

ROB BRYER

ACCOUNTING FOR VALUE

The Invisible Hand



Accounting for Value in Marx's *Capital*

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Rob Bryer

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List of Abbreviations

CMA	capital maintenance adjustment		
DEB	double-entry bookkeeping		
FASB	Financial Accounting Standards Board		
GAAP	generally accepted accounting principles		
IAS	International Accounting Standard		
IASB	International Accounting Standards Board		
ICAEW	Institute of Chartered Accountants in England and Wales		
IFRS	International Financial Reporting Standard		
LTFRP	Law of the Tendential Fall in the Rate of Profit		
MELT	monetary expression of labor time		
MOC	means of circulation		
MOP	means of production		
MOS	means of subsistence		
NI	new interpretation		
PV	present value		
RCA	replacement cost accounting		
RCI	replacement cost interpretation		
ROCE	return on capital employed		
ROI	return on investment		
SSSI	simultaneous single-system interpretation		
TSSI	temporal single-system interpretation		

Chapter 1 The Invisible Hand

In 1845, Marx made clear his revolutionary intent in his *Theses on Feuerbach*, which concluded, "The philosophers have only *interpreted* the world in various ways; the point is to *change* it" (1976b, 5). By 1864 he was confident his "work on political economy, '*Capital*,' would . . . deal a theoretical blow to the bourgeoisie from which it will never recover" (Marx and Engels 1987, 4). At Marx's funeral in 1883, Engels extolled his two outstanding contributions as a "man of science" (1989, 468). First, "Just as Darwin discovered the law of development of organic nature, Marx discovered the law of development of motion governing the present-day capitalist mode of production," his theory of surplus value (Engels 1989, 467–68). Today, many Marxists think that Marx's theories of history and value are internally inconsistent, if not incoherent, and largely irrelevant.¹

From the early 1980s, there arose a "growing clamour . . . to drop the concept of value altogether," which many Marxists accepted "may be justified when applied to that interpretation of value as a pure accounting concept" (Harvey 2006, 36). They agreed, "the idea of value as an accounting tool or as an empirically observable magnitude plainly had to be abandoned" (Harvey 2006, 36), often arguing defensively that Marx did not try to explain prices and rates of profit, but propounded only a qualitative social theory of capitalist exploitation (Elson 1979; Harvey 2006, 36; Callinicos 1983, 126). Some, however, continued searching for proof that his theory of value has the logic, quantitative rigor, and practical relevance Marx claimed, which has produced three competing interpretations: the "New Interpretation" (NI), the "Simultaneous Single-System Interpretation" (TSSI).

Marxist historians, philosophers, and sociologists overwhelmingly reject the "Primacy Thesis" of Marx's "historical materialism," his theory of history that the level of development of society's "forces of production" "determined" its "social relations of production," which "determined" its "superstructure" of institutions and dominant "ideology" (Cohen 2000).² Most find it "deeply flawed" (Giddens 1995, xiv). Very few venture to defend it (Wright et al. 1992; Cohen 2000).

Many books and articles discuss Marx's *Capital* from many perspectives, but this book uniquely advances and defends an "accounting interpretation" of his theory of value, that he used it to explain the principles and practices underlying capitalists' accounts. It confirms and builds on the TSSI's refutation of the long-standing charge that Marx's illustration of the "transformation from values to prices" in Volume 3 of *Capital* is inconsistent, which undermines his theory of value, but it rejects the NI and the SSSI by showing that only a "temporal," "single-system" interpretation is consistent with Marx's accounting.³ A companion volume, Accounting for History in Marx's "Capital": The Missing Link (Bryer 2017) rejects the criticism that Marx's theory of history relies on "evolutionism" "economic determinism," and defends its and "functionalism."

Marx became seriously interested in accounts from the late 1850s, during an important period in the development of his critique of political economy, asking Engels for information and explanations. Examining their letters in the context of Marx's evolving work, the book argues, supports the hypothesis that discovering he could explain capitalists' accounts with his theory of value gave him the breakthrough he needed to decide how to present his work, and explains why in December 1862 he changed its title to *Capital*.⁴ By explaining accounts, it concludes, Marx discovered that he could demonstrate how his "laws of value"—"immanent laws of capitalist production," "invisible essence," "laws of surplus value"-produced the visible reality, the "phenomenal forms," "appearances," or "categories," of "capital," "profit," "rate of profit," "wages," "interest," "rent," etc., that appeared in reality, political economy, and accounts. Having worked out his theory of the "essence," in short, Marx used it to investigate accounts, to explain their phenomenal forms, which he concluded determined capitalist ideology and dominated political economy.⁵

