

Karl Heinrich Marx (1818–1883)

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Life and Writings

The formative years

Karl Marx was born on 5 May 1818 the eldest son of Heinrich and Henriette Marx in the provincial town of Trier in the Rhineland, where his father practised as a lawyer. On his father's side Karl was descended from a Jewish family with a long-standing tradition of rabbis. But his father Herschel (or, since 1814, Heinrich) Mordechai had converted to Protestantism in 1816 in order to escape the Prussian restrictions against the Jews, and he also had Karl and his six brothers and sisters baptized as Protestants. Heinrich Marx was a cultured man, who had great admiration for Leibniz, Lessing, and Kant, and raised his children as liberal and law-abiding Protestants. His wife Henriette, née Pressburg, was the daughter of a Jewish merchant from Nijmegen in the Netherlands.

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The person who exerted the most important intellectual influence on the young Karl, apart from his father, was Johann Ludwig von Westphalen, a high-ranking civil servant, who treated the talented young neighbour's boy and schoolmate of his son Edgar as an equal partner in discussions on literary and philosophical themes. While his father acquainted him with the German and French enlightenment philosophers, Karl would learn about Homer, Shakespeare and the Romantics from his future father-in-law. Presumably, it was also Baron von Westphalen who introduced him to the ideas of Henri de Saint-Simon, in which he took a keen interest himself. Until his twelfth year, Karl was educated privately by his father and the local bookseller. In the gymnasium, which he attended from 1830 to 1835, he was conspicuous mainly for his diligence and for his strong interest in literature and fine arts.

From 1835 to 1841 Marx studied at the universities of Bonn and Berlin. Following his father's advice, he enrolled at Bonn University as a student of law, but attended courses also in history, medicine, and theology. In 1836 he changed over to the University of Berlin, where at first he continued his studies in law, but then devoted his time and energy mainly to philosophy, after he had come into contact with some of the so-called Young Hegelians, who gathered around the radical theologian and religious critic Bruno Bauer (1809–1882). In 1841 he earned a doctorate with a philosophical dissertation on "The difference between the Democritean and the Epicurean philosophy of nature" at the University of Jena. However, he quickly realized that there was little chance of success for an academic career, in view of the strict actions of the Prussian authorities against radical left-wing Hegelians : his mentor Bruno Bauer, whom he had intended to follow to the University of Bonn, was deprived of his lecture rights. Being thrown back on his own financially by the unexpected death of his father, Marx turned to journalism and began to write articles for the *Rheinische Zeitung* in Cologne, which had been founded by enlightened citizens and industrialists in early 1842. In October, Marx took over the editorship of the liberal and anti-clerical — and under Marx's influence increasingly more radical — newspaper. Being watched with mounting suspicion by the censorship authorities, the *Rheinische Zeitung* was banned in March 1843.

Revolutionary turmoil in Europe

In June 1843 Karl Marx and Jenny von Westphalen, the daughter of J.L. von Westphalen, got married. In October the young couple moved to Paris, then the centre of radical thinking and political activism in Europe, where Marx came in contact with men such as Heinrich Heine (1797–1856), Georg Herwegh (1817–1875), Pierre-Joseph Proudhon (1809–1865), and Michail Bakunin (1814–1876), and where he planned to edit, together with Arnold Ruge (1802–1880), a literary-political magazine called the *Deutsch-Französische Jahrbücher*. The first (and only) issue of these “yearbooks” was published in 1844. It contained *inter alia* Friedrich Engels’ contribution “Umrisse zu einer Kritik der Nationalökonomie” (“Outlines of a critique of political economy”) and two articles by Marx, “Zur Judenfrage” (“On the Jewish question”) and “Zur Kritik der Hegelschen Rechtsphilosophie” (“A contribution to the critique of Hegel’s philosophy of right”). Marx was very impressed by Engels’ contribution and the first meeting of the two men marked the beginning of a lifelong friendship. In Engels (1820–1895), the son of an industrialist from Barmen, Marx found a most congenial intellectual ally, who would subsequently stand by him in his scientific and political activities as a critical commentator, occasional co-author, generous financial helper, and editor of his unfinished works.

Shortly after his meeting with Engels, in autumn 1844, Marx began to study seriously political economy. He filled several notebooks with excerpts and commentaries on the economic writings of Boisguilbert and the French physiocrats, and of Smith, Malthus, and Ricardo (which he first read in French). He then used his “Paris notebooks” for drafting out a long text that he himself had not considered for publication, but which was published posthumously in 1932 as the so-called *Ökonomisch-philosophische Manuskripte von 1844* (*Economic and Philosophic Manuscripts of 1844*). In these manuscripts Marx formulated a critique of Hegel’s philosophy and also discussed the specific forms that “alienation” assumes under capitalistic production relations. (On Marx’s early writings, see Colletti 1975.)

In early 1845 Marx was expelled from France on the instigation of the Prussian embassy in Paris. With his wife and his newly born daughter “Jennychen” he flew to Brussels, where he continued to pursue his studies in political economy. In *Die deutsche Ideologie* (*The German Ideology*), written jointly

with Engels in 1845–46, he again discussed critically Hegel’s philosophy and developed the main ideas of what was to be called the materialist conception of history (on the so-called “dialectical materialism”, see Colletti 1969 [1973]), which he later summarized as follows in his celebrated “Introduction” to the critique of political economy :

In the social production of their existence, men inevitably enter into definite relations, which are independent of their will, namely relations of production appropriate to a given stage in the development of their material forces of production. The totality of these relations of production constitutes the economic structure of society, the real foundation, on which arises a legal and political superstructure and to which correspond definite forms of social consciousness. The mode of production of material life conditions the general process of social, political and intellectual life. It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness. At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production or — this merely expresses the same thing in legal terms — with the property relations within the framework of which they have operated hitherto. From forms of development of the productive forces these relations turn into their fetters. . . . In broad outline, the Asiatic, ancient, feudal and modern bourgeois modes of production may be designated as epochs marking progress in the economic development of society. The bourgeois relations of production are the last antagonistic form of the social process of production . . . but the productive forces developing within bourgeois society create also the material conditions for a solution of this antagonism. The prehistory of human society accordingly closes with this social formation. (Marx 1859 [1987] : 263–4)

In 1846 Marx also published a scathing polemic against Proudhon, entitled *Misère de la Philosophie* (*The Poverty of Philosophy*) (1847) — thus ridiculing the title of Proudhon’s book *Philosophie de la misère* (*Philosophy of Poverty*) (1846). In this text as well as in a short tract on “Wage labour and capital”, which emanated from a set of lectures that he had delivered in 1847 at the German Workers’ Association in Brussels, Marx first set out his theory of value and surplus value. In Brussels, Marx and Engels also founded the “Communistisches Korrespondenz-Komitee” (Communist Correspondence Committee) in early 1846, which aimed at the unification of the revolutionary German and international workers. They established an international Communist party by

merging with Wilhelm Weitling's "Bund der Gerechten" (League of the Just). At the first joint congress in London in November 1847 Marx and Engels succeeded in establishing the "Bund der Kommunisten" (the Communist League). From the mandate given to Marx and Engels at the second congress in 1848 to write a declaration of principle emanated the famous *Manifesto of the Communist Party* — which in fact was written by Marx alone after both had agreed that Engels' preliminary drafts were unsuitable.

