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# Value and Price of Production: New Evidence on Marx's Transformation Procedure*

> Was zahlen Sie für einen Rat, wie man sein Geld anlegt mit Nutzen? Hast du Geld, laß es nicht bei dir im Sack, geh' zu den Menschen und säe es aus. Das ist ein Acker, der düngt sich mit Blut, da wächst etwas, da kommt etwas heraus, das produziert die Krone des Gewinns.
>
> Georg Kaiser, *Der Silbersee*.

The main purpose of this article is to highlight a passage of the recently published Main Manuscript of Capital III[1] that was not included in Engels' edition of this book. It is scarcely mentioned in the literature that Marx develops *two* examples of the transformation procedure in what became the chapter 9 of the third volume. Ever since Bortkiewicz published his famous articles on the "transformation problem", Marx's commentators have focused only on the *first* example given in that chapter, because it seemed compatible with that interpretation, the *second* example being almost universally neglected. The missing text, which is a fundamental piece in the explanation of the transformation procedure, pertains to this second example and Engels' omission probably contributed to the subsequent confusion regarding the transformation. This article begins by considering the *first example* of the transformation presented in chapter 9 and its connection with the interpretation proposed by Bortkiewicz and his many followers. I will show that Bortkiewicz substantially altered the textual evidence in order to "adjust" it to his

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1 MEGA$^2$ II/4.2 "Die Gestaltungen des Gesammtprozesses", written between summer 1864 and December 1865. This is the "main manuscript" Engels refers to in the Preface of Capital III, p. 94. See a critical appraisal of Engels' edition of Capital III in Heinrich [1996–97].

own interpretation. The next section systematically reconstructs the *second example*, focusing initially on the text omitted by Engels. The new evidence contained in the missing passage supports the interpretation of the transformation given by some authors since the 1980s[2] and shows that Marx's procedure is logically consistent. The third section provides a numerical illustration of the *second example* of the transformation procedure in both static and dynamic situations.

## 1. The „First Example" in Chapter 9 and Bortkiewicz's Interpretation of the Transformation

The extensive literature on the "transformation problem" has not examined the whole of the textual evidence regarding this aspect of Marx's theory.[3] The dominant interpretation – proposed by Tugan–Baranowsky and Bortkiewicz at the beginning of this century[4] – consists mainly of a possible interpretation of *one* of the two examples presented in what Engels published as chapter 9 of volume III. In this chapter, however, there are *two* illustrations of the transformation procedure,[5] not only one as most of the literature implicitly suggests. Certainly, if both examples had exactly the same features, this would be irrelevant for understanding of Marx's presentation. Yet this is not the case.

The core of the *first example* of the transformation procedure in chapter 9 is a set of two tables widely reproduced, *with important modifications*, by Marx's commentators:[6]

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2 See footnotes 23 and 42 for the references.

3 A non–exhaustive list of passages in which Marx deals with the transformation can be found in Ramos and Rodríguez [1996], p. 74, footnote 10. As far as I know, Marx presents five *tabular* illustrations of the transformation: The first (2 tables, 5 spheres) in Theories of Surplus Value II, pp. 67–68; the second (1 table, 4 spheres) in a letter to Engels dated 2 August 1862; the third (1 table, 4 spheres) in Theories of Surplus Value II, p. 389; the fourth (3 tables, 5 spheres) in Capital III, p. 255–6 and the fifth (1 table, 3 spheres), ibid., p. 264. The latter will be discussed in section 2.3.

4 Tugan [1905], pp. 170–4; Bortkiewicz [1906], [1907a] and [1907b]. Muehlpfordt [1893] and Mühlpfort [1895] (the same author) present the same approach and "solution" as Bortkiewicz but was only recently rediscovered by Howard and King [1989], p. 55–7.

5 Capital III, pp. 255–6 and p. 263–5; MEGA$^2$ II/4.2, 231–3 and 240–1.

6 Capital III, pp. 255–6; MEGA$^2$ II/4.2, 231–3. The Main Manuscript and the published version do not differ conceptually.

| | Capitals | Rate of surplus–value | Surplus–value | Rate of profit | Used up *c* | Value of commodities | Cost price |
|---|---|---|---|---|---|---|---|
| I. | $80_c + 20_v$ | 100% | 20 | 20% | 50 | 90 | 70 |
| II. | $70_c + 30_v$ | 100% | 30 | 30% | 51 | 111 | 81 |
| III. | $60_c + 40_v$ | 100% | 40 | 40% | 51 | 131 | 91 |
| IV. | $85_c + 15_v$ | 100% | 15 | 15% | 40 | 70 | 55 |
| V. | $95_c + 5_v$ | 100% | 5 | 5% | 10 | 20 | 15 |
| Total | $390_c + 110_v$ | – | 110 | – | – | – | – |
| Average | $78_c + 22_v$ | – | 22 | 22% | – | – | – |

| | Capitals | Surplus–value | Value of commodities | Cost price of commodities | Price of commodities | Rate of profit | Divergence of price from value |
|---|---|---|---|---|---|---|---|
| I. | $80_c + 20_v$ | 20 | 90 | 70 | 92 | 22% | +2 |
| II. | $70_c + 30_v$ | 30 | 111 | 81 | 103 | 22% | –8 |
| III. | $60_c + 40_v$ | 40 | 131 | 91 | 113 | 22% | –18 |
| IV. | $85_c + 15_v$ | 15 | 70 | 55 | 77 | 22% | +7 |
| V. | $95_c + 5_v$ | 5 | 20 | 15 | 37 | 22% | +17 |

Since Bortkiewicz's time, these tables have been interpreted in the following way: Each table corresponds to a set of simultaneous equations, the first being a "system of values" and the second a "system of production prices". In the "system of values", the "value" of commodity "j" ($\lambda_j$) is defined as the sum of the *value* of the used up means of production ($c^{\lambda}_{ij}$) + the *value* of the means of subsistence ($v^{\lambda}_{ij}$) + surplus–value ($m_j$), that is, as the sum of the "cost–price in value terms" + surplus–value, $\lambda_j = (c^{\lambda}_{ij} + v^{\lambda}_{ij}) + m_j = K^{\lambda}_{ij} + m_j$.[7] It is thus claimed that this is the definition of value in the first table; for example, the value of commodities produced in sphere I would be $(50_c + 20_v) + 20_m = 90$. On the other hand, it is maintained that Marx calculated the prices of production *incorrectly*, in three steps: Firstly, he obtained the "value rate of profit" as the ratio between total surplus–value and total advanced capital "in value terms" in the first table $-110_m/(390_c + 110_v) = 22\%$; then, he transferred the "cost–prices in value" ($K^{\lambda}_{ij}$) from the first to the second table *with-*

[7] Superscript "l" indicates that the magnitude corresponds to the *value* of inputs, and subscript "ij" that input "i" is used in the production of "j".