Adam Smith put the free pursuit of economic self-interest at the heart of economic theory when he famously argued that the "invisible hand" of commodity markets automatically controlled individual behavior to maximize the "wealth of nations." Marx agreed that markets were important in social control, but his explanations of capitalist accounting, the book argues, amount to an "accounting theory" that explains how individual capitalists and the "capital market" use what is, for many, the invisible hand of accounting to control the production and distribution of surplus value.⁶ Marx used his theory of value to explain the accountant's principles and practices, the rules and methods that produce the accounts, and how capitalists and their agents use them. This is his theory of capitalist accounting control, of "accounting for" value, explaining why and how individual capitalists keep accounts (and how to produce aggregate social accounts), and the phenomenal forms they represent. The claim is not that Marx argued or implied that accounting creates value. He plainly argued that capitalists control the production of value, not the law of value. Rather, the book argues, he discovered that capitalists' accounts inchoately embody the law of value and enforce it, and that his theory of value made their underlying premises explicit, which he articulated as a theory of accounting control.

Even those Marxists who reject his theories of value and history (critics usually reject both) often find relevance in one aspect of Marx's conception of society as a "mode of production," his concept of the "social relations of production." Many recognize that these relations, between masters and slaves, feudal lords and peasants, or capitalists and free wageworkers, "crucially, concern the *control* of the process of production and distribution of its products" (Callinicos 1983, 83, emphasis added). They accept that in Marx's view the "key to understanding the basic evolution and change in human societies lay in uncovering the exact mechanisms through which the ruling classes secured the *control* of surplus production, and the 'contradictions' or instabilities making for change, these mechanisms implied" (Foley 2000, 6, emphasis added). Giddens (1995, xv, 3), a sociologist, rejected the theory of value and historical materialism, but thought, "Marx's emphasis that the economy is always a system of power surely remains necessary and useful," even though he concluded that "power was never satisfactorily theorised by Marx."

This book argues, to the contrary, that Marx's theory of "power"—his theory of capitalist control—is coherent and logical, and consistent with evidence of capitalist accounting principles and practices. Understanding Marx's theory of history, of evolving modes of production, as "accounting history," as a theory of evolving systems of social power using different systems for extracting surplus labor, including different systems of accounting control, *Accounting for History* argues, integrates his theories of history, ideology, and socialism and provides the "missing link" in understanding and testing his work. Understanding capitalism and its accounting as the products of history, it concludes, Marxists can address the apparently "formidable problem of finding an interpretation and reconstruction of the labor theory of value which is simultaneously an unimpeachable representation of Marx's own views and a foundation for a progressive economic research program" (Foley 2000, 3), as a work of "science."

"Science" for Marx meant explaining how "essence" determined "appearance": "all science would be superfluous if the outward appearance and the essence of things directly coincided" (1998, 804). The book supports Marx claim that his work was "scientific" because, contrary to conventional wisdom (e.g., Sayer 1979, 141), an accounting interpretation shows that his theory of value is open to empirical refutation. Marx tested it when he explained capitalist accounting's observable principles and practices as the products of the "invisible essence," the social relations of production that created value and surplus value. Explaining, articulating, and justifying his theory of value through explaining accounting supports his dismissal of the criticism of Volume 1 of *Capital* that he had provided no "proof" of his concept of value. He responded in a letter to his publisher in July 1868, "even if there had been no chapter on 'Value' at all in my book, then the analysis of the real relationships which I provide would contain the proof and evidence of the real relation of value. . . . Science consists precisely in working out how the law of value asserts itself" (Marx and Engels 1983a, 148). The book supports his claim to have "proved" his theory of value by showing him working out how it "asserted itself," operated in reality, by using it to explain the categories of "capital," "profit," "rate of profit," "turnover," "cost price," "fixed capital," "depreciation," "faux frais," etc., he found in accounts, to reveal the "real relationships," the social relations they disguised.⁷ Accounting for History argues we can also test his theories of history, ideology, and socialism against accounting evidence.

Accepting that Marx explains capitalist accounting in the volumes of *Capital* does not diminish their economic, philosophical, historical, sociological, or political significance. Marx wanted to understand the economic determination of values, prices, and profits, etc., in capitalism, and the social processes that make them one magnitude rather than

another, and to understand its history and replace it with socialism in the name of human progress. Nevertheless, the book argues, his largely overlooked explanations of the apparently uninteresting principles and practices of accountancy articulate his theory of value and provide an empirical foundation for his explanations of how value determines prices and profits, etc., and its companion volume supports Marx's theory of history and its end in socialism. In short, they conclude, in addition to his many well-known intellectual contributions, Marx is the master accounting theorist.