In spring 1848, when the revolutionary movements began to spread throughout Europe after the February revolution in Paris, Marx was briefly imprisoned and then expelled from Belgium. Upon an invitation from the newly installed French government he first returned to Paris, but after the March revolution in Germany he and Engels moved to Cologne in order to lead the revolutionary movement in the Rhine provinces and edit the re-established *Neue Rheinische Zeitung*. After the failure of the revolution, the popular daily paper was increasingly subjected to censorship and finally banned in May 1849. Marx was expelled from Prussia and deprived of his citizenship. After a brief interval in Paris he moved into exile with his family to England and settled down in London, where he was to stay until the end of his life.

Exile in London

Over the next 30 years Marx devoted much of his time and energy to political economy. He used to work in the reading room of the British Museum, studying the available literature on political economy as well as the so-called Government Blue Books, the economic and financial sections of newspapers and magazines, and various other sources that provided information on the economic and social conditions in Britain and in the rest of the world, filling several hundred notebooks and thousands of pages with excerpts, commentaries, and bibliographic references. In the evenings and at night he then used his extensive notes in producing first drafts of sections and chapters of his planned books.

The economic crisis of 1857 induced him to summarize the results of his economic studies in a first manuscript on political economy of some 800 pages. In the "Introduction" he grouped the topics to be dealt with into six "books" : "(1) Of Capital (with some pre-chapters). (2) Of landed property. (3) Of Wage-

labour. (4) Of the State. (5) Foreign Trade. (6) World Market.” This manuscript, which Marx composed from August 1857 to March 1858, was first published in 1939–41 under the title *Grundrisse der Kritik der Politischen Ökonomie (Rohentwurf)* 1857-1858. It is often referred to as a “rough draft” of *Das Kapital (Capital)*, but Marx’s original plan was in fact much wider in scope. The three volumes of his later main work, *Das Kapital*, in fact cover only the contents of the first “book” of the originally planned six “books”. In the course of working out this part, Marx realized the impossibility of finishing the huge task he had set himself and was forced to postpone work on “books” 4, 5 and 6, while those on “landed property” and on “wage-labour” were partly integrated into his main work (in volumes I and III of *Capital* and in the *Theories of Surplus Value*).

In 1859 Marx managed to prepare a revised version of the first part of the 1857–58 “Rough draft” for publication : *Zur Kritik der Politischen Ökonomie (Erstes Heft)* (*A Contribution to the Critique of Political Economy*). However, this book, in which Marx first presented his value theory in full, did not have the desired impact, which prompted him to revise his publication plans again. As preliminary drafts for his major work, which was now meant to consist of four “books” (in three volumes), he wrote two extensive sets of manuscripts, which have been published as *Ökonomische Manuskripte von 1861-63* and *Ökonomische Manuskripte von 1863-67* in the new MEGA edition (for the different editions of Marx’s works, see the note below). On the basis of these manuscripts he then managed to complete and prepare for publication, in 1867, only the first volume of *Capital*, entitled *Das Kapital. Kritik der Politischen Ökonomie. Erster Band. Buch I : Der Produktionsprozeß des Kapitals*. He did not succeed in bringing the remaining volumes to completion. These were published only posthumously by Friedrich Engels from the extant sets of manuscripts, with many changes and additions, in 1885 and 1894, and by Karl Kautsky, in 1905–10. During the 1870s Marx repeatedly interrupted his work on the planned volumes II and III of *Capital* and devoted his attention to various other research fields (such as Russian society, the Asiatic mode of production, linguistics, mathematics, and the latest developments in the natural sciences, in particular chemistry); in the early 1880s he ceased to work on them altogether.

Engels's edition of volumes II and III of *Capital* does not meet today's editorial standards. As the basis of the text Engels used the manuscripts written by Marx between 1863 and 1867, which he merged with manuscript fragments from later working periods and "supplemented" by insertions, changes, and additions of his own, without properly indicating the latter. The full extent of Engels's editorial intrusions can be assessed only since the original manuscripts have been published in the new MEGA edition.

According to Marx's plan, the second volume was meant to comprise the "Circulation process of Capital (Book II) and the Process as a whole (Book III)", but in Engels's edition book II became volume II and book III became volume III of *Capital*. According to Marx's plan, the final and third volume was to be the "History of the Theory" ("Book IV" in Marx's outline); this was published in three volumes from 1905–10 under the editorship of Karl Kautsky as *Theorien über den Mehrwert* (*Theories of Surplus Value*) from a set of manuscripts that Marx had written during 1861–63. (For a detailed account of the gestation of Marx's economic writings, culminating in the three volumes of *Capital* and the *Theories of Surplus Value*, see Rosdolsky 1968 [1977]; Oakley 1983; and the volumes published in the new MEGA edition as "Abteilung II. Vorarbeiten zum Kapital".)

During the years in London, Marx and his family suffered from material deprivation, in spite of continuous financial support from Engels. Bad housing conditions, malnutrition, and lack of medical care led to the worsening of Marx's health and that of his wife, as well as to the early death of four of his seven children. He took on various journalistic jobs, but these did not earn him a regular income. His work as European correspondent of the *New York Daily Tribune*, for which he wrote hundreds of articles (see Ledbetter 2007), forced him to keep himself well informed about British and European politics. From 1864 to 1872 Marx also often had to interrupt his scientific work because of his multifarious commitments in the International Workingmen's Association, the so-called "First International", in whose foundation he was actively involved in 1864. From London he also tried to foster the foundation of a revolutionary socialist party in the German states. At first he distanced himself from Ferdinand Lassalle's reform-oriented "Allgemeiner Deutscher Arbeiterverein", which then however was merged with the "Sozialdemokratische Arbeiterpartei" in 1875, which Wilhelm Liebknecht had founded six years earlier in close collabora-

tion with Marx, to form the “Sozialistische Arbeiterpartei Deutschlands”, from which the German “Social Democratic Party”, the SPD, was later to emerge.

In his last years Marx was plagued by serious health problems. He suffered from chronic liver and lung problems, and also from carbuncles, which are diagnosed today as psychically caused. In spite of several cure treatments at the English seaside, in Karlsbad and in Algiers, his health further deteriorated. His wife Jenny, who fell fatally ill in 1880, died the following year. Marx only survived her by a little more than two years. He died, presumably from the after-effects of lung tuberculosis that had never been properly treated, on 14 March 1883 in London.

