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The productive powers of labour and the redundant transformation to prices of production; a Marx-immanent critique and reconstruction

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Abstract
The famous Marxian ‘transformation problem’ originated from a research manuscript written by Marx in 1864/65, from which Engels assembled *Capital III* (1894). Unequal capital compositions, equal rates of surplus-value and equal rates of profit among different sectors are posited, and reconciled using the problematic concept of ‘prices of production’. Yet the assumption of equal rates of surplus-value is at odds with the subsequent text of *Capital I* (1867), where Marx presents various determinants of the rate of surplus-value, and connects productive powers of labour diverging between sectors with divergent *value-generating potencies* of labour. Given the other determinants, diverging rates of surplus-value then result. Marx disregarded these productive power differentials when he originally formulated his transformation. In a reconstruction, building on *Capital I*, this omission is rectified. It makes prices of production and hence the dual account systems redundant. The transformation problem then evaporates.

Keywords
Marx’s *Capital*; transformation problem; research manuscript of ‘Capital III’; rate of surplus-value; productive powers of labour; reconstruction of transformation.

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Introduction

In this article I revisit what probably is the main theoretical problem in *Capital*, namely the transformation of the *Capital I* value concepts into the 'prices of production' of *Capital III*, Part Two. Marx's own approach to this transformation, and its implications, was subsequently dubbed the 'transformation problem'.

Marx sets out this transformation in an 1864/65 research manuscript of 'Capital III'. At this time *Capital I* existed in a draft form that differed from the version that was actually published in 1867. In the 1864/65 manuscript some key 'Capital I' concepts – referring to averages of the capitalist economy at large – are transformed into concepts referring to the particular sectors (or branches) of production. Here he posits a configuration of so-called 'prices of production', defined by ratios of capital and wages (capital compositions) which diverge in each sector, equalised rates of surplus-value, and equalised profit rates. After Marx's death in 1883, Engels edited and published this research manuscript in Part Two of *Capital III* (1894). Soon after, however, it was discovered that Marx's transformation contains a serious flaw (see section 2 below). This flaw, and later formal-analytical extensions of it, came to be known as 'the Marxian transformation problem'. I agree with many of the formal-analytical criticisms, and it is not my intention to repeat them here (for an overview, see Schefold 2004). Note though that the scholarly transformation controversy mainly concerns issues that Marx himself never dealt with. In that sense these are *external* criticisms, although this does not disqualify them.

My own aim in this article is to set out an *immanent* critique of the way in which Marx posited the transformation in 1864/65. For this immanent critique, I rely on the in 1866/67 thoroughly reworked version of *Capital I*. In a reconstruction I transcend the transformation as a concretisation of the *Capital I* concepts of value and surplus-value. This concretisation makes the (current *Capital III*) concept of prices of production redundant, as a result of which the transformation problem evaporates. Instead of dual accounts for values and prices of production, my reconstruction posits one single account.[2] My argument focuses on the frail

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[1] University of Amsterdam, School of Economics (reuten@uva.nl; http://reuten.eu). This article is a revised and briefer version of a chapter that appears in *Marx's Capital – An Unfinished and Unfinishable Project?* edited by Gerald Hubmann and Marcel van der Linden (Historical Materialism Book Series). The first version was presented at a conference, under the same title, organized by the Berlin-Brandenburgische Akademie der Wissenschaften and the International Institute of Social History, Amsterdam, on 9-11 October 2014. I thank the participants for their discussion of that paper. In rewriting the text for that chapter (the second version), I benefited especially from the comments by Chris Arthur, the main commentator at the conference. I also benefited from a written comment by Fred Moseley, from oral and written comments by Boe Thio, and from Jurriaan Bendien's correspondence and copy-edits (all these scholars participated in the conference). The current third version has greatly benefited from comments by the *HM* editors and by three anonymous reviewers, for which I am grateful.

[2] On very different grounds, and without considering prices of production as a redundant concept, a single system account is also proposed by the TSSI school ('temporal single-system interpretation') – I

constraints of the transformation procedure posited by Marx himself, and thus interprets the problem to be wider in scope than the usual appraisals.

In *Capital I*, Part Four, Marx presents the determinants of relative surplus-value and the concomitant rate of surplus-value, a major one being the 'productive powers' of labour. He associates sectoral divergences in the productive powers with divergent *value-generating potencies* of labour. Given the other determinants of the rate of surplus-value, we then obtain diverging rates of surplus-value. In the 1864/65 research manuscript of 'Capital III', however, Marx posits equalised rates of surplus-value, either because he had not yet developed the *Capital I* notion just referred to, or because he disregarded this productive powers determinant for unknown reasons.

My reconstruction shows how, predicated on this productive powers determinant, diverging rates of surplus-value are associated with diverging compositions of capital and equalising rates of profit, maintaining throughout the monetary value dimensions of *Capital I*. Because in the reconstruction 'prices of production' are redundant, that monetary value dimension also captures balanced and non-balanced prices generally.

In line with Marx's own view in the 1864/65 manuscript, the received view on the transformation is that the texts for *Capital III* put the argument of *Capital I* into question. Inverting that interpretation, I will show that the later finalised *Capital I* theory instead puts the drafts for the *Capital III* transformation into question.

After some methodological and value-theoretical remarks (§1) followed by a summary of the transformation problematic (§2), I will focus on the concept of relative surplus-value in *Capital I*'s Part Four (§3). With that background, I then provide the main elements for a Marx-immanent reconstruction which transcends the transformation (§4).

The admittedly difficult and controversial idea I propose is that Marx himself posited the *problematic* in such a way, that a transformation *problem* could emerge which remains irresolvable because of its deficient premises. Thus, a hundred and twenty years after 1894, I want to argue that the problematic may well have been wrongly posited by Marx himself in his drafts, and therefore by his latter-day critics as well. In that case, the difficult challenge for us is to transcend the way the issue was originally framed.

Because the dating of Marx's manuscripts for *Capital* is important to this article, I present these in tabular form.

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mention Carchedi, Ernst, Freeman, Kliman, Maldonado-Filho, McGlone, Potts, and Ramos Martinez – as well as by Moseley (e.g. his 2015). See the latter's chapter 9 for references on the TSSI school.

Table 1. Marx's work on Capital from 1863-67

Volume	Dating	Draft	Remarks
C I	1863-64	penultimate draft	lost or blended into final draft (see §2)
C III	1864-65	first full research ms.	
C II	1865	first research ms.	
	early 1866		Engels convinces Marx that he should bring out C-I, even when C-II and C-III are not completed
C I	1866-67	final draft 1st edn.	

Source: Vollgraf (2012).[3]

Making the argument in this article necessarily involves quite a number of terminological references, as well as citations from German and English texts, for which I adopt some conventions. I render the German noun *'Darstellung'* as *'exposition'*, and use 'exhibit' to refer to the setting out of this exposition. With regard to Marx's research manuscripts, the German noun *'Forschung'* is rendered as *'investigation'* and I use 'write', 'set out' or variants thereof for the setting out of this investigation. Within cited passages, the italics are always an emphasis in the original. Underlining indicates my own emphasis. Unproblematic insertions in quotations are rendered in square brackets. My own comments are in accolades. The abbreviation 'mt' after a page number (e.g. 370-mt) denotes my own translation. Within my translations, an original German term is likewise inserted with accolades. References to the published texts of *Capital* are rendered in italics. When I refer to manuscripts prior to it, these are non-italicised in quotation marks ('Capital I', 'Capital III').

1. Method and dimensions

To place the argument in its appropriate theoretical context, I will first make five relevant points about Marx's method and the value-theoretical dimensions which he uses.

1. In *Capital*, Marx's methodology of exposition involves different stages. He moves from the production of capital (Book I), to capital's circulation which includes the realisation conditions of production (Book II), and finally to the concretisation of the former two stages, distinguishing on the one hand capital in its particular material manifestation (*Gestaltungen*) of sectors of production (*Produktionszweige; Anlagsgebiete*), and on the other its functional forms, such as industrial capital and finance capital (Book III). Although in my view there are good reasons for interpreting Marx's method as a systematic-dialectical one, the argument of the current paper does not rely on that interpretation.[4] I want to emphasise here only that – contrary to most 'economic modelling' approaches – Marx's method is one in which the general statements established within *each* one of these three stages must be claims to *general* truth. In particular, if for example a level III statement would turn out to be inconsistent with a

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[3] Between 1868 and his death in 1883, Marx's continuation on *Capital* is very briefly as follows (for details see Vollgraf 2016).

On Capital I: 2nd edition (of 1872); 3rd edition (of 1883); French edition (of 1872-1875).

On Capital II: 1868-70 and 1877-81.

On Capital III: conceptual, mathematical and comparative statistical studies (no new drafts).

[4] For an account of the systematic-dialectics, see Reuten 2014 as well as the other contributions in Moseley and Smith 2014.

level I statement, one of those statements must be false. (As regards a core theme in my argument in this article, for example, we cannot combine the first stage general statement that the production of commodities and commodity transactions are determined by their value – as explained by labour-time – and a next stage general statement that, instead, commodity production and transactions are determined by prices of production that are only partly determined in that way. Similarly, we cannot combine the initial general statement that capitalist production is motivated by the production of surplus-value only, with another general statement that it is determined by an *amalgamation* of surplus-value and a capital size related profit-levelling (dis)agio.) In brief: the abstract statements must be true statements; they must, without additional qualification, cover the richer and more concrete statements.

2. In Marx's way of exposition of the production process in *Capital I* – the production of surplus-value and therefore of capital – he is able to blend out ('bracket') all kinds of factors that do not affect this core matter (including the realisation restrictions in *Capital II*, and the financiers' share in surplus-value in *Capital III*). In this way he can show how labour is the overall determinant for the production of surplus-value and capital.

3. In *Capital I*, as for all of *Capital*, value entities are expressed in monetary dimension (using some currency standard such as £); the same applies to all numerical examples.[5] It is important to emphasise this since in some interpretations of Marx's theory 'value' is itself taken to have a labour-time dimension (those same accounts often adopt the term 'labour values' – one that is never used in *Capital*).[6] At the level of abstraction of the production of capital (*Capital I*) Marx aims to *explain* value and surplus-value (in monetary dimension) in terms of labour-time (in Parts Three to Five, 350 pages) – an explanation in terms of labour-time does of course not mean that *value* ever discards its monetary dimension.[7]

4. The first chapter of *Capital I* is complex.[8] In my view, it ought to be read in the context of the Ricardian labour-embodied theory of value which predominated in those days (recall the subtitle of *Capital I*).[9] In the chapter's early sections, Marx starts out with a sophisticated Ricardian view, adopting metaphorical phrases such as labour being the 'substance' of value.[10] However, the main point of the chapter is, that he breaks away from Ricardianism by presenting a theory of monetary value (especially its section 4). In that same chapter, 'abstract labour' is a place holder for money (the term disappears subsequently). I showed this in my 2005 essay, where I indicated that a full comprehension of this chapter requires a reading

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[5] Elson, 1979, pointed this out.