Some Marxist economists (Sweezy 1942; Foley 1986, 2000), economic historians (Hicks 1974; Klamer and McCloskey 1992), and accounting academics (Paton 1922; Most 1963; Wells 1978; Bailey 1978; Chiapello 2007) have detected an affinity between Marx's theory of value and capitalist accounting, but nobody has pursued it.⁸ Sweezy (1942, 63) claimed, "Marx's value theory has . . . the great merit, unlike some other value theories, of close correspondence to the actual accounting categories of capitalistic business enterprise," but apparently thought these too obvious to state or discuss. Bailey (1978, 12) argued, "Marx required an understanding of business practices," and "appreciated the importance of accounting" in analyzing how capitalism worked, but gave few details. Foley (1986, 2000) has addressed the link in formal outline, but has not explored further. With the exception of Chiapello (2007), discussed in chapter 2, the few accountants have merely noted it. This book and its sequel aim to rectify this omission by examining the links between accounting and Marx's theories of value and history in some detail.

Accounting for Value builds on the TSSI's refutation of the charge of inconsistency by showing that Marx used his theory of value to explain "traditional" capitalist accounting principles and practices.⁹ Accounting for *History* uses Marx's theory of capitalist control to interpret his theory of history as an accounting history of the evolutionary transitions of precapitalist modes of production. It shows that accounting's phenomenal forms are the foundation of Marx's theory of ideology, which undermines the criticism that he left Marxists with a "problem of ideology." It interprets his discussions of the transition to socialism as a theory of accountability for the "valorization process," the process of producing profit, to the "vast association of the nation" envisaged in the *Communist Manifesto* (Marx and Engels 1976b), which contradicts the common view that he advocated "equality" and central state planning. By explaining

capitalist accounting, it concludes, Marx's theory of value provides the basis for a progressive research program by giving Marxists a "critical accounting theory" that articulates capitalism's hidden social foundation, and leaves them with the task of "critical accounting," using this knowledge to explain capitalist accounts, their causes, and their consequences.¹⁰

This chapter first outlines the broad links between Marx and accounting. It then highlights the major criticism that Marx's solution to the "transformation problem" is inconsistent, and outlines the advance represented by the TSSI's refutation of this influential charge, the accounting interpretation's confirmation of the TSSI, and extension from it, issues which later chapters explore in detail.¹¹ It concludes with a chapter-by-chapter overview of the remainder of the book.

MARX AND ACCOUNTING

Accounting today is the ubiquitous profession and business of collecting, processing, auditing, and reporting the vast amounts of financial data that capitalism generates and uses. It has two branches, "management accounting" that operates within businesses, generating and reporting financial information for management, and "financial accounting" (or "financial reporting") that reports to external shareholders.

From the mid-nineteenth century, British company legislation and legal judgments recognized the importance of financial accounting to the development of capitalism based on joint stock companies and the divorce of ownership from control (Bryer 1991, 1993a, 1998). When Marx was writing, as he said in the *Contribution to a Critique of Political Economy* published in 1859, "joint-stock companies . . . [were] one of the most recent features of bourgeois society" (1971, 213). Nevertheless, chapters 2 and 3 show that they play a key role in his theory of capitalist control and, *Accounting for History* shows, in his theory of the transition to socialism.

The link between accounting and control is most apparent in management accounting. Textbook writers, business owners, and managers take it for granted that management accounting systems are "vital" for control (Mackintosh 1994, 197). They presume that accounting is an objective source of information that management uses in a rational, authoritarian way in pursuit of the self-evident and widely shared economic end of realizing the maximum "rate of return" on capital, usually called the "return on capital employed" (ROCE) in the United Kingdom, or return on investment (ROI) in the United States. This metric, we will see, is Marx's "rate of profit," a key phenomenal form that he claimed to explain. An outstanding American practitioner of this creed was Alfred P. Sloan, for many years chairman of General Motors, who reminisced, "No other principle of which I am acquainted serves better than the rate of return as an objective aid to business management" (1964, 140).¹² In the realm of production, management accounting provides a socially objective basis for capitalist control of the valorization process, the process of production for profit, and its concepts and practices are consistent with his theory of value (Bryer 2006a).