Marx’s Approaches to Value – Socio-historical, Dialectical, Classical

The theory of labour value : basic concepts

Marx begins his study of capitalistic production with an analysis of commodities, because “for bourgeois society, the commodity-form of the product of labour, or the value-form of the commodity, is the economic cell-form” (1867 [1976] : 90). Commodities have a use-value and an exchange-value. According to Marx, this “double character” of the products of labour is a source of “contradictions”. While from a societal point of view economic activities aim at the production of use-values to satisfy the needs and wants of the members of society, the interest of the individual capitalist is directed at the production of exchange-values and profit — he “wants to produce a commodity greater in value than the sum of the values of the commodities used to produce it, namely the means of production and the labour-power” (1867 [1976] : 293). What, then, determines the exchange values of commodities? Since every commodity can be exchanged against any other, the exchange relations between commodities, Marx insists, must be based on a common “something” : “The exchange values of commodities must be reduced to a common element, of which they represent a greater or lesser quantity” (1867 [1976] : 127). He adds :

This common element cannot be a geometrical, physical, chemical or other natural property of commodities. Such properties come

into consideration only to the extent that they make the commodity useful, i.e. turn them into use-values. . . . As use-values, commodities differ above all in quality, while as exchange-values they can only differ in quantity, and therefore do not contain an atom of use-value. If then we disregard the use-value of commodities, only one property remains, that of being products of labour. (Marx 1867 [1976] : 127–8)

The relative values of commodities are thus taken to be governed by the relative amounts of embodied labour. Labour itself, however, also has a double character. In the production process, with all its technical and intellectual specificities due to education and formation, it is heterogeneous, “concrete labour”, qualitatively different according to productive necessities. However, as the “substance” and “magnitude” of value, Marx stresses, it is “abstract labour”, “labour in general”, and as such directly comparable to any other quantity of abstract labour embodied in some other commodity. For some given prevailing technical conditions of production, the amount of abstract labour spent in the production of a commodity is called “socially necessary labour” (1867 [1976] : 129).

These are the first basic concepts on which Marx’s reasoning is built. Their understanding, however, is not self-evident, and Marx himself published several versions of his presentation of his theory of value, for example, first in the 1859 *Contribution to the Critique of Political Economy*, then in 1867 in the first section of the first edition of *Capital* — to which he added an appendix, “Die Werthform” (the value-form), placed as an afterthought at the end of the book — a section modified for the 1872–75 French edition and again in the fourth German edition (posthumously published in 1890). Marx was not only facing misunderstandings from his readers, as he wrote, he was also struggling with important analytical difficulties. One problem is the way in which he “derived” the statement that the only thing that commodities have in common is labour, leaving “out of consideration the use-value of commodities”. Eugen von Böhm-Bawerk (1884 [1890]), Philip Henry Wicksteed (1884) and Vilfredo Pareto (1902), for example, pointed out that this mode of reasoning is not conclusive : eliminating some items in a list of qualities to retain the remaining one cannot be a proof because the substance of value could well originate in an item omitted from the list ; moreover, Marx’s approach could also be turned in favour of utility because, just as “abstract labour”, as distinct from “concrete

labour”, is alleged to be the substance of value, “abstract utility”, as distinct from “concrete utility”, could well form the substance of value.

This aspect is only a symptom of deeper difficulties in Marx’s approach. In particular, the meaning of the central concept of “abstract labour”, “labour in general”, is not clear. Several definitions can be found, which are not compatible with one another. These definitions express different strands of Marx’s thought concerning value, money and capital — socio-historical, dialectical and classical (see Faccarello 1983a, 1997, 2000a).

The socio-historical approach to value

A first definition of “abstract labour” is purely socio-historical — or “sociological” — and is tightly connected to the phenomenon of fetishism (see, for example, “The fetishism of the commodity and its secret”, Marx 1867 [1976] : 163-77). We encounter it in passages in which Marx stresses the “phantom-like objectivity” (ibid. : 128) and the “mystical character” (ibid. : 164) of the products of labour in a market society and speaks of “labour in general” as the “common social substance” of these products, and of the commodity as a “social hieroglyph”. “Not an atom of matter enters into the objectivity of commodities as values”, Marx stresses, and adds :

Commodities possess an objective character as values only in so far as they are expressions of an identical social substance, human labour, . . . their objective character as values is therefore purely social. From this it follows self-evidently that it can only appear in the social relation between commodity and commodity. (1867 [1976] : 138–9)

Marx’s purpose here is to define the “specific difference” presented by the capitalist mode of production as compared with other forms of society. This is an important task, which he deduced from his youthful criticism of Hegel’s philosophy along Feuerbachian lines. In this perspective, “value” is supposed to express this *differentia specifica*. What matters is the qualitative side of the analysis. However, the sociological or qualitative characterization of value inevitably involves a quantitative determination, which proves to be at variance with the traditional “labour incorporated” analysis (below).

To single out the specificity of a market-based economy, Marx refers, in *Contribution* and *Capital*, to four other forms of society : “Robinson on his island”, the “dark European Middle-Ages”, the rural and patriarchal family, and a “society of free and equal men”. In these non-capitalist societies, Marx writes, (1) only “concrete labour” matters, (2) the products of labour are not commodities and (3) social relations of production are transparent. In a market society, on the contrary, (1) concrete labour does not matter as such, (2) products are commodities and (3) the social relations of production are hidden behind the apparent equality in exchange relations. Why do such differences arise?

First, Marx argues, in a non-capitalist society there is an immediate correspondence between (1) the different kinds of concrete labour, (2) the produced use values and (3) the needs of the members of society. There is no place for a break between a “private” and a “social” side of activities : it is “the distinct labour of the individual in its original form, the particular features of his labour and not its universal aspect that formed the social tie” (Marx 1859 [1987] : 275). Second, the cause of this state of things lies in the existence of a community that acts prior to production and coordinates it. All the societies he mentions are, in some way, planned : “the individual labour powers, by their very nature, act only as instruments of the joint labour-power” (Marx 1867 [1976] : 171).

The “specific difference” presented by the capitalist mode of production is thus defined as the lack of any community prior to production. Producers are independent and isolated ; they work privately and their activities are not coordinated *ex ante*. This is why the “natural” forms of labour are not immediately social. The social link forces itself upon the system *ex post* through the market. It is by transforming their products into commodities that independent producers constitute a coherent set of relationships, that is, a society, and that their private labour is — or is not — validated as a social commodity. The market is the locus of social integration. In this socio-historical line of argument, Marx called “abstract” or “general” labour the concrete labour that is socially validated through the exchange of its products in the market, a “concrete labour” that proves itself part of the “social division of labour”. It is a result of exchange, defined simultaneously with the exchange rate. “Abstract labour” is not a “substance” prior to exchange nor does it determine it. “Universal social

labour is consequently not a ready-made prerequisite but an emerging result” (Marx 1859 [1987] : 286 ; translation modified).