[6] For example, Schefold (who is generally well acquainted with the field) does presume this. Thus, in his introduction to *Capital III*, Schefold (2004, p. 874) erroneously writes 'Arbeitswerten (wie Marx sie nannte)' ['Labour-values (as Marx called them)']. Possibly Marx used this expression in some writing prior to *Capital* – Schefold cites no source – but that would surprise me very much.

[7] In my 2005 essay, I trace Marx's exposition of the monetary dimension of value from *Capital I*, Chapter 1 to its Chapter 3 where the concept of value has been fully constituted. In section 1.1 of my 2004b essay, I trace the dimensions and measures adopted by Marx in the explanatory Parts Three to Five of *Capital I*.

[8] Marx himself admits that the chapter is complicated – see his Foreword to the first edition (1867).

[9] A distinction ought to be made between, first, the dominance of a school of thought (here, the Ricardian one) in university teaching and in common appraisal and, second, research leading to new thought that might perhaps become a new dominant school in teaching and appraisal later on. There are considerable time-lapses between the two.

[10] This, and the later history of such misleading statements (that is, misleading for us today), is amplified in my 1993 article.

interconnected within the full Part One (i.e. Chapters 1-3). Nevertheless, for some, including myself, Marx's break with Ricardo is not complete.[11]

5. However, even if I myself hold a value-form theoretical interpretation of *Capital*'s categories (point 4 above), that is not relevant for my argument in this paper.[12] This paper is not about *Capital I* Part One as such, and it mainly builds on its Parts Three to Five, in which such disputed matters are absent or not prominent. What is more, the reconstruction that I propose in §4 should fit any interpretation of the value-theoretical categories. For each interpretation, the reconstruction does away with dichotomous 'value'–'prices of production' algorithms, and results in a continuity of the concept of value for each of *Capital*'s levels of abstraction. This conceptual continuity *includes* all specific and concrete market phenomena in terms of balanced or imbalanced market prices (*Capital II*, Part Three and *Capital III* Part One). However, it *excludes* 'prices of production' and hence dual account systems.

2. Marx's 1864/65 general rate of profit transformation

In this article I shall refer to the field of *Capital III*, Part Two, as 'the general rate of profit transformation' (abbreviated as 'GRP transformation'). In the research manuscript for it, of 1864/65, Marx sets out a concretisation of his "Capital I" categories, in face of the tendency toward equalisation of rates of profit between sectors, or to the formation of a 'general rate of profit' (GRP).[13] In face of the Capital I concepts of value and surplus-value, Marx refers to this concretisation as a 'transformation'.

I assume that many readers have at least a general acquaintance with Marx's GRP transformation (that is of Engels's rendering of it in his edition of *Capital III*) and with its problems: 'the transformation problem(s)'. In brief Marx posits the relationships between sectors of production as: (1) equal or equalising rates of profit; (2) diverging compositions of capital; and (3) equal or equalising rates of surplus-value. He then feels (reluctantly) constrained to drop his 'Capital I' commodity sales at value, and to introduce 'production prices' instead. For a further reminder of Marx's GRP transformation the reader can turn to Reuten (2016) which is an Annex to this article that provides an overview and a critical discussion of that text. Table 1 of this Annex provides a reminder in a nutshell.[14]

The standard critique on Marx's GRP transformation procedure is that it is a 'halfway house'. He transforms *Capital I* output quantities into *Capital III* output quantities, neglecting to apply that transformation to the inputs.[15] He therefore obtains incorrect results (especially

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[11] See the references in Reuten 1988 and 1993; here I merely mention the pivotal paper by Backhaus 1969. Regarding Part One's Chapter 3, a main problem is that Marx's theory of 'commodity money' is clearly a 19th century theory that is not applicable in the current age (see the references in Reuten 2005; here I merely mention Bellofiore 2005). However, the value-form theoretic critique does not dispute Marx's explanation of surplus-value in terms of labour-time (that is, at least, my own take on value-form theory). The thesis that labour is the unique producer of surplus-value and profit does not require any labour-embodied theory of value.

[12] I should add here that in the opinion of one anonymous reviewer it is relevant.

[13] The research manuscript is published in *MEGA II/4.2* (1993). Engels's editorial work is published in *MEGA II/14* (2003). *MEGA II/15* (2004) contains the critical edition of *Das Kapital III* of 1894.

[14] In Reuten (2009) I discussed the transformation issue mainly in methodological terms. Its general defect was nevertheless that I did not connect the matter to Marx's exposition of relative surplus-value and the rate of surplus-value in *Capital I,* as I will do in the next two sections.

[15] Here I refer to the published versions (*Capital I, Capital III*) as they appeared for the reader at the time of publication of the third Volume. In his Foreword to the latter, Engels provides the reader no hint

regarding the simultaneous aggregate equalities of, on the one hand, the commodity values and the prices of production of commodities, and on the other hand, surplus-value and profit). This critique is accurate, and it has been extensively dealt with already in the literature (see the overview by Schefold 2004, pp. 875-95).

However, in a way this was not Marx's problem, since he (mistakenly) neglected it, or was not aware of it.[16]|[17] In the Annex just mentioned, I approach the matter rather from the perspective of the problems that Marx *was* aware of in the 1864/65 manuscript. There it is set out how Marx is sceptical and worries about his transformation, the main point being that his transformation cannot be simply combined with his text for 'Capital I' – i.e. its draft at the time (1864/65). Howard and King (1989, p. 37) comment: 'Engels accepted Marx's defective solution to the transformation problem uncritically. He did not, indeed, follow up or even comment upon the uncertainties expressed by Marx himself concerning the volume III solution.' In my view Marx's own worries overarch those of the post-Marx criticisms: even if he would not have made the formal mistake of neglecting the transformation of inputs, his own problems with the manuscript would still prevail. These problems are not resolved in the standard post-Marx solutions to the transformation problem.

In the remainder of the current section I merely focus on one passage, from what became Chapter 10 of *Capital III*, where Marx writes that equality in the rate of surplus-value is not just a simplifying theoretical presupposition, but rather a *law* which is predicated on competition between workers:

> "[E]quality in the *grade of exploitation of labour* or the *rate of surplus-value* … presupposes competition among the workers and an equalisation that takes place by their continual migration from one sphere of production to another." (MF:286-amended; M:250; cf. E:184, EF:275)[18]|[19]

Anticipating §3 and §4, I indicate already here that I have no problems with this competition determinant of the rate of surplus-value (concerning the 'intensity of labour'). In this manuscript, however, Marx neglects the productive powers determinant of the rate of surplus-value that we find in Part Four of *Capital I* (see §3.2). However, we do not know what manuscript of *Capital I* Marx had before him in 1864/65. The draft of 1863/64 for *Capital I* is

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about the order in which Marx wrote the published manuscripts – see Table 1 above (even though some readers might perhaps have inferred this from Engels's Foreword to *Capital II*).

[16] Perhaps he was aware of it in other contexts (see e.g. his 1861/63 discussion of Bailey in the *Theories of Surplus-value,* MECW 32, pp. 352-53; I thank Jurriaan Bendien for pointing this out). Marx seems nearly aware of it in his manuscript for *Capital III,* 'Chapter 12' (M:283; cf. E:217, EF:309 – see the next footnote for these shorthand references.

[17] In this section I use the following shorthand references. M = Marx 1993 (Marx's 1864/65 research manuscript for *Das Kapital III*, MEGA II/4.2); MF = Marx 2015 (Fowkes' translation of the former); E = Marx 1964 (Engels's 1894 edition of *Das Kapital III*, MEW 25); EF = Marx 1981 (Fernbach's translation of the former: *Capital III*).

[18] See the last but one footnote. When Marx in his text uses the term '*Voraussetzung'* Fowkes sometimes correctly translates this by 'presupposition' but at other times switches to 'assumption' even in the same sentence. The reader then loses the sense of what is being argued. These terms are not the same. 'Assumption' would rather cover the German *Annahme* – a term that Marx also uses. See also Inwood 1992 p. 224.

[19] Marx continues: "A general rate of surplus-value of this kind – as a tendency, like all economic laws – is presupposed by us as *theoretical* simplification; but in practice it is an actual presupposition of the capitalist mode of production, even if inhibited to a greater or lesser extent by practical frictions .... In theory we presuppose that the laws of the capitalist mode of production develop in their pure form." (transl. amended)

either lost (as much was suggested previously by the MEGA II/5 editors, see Kopf *et al* 1983), or – and this is the recent expert opinion – it was blended (*verschnitten*) into the final version compiled for the printer (convincingly argued for by MEGA II editor Vollgraf 2012).[20]

3. 'Productive powers', 'intensity of labour' and the rate of surplus-value in *Capital I*

§3.1. Preliminary remarks

Six preliminary remarks are in order here:

1. In the next section (§4), I present an immanent reconstruction of the GRP problematic – 'immanent' in the sense that I base myself on Marx's own text. Divergent rates of surplus-value in different sectors of production are at the core of this reconstruction. In §3, I therefore reconsider Marx's exposition of surplus-value and the rate of surplus-value in *Capital I*, in order to argue that the key to the solution of the transformation problematic is found in *Capital I*, Parts Four and Five on the production of relative surplus-value.

2. Recall Marx's exposition of surplus-value in *Capital I*, in which he draws a distinction between absolute surplus-value (Part Three) and relative surplus-value (Part Four), each predicated on some given real wage per working day. Then the *absolute surplus-value* varies with the length of the working day. The *relative surplus-value* varies with the production costs of the wage bundle. Thus, at a given length of the working day (and hence with a given absolute surplus-value), the surplus-value in its aspect of relative surplus-value may increase, when the value of commodities that make up the wage bundle decreases (and vice versa).

3. Recall from my §1, that 'value' has a monetary dimension, and that Marx aims to *explain* value and surplus-value in terms of labour-time.

4. It is relevant to emphasise that, in most of *Capital I*, Marx reasons from economic averages – including their change.[21] This applies especially also for most of what Marx develops in the 350 pages of Parts Three to Five, where he discusses (changes in) the 'average' production of surplus-value and the average capital. Marx repeats over and again, that he is only considering averages (also alternated with the term 'normal'). Except when he discusses *changes* (especially in productive powers), differences between sectors are bracketed out.

5. It is just as relevant that the concept of the 'composition of capital' (the c/v ratio), makes proper appearance only in Part Seven of *Capital I*. In the relevant Parts Four and Five, the capital composition is mostly only implicit (it is alluded to in Part Four's Chapter 15$^{\text{Germ.13}}$).[22] Notably it is not alluded to in Chapter12$^{\text{Germ.10}}$ on the productive powers of labour, where the discussion in the next subsection starts.