In the realm of the stock market and its relations with business enterprises, the domain of financial accounting, the links between Marx's theory of value, accounting, and control, today appear less clear. The official purpose or objective of financial reporting to shareholders changed in America in the 1970s from the traditional aim of "stewardship" or "accountability" for capital, providing financial accounts to allow shareholders to hold management accountable for ROI, just as management uses its accounts to hold subordinates accountable to them.¹³ This objective and the valuation rules it implies, the book argues, are consistent with Marx's use of his theory of value to explain the workings of capitalism as a system of accounting control.

"Traditional" stewardship accounting means the capitalist accounting that spread from around 1850 in Britain with the appearance of joint stock companies (Bryer 1993a, 1998, 2005, 2015). In 1978, the Financial Accounting Standards Board (FASB), which sets US accounting standards, changed the objective to "decision-usefulness," that is, providing information to "investors" (shareholders and creditors) to help them forecast future cash flows to value shares and debt. Many commentators, particularly European, disagree with this objective, arguing that it introduces subjectivity into financial reporting, and the debate continues (IASB 2007, 2013, 2014).

This book puts that debate to one side. Its focus is showing that Marx used his theory of value to explain capitalist stewardship accounting, whose principles and practices remain important in financial accounting today. *Accounting for History* shows that the "decision-usefulness" objective, the product of exceptional American history (Bryer 2012, 2013, 2013b), seeks to implement the "vulgar" (neoclassical economics) version of what Marx (1998, 817) called Adam Smith's "Trinity Formula," which

transformed "capital" into money capital and "profit" into interest, that Marx dismissed as "shallow pompousness." Official endorsement of "decision-usefulness" would therefore have surprised him. Chapter 2 shows that his categories of "cost price" and "profit," etc., are consistent with traditional accounting principles, which subsequent chapters argue he explained. Marx concluded that these categories were "ideological," "inversions" of an objective social reality that left them "practically adequate" (Sayer 1979, 8), but we cannot take this for granted with "modern" financial reports. *Accounting for History* concludes that ideologically distorted, "decision-useful," accounts present a challenging opportunity for critical Marxist accountants.

THE "TRANSFORMATION PROBLEM"

Volume 3 of Capital, published in 1894, quickly became the focus of Marx's critics. Following Ladislaus von Bortkiewicz (1906–1907), many agreed that Marx's illustration in chapter 9 of the "transformation from values to prices" was inconsistent, and that solving it according to what became the "standard interpretation" fatally undermined his theory of value (Kliman 2007, 45–46; Loranger 2004). The "problem" arises because in Marx's theory the "socially necessary labor time" needed to produce a commodity, including the time to produce its means of production, determines its "value," but this was not necessarily its price, the money received from selling it (Kliman 2007, 25), for a variety of reasons. An important one was that different capitals, employing different proportions of labor and means of production, according to the labor theory of value should earn different rates of profit, whereas competition for capital meant that they were equal when measured in prices, that all capitals earned the average or "general rate of profit." In reality, Marx knew, "actual market prices fluctuate around prices of production" (Kliman 2007, 27), the cost of production plus a profit mark-up, not values.¹⁴

In parts of Volume 1 of *Capital*, all of Volume 2, and the early chapters of Volume 3, Marx put aside complications introduced by differences between value and price by assuming they are equal, that there is what he called "equal exchange" for every commodity. However, in Part 2 of Volume 3, Marx claimed that his theory of value explained their systematic divergence under competition, why individual capitalist's rates of profit measured in value and prices diverged to give them all the general

rate of profit. Apparently proving his illustration in chapter 9 "contains a demonstrated error that invalidates Marx's results," and that rectifying this undermined his theory of value, has therefore, not surprisingly, been "one of the most potent weapons in the arsenal of those who would seek to suppress his work" (Kliman 2007, 139). At the same time, Marxists frequently find economists' presentations of the transformation debate "abstruse and technical," often dismissing it by arguing that Marx had no interest in explaining prices (Kliman 2007, 139, 4). However, as he undeniably "wished to explain where profit comes from and what determines its magnitude," and in his theory "price is cost plus profit . . . [so] the theory of price determination is essentially the same as the theory of profit determination" (Kliman 2007, 139), Marxists cannot ignore price determination. It is, therefore, important to examine Bortkiewicz's criticism thoroughly, and its rejection by the TSSI. Kliman (2007) shows that the controversy is not "abstruse and technical," a view supported by chapters 4 and 5 which argue that it raises simple but fundamental questions of accounting.

