to want to specify the multiplicative coefficients that ‘reduce’ complex labour time to simple labour time,³⁴ but in a later chapter makes it clear that the multiplication is *proportional* to relative wages, by writing: “All labour of a higher, or more complicated, character than average labour is expenditure of labour-power of a more costly kind, labour-power whose

34 Actually in that passage Marx seems to fall into circular reasoning: “More complex labour counts only as *intensified*, or rather *multiplied* simple labour. . . . Experience shows that this reduction is constantly being made. A commodity may be the outcome of the most complicated labour, but through its *value* it is posited as equal to the product of simple labour, hence it represents only a specific quantity of simple labour”. Here the value of the commodity appears to be given first, and the ‘reduction’ appears derived from it. Given the relevance of labour heterogeneity, the fact that Marx feels it unnecessary to clarify the issue until chapter 7 is surprising, and suggests that he assumes that attentive readers are not disconcerted because already familiar with how the ‘reduction’ operates, evidently from having read it in Smith or Ricardo.

production has cost more time and labour than unskilled or simple labour-power, and which therefore has a higher value. This power being of a higher value, it expresses itself in labour of a higher sort, and therefore becomes objectified, during an equal amount of time, in proportionally higher values.” (this is in chapter 7: 305, 1)³⁵. Very importantly, in a footnote attached to these lines Marx adds:

The distinction between higher and simple labour, ‘skilled labour’ and ‘unskilled labour’, rests in part on pure illusion or, to say the least, on distinctions that have long since ceased to be real, and survive only by virtue of a traditional convention; and in part on the helpless condition of some sections of the working class, a condition that prevents them from exacting equally with the rest the value of their labour-power. (305, fn. 19).

This is important because it implies that the basis for the ‘reduction’ of complex to simple labour is not different ‘values’ of different labour powers (in the sense of socially necessary expenses for the production and maintenance of different labour powers), but simply persistently different real wages *whatever their cause*.

In this Marx is simply following Ricardo, as required by the labour theory of value. Smith takes relative wages as given and considerably persistent, and Ricardo follows him on this. Then there is no problem with ‘reducing’ quantities of heterogeneous labour inputs to homogeneity on the basis of relative wages when one wants to specify wage costs per unit of output in such a way that total wage cost is proportional to quantity of labour employed: one must only measure each type of labour in such a unit that all units cause the same wage cost, and then consider these units additionable; this is what Sraffa does too (1960, p. 10). This way of performing the ‘reduction’ to homogeneity is indispensable to the labour theory of value. Suppose labour is heterogeneous and the rate of profits is zero: then costs, i.e. prices, are equal to direct and indirect wage costs, one might say equal to *embodied wages*, and then also equal to embodied labour if and only if each type of labour is measured in such units. Clearly, it is only by starting from labour-values thus determined, which for a zero rate of profits (or a uniform organic composition) determine exchange values correctly, that Marx could proceed to apply the idea of a compensation of deviations.

Note that then *labour-values depend on relative wages*. I am not aware of discussions of the implication of this fact for Marx’s own approach. At least one implication appears of some importance: relative wages can depend on relative *prices*, with a risk of impossibility of considering Marxian labour values determinable before relative prices. This will be the case if certain types of labour receive, in addition to a money payment, the access to consumption of some physical commodities or services, e.g. food, lodging, utilisation of vacation facilities or of health services supplied by the firm. This is not

35 The same proportionality is implicit when in Volume III Marx unambiguously assumes a uniform *rate of exploitation* (defined as surplus labour / necessary labour = surplus value / variable capital) and a capital advanced as variable capital equal to advanced wages, by stating that differences “in the level of wages ... in no way affect the degree of exploitation of labour ... If the work of a goldsmith is paid at a higher rate than that of a day labourer, for example, the former’s surplus labour also produces a correspondingly greater [in other translations: a proportionally greater] surplus-value than does the latter” (Marx 1981, p. 241).

unusual. Then relative wages must be determined by adding, for these types of labour, the money value of these commodities or services to the money payment, and will depend on relative prices. But the question, whether this is totally destructive for Marx's own approach to value via embodied labour, can be neglected once one concludes that Marx's approach must be replaced with Sraffian price equations; these have no problem with admitting real wages consisting of different bundles of commodities for different types of labour.

However, one point cannot be neglected: Marx's admission of the need for a 'reduction' implies that the idea of an "equality and equivalence of all kinds of labour" in the determination of Marxian value is untenable. Different types of labour are clearly treated by Marx as *not* equal and equivalent in their capacity to contribute to (to 'create' or 'produce') labour-value, and this different capacity is a consequence of *the different capacity to cause costs to capitalists*, a clear non-equality and non-equivalence.