6. Regarding the standard English translation of *Capital I* by Ben Fowkes, I note here that he translates the German *Produktivkraft* by 'productivity'.[23] This does not cover the meaning

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[20] Kopf *et al* 1983, pp. 15*-16*. Vollgraf 2012, p. 465; his full argumentation is on pp. 464-67.

[21] In an important section of his 2012 Introduction, Vollgraf (2012, pp. 450-51) points at Marx's acquaintance with the work of Quételet. Vollgraf also quotes Marx on Quételet from the 1863-65 manuscript (its p. 879). This might seem to imply that Marx's usage of 'averages' in *Capital I* is not casual (in a footnote in *Capital I*, Marx refers in passing to Quételet (1867 p. 261, n. 8; 1962, p. 342, n. 8; 1976 p. 440, n. 1).

[22] Marx 1962 [1890^4], pp. 466-67 and 473-74; Marx 1976 [transl.1890^4], pp. 571 and 577-78.

[23] Most of the time at least – e.g. on page F:453 2nd paragraph, Fowkes translates Produktivkraft into 'productive power' and on page F:508 it is translated into 'productive forces' (cf. M^4:407). Not only do we lose terminological connections, the English text also makes connections that are absent from the German (esp. with the German term *Produktivität der Arbeit*, and when Fowkes translates this into 'productivity of labour', `productivity' being his most frequent translation for `*Produktivkraft*'). We have

of the term. It is moreover unfortunate, because Marx sometimes also uses the term *Arbeitsproduktivität* (labour productivity). In all of the following citations, I have amended the translation for *Produktivkraft* to 'productive power' (marked *...*'; I use the same mark for any other amendments of the translation). Fowkes also misses the related term *potenzierte Arbeit* (see below). The same applies for the Moore and Aveling translation. These remarks highlight that the art of translation is inevitably also one of interpretation. All English citations below have been checked against the German.

References in this section are as follows: M^1 = Marx 1867[1] (*Das Kapital I*, 1st edition 1867, MEGA II.5); M^4 = Marx 1962 (*Das Kapital I*, 4th edition 1890, MEW 23); MF = Marx 1976 (*Capital I*, 4th edition 1890 in the Fowkes translation). All key quotations in this section have been checked against the first German edition of *Capital* (1867), because that is nearest to the 1864/65 manuscript. Chapter references are to the English editions, with those of the German editions as superscript (e.g. Chapter $15^{\text{Ger.13}}$).

§3.2. The productive powers of labour: degree of value-generating potencies of labour

I will now show how Marx posits *diverging rates of surplus-value* between sectors of production according to the development of the productive powers.

Marx systematically introduces the 'productive power' of labour in Part Four, Chapter $12^{\text{Ger.10}}$.[24]

> "[I]ncrease in the *productive power* of labour ... cannot be done except by an alteration in his [the labourer's] tools or in his mode of working [*Arbeitsmethode*], or both. Hence the conditions of production of his labour, i.e. his mode of production, and the labour process itself, must be revolutionized. By an increase in the *productive power* of labour, we mean an alteration in the labour process of such a kind as to shorten the labour-time socially necessary for the production of a commodity, *hence a smaller quantity of labour acquires the force* of producing a greater quantity of use-value." (MF:431 amended; M^4:333)

In other words, the effect of such a change is that one worker works up (*verarbeitet*) more means of production.[25] Marx considers the transition from the one state of the productive powers to a new one as initiated by some individual capitalist.[26] As regards the labour producing at the increased productive power, he states the following key sentence:

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the same problem in the *Results* (translated by Livingstone). Moore & Aveling (*Capital I*, edition of 1887) translate *Produktivkraft* as 'productiveness' (at least those instances I have checked). Generally there are two translation options for the term *Kraft* as in *Produktivkraft*: power and force. The former is adopted in the *Grundrisse* translation (productive power) and the latter in *The German Ideology* and the 1859 *Critique* Introduction (productive force). I do not mind much which one translation is adopted as long as the translation is consistent. In what follows I use 'productive power'. At the end of Chapter $12^{\text{Ger.10}}$ Marx refers to Richard Jones who uses the term 'productive powers'. Marx in his German text translates this in 'Produktivkräfte', which is one reason for me to lean to the 'productive powers' translation.

[24] Earlier (Chapter 1) he wrote: '*The productive power of labour* is determined by a wide range of circumstances; it is determined amongst other things by the workers' average degree of skill, the level of development of science and it's *technological applicability*, the social organisation of the process of production, the extent and effectiveness of the means of production, and the conditions found in the natural environment.' (MF:130 amended; M^4:54)

[25] Marx uses this term 'verarbeiten' (working up) only occasionally (e.g. in Chapter $8^{\text{Ger.6}}$, M^4:225; MF:319 'one man may now, with the aid of one expensive machine, work up one hundred times as much raw material').

[26] MF:433-36; M^4:335-38.

> "The labour operating at this exceptional productive power acts as potentiated labour; it creates in equal periods of time greater values than average social labour of the same kind." (my translation; cf. MF:435)[27]|[28]
>
> "Die Arbeit von ausnahmsweiser Produktivkraft wirkt als potenzierte Arbeit oder schafft in gleichen Zeiträumen höhere Werte als die gesellschaftliche Durchschnittsarbeit derselben Art." (M[4]:337; M[1]:257)[29]

Therefore, the above-average potentiated labour – labour with extra value-generating potencies – cannot be simply measured in clock-time. Note that Marx thus draws a distinction between the 'value productivity of labour' (the value produced per unit of time) – the last quotation – as opposed to labour's 'use-value productivity' (the physical quantity of commodities produced per unit of time) – the one but last quotation.

Marx continues:

> "Hence, the capitalist who applies the improved method of production, *appropriates as surplus-labour* a greater portion of the working-day than the other capitalists in the same business. He does as an individual what capital itself taken as a whole does when engaged in producing relative surplus-value. On the other hand, however, this extra surplus-value vanishes, as soon as the new method of production is generalized …" (MF:436; M[4]:337)

Thus Marx feels (rightfully) constrained to exhibit a change in the socially average production force as a change within one sector of production (of course other changes may occur in other sectors). Note that whereas he suggests a generalisation of the implementation of productive powers within a sector, he (rightfully) posits no mechanism for inter-sectoral generalisations of the development of the productive powers (equalisation of compositions of capital?!). However, *given the value-generating potencies, this implies divergences in rates of surplus-value between sectors* – that is, under the condition that there are diverging productive powers of labour. Thus whereas there seems to be no direct measure for the comparison of the physical use-value productivity of labour *between* sectors of production (indirectly there is one – see the next sub-section), there is a measure for the value productivity of labour between sectors, which is the value-added per unit of labour time. Given the real wage rate per unit of labour time, this value productivity can be measured by the rate of surplus-value.

Note that in the last quotation Marx posits the 'exceptional' and 'vanishing' character of the implied divergences in rates of surplus-value (apparently due to competition). However, this circumstance is not obvious. The point is that, in the current exposition, Marx is not explicit about the composition of capital. Should a change in productive powers in a sector go along with an above-total-economy-average c/v, then the extra surplus-value or some of it will *not* vanish, whence we have persistent sectoral diverging potencies of labour and concomitantly diverging rates of surplus-value. (See §4 – and in more detail the Appendix, section A§2.)

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[27] Fowkes (p. 435) renders: 'The exceptionally productive labour acts as intensified labour; it creates in equal periods of time greater values than average social labour of the same kind.' We find the "intensified" also in the earlier translation by Moore and Aveling (p. 457). This is wrong, also because it risks to make a confusing reference to the treatment of "intensity of labour" discussed in Chapter 15[Ger.13]. Marx, as we will see, carefully distinguishes the two.

[28] Instead of 'potentiated labour' an alternative translation for 'potenzierte Arbeit' might perhaps be 'exponentiated labour'.

[29] In the first edition, there are two emphases: 'Die Arbeit von *ausnahmsweiser* Produktivkraft wirkt als *potenzirte* Arbeit oder schafft in gleichen Zeiträumen höhere Werthe als die gesellschaftliche Durchschnittsarbeit derselben Art.' (M[1]:257)

The concept of ‘potentiated labour’ reoccurs one more, relevant, time in *Capital I* (Chapter 15^{Ger13}):[30]

> “Machinery produces relative surplus-value, not only by … cheapening the commodities that enter into its [labour-power’s] reproduction, but also, when it is first introduced sporadically into an industry, by converting {*verwandlen*} the labour employed by the owner of that machinery, into *potentiated* labour … During this transitional period, while the use of machinery remains a sort of monopoly, profits are exceptional {*außerordentlich*} …” (MF:530 amended; M^4:428-29; M^1:333)[31]

In the same chapter ($15^{Ger.13}$), we find another reference to divergent sectoral rates of surplus-value related to the productive powers:[32]

> “The use of machinery for the exclusive purpose of cheapening the product is limited … by the difference between the value of the machine and the value of the labour-power replaced by it. Since the division of the day's work into necessary and surplus-labour differs …*simultaneously* in different branches of industry …, it is possible for the difference between the price of the machinery and the price of the labour-power replaced by that machinery to *vary very much* … [It] determines the cost to the capitalist of producing a commodity, and influences his actions through the pressure {*Zwangsgesetze*} of competition.” (MF:515 amended; M^4:414; M^1:321)[33]|[34]

Comment. Overall, we find in *Capital I* three types of statements and arguments about generalisations and averages:

- First, *generalisations* (which are applicable in each case). For example, in capitalism, production takes the form of commodity production; or, value takes the form of monetary value.
- Second, *averages accounts*. In *Capital I*, these are most often social averages (for the economy at large). A problem with Marx’s terminology is that he often conflates ‘general’ and ‘grand average’ throughout his research manuscripts and final texts – sometimes explicitly.[35]|[36]
- Third, *distinctions within the averages*. In *Capital I*, Marx mostly summarises these later on in the text, in terms of averages (for the distinctions above, we will see this in §3.4).

Each time the reader has to be very alert about the type of statement Marx is actually making. Thus, in the quotations that I provided above, Marx sets out sectoral distinctions and, in particular, differences in rates of surplus-value. These are of course levelled out in an averages account. One of my main points is, that when we get to sectors of production in a *systematic* way (the concretisation of *Capital III*, Part Two), all these sectoral distinctions – including diverging rates of surplus-value – must regain account.

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[30] In §3.5 I will refer to another, different, occurrence.

[31] The latter (Marx 1867^1) has several terms emphasised, including ‘potentiated’ (*potenzirte*) and ‘transitional’.