The key issue is the validity of Bortkiewicz's interpretation, according to which "Marx had a *simultaneist* and *dual-system* theory," which meant "inputs and outputs are valued simultaneously, so input and output prices are necessarily equal, and . . . there are two separate systems of values and prices" (Kliman 2007, 2). According to Bortkiewicz, Marx should have valued the inputs and outputs of individual departments of production in values and prices, with the input and output values and prices determined simultaneously, which he "failed" to do. Bortkiewicz's interpretation requires Marx's solution to keep separate value and price accounts even though its proponents recognize that he did not work that way, that in his theory the commodity had a "single cost price," not "two distinct cost prices," but they "claim that this was an error" (Kliman 2007, 32). It imposes simultaneous valuation to remove the claimed internal inconsistency in Marx's solution between inputs at values and outputs in prices to "correct," Bortkiewicz argued, "Marx's 'successivist' conception of determination" (Kliman 2007, 47), that is, his "temporal" determination of value through time.

Marx's illustration of the transformation from values to prices maintained three aggregate (social or economy) equalities. (1) Society's average (or general) value rate of profit equals its average price rate of profit. (2) Society's total surplus value equals its total profit measured in prices. (3) The total value of production equals total production measured in prices. For Marx, as Kliman (2007, 144, 148) puts it, these equalities "were immensely significant. They confirmed both the law of value and his theory that all profit had its origin in the exploitation of workers"; they were "the key result of Marx's solution." Therefore, the fact that Bortkiewicz's solution did not reproduce two of them made his theory of value seem "untenable," "seriously called into question" his theory of exploitation, and implied that his law of the tendential fall in the rate of profit (LTFRP) was "incorrect" (Kliman 2007, 46).

This was the accepted wisdom until the early 1980s, when independent groups of Marxist scholars began to question the standard interpretation, producing three alternative interpretations, the NI, the SSSI, and the TSSI (Kliman 2007, 33, 52–3). After intense debate, Kliman (2007, 207–8) concludes, "Critics of Marx's value theory and other critics of the TSSI have acknowledged, however grudgingly and implicitly . . . that the LTFRP and Marx's account of the value-price transformation have not been shown to be logically invalid." It follows "that his 'metaphysical' value theory has *not* been shown to be superfluous to his conclusion that surplus labor is the exclusive source of profit" (Kliman 2007, 207–8). However, Kliman (2007, 206, 208) accepts, "This leaves . . . contested readings of the direct textual evidence" concerning whether "Marx was a temporalist . . . [and] a single system theorist." Some accept the TSSI's refutation of the charge of inconsistency, but "the myth . . . is almost as ubiquitous as before" (Kliman 2007, 208). This could well be because, as Kliman speculates, "the specialists in the field, mainly Marxist and Sraffian economists—have not done their part to set the record straight" (2007, 208–11); that is, they have suppressed the TSSI's dissent for careerist and political reasons.

The book contributes to this debate by making visible the accounting in *Capital*, taking sides in the contest between the TSSI, its critics, and the uncommunicative majority of economists, by showing that the TSSI is consistent with Marx's explanations of capitalist accounting, whereas the standard interpretation, the NI, and SSSI, are not. The accounting interpretation shows that Marx's theory of value determination is "temporal," that is, it explains how capitalists account for the creation of value through time, in production, and is "single-system," explains how values and prices are determined and accounted for interdependently, and therefore supports the TSSI's rejection of all simultaneist and dual-system

interpretations (Kliman 2007, 32, 33). Kliman (2007, xiii emphases added) claims only, "Marx's theories *need not* be interpreted in a way that renders them internally inconsistent"; that the "allegations of inconsistency are *unproven*"; that "they are *implausible*." The book seeks to go further. It argues that Marx's explanations of capitalist accounting show that we cannot interpret his theory of value as dual system and simultaneist.

ACCOUNTING ADJUDICATION

The NI is a "different dual-system interpretation" that challenged Bortkiewicz's requirement for dual systems for "variable capital," arguing that money wages is the variable capital in both the value and price systems (Kliman 2007, 33, 52).¹⁵ However, by retaining dual systems for constant capital and simultaneous valuation, the NI's solution is inconsistent with some of Marx's aggregate equalities (Kliman 2007, 33, 161–63), and, as chapter 4 shows, with his accounting for the production of value. The NI proposed "a new aggregate value-price equality," that variable capital (wages) plus profit, what accountants call "value-added," equals variable capital plus surplus value, rather than total price equals total value, which, as we will see in chapter 4, means that "arguably the NI preserves something akin to two of Marx's three aggregate equalities" (Kliman 2007, 52). However, its dualistic treatment of constant capital means that total price does not equal total value, and the general value rate of profit does not equal the general price rate of profit (Kliman 2007, 52).