It is clarificatory then that Sraffian price equations with heterogeneous labour dispense with the ideas of "human labour in general" and of "equality and equivalence of all kinds of labour", needing only the labour-time technical coefficients, and the real wage of each type of labour (a scalar in terms of the numéraire, or a vector). For example, in an economy producing in yearly production cycles corn (good 1, numéraire) and iron (good 2) with two different types of labour, *S* (simple) and *C* (complex), with yearly corn wages paid at the end of the year, a_{ij} the technical coefficient of input $i = 1,2$ in industry j , and l_{Sj} , l_{Cj} the amounts of labour of type *S*, *C* per unit of output in industry j , the Sraffian price equations per unit of output are:

$$\begin{aligned} p_1 = 1 &= (1 + r)(a_{11}p_1 + a_{21}p_2) + w_S l_{S1} + w_C l_{C1} \\ p_2 &= (1 + r)(a_{12}p_1 + a_{22}p_2) + w_S l_{S2} + w_C l_{C2} \end{aligned}$$

These equations show that what is really common to different types of wage labour as contributors to the value of commodities, that is as 'abstract labour', is that they cause wage costs. This answers the 'deeper question' posed earlier, of what is the ultimate homogeneity that allows Marx to add (although after a 'reduction') quantities of different kinds of labour to obtain labour-values: the answer is that if one measures each type of labour in such units that all units, of any type of labour, cause the same wage cost, then the number employed of these units determines total wage cost, so heterogeneous labour *measured in these units* is homogeneous in its contribution to wage costs, these units can be added to obtain total wage costs. But then heterogeneous labour so measured is also homogeneous in its contribution to *prices*, if the profit rate is zero; and if the profit rate is positive, it is also homogeneous in its contribution to what prices *would be*, if all wages were raised in the same proportion up to reducing the profit rate to zero, in which case prices being proportional to embodied wages would also be proportional to embodied labour (measured in those units), being in fact Marx's values.³⁶ In Sraffian equations

³⁶ We reach here an interpretation of Marx's values as the prices that would obtain with a proportional rise of all wages that, reducing profits to zero, rendered the costs caused by labour the only costs; the connection is then clear with the idea of (Marxian) value as 'created' or 'produced' by labour.

things are simpler, when relative wages can be treated as known before relative prices because all wages are fixed in a common unit then the ‘reduction’ is possible, in the way explained, but is not necessary, all that is needed is the wage cost per unit of output in each industry, also determinable by specifying real wages as vectors. This confirms the correctness, and applicability to heterogeneous labour too, of the interpretation suggested above of ‘abstract labour’: *it refers to labour in its aspect of a cause of wage costs for the capitalists*, hence with no need to specify what the labourer does during labour time for the purpose of determining values.

The Sraffian price equations also clarify that in order to determine values there is no need for some physical, ‘technological’ measurability of ‘quantities of labour’ as measurable contributions to productive processes, analogous to ‘labour’ in physics, or to electricity;³⁷ all that is needed is some way to determine, in each industry, wage costs per unit of output. When ‘quantity of labour’ is measured in hours and its cost is determined by multiplying it by the hourly wage rate, that two kinds of labour receive the same hourly wage does *not* imply that the two kinds of workers produce the same hourly ‘effort’ or ‘quantity of productive activity’ in some technologically measurable sense; for each kind of labour normal work intensity, attention to avoiding mistakes, shirking are determined by that labour’s social situation and bargaining power, and will not generally be the same as for other kinds of equally paid labour. An extreme example: in Japan for years after WWII many firms were pressured to hire more workers than they needed, and often put them to do nothing but kindly smile at visitors; but in the determination of prices the wage costs of these workers counted as all other wage costs even though not reflecting actual productive activity. So even for equally paid types of simple labour, generally no “equality and equivalence” can be found apart from their causing equal wage costs. All the more so of course for highly different and differently paid types of labour.

In conclusion, of the notions that appear in the first chapter of *Capital*, commodity fetishism and abstract labour remain valid even if one drops, as one must, the thesis that labour is the substance of value. The nebulous notions of “human labour in general” and of “equality and equivalence of all kinds of labour” must be dropped too. With this, nothing important of the general picture of the nature of capitalism derivable from Marx gets lost; only, that wage labour is deeply (politically too) *not* homogeneous must be clearly recognized, against tendencies to talk simply of ‘the working class’.

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³⁷ Sraffa seems to have thought that in the classical economists there was a tendency toward such an interpretation of ‘quantity of labour’; in 1927 he wrote: “The fatal error of Smith, Ricardo, Marx has been to regard ‘labour’ as a quantity, to be measured in hours or in kilowatts of human energy” (D3/12/11: 36, quoted in Kurz and Salvadori 2010, p. 196).

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