[32] I thank Boe Thio for drawing my attention to this passage.

[33] The latter text (Marx 1867^1) has several phrases emphasised.

[34] The text that I emphasised, reads in German (in full): ‘Da die Teilung des Arbeitstags in notwendige Arbeit und Mehrarbeit in verschiednen Ländern verschieden ist, ebenso in demselben Lande zu verschiednen Perioden oder während derselben Periode in verschiednen Geschäftszweigen; …‘

[35] As in the title of *Capital III* Chapter 9, which is identical in the research manuscript: “Formation of a general rate of profit (average rate of profit), and …”.

[36] One reason might be that Marx is only gradually making up his mind about the importance of averages – see Vollgraf 2012, referred to in the first footnote of §3 (nr. 21).

§3.3. Intensity of labour: degree of value-generating density of labour

In Chapter 15[Ger.13] of Part Four, Marx systematically introduces the 'intensity of labour'. One important point about it is that, once again, labour-time cannot be simply measured in terms of clock-time. Now, however, for reasons other than those for changes in productive powers. He writes:

> "It [intensification of labour] imposes <u>on the worker</u> an increased expenditure of labour within a time which remains constant, <u>a heightened tension of labour-power</u>, and a closer filling-up of the pores of the working day, i.e. a condensation of labour, to a degree which can only be attained within the limits of the shortened working day. This compression of a greater mass of labour into a given period now counts for what it really is, namely an increase of the quantity of labour. In addition to the measure of its 'extensive magnitude', <u>labour-time now acquires a measure of its</u> *<u>degree of density</u>*.[37] … The same mass of value is now produced for the capitalist by, say, 3⅓ hours of surplus labour and 6⅔ hours of necessary labour, as was previously produced by 4 hours of surplus labour and 8 hours of necessary labour." (MF:534 amended; M[4]:432-3)

Marx next uses terms like 'degree of power exerted' (*Grad der Kraftäußerung*), 'energy of labour' and 'discipline' (MF:535; M[4]:433). In brief, it concerns the effort and strain of labour. In so far as there are intra-sector or inter-sector differences in intensity, and *to the extent* that it is the intensity that affects divergences in the intra-sector or inter-sector rates of surplus-value, these are likely to be levelled out by intra-labour competition. From *this* perspective, and this one only, the Marx of 1864/65 is quite right to posit equalised rates of surplus-value (see the quotation in §2).

§3.4. Separate and combined average variations in productive power and intensity

In Chapter 17[Ger.15] of Part Five – synthesising Parts Three and Four – the main focus is on social averages (this also applies for the next and last chapter of this Part, that I will not discuss here). Marx indicates that at a given average real wage rate per 'normal working day', the rate of surplus-value depends on:[38]

> "(1) the length of the working day, or the extensive magnitude of labour, (2) the normal intensity of labour, or its intensive magnitude, whereby a given quantity of labour is expended in a given time and (3) the *productive power* of labour, whereby the same quantity of labour yields, in a given time, a greater or a smaller quantity of the product, depending on the degree of development attained by the conditions of production." (MF:655 amended; M[4]:542)

Marx emphasises strongly that the three determinants mentioned in this passage are not only variable, but also may occur separately or in several combinations. In what follows after this passage, he analyses each of these in turn, in four separate sections. Marx here usually assumes

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[37] "Neben das Maß der Arbeitszeit als "ausgedehnter Größe" tritt jetzt das Maß ihres Verdichtungsgrads." Concerning the term 'measure' a general warning – for all of *Capital* – is appropriate: the meaning of the German term '*maß*' is complicated. The relevant meaning *here* seems near to 'gradation' or 'degree' – or 'measure' as in the phrase 'to considerable measure' (for at least some explication of the term, see Inwood 1992, p. 240.)

[38] Next to the normal sales of commodities at their value, Marx assumes that the price of labour-power may at times be above its value, but not below it.

that the determinants have been generalised across the economy, whereas the previous chapters that I discussed (§3.2 and §3.3) also treated (the initiation of) changes.[39]

§3.5. A digression on 'potentiated labour' in Chapter 1

By itself, the notion of different value-generating potencies of labour (§3.2) is not a novel issue within Marx's systematic of *Capital I*. In its Chapter 1 he uses a similar (though not the same) notion:

> "*Simple average labour* … varies … at different cultural epochs … but in a particular society it is given. … [C]omplex labour counts only as **potentiated** or rather *multiplied* simple labour, so that a smaller quantity of complex labour *is equal* to a larger quantity of simple labour. (…) In the interests of simplification, we shall henceforth view every *kind* of labour-power directly as simple labour-power; by this we shall simply be saving ourselves the trouble of making the reduction." (MF:135 amended;[40] M^4:59; cf. M^1:20[41])

We see that, already at this point, Marx starts his *Capital I* 'averages account'. The similarity of the Chapter 1 and the Chapter 12[Ger.10] notions is that the *same* clock-time of different kinds of labour creates *different* quantities of value (due to different labour potencies). We now assume transposition between reduction and non-reduction, which is, depending on the type of value theory one holds, at least theoretically not a simple matter.[42] Then, starting from a given heterogeneous amount of labour, the difference between the two potency notions is that the labour within one sector may acquire an extra value-potency due to an increase in productive powers (*at least* before "this extra surplus-value vanishes" i.e. before "the new method of production is generalized" – the third quote in §3.2). Because there is no mechanism that should depreciate the value created in other sectors, we have an *at least* temporary increase in the economy-wide average value and surplus-value (which might be akin to such change from the one to the other "cultural epoch").

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[39] Marx opens the first section by stating: 'A working day of given length always creates the same amount of value, no matter how the productivity of labour, and, with it, the mass of the product and the price of each single commodity produced may vary.' (MF:656; M^4:543.) Given Marx's earlier exposition (§3.2 above) I take it that he refers to the social averages of labour-time and value. The first section ends with a preview in which Marx moves beyond averages: 'I shall show in *Book III* that the same rate of surplus-value may be expressed in the most diverse rates of profit, and that <u>different rates of surplus-value</u> may, under certain conditions, be expressed in the same rate of profit.' (MF:660; M^4:546-47; M^1:423.) Concerning the last phrase of this sentence: at this point Marx does not seem worried about differing rates of surplus-value. In the second section, he writes: 'Increased intensity of labour means increased expenditure of labour in a given time. (…) Whether the magnitude of the labour changes in extent or in intensity, there is always a corresponding change in the magnitude of the value created, independently of the nature of the article in which that value is *actualised* {*sich darstelt*}.' (MF:660-61, amended; M^4:547-48.) Marx does not posit (here) a tendency toward equalisation of the intensities, but in the following he is perhaps near to suggesting it: 'If the intensity of labour were to increase simultaneously and equally in every branch of industry, then the new and higher degree of intensity would become the normal social degree of intensity, and would therefore cease to count as an extensive magnitude.' (MF:661-2; M^4:548.) I suppose that the last 'extensive' is a mistake and that it should read 'intensive'.

[40] Fowkes has 'intensified' for the German 'potenzierte'. In a similar passage in Marx's 1859 *Critique*, were the German texts has 'einfache Arbeit auf höherer Potenz' (p.19) Ryazanskaya translates this more appropriately by 'simple labour raised to a higher power' (p. 31).

[41] There are some deviations between the German editions.

[42] I have shown in my 1993 article that this reduction precludes the interpretation that Marx would hold any simple pre-market labour-embodied theory of value, because there is no other way to make the reduction than via the labour market.

§3.6. Conclusions

With the composition of capital still being implicit, Parts Three to Five of *Capital I* are mainly an exposition of *the determinants of* the average rate of surplus-value, and changes in that rate. The first determinant is the average real wage rate per working day of labour of average quality. The further determinants are: (1) the length of the working day; (2) the intensity of labour; and (3) the productive power of labour. These further determinants can arise either separately or in several combinations.

The intensity affects the 'density' of labour, while in contrast the productive powers affects its 'potency'. Each of the *non-generalised changes* in the intensity or the productive power of labour mean that the *value* produced in one hour of labour diverges between capitals (whether intra-sectoral or inter-sectoral).

Differing intensities of labour can presumed to be equalised due to competition between workers. However, there is apparently no mechanism for the equalisation of productive powers (or techniques) between sectors. Hence Marx does not posit it: he can only exhibit the matter for single sectors. Given the extra value-generating potencies of labour as associated with above-average productive powers (§3.2), this is a key point, because in this way we obtain diverging rates of surplus-value between sectors, that is, when the development of the productive powers is unequally diffused across the economy.

Addendum. Given Marx exposition of the productive powers recapitulated above, it is relevant to now briefly refer back to the 1864/65 GRP manuscript. Because, as indicated in §2, the 1863/64 draft for *Capital I* is missing, we do not know if the conceptualisation from 1867 presented in §3, is richer than that in the missing manuscript, which is the one that Marx presumably had in mind when he wrote the GRP manuscript.

The term 'productive powers' (or also 'technology') is mentioned several times in Chapters 1-2 of the1864/65 manuscript (i.e. Parts One-Two of the current *Capital III*).[43] However, in those passages Marx keeps the rate of surplus-value constant.[44] The notion of (extra) value-generating potencies of labour or a variant thereof is not mentioned.

It is appropriate to indicate though that Marx in this 1864/65 manuscript considers specific sectors of production to have developed some specific 'gradation' in the development of the productive powers of labour. Next he associates this gradation with the proportions of the composition of capital:

> "[T]he specific development of the social productive power of labour in each particular sphere of production varies in degree relative to how large a *quantity of means of production is set in motion* by *a certain quantity of labour* …; such capitals as contain a larger quantity of constant capital … than the social average capital are called capitals of *higher* composition …"[45]

[43] Chapter 1 (Part One): MEGA II.4.2 pp. 78-79, 81-82, 103, 108-109, 112, 114-123; Chapter 2 (Part Two): MEGA II.4.2 pp. 241-243, 247.

[44] See especially his statement on pages 110 and 118 and 164 (Chapter 1/Part One) and 212 (Chapter 2/Part Two).

[45] He writes this in the text that became Chapter 10 of *Capital III* (MEGA II/4.2, p. 241; Fowkes' translation (Marx 2015) p. 276; cf. *Das Kapital III,* MEW 25 p. 173; *Capital III,* Fernbach translation, pp 263-4). I have amended Fowkes' translation (admittedly from one sentence of about 125 words), the most important point being that he once again has 'productivity' instead of 'productive power'; next he also misplaces the term degree.

Finally – keeping the rate of surplus-value uniform – he associates these grades and proportions with the deviations of production prices from values.[46]

4. An immanent reconstruction: the 1864/65 GRP transformation in face of *Capital I*

§4.1. Introduction

Although value is produced by labour and labour only, diverging productive powers of labour (and perhaps concomitantly diverging compositions of capital) make that value and surplus-value cannot be simply explained in terms of labour clock-time.