If abstract or general labour is not a substance which exists prior to exchange, value cannot be defined other than as the quantity of money for which a commodity is exchanged : this quantity acts both as the determining factor and the measure of value. We can now understand the meaning of such sentences as “universal labour time itself is an abstraction, which, as such, does not exist for commodities” (Marx 1859 [1987] : 286). Money acts as the social link for labours expended independently of each other, without social coordination. It regulates production. It is, in Marx’s own words, the community (an indirect, abstract community) that seems to be lacking in a society based on market exchange and the private ownership of means of production. Producers meet as owners and

exist for each other only as things, something that is merely further developed in the money relation, in which their community itself appears as an external and hence a casual thing with respect to all. . . . Since . . . they are not subsumed under any naturally evolved community . . . this community must . . . exist as an independent, external, casual thing . . . with respect to them as independent subjects. That is precisely the condition for their simultaneously being in some social connection as independent private persons. (Marx 1858 [1987] : 468)

This “sociological” approach is thus at variance with the traditional, or classical, interpretation of *Capital* (below). Its most striking feature is the inversion of the deduction of value and money. If, in the classical approach, money is deduced from the concepts of abstract labour and value — it is a commodity which itself has a value and can consequently act as a measure of value, a medium of exchange and a store of value — in the socio-historical approach abstract labour and value are deduced from the concept of money.

The dialectical approach

The second definition of “abstract”, “general” labour is purely conceptual. Abstract labour can be seen as an “indeterminate abstraction”, as the category that, in thought, embraces all imaginable kinds of concrete labour : “the mental product of a concrete totality of labours” (Marx 1857–58 [1973] : 104) — just

as the concept of “fruit” denotes concrete fruits like apples, pears, mangos, and so on. The concept is here hypostatized, in an idealist way that it is *a priori* surprising to find in Marx. However, it is in fact in line with Marx’s second line of argument, which can be called the “dialectical approach” and which stems from Marx’s plan to build his theoretical construction on a rigorous chain of deductions of concepts, from the commodity concept to that of money, from money to capital and then to wage-labour and the different kinds of capital — a plan which is visible in *Grundrisse*, in *Contribution* and the manuscript of it, and of course in *Capital*.

In Marx’s eyes the theoretical introduction of money from the sociological approach is no doubt insufficient because all the concepts are given simultaneously and are not deduced from one another. This creates a break in his chain of reasoning : once money and value are given, there seems to be no place left for a rigorous deduction of the concepts of capital and wage labour, and a picture emerges eventually of a rather harmonious society of independent producers, whereas in Marx’s opinion a monetary economy is necessarily a capitalist one. This is why, of the preceding considerations, Marx retains only the necessary transformation of products into commodities. He then stresses that a commodity has a twofold character (exchangeable value and use value) and that these two are “contradictory”. Then, from this basic “opposition”, he dialectically deduces money, capital, wage labour and the different kinds of capital.

To use Marx’s Hegelian language, what is this “opposition” stemming from the analysis of the two sides of a commodity and why is there a “contradiction” between them ? How and with the help of which logical tools is the concept of money generated as a result of the development of this alleged basic “contradiction” ? Marx asserts that, on the one hand, a commodity is not immediately a value, but “has to become so”. On the other hand, it is not immediately a use value, but it has also to become so. Of course the exchange process realizes a commodity as a value (for the seller), just as it simultaneously realizes it as a use value (for the buyer). In Marx’s opinion, this means a “contradiction” : the “realization” of use value presupposes in his eyes the realization of the commodity as value, and conversely the “realization” of value presupposes that of use value. As the solution of each problem implies that of the other, we therefore face an endless theoretical regression from one determination of the concept of

commodity to the other. In order to generate this opposition and the endless regression, the classical meanings of value and use value have been modified. Use value is now defined as a direct utility relationship between a thing and its owner, and value is defined as the quantity of such and such commodities for which it can be exchanged.

The “inner” contradiction of the commodity, Marx continues, brings about the “equivalent form”, in which a given commodity assumes the “relative” value form, and the received commodity acts as a “particular” equivalent. The commodity is then equated with different quantities of all other commodities, which act as many particular equivalents : it is the “developed” equivalent form. Marx stresses, however, that every attempt to transcend a particular equivalent in order to give value its “general form” is bound to fail : a commodity can be successively equated with every other commodity, but each of them nevertheless remains a particular equivalent. Here we encounter once again a theoretically endless regression from one determination to another. To obtain the “general equivalent”, the “money form”, Marx simply reverses the sequence of the particular equivalents, which, by means of this operation, express their value in a determined amount of one and the same commodity.

The meaning of this analysis of the “value forms”, that is, the development of the original “contradiction” of the two aspects of commodity — stated at the beginning of *Contribution* and *Capital* — and the final reversal which generates the concept of money, is problematic. (1) The reversal can be interpreted as a mere subjective reasoning on the part of the dealer who considers his or her commodity as a general equivalent for all other commodities. However, in this case no theoretical derivation of money is accomplished : if each dealer wants his commodity to be accepted by the other dealers as the general equivalent, no commodity can assume this role (Marx 1867 [1976] : 180). (2) The development of the “value forms” could also be interpreted in an idealist way, implying the progressive realization of a universal element (value) that aims at a manifestation appropriate to its concept (money), as Hegel would have put it. In both cases the dialectical deduction of the concept of money is questionable, and the concept of “abstract” labour, “substance” of value, either vanishes, or is at best to be understood as an “indeterminate abstraction” (the definition noted above).

Marx's classical approach to value

Two further definitions of “abstract labour” can be found in Marx's texts, referring to the usual classical understanding of Marx's economics. The first conveys a “physiological” conception, which, as for Ricardo at the end of his life, puts stress on the expense of energy that all labour always involves. “Tailoring and weaving, although they are qualitatively different productive activities, are both a productive expenditure of human brains, muscles, nerves, hands etc., and in this sense both human labour” (Marx 1867 [1976] : 134). This is why Marx states that “all labour is an expenditure of human labour-power, in the physiological sense, and it is in this quality of being equal, or abstract, human labour that it forms the value of commodities” (1867 [1976] : 137).

The second definition of “abstract” or “general” labour stresses the growing indifference of labourers vis-à-vis their tasks and kinds of labour, an indifference that results from the development of the labour market and from a process of deskilling imposed by technological progress (Marx 1863–66 [1976]). “Indifference towards specific labours corresponds to a form of society in which individuals can with ease transfer from one labour to another, and where the specific kind is a matter of chance for them, hence of indifference” (Marx 1857–58 [1973] : 104). This is evident in the United States : “Here, then, for the first time, the point of departure of modern economics, namely the abstraction of the category ‘labour’, ‘labour as such’, labour pure and simple, becomes true in practice” (ibid. : 104-5).