When we leave the social averages account, and move to the presentation of sectors of production with their distinct 'gradation' in the development of the productive powers of labour (i.e. the level of abstraction of 'Capital III, Part Two'), it is far from obvious to posit equalised rates of surplus-value between sectors. Nevertheless, as we have seen (§2) this is what Marx does in the GRP manuscript. In that manuscript, he decisively posits the uniformity of rates of surplus-value for all sectors as predicated on the *competition between workers*. Hence it would seem that (in 1864/65, though not so in 1867) rates of surplus-value *uniquely* reflect the physical *intensity* aspect of the exploitation of labour, leaving no room for its productive powers aspect.

Workers, from their own perspective, have an interest in: the real wage (the value of labour-power), the length of working day and the intensity of labour. These determine the degree of physical exploitation, and these can be supposed to be levelled out by competition among workers. The final determinant of the rate of surplus-value, i.e. the productive powers, is apparently of no importance for their competition (it is the capitalists' thing, so to speak). This is the key point neglected by Marx in his 1864/65 GRP transformation, whence he posits equalised rates of surplus-value.

As far as I am aware, this position of Marx has never been questioned in the main debates on "the" transformation problem.[47]

§4.2. Main elements for a reconstructive account of the GRP as a stage of concretisation

The core of a Marx-immanent reconstruction of the GRP problematic is simple.

- First, we posit a tendency to between sector equalisation of profit rates.
- Second, we posit compositions of capital diverging between secors.
- Third, we posit diverging rates of surplus-value between sectors, predicated on diverging value potencies of labour. (Generally an increase in the rate of surplus-value in a sector concomitant on an increase in the composition of capital, is a condition for such a technical change.)
- Fourth, we maintain the *Capital I* concept of value.

I claim that there is no friction between these four theses. We thus have no GRP transformation problematic, and much of what is written in Part Two of *Capital III* is redundant, including the concept of prices of production. Because of the maintenance of the *Capital I* concept of value,

[46] Idem.

[47] However, prior to those main debates (prior to the publication of *Capital III*) two authors, Stiebeling (1890) and Wolf (1891), anticipated in fairly general terms the relevance of the productive powers for divergent sectoral rates of surplus-value. They expressed their views in connection with Engels's (1885) 'prize essay contest' about the consistency of 'the law of value' in face of divergent sectoral compositions of capital. (These texts are discussed in Reuten, 2016, section 2 – included at the end of the current text.) Their contributions were inaptly ridiculed by Engels in his Preface to *Capital III*.

any value-theoretical duality between *Capital I* and *Capital III* is eliminated. Therefore, output transformation or input transformation is also redundant. In brief, we have continuity of the concept of value for each of *Capital*'s levels of abstraction.

Generally speaking, the systematic insufficiency, or incompleteness, of Marx's 1864/65 draft for *Capital III* is that he moves to a consideration of sectoral differences, without having concretised his 'Capital I' account of *social average* production into sectors of production. Thus he skips a step, and is so bound to phrase the matter immediately (i.e. non-mediated) in terms of market supply phenomena (which, I add, for a major conceptual transformation, seems not quite fitting the marxian paradigm).

Hence the reconstructed conceptual progress, or concretisation, of *Capital III*, Part Two that I propose, concerns, first, the explicit introduction of a general (i.e. average) rate of profit, and second, abandoning the *Capital I* production averages, so that we have differentiated sectors of production. That is also Marx's aim.

In particular, this reconstructed concretisation moves from the explanation of the social average surplus-value produced (*Capital I*) to the explanation of the sectors' *production* of surplus-value. In a way, this is formally in line with Marx, be it that in the 1864/65 manuscript he *implicitly* posits that this matter requires no concretisation: rates of surplus-value tend to equalise between sectors.

The concretisation also includes the explicit introduction of the composition of capital (c/v) – which was mostly only implicit in Part Four of *Capital I* (see §3.1 point 4).

The Appendix below sets out this reconstruction in more detail, making use of some simple formalisations. It treats especially increasing productive powers in one sector in comparison with the economy as a whole, along with the three cases of constant, increasing and decreasing compositions of capital.

To understand the context of this reconstruction correctly, I should make the following explicit. More so than Marx in the current context, I put emphasis on the point that the social development of the productive powers of labour – that is technology, as well as its potential application in techniques – is the product of labour and labour only.[48] However, capital appropriates these and the management of capital decides which particular techniques are actually applied and specifically developed (by labour) for specific production processes. Thus in as much as labour produces capital – via the production of surplus-value and capital's appropriation of it – it produces the potential technical forms of the production processes and hence labour's productive power. In brief, in capitalism the development of the productive powers of labour takes the value-form.

§4.3. Implications of the reconstruction

The reconstruction strengthens Marx's explanation of surplus-value. The central idea is the diverging value-generating potencies of labour between sectors, associated with diverging states of the productive powers between sectors. There are five implications:

1. Contrary to the 1864/65 GRP manuscript for *Capital III*, we have no transformation of value concepts, no dual account systems, and no artificial value and surplus-value adjusting transfers that would question the status of the *Capital I* determinations.

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[48] I make a distinction between 'technology' (knowledge about and search for potential techniques) and 'technique' (the particular application of technology in production). It is akin to Schumpeter's (1934) and Freeman's (1974) distinction between 'invention' and 'innovation' (see Reuten and Williams 1989: 80 and 119-21).

2. The reconstruction maintains the monetary value account – established in *Capital I* – throughout the terrains of each of the levels of abstraction of the three volumes of *Capital*, as including the exposition of all specific and concrete market phenomena in terms of balanced or imbalanced market prices. Again, it merely excludes prices of production and hence the implied account duality.

3. The reconstruction does not affect the determination of average surplus-value by the average exploitation of labour as set out in *Capital I*.

4. Given the real wage, the length of the working day (or year) and the intensity of labour, the production of surplus-value in each one sector is determined by the value-generating potencies of labour. Sectoral divergences of the latter are predicated on the degree of diffusion of the productive powers of labour. In other words, these are predicated on the degree of diffusion of technology into techniques applied in each sector – technology and techniques themselves being the product of social labour.

5. The 'productive powers' component of surplus-value and the rate of surplus-value has explanatory power. However (and as far as I can see now) it can be measured only indirectly (this is a defect, even if it also applies to many accepted theories in the social and natural sciences).[49]

Summary and conclusions

I revisited what probably is the main problem with Marx's *Capital*, namely the concretising transformation of the *Capital I* value concepts into the prices of production of *Capital III*, Part Two – dubbed the 'transformation problem'. As a quantitative transformation, it posits dual account systems.

In what became Part Two of *Capital III*, and in the 1864/65 research manuscript for it, Marx set out a number of constraining incompatible presuppositions for that transformation. Key presuppositions are the sale of commodities 'at their values' and equalised rates of surplus-value. To get rid of the incompatibility of presuppositions, Marx then abandons the first one, although he is hesitant to do so, because of its severe implications for his (draft stage) *Capital I* exposition (§2).

In the 120-year history of the appraisal of that transformation, the main focus has been on the analytical shortcomings of *that* transformation (shortcomings which I do not question, given the way it was posited). That appraisal leaves the constraints as finally posited by Marx untouched. In this article, I have set out a Marx-immanent critique of his positing of these constraints, and especially the presupposition of equalised rates of surplus-value.

To achieve this, I scrutinised Marx's exposition of surplus-value and the rate of surplus-value in *Capital I* – especially Parts Four and Five – an exposition which I accept. In brief, given a real wage, the rate of surplus-value is determined by (1) the length of the working day; (2) the intensity of labour; and (3) the productive power of labour. Changes in each of these

[49] Finally, I mention that the reconstruction might have repercussions for *the presentation* of the 'tendency of the rate of profit to fall' of *Capital III*, Part Three (I prefer to call it the 'rate of profit cycle' – see the discussion of the manuscript in Reuten 2004a). Note that it is formulated at the aggregate (or average) level, as a result of which diverging rates of surplus-value in different sectors play no role. The formulation of the theory in terms of a rising composition of capital in the upturn (instead of a more general over-accumulation of capital), would require a more complicated argument than the one we find in the current text of that Part Three (however, that theory requires to be concretised anyway).

three can arise either separately or in various combinations. In these Parts, Marx presents these in terms of social averages and their changes (§3).

Key to the defect of Marx's 1864/65 transformation is its disregard of the development of the productive powers of labour that is presented in the in 1866/67 thoroughly reworked version of *Capital I*. In the latter we find that while there are mechanisms for the equalisation of wages between sectors, the working day, and the intensity of labour, there is no mechanism for the equalisation of the productive powers between sectors. Marx justifiably does not posit the latter (§3.2). In particular, he does not posit an equalisation of the composition of capitals. Confronted by the transformation problem, the heart of the matter turns out to be that Marx's *Capital I* associates diverging productive powers of labour with diverging *value-generating potencies* of labour (§3.2).

In the reconstruction which I set out in §4 (more detailed in the Appendix), I carry over these *Capital I* notions to the level of concretisation in "Capital III". Marx's transformation (and its problem) is then transcended into a concretisation of the averages account of *Capital I*, especially with regard to divergences between sectors in their productive powers, and the concomitant value-generating potencies of labour. Because of these divergences, we have divergent rates of surplus-value. This concretisation is consistent with diverging composition of capitals and equalising or equalised rates of profit. Thus, the transformation of the *Capital I* concept of value into 'prices of production' becomes redundant. The result is a continuity of the concept of value for each of *Capital*'s levels of abstraction.

With *Capital I* in retrospect, and equipped with the reconstruction, we can see that Marx's 1864/65 GRP constraints posit the matter in a static way: we have divergent sectoral compositions of capital. However, dynamically considered, we have diverging compositions of capital *because* diverging
rates of surplus-value are their condition.

Appendix (to §4). Core Analytics of an immanent reconstruction of the GRP transformation in face of *Capital I*

A§1. Preliminary remarks

In §4 I proposed a reconstruction of Part Two of *Capital III* in face of Part Four of *Capital I.* In this appendix I set out a simple formalisation of the analysis that underlies this reconstruction. It builds on the between sectors diverging rates of surplus-value that Marx introduced in *Capital I* at a point when he digressed from his averages account of that book (cf.§3). It is appropriate to build on that because the GRP transformation is pre-eminently about between sector differences.

Recall the four main elements of the reconstruction summed up at the beginning of §4.2. Given a tendency to equalisation of rates of profit, I focus on two variables in terms of *Capital I*'s monetary value dimension. First, the rate of surplus-value and its divergence between sectors as determined by the productive powers. Given Marx's mature exposition of these (1867) it is far from obvious to posit equalised rates of surplus-value between sectors as he did in an earlier research manuscript (1864/65). Second the organic composition of capital (c/v) which was mostly only implicit in Part Four of *Capital I* (see §3.1 point 5).

With regard to details of the reconstruction I add a terminological point. Just as Marx did *at the start* of his GRP manuscript, I treat surplus-value as being identical to profit. My reason is that the distribution of surplus-value to financiers has not yet been introduced. However, because the reconstruction makes ‘prices of production’ redundant, surplus-value keeps on being identical to profit prior to the explicit introduction of finance.

A§2. Analytics of technical change along with increasing productive powers, and associated with varying organic compositions of capital

I set out a brief point-wise presentation of the main elements of the reconstruction. Generally, there are three possibilities regarding the combination of increasing productive powers of labour (PPL) and of the organic composition of capital (CC): first, a constant CC; second, an increasing CC; third, a decreasing CC. I consider each of these in turn.

1. The productive powers in a sector increase along with a constant CC

If the PPL rise while the CC is constant, the change is without costs. I suppose that this is what Marx generally had in mind in *Capital I*, Parts Four and Five. In this case, we have – after competitive adaptation – *a pure decrease in the value of commodities and so an increase in relative surplus-value* (that is, to the extent that the commodity at hand makes part of the wage bundle).

- Upon introduction of the new technique, the initiator makes an extra surplus-value due the increased value-generating potencies of labour, that is, at a constant market price. Along with it, the initiator’s rate of profit rises above the average.

PPL↑, CC constant → $\mathbf{s'_I}$↑ and $\mathbf{r'_I} > \mathbf{r'_S} = \mathbf{r'_E}$	(1)

(From here on I use the following notation: s = surplus-value; s′ = rate of surplus-value; r′ = rate of profit; subscripts: I = initiator; S = sector; E = economy.)

- Competitors follow suit, and because of the above-average rate of profit there will also be an extra investment (by the initiator, competitors or entrants) which forces the market price downward.[50] This price decrease devalues the initial extra value-generating potency of labour. I call this a ‘devaluation’, because an increased value-generating potency results in fact in a revaluation.

competition → **p**↓→ $\mathbf{s'_I} = \mathbf{s'_S} = \mathbf{s'_E}$ (result of devaluation) and $\mathbf{r'_I} = \mathbf{r'_S} = \mathbf{r'_E}$	(2)

- The result is a normal, and ultimately generalised, increase in relative surplus-value; that is, to the extent that the commodity at hand makes, directly or indirectly, part of the wage bundle.

p↓ (relative surplus-value↑) → **generalised s′↑ and r′↑**	(3)

This part of the concretisation is directly in line with Marx’s *Capital I* Part Five (moreover, there is no problem of different CC’s.)

[50] I draw a distinction between *production process competition* and *market competition*. Only additional supply of the commodity at hand (predicated on extra investment) will ceteris paribus lower the market price. The above-average rate of profit (predicated on the production process competition) induces this extra investment, and hence this market competition. In case the new technique requires an increase in scale, we would have already upon its initiation an extra investment and an additional supply, and some downward pressure on the market price. This qualification also applies for the next two cases. (I disregard any market strategic pricing considerations, which would belong at a more concrete level of the exposition.)

2. The productive powers in a sector increase along with the CC increasing

In the second case the PPL increase in a sector along with a rise in CC. *A capitalist introduces a CC-raising technique only if this raises the* ***rate of surplus-value*** *such that the rate of profit rises as a result* (or remains at least constant). Thus the expectation of a rise in the rate of surplus-value is a condition for a rising CC. This is a very simple point, but a key one for the whole discussion.[51]

2-a. For analytical reasons, I start by considering the period before any competitor has adopted the new technique; along with it I assume *constant* market prices.[52]

- Upon the introduction of the CC-raising technique (as predicated on increasing PPL), the initiator obtains an extra surplus-value due to the increased potencies of labour (this is in line with Marx 1867).[53] Along with it, the initiator's rate of profit moves above the average.

PPL↑, CC↑ → $\mathbf{s'_I}$↑ and $\mathbf{r'_I > r'_S = r'_E}$	(4)

- Because of constant market prices the increase in PPL has no effect on the relative surplus-value. In fact, the absolute surplus-value increases without an increase in the length of the working day.[54] I call this *'compressed absolute surplus-value'*.

2-b. We now drop the assumption of a constant market price, and consider effective production process competition. Again, for the initiator we have:

PPL↑, CC↑ → $\mathbf{s'_I}$↑ and $\mathbf{r'_I > r'_S = r'_E}$	(5)=(4)

- Now competitors follow suit, and extra investment (by the initiator, competitors or entrants) forces the market price down, thereby devaluing *some* of the initial extra value-generating potency of labour.
- Extra investment (and price decrease) continues up to the point where the sector rate of profit (r_S) is averaged out.[55] Given the increase in CC, this averaging-out of the sector's rate of profit will be reached at a point where the sector *rate of surplus-value* is higher than the economy average rate ($s'_S > s'_E$); hence, the value-potency of labour is devalued up to that point. Thus the extra value-potency of labour (and hence the increased sector rate of surplus-value) will not completely vanish, since there is no capitalist motive or force or mechanism for any further price decrease that would push the rate of profit below the average.

competition → p↓→ $\mathbf{s'_I = s'_S > s'_E}$ (result of partial devaluation) and $\mathbf{r'_I = r'_S = r'_E}$	(6)

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[51] Within any other theoretical constellation – (including the ones that I contest) and in whatever way profits are explained – an expected rise in profits such that the rate of profit remains at least constant is also a condition.

[52] In order to keep the presentation concise, I will disregard for this and the next point, any market-strategic considerations to gain an increased market share. These are relevant for a further concretisation, although they do not inherently pertain to changes in productive powers, because 'market share competition' – e.g. a (temporary) price decreasing one – might occur independently of it.

[53] Thus the aggregate surplus-value increases. This is not different for Marx's presentation in *Capital I*, Chapter 12[Ger.10] (§3.2 above).

[54] The qualification about this type of absolute surplus-value was pointed out by Chris Arthur in the conference discussion, based on an earlier version of this paper.

[55] All these are notions of pure theory (in an equilibrium framework the final match will be exact). In practice all such investments are more or less rough guesses or expectations.

- The result is a *combination* of, first, an *increase in the 'compressed absolute surplus-value'* for this sector (due to the lasting increase in labour potency for this sector) and, second, an economy-wide *increase in relative surplus-value* (to the extent that the price decrease affects the wage bundle).

> - *sector effect:*
> $\mathbf{p}\downarrow \rightarrow \mathbf{s'_I = s'_S > s'_E}$ (partial devaluation) and $\mathbf{r'_I = r'_S = r'_E}$ (7a)
> - *economy-wide effect (as including on the sector at hand):*
>   **p↓ (restricted relative s↑) → generalised s′↑** and **r′↑** (at $r'_I = r'_S = r'_E$) (7b)

Recall from §3.2, that such changes and divergences in the rate of surplus-value between sectors are in line with Marx's 1867 Part Four exposition. However, at that point of the 1867 exposition, he has the CC and the rate of profit implicit; we now have made these explicit, so concretising the exposition at a "Capital III" level. Marx probably assumed that the "compressed absolute surplus-value", i.e. the increased potency of labour, would vanish (see the third citation in §3.2), because he implicitly held the CC unchanged. In that case, we have the constellation set out under point 1 above.

3. *<u>The productive powers in a sector increase along with the CC decreasing</u>*
The case of an increase in PPL along with a decrease in the CC has effects similar to case 1 (although now CC's diverge across the economy).

- The initiator's introduction of a new technique:

> **PPL↑, CC↓ →** $\mathbf{s'_I}\uparrow$ and $\mathbf{r'_I > r'_S = r'_E}$ (8)

- Competition and extra investment:

> **competition → p↓→** $\mathbf{s'_I = s'_S < s'_E}$ (result of devaluation) and $\mathbf{r'_I = r'_S = r'_E}$ (9)

  Now the equalisation of the rate of profit is reached at a sector rate of surplus-value below the average one ($s'_S < s'_E$).

- To the extent that the lower sector price affects the wage bundle, we have a generalised increase in relative surplus-value, and hence a generalised increase in the rate of profit.

> **p↓ (relative surplus-value↑) → generalised s′↑ and r′↑** (10)

See §4.3 of the main text for the conclusions.

Addendum on the status of a transformation. In line with what Marx wrote about this, Part One of 'Capital III' can be characterised as a conceptual transformation.[56] Concomitant on making the driving force of 'the rate of profit' explicit, this transformation concerns mainly the transformation of the concept of surplus-value into profit – each one value concepts.

Part Two in fact makes explicit that the driving force of the rate of profit entails that capitals move from low to high rate of profit sectors, so establishing a tendency to equalisation of rates of profit (the 'general rate of profit'). It is somewhat arbitrary whether in the reconstruction

[56] Chapter 1: 'Materially {*Stoff; stofflich*} considered ... the *profit* ... is not different from the *surplus-value* itself. Hence its absolute magnitude is not different from the magnitude of the surplus-value (...) it is however a *transformation* {*verwandelte Form*} of the latter ...' (M:8-9-mt; cf. MF:50)↔(Marx 1993 and Marx 2015). Engels omits this text in *Capital III.*

presented above, this should still be called a transformation. We have no new transformation of an earlier *value* concept (as in Part One). If at all, we have transformations of the *physical* guise of capital (producing e.g. soap instead of sweets).[57]

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[57] I have no principal objection calling this a (particular) transformation. In reference to a comment by one of the reviewers for *HM* I add that I would even have no objection to calling the resulting constellation one of 'prices of production', would it not be that the history of marxian political economy has been such that this name now stands for quite some more: value adjustments and dual systems.

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Annexes to 'The productive powers of labour and the redundant transformation to prices of production' (these annexes contain additional information; they are not part of the article)
(A) Marx's 1864/65 unresolved self-critique on his general rate of profit transformation;
(B) George Stiebeling (1890) and Julius Wolf (1891) on differences in rates of surplus-value

Geert Reuten (2016)

Section references without letter A or B prefix (§2 etc.) are to the sections of the article above (*Historical Materialism*).

Annex A (to §2). Marx's 1864/65 unresolved self-critique on his general rate of profit transformation

A§1. Introduction and preliminary remarks

In this Annex I discuss how Marx – in his 1864/65 research manuscript for Part Two of *Capital III* – sets out his transformation from value to price of production.[60] It is obvious from the text of this manuscript, as also its MEGA editors emphasise, that this is indeed a 'research manuscript'. Thus it is an investigation for self-understanding (Forschung) and not an exposition (Darstellung). As indicated in the main text (§2) Marx was presumably not aware of the 'transformation problem' which was detected after Engels's publication of *Capital III* in 1894. In this Annex I approach the matter rather from the perspective of the problems that Marx was aware of in this manuscript. In my view these problems are far more severe than the post-Marx transformation problem. The main thesis of this Annex is, that Marx himself was sceptical about his own GRP transformation, because it would undermine his text for 'Capital I' – i.e. its draft at the time of writing the GRP manuscript.