In Marx's texts, the line of argument expressed by these definitions is closely connected to the traditional analysis of *Capital* and to its stress on the determination of values in terms of incorporated quantities of labour. This approach links the analyses of *Capital* directly to those of classical political economy and, in systematically developing a quantitative and positive economic analysis, confers a “naturalistic” flavour on the theory of value. From this point of view the so-called “socially necessary labour” that must be spent directly and indirectly to produce a commodity, and which forms its value, is defined with respect to technical factors, that is, to what can be considered as the “normal” or “average” technical conditions in each industry at a given place and time. The “substance” of value, “abstract labour”, is also to be understood in the same perspective. This is why, among the different definitions that can

be found in Marx, only the “physical” ones can be coherently accepted : that is, either the one that stresses the “energetical” nature of abstract labour, or the one that, in pointing out the process of development in the labour market, in the end simply identifies “concrete” and “abstract” labour. This kind of “technological” or “naturalistic” approach, of course, does away with a socio-historical specification of value. It is also at odds with the dialectical deduction of concepts : it is impossible to see to what extent its concepts of value and use value (value is supposed to be a quantity of labour, and use value expresses the physical and concrete aspects of the product of labour) are “opposed” to each other.

Finally, it is important to note that the ideas expressed by Marx in his different approaches to value — including the classical approach with the attempt to “prove” that the only thing that commodities have in common is labour — owe a great deal to Hegel’s philosophy : not only to Hegel’s *Science of Logic* but also, and perhaps to a greater extent, to his *Philosophy of Right*, and that this source of inspiration is also important for the deductions of the concept of “capital in general”, wage labour and the different forms of capital (see Reichelt 1970, Faccarello 1983a : chs 14—16, 1997, 2000a).

Note that the three conflicting approaches coexist in Marx’s texts in different proportions, with the classical definition being dominant in *Capital*. This coexistence of conflicting conceptualizations is a source of dire controversies and confusions. In the following we focus on the classical concept of value in Marx.

Main Themes in Marx’s Classical Approach

From value to surplus value

According to Marx, it is a specific characteristic of the capitalist mode of production that human labour-power also assumes commodity-form. Its value is determined, just like that of any other commodity, by the amount of socially necessary labour required in its (re)production. In order to (re)produce his labour-power the labourer needs certain amounts of means of subsistence (for himself and his family), that is, a certain consumption basket, the size

and composition of which is determined, at any given time and place, by physiological, historical, and cultural circumstances : “Therefore the labour-time necessary for the production of labour-power is the same as that necessary for the production of those means of subsistence ; in other words, the value of labour-power is the value of the means of subsistence necessary for the maintenance of its owner” (Marx [1867] 1976 : 274). That the workers’ remuneration cannot systematically exceed the subsistence level Marx explains with reference to competitive pressures on the labour market that result from the existence of an “industrial reserve army”, that is, especially from the existence of a pool of unemployed workers, which is continuously replenished up again by the displacement of workers consequent upon the introduction of labour-saving technical progress.

The use-value of the commodity labour-power consists in its “productive consumption” in the production process : the capitalist “consumes” the commodity labour-power he has purchased at its labour-value v by employing it, together with various means of production whose aggregate labour value is given by c , in the production of a certain commodity. Marx called the raw materials, intermediate products, and the means of production purchased by the capitalist “constant” capital, because their value is merely transferred onto the product without any change, either in a single production cycle (raw materials and intermediate products) or else over a number of production cycles (tools and machines). With the “variable” part of the capital advances labour-power is purchased, which reproduces not only its own value but generates an additional value conferred to the product. The value of the product, λ , is given by the amount of (socially necessary) labour which has been used up in its production in the form of “direct” or “living” labour, l , and in the form of “indirect” or “previously expended” labour, which is “congealed” in the means of production, c , that is :

$$\lambda = c + l = c + v + s \quad (1)$$

The term s denotes what Marx calls “surplus value”. Its existence obviously derives from the fact that a part of the “living” labour performed by the worker consists of “unpaid” or “surplus labour”, because the labourer has to work longer than is necessary for reproducing his means of subsistence ($l > v$). In volumes

I and II of *Capital*, Marx supposed all commodities, including the commodity labour power, to exchange at their (labour-)values. Accordingly, “exploitation” is not “explained” by him from wages being “too low,” that is, from assuming that workers have to sell their commodity — their labour power — below its value. Exploitation, Marx insisted, is a phenomenon that is not generated in the sphere of circulation, but in that of production.

The “transformation problem”

In volume I of *Capital* Marx maintained that the value of a commodity is given by the quantity of socially necessary abstract labour required in its production. The exchange ratios between any two commodities are then given, by definition, by the ratio of their labour values. However Marx, who had carefully studied the contributions of Smith and Ricardo, was of course aware of the fact that the “prices of production” (or “natural prices”, as his precursors called them) must generally deviate from labour values. He was convinced, however, to have understood much better than his predecessors why these deviations occur and how their magnitudes can be ascertained. What had prevented his precursors from developing a correct solution of the problem? According to Marx, the reason for their failure is to be found in Adam Smith’s erroneous idea that the annual social product (exclusive of rent) can be entirely reduced to wages and profits; an idea which had also been implicitly adopted by Ricardo when he supposed in his determination of the general rate of profits that all capital can be reduced to advanced wage capital in a finite number of steps. Both had overlooked that a part of the annual product, which Marx called “constant capital”, must be used in order to replace the used-up means of production. If this is taken into account, it becomes immediately obvious that the deviations of production prices from labour values are caused by the differences in the proportions of the two capital components in the production of the various commodities, that is, by differences in the proportions between “living labour” and “dead labour” (“vorgetane Arbeit”). If the constant capital is again assumed for simplicity to consist only of circulating capital, the value of an industry’s annual product is equal to $c + l$, where c is the value of the constant capital (the quantity of “indirect” labour) and l is the quantity of “living” (or “direct”) labour. Denoting by v the value of the wages advanced in this industry — Marx’s “variable capital” — the industry’s costs of production

in value terms amount to $c+v$, and the surplus value generated in this industry is given by $s = (c + l) - (c + v) = l - v$. The rate of profits in value terms of this industry is then given by :

$$r = \frac{s}{c + v} = \frac{s/v}{(c/v) + 1} \quad (2)$$

It is thus seen to depend on two magnitudes : on s/v , a ratio that Marx calls “rate of surplus value” or “rate of exploitation”, and on c/v , which expresses the so-called “organic composition of capital”. Under competitive conditions (and on the assumption of the mentioned deskilling of labour and the emergence of a uniform length of the working day) the rate of surplus value must be the same in all industries. The organic composition of capital, however, is determined by technology and will in general differ across industries. An exchange of commodities at their labour values would therefore be associated with different profit rates across industries. The tendency towards uniform rates of profits in competitive conditions therefore leads to systematic deviations of relative prices from labour values. These deviations are necessary in order to relate the surplus value of the economic system as a whole, S , which was generated in the individual industries in proportion to the industries’ variable capitals, to the capital of the economic system as a whole, $C + V$.

Marx believed that for the system as a whole these deviations of production prices from labour values must exactly compensate each other, so that the general rate of profits is the same as the one which emerges if the economy as a whole is considered as a single industry, that is, the same as :

$$r = \frac{S}{C + V} \quad (3)$$

where S , C , and V denote total surplus value, total constant capital, and total variable capital, respectively. In Marx’s view, the labour theory of value, although it does not directly give a correct theory of relative prices, nevertheless provides the basis of such a theory. That Marx felt justified to make use of the labour theory of value in volumes I and II of *Capital* was therefore due to his conclusion, at which he had already previously arrived (but from which we now know that it is untenable) that the general rate of profits calculated

at production prices is the same as the value rate of profits. However, if this mode of exposition may have seemed justified to Marx as being easily comprehensible for his readers, with the benefit of hindsight it was a mistake, which has seriously impeded the understanding of his work. The fact that volumes II and III of *Capital* became available only much later has contributed to the solidification of the misconception that Marx had meant to determine relative prices directly by means of the labour theory of value.

When Marx, in section 2 of volume III of *Capital*, explicated his idea of the redistribution of surplus value in the course of the transformation of labour values in prices of production, he noted explicitly that his transformation procedure was not fully accurate, because the means of production have to be evaluated at production prices rather than at labour values (1894 [1981] : 259–60, 264–5). He overlooked, however, the important implication that he then also had no justification for supposing that the ratio of total profits to total capital is the same as if commodities were exchanged at labour values, that is, he overlooked that his “successivist”, two-step procedure for the determination of the general rate of profits and relative prices, as Ladislaus von Bortkiewicz (1906–07 [1952] : 38) called it, was thereby undermined.

Reproduction, accumulation, and crises

As Marx explained in his Foreword to *Capital*, “it is the ultimate aim of this work to reveal the economic law of motion of modern society” (1867 [1976] : 92). Accordingly, the analysis of the dynamism of the capitalist development process formed a central element in Marx’s work. In this analysis, as in Marx’s thinking generally, the concept of “reproduction” occupied a prominent place. Social relations and social formations exist, Marx argued, because the prevailing mode of production systematically reproduces them. In capitalist societies the reproduction of capital is associated with the reproduction of the class relations : at the end of the production and circulation process the capitalist has reproduced his advanced capital, together with surplus value, whereas the labourer has reproduced only his labour power. If social production is organized capitalistically, the production process itself thus reproduces capitalists and labourers as social classes.

Accumulation of capital requires that part of the previously generated surplus value is used in the production process again. If the reinvested surplus were used only for increasing the activity levels of the existing production processes, the constant capital and the variable capital would be increased proportionately, and there is “reproduction on an extended scale”. However, this need not be the case. In general, the accumulation process is bound up with changes in the structure and organization of capital and in production relations; new machinery and new methods of production, of transportation, or of organization are introduced, and new products and new markets are developed. The competitive process forces each individual capitalist to search constantly for less costly methods of production, better product quality, new markets, and so on. In addition, Marx argued that the accumulation process is also bound up with an increasing concentration and centralization of capital: larger capitals displace smaller capitals owing to the exploitation of increasing returns to scale or scope, and capital becomes ever more centralized by means of take-overs of competitors.

The schemes of “simple” and “extended reproduction” in chapters 20 and 21 of volume II of *Capital*, which Marx developed on the basis of François Quesnay’s *Tableau économique*, are widely regarded as one of his finest analytical achievements (see Gehrke and Kurz 1995). The model of simple reproduction depicts the commodity circulation between two sectors. The first sector produces capital goods for itself and for the second sector producing consumption goods, and receives in return the consumption goods required for the alimentation of the workers and the capitalists’ consumptions. For this simple two-sectoral model with circular production relations Marx showed the conditions for a stationary reproduction equilibrium. In the next step, he then turned to the analysis of extended reproduction and showed by means of simple numerical examples that balanced capital accumulation must be associated with an expansion of the two sectors in lock-step, that is, with steady-state growth. The original manuscripts published in the MEGA edition show that Marx had also worked out more elaborate versions of the reproduction schemes with six sectors, which in terms of their analytical structure are similar to the three-sector models of Fel’dman (1928 [1964]), Mahalanobis (1953), and Lowe (1976) (see Mori 2007).

In Marx's writings there is no consistently elaborated cycle theory, but there are several approaches to the explanation of crises. One of these relates to the reproduction schemes and locates the source of crisis-ridden developments in disproportions that occur in the accumulation process and that tend to reinforce themselves. In addition, Marx also put forward theoretical explanations based on under-consumption arguments, which refer to insufficient purchasing power of the working class as triggering an insufficient overall effective demand. However, Marx's most elaborate explanation for crises and economic stagnation derives from his "law of the tendency of the rate of profits to fall", which he set out in volume III of *Capital*.

The law of the tendency of the rate of profits to fall

Like his predecessors, Marx tried to provide an explanation for the supposed empirical phenomenon of the tendency of a falling rate of profits. His approach must be seen in connection with the alternative one suggested by David Ricardo, who had argued that in the course of the accumulation process the wage share must rise, because the production of foodstuff is subject to increasing costs as a consequence of the need to have recourse to less and less productive soils or methods of land cultivation. Accordingly, nominal wages must rise to keep real wages constant and the rate of profits and the profit share are bound to fall. Ricardo had also suggested that the rise in money wages could lead to the substitution of machinery for labour, that is, to the introduction of machines which have been available already before, but which could not be profitably introduced at the lower money wages. This can temporarily retard the fall of the rate of profits, but not ultimately prevent it. In his argument Ricardo explicitly set aside technical progress proper.

Marx had detected an important error in Ricardo's reasoning. Ricardo had maintained that the rate of profits depends only on "proportional wages", that is, the share of wages in the total product measured in labour terms. With a rise in the latter the former is bound to fall. In his argument, Ricardo had assumed for simplicity that the advanced capital consists only of wages, or could be reduced to direct and indirect wages in a finite number of steps; but such a reduction is possible only with "unidirectional" production processes, that is, when the reduction series comprises a production stage at which only "original"

factors of production like labour and land are needed in the production of the means of production. If Ricardo's error is corrected and the existence of circular production relations is taken into account, Marx insisted, the true cause of the falling rate of profits is revealed.