We will see that in the text discussed in section A§4, Marx compares exchanges in terms of values and in terms of prices of production. It is not altogether clear whether Marx refers here to a specific Part or to specific Parts of 'Capital I'. Anyway, as Vollgraf (2012, p. 462) sets out, Marx decided only in 1866 to include its current Part One into 'Capital I'. It is, in fact, a rewritten version of his 1859 *Critique*.[61] I therefore assume that in comparisons such as mentioned above he also had the 1859 *Critique* in mind. This point is relevant, because the 1859 work takes less distance from labour-embodied notions of value than the 1867 text does. By implication, the general frame of the1864/65 text, as discussed below, may lean more to the 1859 than to the 1867 one.

For his edition of *Capital III* (1894), Engels based himself on this 1864/65 manuscript. We find the GRP transformation in its Part Two (originally "chapter"). In editing it, Engels left unchanged the main chapter *structure* of the text (chapters 8-12); however, there are changes of order within the chapters, amendments, and texts that disappear altogether.[62] When discussing this manuscript, I will – for the convenience of the reader – refer to the analogous *Capital III* chapters (indicated as sections in the manuscript). I shall discuss its three main chapters 8-10, and ignore the two smaller chapters 11-12 that can be regarded as 'addenda'. In brief, Chapter 8 sets

[60] The research manuscript is published in *MEGA II/4.2* (1993). Engels's editorial work is published in *MEGA II/14* (2003). *MEGA II/15* (2004) contains the critical edition of *Das Kapital III* of 1894.
[61] MEGA II/2.
[62] See also the extensive comments by the MEGA editors Vollgraf and Jungnickel (1994) about Engels's own mark on the text ("Engels left only few of Marx's sentences untouched – p. 47-mt). See likewise Heinrich 1996, pp. 456-64.

out the general problematic for this transformation as Marx perceives it; Chapter 9 provides a solution; and Chapter 10 reflects on the consequence of this solution.

In references for this Annex, I use the following abbreviations: M = Marx 1993 (Marx's 1864/65 research manuscript for *Das Kapital III*, MEGA II/4.2; MF = Marx 2015 (Fowkes's translation of the former); E = Marx 1964 (Engels's 1894 edition of *Das Kapital III*, MEW 25); EF = Marx 1981 (Fernbach's translation of the former: *Capital III*).[63] Within cited passages, the italics are always an emphasis in the original. Underlining indicates my own emphasis. The abbreviation 'mt' after a page number (e.g. 370-mt) denotes my own translation

A§2. "Chapter 8": the problematic

At the very beginning of Part Two (originally chapter), Marx immediately delimits the scope of his theorizing about the rate of surplus-value. He writes: 'In this chapter [i.e. Part] the rate of surplus-value is *presupposed* {*vorausgesetzt*} to be constant' and particularly it is 'presupposed' to be 'equal' for all sectors of production (*Produktionssphären*).[64] It is repeated regularly throughout the part.

This chapter sets out the following (further) presuppositions:[65]

[A]	Commodities are sold 'at their values'.	
[B]	Rates of surplus-value are equalised.	$s'_i = s'_j$
[C]	Compositions of capital diverge.[66]	$(c/v)_i \neq (c/v)_j$
[D^a]	Hence [A-C] equal capitals produce unequal surplus-value or profit.	$(s/k)_i \neq (s/k)_j$
[D^b]	Therefore we obtain diverging rates of profit.	$r'_i \neq r'_j$
[E]	Yet, in fact, we have (tendentially) equalised profit rates.	$r'_i \neq r'_j$

Hence this set of presuppositions is incompatible.[67] At least one of these must be wrong, it remains to find out which one(s).

A§3. "Chapter 9": the transformation as a formal result

Because the constellation [A]-[C] is inadequate, Marx's next chapter widens the theoretical terrain. He introduces the new concept of 'production price', which is predicated on the existence of a general rate of profit.[68] The production price is 'a transformation of value' ('*eine verwandelte Form des Werths*').[69]

The status of this transformation is very different from the *purely conceptual* one that Marx had set out in Part One of the manuscript for *Capital III*, where he introduces the rate of profit. In

[63] Many of the citations in this section have been taken over from Reuten (2009). Whereas that article discussed the transformation issue mainly in methodological terms, its general defect was nevertheless that I did not connect the matter to Marx's exposition of relative surplus-value and the rate of surplus-value in *Capital I*, as I did in §3 of the main text.

[64] M:212; MF:250; E:151; EF:241. The manuscript has 'chapter'; Engels apparently forgot to change this into 'part'. As indicate before the term 'presupposition' (*Voraussetzung*) is not quite the same as an 'assumption' (which would rather cover the German *Annahme*). See also Inwood 1992 p. 224.

[65] M:223-4; 229-30; MF:258-9; 265 – cf. their version of E:162 and EF:252. The formulas in square brackets have been added. The subscripts i and j refer to any sector. The other symbols are defined as follows: s = surplus-value; v = the wages sum; s′ = the rate of surplus-value (s′=s/v); c = constant capital; c/v = the 'composition' of capital; r′ = the rate of profit (r′=s(c+v)).

[66] Marx explicitly indicates that diverging turnover times offer the same problematic (e.g. M:229; MF:265).

[67] M:229-30.

[68] M:233-4; MF:269.

[69] M:239; MF:275; E:173.

that part, as Marx notes, there is no quantitative difference between profit and surplus-value.[70] There 'profit' is merely another name for 'surplus-value'. However, for his Part Two transformation, Marx does posit a quantitative difference between surplus-value and profit, at least for the micro level.

The chapter starts out by repeating the presupposition about the rate of surplus-value [B]. Marx also introduces a number of simplifying presuppositions, such as the full and linear depreciation of fixed capital within a year, and equal turnover times.[71]

Next, he sets out the famous three schemes.[72] The first and the second scheme apply presuppositions/theses [A]-[D]. The third scheme applies [B]-[C] and [E] and introduces prices of production. Regarding 'values' versus 'prices of production' and 'surplus-value' versus 'profit' Marx characterises the third scheme variously in terms of 'deviation' (*Abweichung*), 'even distribution' (*gleichmässige Verteilung*), 'surcharge' (*Zuschlag*), 'adjustment' (*Ausgleichung*) and 'addition' (*Zusetzung*).[73] In what follows, I will use the single term 'adjustment' and sometimes 'deviating adjustment'. For the sake of brevity, Table 2 compresses these three schemes to one single and reduced one.

Table 1. Reduced transformation scheme

	Capital I in apparent hindsight					*Capital III* after transformation				
	c	v	s	c+v+s	r′ = s/(c+v)	c	v	adjustment ρ	c+v+ρ	$\pi = \rho/(c+v)$
low CC	70	30	30	130	30%	70	30	30 **– 10**	130 **– 10**	20%
average CC	80	20	20	120	20%	80	20	20	120	20%
high CC	90	10	10	110	10%	90	10	10 **+ 10**	110 **+ 10**	20%
total			*60*	*360 †*	*20%*			*60*	*360 ‡*	*20%*

† "values" ‡ prices of production

Thus Marx drops sales at value (presupposition [A]), introduces production prices instead, and thereby gets rid of diverging profit rates (presupposition [D]). He does this without hardly any argument:

> "Their presupposition [i.e. of production prices] is the existence of a *general rate of profit* ... In actuality however the very different profit rates (...) are balanced out by *competition* to give a *general rate of profit* ..." [74]

Note that he maintains the disproportional *production* of surplus-value [Da].[75]

However, presupposition [A] is not abandoned altogether. At this point in the text, Marx posits one of the famous two aggregate equalities, i.e. that of 'values' and production prices.[76] The aggregate equality of profits and surplus-value is posited throughout.

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[70] Chapter 1: 'Materially {*Stoff; stofflich*} considered ... the *profit* ... is not different from the *surplus-value* itself. Hence its absolute magnitude is not different from the magnitude of the surplus-value (...) it is how-ever a *transformation* {*verwandelte Form*} of the latter ...' (M:8-9-mt).
[71] M:230-31; MF:266.
[72] M:231-33; MF: 266-68; E:165-66; EF:255-56.
[73] M:233; cf. MF:269, E:166-67 and EF:256. Engels omits the 'ausgleichen', hence its translation is absent in Fernbach. However, Fowkes misses it too. Like Fernbach he has for *Abweichung* 'divergence' instead of 'deviation'.
[74] MF:269-amended; M:234; cf. E:167; EF:257. Instead of 'presupposition', Fowkes has 'prerequisite' for *Voraussetzung*.
[75] M:234-5; MF:269-70.
[76] When he posits this equality, he seems to feel that there is a difficulty (M:236-7; MF:271; E:169-70; EF:259-60; cf. M:241-43 on the same theme).