If we designate the rate of profits with r , the value of the social product with Y , wages with W , profits with Π , and the wage share with ω , then Ricardo determined the rate of profits as :

$$r = \frac{\Pi}{W} = \frac{Y - W}{W} = \frac{1 - \omega}{\omega} \quad (4)$$

In the special case contemplated by Ricardo, the rate of profits corresponds to the rate of surplus value : Ricardo thus derived the falling rate of profits from a falling rate of surplus value (see Marx 1861-63c [1989b] : 73).

Denoting the total quantity of living labour by L , and the maximum rate of profits by R , the following relationship can be derived (reckoning in terms of labour values, where $Y = L$, $W = V$ and $\Pi = S$) :

$$r = \frac{S}{C + V} = \frac{S/L}{C/L + V/L} = \frac{1 - \omega}{1/R + \omega} = \frac{R(1 - \omega)}{1 + R\omega} \quad (5)$$

This shows that the rate of profits depends on *two* magnitudes, not one (as Ricardo thought) : on the wage share ω — or the rate of surplus value, $(1 - \omega)/\omega$ — and on the maximum rate of profits, R . If the latter falls, the rate of profits must also fall, given the rate of surplus value. Even a moderately rising rate of surplus value cannot prevent this tendency of a fall in the general rate of profits.

For Marx the law of the tendency of the rate of profits to fall had two fascinating aspects. First, he regarded it as a striking refutation of Ricardo's view, according to which the falling rate of profits is caused by the "niggardliness of nature", which gives rise to increasing production costs of subsistence goods. For Ricardo, the introduction of agricultural improvements or new machinery in manufacturing was a counter-acting factor, which could temporarily retard, but not ultimately prevent, the fall in the rate of profits. Marx believed he could demonstrate that the rate of profits falls not in spite of, but precisely

because of technical progress, since the latter is bound up with a rising organic composition. Secondly, the law also revealed, in Marx's view, one of the major contradictions inherent in the capitalistic mode of production : the progressive element in this mode of production is its capacity to develop the social forces of production and to raise labour productivity. However, since technical progress under capitalistic production must inevitably take the form of replacing living labour by machinery — or, in Marx's terminology, of a rising organic composition of capital — it paradoxically deprives the capitalistic system also of one of its constituting elements, since surplus value cannot be generated by “dead”, but only by living, labour.

However, as the original manuscripts published in the new MEGA edition show, Marx entertained doubts about the general validity of the “law” (see, in particular, Marx 1863-67 [2012]). On the one hand, he was clear about the fact that not all forms of technical progress are necessarily associated with a rising organic composition of capital. Moreover, even if the organic composition were rising and the maximum rate of profits were exhibiting a tendency to fall, this need not necessarily imply a fall in the actual rate of profits, since the former could be accompanied by a rise in the rate of surplus value. (For a more detailed account, see Kurz 2010, 2012–13.)

From the point of view of the development of the surplus approach to value and distribution it was perhaps one of Marx's most important analytical achievements to have carried the analysis of prices and income distribution which he had inherited from his precursors a step forward : by resurrecting the aspect of circular production relations he could demonstrate the existence of a maximum rate of profits and show its importance for the analysis of distribution, accumulation, and technical change.

Reception and Influence

It is not possible to summarize the reception and influence of Marx's economic work, which has spanned more than 150 years, in its entirety within the confines of this entry. In order to show some of the main lines of development, it will be convenient to make use again of the thematic division introduced above. It is, however, worth noting that Marx's work, although he was widely

considered as the scientific head of the international socialist movement after the publication of volume I of *Capital*, was at first largely ignored by the so-called “bourgeois economists”. This was not owing to ideological reasons alone, but also had to do with the fact that at first only volume I of *Capital* was available, and this only in German (a French and a Russian edition were published from 1872 onwards — the French translation having been published by instalments until 1875). Until the turn of the century, the scientific discussion of Marx’s work was therefore mainly confined to Germany and Russia, and to some extent also to France and Italy. In England, where Marx was living since 1849, he remained largely unknown during his lifetime. (For more detailed assessments of the reception of Marx’s economics, see Howard and King 1989, 1992 and Steedman 1995.)

The theory of value and prices

From the beginning the discussion of Marx’s work centred on the theory of value and prices. When Friedrich Engels, in his Foreword to the second volume of *Capital*, rejected the idea that Marx had plagiarized the theory of value and surplus value from Johann Karl Rodbertus, he invited the economists to show “how an average rate of profits can and must come about, not only without violating the law of value, but precisely on the basis of this law” (Engels 1885 [1978] : 102), and announced that the third volume would contain Marx’s definitive solution of the problem. Of the contributions to Engels’s “prize essay competition”, which came *inter alia* from Wilhelm Lexis, Julius Wolff, Achille Loria, Conrad Schmidt and P. Fireman, none was convincing. When the third volume of *Capital* was published in 1894, the interest centred mainly on Marx’s solution to the so-called “transformation problem”. (For a detailed history of the controversies, see Dostaler 1978 and Faccarello 1983a, 2000b.)

From the standpoint of the neoclassical theory Marx’s theory of value and prices was criticized by, among others, Philip H. Wicksteed (1884, 1885) and Vilfredo Pareto (1902). One of the most influential critiques of Marx’s procedure for the transformation of values to prices (and of the rate of surplus value to the rate of profits) was Eugen von Böhm-Bawerk’s “Zum Abschluß des Marxschen Systems” [“Karl Marx and the close of his system”] (1896 [1949]). Böhm-Bawerk accused Marx of having given up the value theory expounded

in vol. I of *Capital* with his theory of prices of production expounded in vol. III. Between the first and the third volume of *Capital*, he contended, there is “an irreconcilable contradiction”. He declared that a determination of the general rate of profits and of relative prices in the way Marx intended was impossible and that Marx’s theoretical work has “a past and a present, but no permanent future”. But although Böhm-Bawerk failed to notice the real shortcomings of Marx’s theoretical construction, Rudolf Hilferding ([1904] 1949), who was to play the leading role in defending Marx in the ensuing debates, could not counter Böhm-Bawerk’s attack convincingly. Note however that, in his 1904 answer to Böhm-Bawerk and in his book *Das Finanzkapital* (1910 [1981]), Hilferding started a sociological interpretation (see above) of Marx’s theory of value, which was to be taken up later by a few authors such as Nikolai Boukharin in *Economic Theory of the Leisure Class* (written in 1914, published in 1927) and Rosa Luxemburg in her posthumously published *Einführung in die Nationalökonomie* (1925) — a line of thought above all developed in Isaak Illich Rubin’s writings in the 1920s (Rubin 1927 [1978], 1928 [1972]), especially his 1928 *Essays on Marx’s Theory of Value* (Faccarello 1983b, 2000b; for a historical setting of Rubin, see Boldyrev and Kragh 2015).