Finally, with regard to Chapter 9, I draw attention to the passage were Marx seems quite happy about what he has achieved so far, declaring that 'the inner connection' between value and production price and between surplus-value and profit is 'revealed here for the first time'.[77]

A§4. "Chapter 10": The transformation process – Marx's unresolved self-critique

In Chapter 10 Marx reflects on, and questions, what he has accomplished in the previous chapters, including the consequences for his self-interpretation of the concept of value set out in his manuscripts. Here the scene seems much more gloomy and dismal. After two pages connecting the two chapters, Marx posits two research questions – one immediately after the other (I call these Question 1 and Question 2):

> {Question 1} "The really difficult question here is this: <u>how does this equalisation of profits</u> or this establishment of a general rate of profit <u>take place</u>, since it is evidently a result and cannot be a point of departure."
>
> {Question 2} "It is clear first of all that an <u>assessment of commodity values</u>, e.g., in money, can only be the result of exchanging them, and that, if we presuppose such an assessment, we have to view it as a result of <u>*actual exchanges of commodity value*</u> *against commodity value*. But how could this exchange of commodities against their actual values have come about?"[78]

Marx devotes some twenty pages to Question 2, before he gets to the first. He repeats (M:250) that such exchange (given the equalised rate of surplus-value presupposition, as he once again stresses) would result in unequal profit rates.[79] Obviously the production prices of the research manuscript for Chapter 9 put into question the (current) *Capital I*, Part One, exposition of "actual" commodity exchange according to value.[80] It is clear from the text, that Marx was greatly bothered by this. My reading is, that Marx sets out, in an unsystematic way, a number of analytical consequences of where he has got to with the argument, together with some possible ways out. We find, for example, a model-like case in which workers own the means of production and exchange products according to their value; then a move to a "historical transformation"; next a long *détour* on *market* value and supply and demand generally, without really coming to the point (in his work of 1896, all this was rightfully ridiculed by Böhm-Bawerk in this context – that is to say, Engels's rendering of it).[81] The 'try out' of the historical transformation especially is inconsistent with Marx's method of systematic exposition.[82]

On page M:267 (E:203; EF:294), Marx finally arrives at a systematically relevant statement. Note that he uses the kind of 1859 (or 1867) terminology of exchange (Engels puts the following in the past tense, suggesting an even more direct reference to *Capital I*, Chapter 1):[83]

> "In considering money, it is assumed that commodities are sold at their value, because there is no foundation {*Grund}* to consider prices deviating from value since the concern is just

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[77] M:245, MF:280; cf. E:178 and EF:268.
[78] MF:285 amended; M:250; cf. E:183-4, EF:274-5.
[79] Note that for the following 20 pages Engels maintains the structure of Marx's text.
[80] Instead of *Capital I*, Part One, we can take the 1859 *Critique* as a reference point. Marx refers to this work on page M:257 (E:191-2).
[81] Böhm-Bawerk of course read the text as a final document – that is, as polished by Engels.
[82] Engels, on the other hand, seems to have liked the idea. It has given rise to a historical, as against systematic, interpretation of *Capital I*, Chapter 1 – rightly criticised by Arthur 1997. Such an interpretation, however, cannot save the Chapter 9 procedure (even neglecting the latter's problems of the two aggregate conditions).
[83] I don't know why Fowkes, the 2015 translator of the MEGA manuscript, does the same.

the changes in form that commodities undergo when they are turned into money and then transformed back into commodities again. ... it is completely irrelevant for them *as such* [the commodities] whether the realised commodity price is *below* or *above* their value. The *value* of the commodity as groundwork {*Grundlage*} remains important, since money can only be developed conceptually from this foundation {*Fundament*}, and *price*, in its general concept {*seinem allgemeinen Begriff nach*}, is only valeur monetiste [monetised value; the two words appear in French]."[84]

Marx shows here himself (implicitly that is) that the two drafts that he has (the current and the one for 'Capital I', the latter perhaps also in reference to the 1859 *Critique*) cannot be simply combined.

Recall Marx's 'really difficult' Question 1 – how does the equalisation of profit rates actually come about? His answer to it[85] is rather limited. We learn mainly that capital moves from sectors of low profitability to sectors of high profitability, and that the so affected supply in relation to demand establishes prices of production, surplus-value 'adjustment' and the rate of profit equalisation.(Note that processes of capital movement affecting supply and demand and establishing equal rates of profit are *by itself* nothing new (in 1864/65) – these are part and parcel of classical political economy.) [86]

Annex B. George Stiebeling (1890) and Julius Wolf (1891) on differences in rates of surplus-value

Equalised rates of surplus-value between sectors are key to the way in which Marx posits the General rate of profit (GRP) transformation problematic in his 1864/65 research manuscript. Whereas one can suppose that the 'intensity of labour' aspect of the rate of surplus-value may be levelled out in competition among workers, no mechanism exists for the levelling out of its aspect of the 'productive powers'. Marx is aware of this in *Capital I* (1867), but (still) neglects it when he sets out the GRP transformation. I indicated in the main text (§4.1) that, as far as I am aware, this position of Marx has not been questioned in the main debates on the transformation problem. However, prior to the publication of *Capital III* (1894), two participants in Engels's (1885) 'prize essay contest' showed the right intuition about the connection between sectoral productive powers and rates of surplus-value, be it in rather general terms. The contributions of these two, Stiebeling (1890) and Wolf (1891) are briefly discussed below. I will not discuss Engels's (1894) inapt ridiculing criticism of these contributions in his Preface to *Capital III*. The sad story behind it is narrated by Vollgraf and Roth (2003b, pp. 482-486 and 489; see also their 2003a, p. 399-400).

George Stiebeling, 'Das Werthgesetz und die Profit-Rate' (1890)

Stiebeling's essay appeared as a booklet (vi + 35 + 3 pages) after he had tried to get it published in *Die Neue Zeit* (edited by Karl Kautsky).[87] Stiebeling, like Wolf, was of course ignorant about what all post-1894 commentators know about how Marx posited not only the GRP problematic, but also the movement from the rate of surplus-value to the rate of profit (*Capital III*, Part One). Stiebeling (therefore) starts his essay with the latter movement (pp. 1-

[84] M:267 my translation; cf. MF:303, E:203, EF:294-5.
[85] M:269-70; MF:304-05; E 205-7; EF:297-8.
[86] Note also that, as Marx indicates, a similar type of 'transformation' applies for the turnover of capital (cf. Part Two of the current *Capital II*, where the GRP is yet blended out).
[87] See Stiebeling's Preface. See also Vollgraf and Roth 2003b, p. 484.

10), mainly by way of a running numerical example (he is even worse than Marx in choosing numerically awkward examples). His solution to the problem posited by Engels (1885) follows on pp. 11-21. Next, he has an addendum in which he applies his views to the accumulation of capital between 1870/71 and 1880/81 in the USA and England. Using census data for these countries, he estimates their (changes in) rates of surplus-value and rates of profit for these years (pp. 22-35).[88]

Stiebeling's solution consists of diverging/changing[89] rates of surplus-value associated with a diverging/changing 'productive power of living labour' (*Produktionskraft der lebendige Arbeit*), along with divergences/changes in constant capital (p. 12).[90] He posits these as an assertion, offering hardly any argument. He does not refer to Marx's *Capital I* exposition of surplus-value and the productive powers of labour. Explicitly at least, he neglects relative surplus-value – including the distinction between the 'use-value productivity' and the 'value-productivity' of labour. Unfortunately he also does not address the relevant competitive processes that would result after changes in the productive powers.

Generally, I consider Stiebeling's essay theoretically defective (quite apart from a somewhat clumsy presentation), but he nevertheless shows the right intuition about the key role for the productive powers. Throughout he equates (correctly in my view) the mass of surplus-value and the mass of profit at the micro level (that is, profit before any distribution such as to financiers) – labour being the unique source (*Quelle*) of surplus-value. Because of this equality at the micro level, he posits no surplus-value 'adjustments' between sectors of production.[91]

Howard and King (1989, p. 29) comment about the approach that Stiebeling adopts that: 'The problem is, of course, that these are price rather than value magnitudes. Stiebeling's implicit assumption that individual prices and values are equal [this is correct] reveals a basic misunderstanding of the entire problem. His calculations for an equilibrium situation are true by definition: Stiebeling does not solve the transformation problem, he abolishes it.'

This is a strange comment. At the point where Stiebeling starts (i.e. prior to the publication of *Capital III* in 1894) there is no tension between value and prices in Marxian theory, at least not one relevant for the current problematic. So how can this be 'a basic misunderstanding of the entire problem'? The Marx of 1864/65 made the distinction between 'values' and 'prices of production'. This does not imply that an attempted solution which does not make that distinction is necessarily false, or would abolish the initial problem. Howard and King seem to presuppose that we inevitably must have dual account systems. (I do not want to criticize at Howard and King especially; I regard them as representatives of a particular value-theoretical mind set, and I only comment on them because they discuss Stiebeling's work.)

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[88] It is beyond the scope of this Annex to comment on this interesting part of Stiebeling's essay. Howard and King (1989, p. 29) remark that Stiebeling's was 'almost certainly the first systematic use of statistical sources in Marxian value theory' (their reference is probably – also – to Stiebeling 1894, which is a 28 pages cross-section analysis of the year 1880 for the US economy).

[89] He is often not clear about 'divergences between sectors' and 'changes within a sector'.

[90] He does not explicitly use the term 'composition of capital'. Throughout his essay, Stiebeling seems to be aware that differing turnover times of capital posit the same problematic as differing ratios of constant and variable capital.

[91] He of course does not use the – at the time non-existent – terms micro or macro, nor would he have required them, because in his account the micro equality implies macro equality. He can posit the micro equality because, in this part of his essay, he is – similar to Marx – not concerned with the distribution of surplus-value to financiers. However, he does take account of that in his empirical estimates.

Julius Wolf, 'Das Rätsel der Durchschnittsprofitrate bei Marx' (1891)

Julius Wolf's contribution in 16 pages appears in 1891 in the *Jahrbücher für National-ökonomie und Statistik*. Although Wolf goes into less detail than Stiebeling does, in terms of his numerical or algebraic examples, his essay is theoretically better substantiated than Stiebeling's. Like Stiebeling, Wolf shows in my opinion the right intuition about the key importance of changes in the productive powers in combination with the rate of surplus-value (esp. p. 356). He writes that Marx, unlike Classical Political Economy, distinguishes the productive powers of labour independently of the intensity of labour (p. 356). Quoting Marx from *Das Kapital I*, Part Seven, Chapter 23[Eng 25], he connects increasing labour productivity to an increasing capital composition (even if, I add, Marx does not use the term productive powers at that point).[92] Yet Wolf, like Marx most often, casts the matter of increasing productive powers in terms of labour's 'use-value productivity' increase (cheapening commodities) rather than a '*value* productivity' increase (only the latter, as we have seen in the main text, is relevant for the transformation problematic). Wolf quotes Marx from Part Five (the extra value-generating potency of labour – in Part Four – seems to have escaped him). He seems to get somewhat lost in the notion of relative surplus-value, and an example that he provides on it (p. 360). Nevertheless, according to him, this should be stepping stone to the solution of the problem. On page 361, he claims that 'the solution is not impossible', and that Marx might well present it, i.e. in the long awaited third volume of *Capital.* ('Die Lösung stellt sich also nicht als eine Unmöglichkeit heraus; bezw. Marx ist nicht genötigt, sich zu widersprechen, indem er sie bringt.') In fact, Wolf – as far as I see – does not claim to have solved the problem. He rather claims to have provided the essential ingredients for the solution (that is what he writes on p. 362). From that page onwards, he expands on various related matters, such as what other writers – including Engels – said about it.

Generally, Wolf is very respectful to Marx (but he grumbles at Engels who, since 1885, had been promising time and again to publish the third volume "within a few months").

Howard and King (1989, p. 30) comment: 'Like Stiebeling, however, Wolf avoided the problem rather than solving it.' Again, Howard and King seem to take Marx's GRP presupposition about equalised rates of surplus-value, as well as the concomitant dual account systems, as indisputable.

Engels (1894) comments about Stiebeling and Wolf in his Foreword to *Das Kapital III* are dismissive (to say the least). His attitude toward both men is disrespectful, rather than of the type 'we have to solve a problem together'.

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