Ladislaus von Bortkiewicz (1906–07 [1952], 1907) deserves the credit for having first demonstrated the errors of Marx’s transformation algorithm, and for presenting a correct solution procedure. Bortkiewicz demonstrated, first for the case of unidirectional production processes (where he harked back to a contribution by Vladimir K. Dmitriev (1898 [1974]) and then also for a circular, three-sectoral production system, that the rate of profits and relative prices can be determined on the basis of Marx’s set of data by solving a system of simultaneous equations. Similar findings were presented in two neglected contributions by Georg von Charasoff (1909, 1910), who not only anticipated some of the arguments that were proposed later in the discussion of Marx’s “transformation problem”, but also noted the duality properties of the price and quantity system. Moreover, in the course of his investigation he defined and made use of the concepts of a “production series” (“Produktionsreihe”), of “original capital” (“Urkapital”), and of “basic products” (“Grundprodukte”), thus anticipating Piero Sraffa (1960) with regard to the related concepts of a reduction series to dated quantities of labour, the Standard commodity, and the basics/non-basics distinction. Bortkiewicz’s approach to a solution of the trans-

formation problem, which was first made available in an English translation by Paul M. Sweezy in 1942, was subsequently generalized by Josef Winternitz (1948), Francis Seton (1957), and Paul A. Samuelson (1957).

A milestone in the understanding and further development of the surplus approach of the classical economists and Marx was Piero Sraffa's *Production of Commodities by Means of Commodities* (1960). Without entering into an explicit critique of Marx's economic theory, Sraffa demonstrated that the general rate of profits can be ascertained on the basis of the classical set of data (given quantities, given real wage rate, and given methods of production) only simultaneously with the prices. The implications of Sraffa's modern reformulation of the surplus approach to the theory of value and distribution for Marx's theoretical construction were concisely stated by Ian Steedman (1977) : on the basis of the classical set of data a consistent determination of the general rate of profits and of relative prices is possible ; the recourse to labour values is dispensable. Moreover, Steedman also stressed that labour values and prices more generally depend on income distribution if there is a choice of technique and that Michio Morishima's "Fundamental Marxian theorem", according to which "the equilibrium rate of profits is positive if and only if the rate of exploitation is positive" (1973 : 6) need not hold in systems with (pure) joint production.

While Sraffa (1960) and Steedman (1977) have implicitly or explicitly shown that Marx's (labour) value-based reasoning is difficult to sustain, there have been various attempts to defend or reinterpret it. Here it suffices to mention only the reconstruction of Marx's labour theory of value suggested independently from each other by Duncan Foley (1982) and Gérard Duménil (1983). The reconstruction emphasizes the relation between money and labour time that preserves the rigorous quantitative relation between paid and unpaid labour on the one hand and the aggregate wages bill and aggregate gross profits on the other. It became known as "the new solution" to the transformation problem, which is a misnomer, because the punchline of the argument is that there is no transformation problem. The "new view" has been criticized for, among other things, that it is not a faithful interpretation of Marx and that it wrongly conveys the impression that the classical surplus-based approach to the theory of value and distribution stands or falls with the labour theory of value.

Theory of capitalist development

At centre stage in discussions about Marx's theory of capitalist development has been the validity of the law of the tendency of the rate of profits to fall, on which a large amount of literature exists. An important contribution was made by Nobuo Okishio (1961, 1963), who proved that for a constant real wage rate the rate of profits cannot fall with technical progress (now known as the "Okishio theorem"). It ought to be mentioned, however, that Okishio's results are clearly foreshadowed in Ricardo's analysis and have been anticipated by Samuelson (1959) and Sraffa (1960). For many economists this demonstrates the invalidity of Marx's entire theoretical construction, because a central element of his accumulation theory and his crises theory has been shown to be false. However, as was argued above, Marx seems to have had doubts about the correctness of his "law" himself, and it is unclear whether he meant to suppose a constant wage share (or given rate of surplus value) or a constant real wage rate. Moreover, his argument seems to have been meant to refer, following Ricardo, to technical changes induced by changes in income distribution, that is, to "induced innovations", rather than to technical progress proper.

Marx's schemes of simple and extended reproduction inspired the development of multi-sectoral models of growth and cycles. Michail Tugan-Baranovsky (1905) and Henrik Grossmann (1929) developed cycle and crises theories from those schemes; Rosa Luxemburg (1913 [1951]) used the reproduction schemes for the development of a theory of imperialism; and Russian economists like G.A. Fel'dman (1928 [1964]) developed multi-sectoral planning models from them (for a comprehensive survey, see Turban 1980). Marx's schemes also influenced Wassily Leontief's input-output analysis and the associated literature. (Piero Sraffa's "first equations", which he elaborated in 1927–28, however, were developed independently of Marx's reproduction schemes; see Kurz and Salvadori 2015.)

Marx's analysis of the interrelationship between capital accumulation and income distribution in an evolving economic system has led to the development of a still growing class of non-linear cyclical growth models, which generate endogenous cycles around a growth path on the basis of the "predator–prey" model developed by Richard M. Goodwin (1967). Strongly influenced by Marxian ideas about the introduction and diffusion of technical progress and the

dynamics of capitalist development is also a branch of the evolutionary economics literature inspired by Joseph A. Schumpeter's *Theorie der wirtschaftlichen Entwicklung* (*Theory of Capitalist Development*) (1912). The macroeconomic effects of the tendency towards monopolization and capital concentration, emphasized by Marx, have been investigated by Rudolf Hilferding (1910 [1981]), Josef Steindl (1952), and Paul A. Baran and Paul M. Sweezy (1966).

See also :

Ladislaus von Bortkiewicz ; British Classical Political Economy ; Vladimir Karpovich Dmitriev ; Marxism(s) ; Non-Marxian Socialist Ideas in France ; Non-Marxian Socialist Ideas in Germany and Austria ; Non-Marxian Socialist Ideas in Britain and the United States ; Pierre-Joseph Proudhon ; David Ricardo ; Value and Price ; Piero Sraffa.

References and further reading

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After World War II a new publication was started. The 39 volumes (plus four supplementary volumes) of the *Marx-Engels Werke* (MEW) series, which were published jointly by the Institutes for Marxism-Leninism in Moscow and in East Berlin (in Russian and in German), contain the most important writings and correspondence.

An attempt to bring out a complete critical edition called the *Marx-Engels Gesamtausgabe* — thus the second MEGA — was started by the same institutes in 1970, but interrupted by the breakdown of the German Democratic Republic and the Soviet Union. In 1990 the Internationale Marx Engels Stiftung (IMES) assumed the scientific responsibility for the continuation of the project. The editorial plans were revised and the originally envisaged 164 volumes were cut down to 114 volumes, of which 62 have been published by 2015. The manuscripts published in the (second) MEGA edition, in particular those relating to Marx's preliminary work on volumes II and III of *Capital*, necessitate revising the assessments of parts of Marx's work.

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