By dropping dual systems for variable and constant capital, the SSSI provides a solution that is consistent with Marx's three aggregate claims. its retention of the "nearly ubiguitous" simultaneist However. interpretation makes it inconsistent with the TSSI's explanation of his theory of value determination (Kliman 2007, 47, 163–64), and as chapter 4 shows, with Marx's and capitalists' accounting for changes in the prices of constant capital. When prices change, simultaneous valuation requires, contrary to Marx and accountants, the revaluation of production inputs to output prices, "for instance, that a bushel of seed corn planted at the start of the season must have the same value as a bushel of corn harvested at its end" (Kliman 2007, 34). Simultaneists, therefore, in effect measure the rate of profit as the physical productivity of capital (Kliman 2007, 53), the ratio of physical output to physical input, not its "value productivity," Marx's rate of profit measured as the increment to the value of capital in circulation, the accountants' ROI.

Chapter 4 supports the TSSI's conclusion that "commodities' values depend upon what the inputs cost when they enter into the production process, which might be quite different from both their historical cost and their replacement cost" (Kliman 2007, 35). Marx and accountants agree that when input prices change the value transferred during production is the current replacement cost of the inputs at the time they enter production, which may be more or less than their historical costs, and different from their replacement costs after production, which accountants call "replacement cost accounting" (RCA). However, to calculate the rate of profit when prices change, as chapter 4 shows, it is also necessary, as Marx worked out, to calculate what accountants today call "capital maintenance adjustments" (CMAs), to remove the effect of the fluctuation of input prices from external causes from the calculation of profit, and revalue the capital to closing replacement costs. Accountants make this calculation to measure, as Marx put it, the "tie-up" or "release" of capital.

Kliman (2007, 95) gives a simple example to illustrate the difference between the SSSI and the TSSI, which we can use to illustrate the alternative accounting systems, that I examine in detail in chapter 4. In Kliman's example, an apple producer produced an apple yesterday that cost \$0.60, which an applesauce producer buys today at 9 pm for \$0.55. The applesauce producer uses the apple to start making applesauce at 1 pm today when the replacement cost of an apple is £0.50, and finishes making it an hour later when the replacement cost is \$0.45 per apple (see Table 1.1).

If the applesauce producer sells the product immediately on completion for \$1 and there are no other costs, what according to Marx's theory of value are the profit and the rate of profit? Simultaneists argue that the profit is 1-\$0.45 = \$0.55, and because the capital falls from \$0.55 to \$0.45, the rate of profit is 122% [\$0.55/\$0.45]. If by "enter production" we mean, consistent with traditional capitalist accounting, when the applesauce producer acquired control of the asset, which is on purchase at 9 am, the "Pre-Production Reproduction Cost," the replacement cost of \$0.50 at the time of production, is not relevant to the calculation.¹⁶ If we calculate using the replacement cost at the time of purchase, the TSSI profit is \$1-\$0.55 = \$0.45, and the rate of profit on the capital advanced by the applesauce producer of \$0.55, the replacement cost at that time, is \$2%[\$0.45/\$0.55].

 Table 1.1 Changes in the Cost of an Input

Time	Yesterday, 2 pm	Today, 9 am	Today, 1 pm	Today, 2 pm
Event	The apple is produced	The apple is sold	The apple becomes an input into applesauce	The applesauce is produced
Cost of Newly Produced Apple	\$0.60	\$0.55	\$0.50	\$0.45
Cost Concept	Historical cost		Preproduction reproduction cost	Postproduction replacement cost

Source: Kliman (2007 Table 6.1, 95).

Apparently agreeing with the simultaneists, chapter 4 argues that Marx would calculate what accountants call the "current operating profit" of 1-0.45 = 0.55, the profit the applesauce producer would earn if it repeated the investment under current conditions. However, contrary to the simultaneists, Marx and accountants would show that this included a CMA of \$0.10 [\$0.55–\$0.45], showing that \$0.10 of the "profit" of the reported \$0.55 was a "release" or return of capital to its owner, because to repeat the investment the applesauce producer needs only \$0.45, not the \$0.55 initially required. Marx and accountants therefore agree with the TSSI that the rate of profit earned from the production and sale of the applesauce is 82% [\$0.45/\$0.55]. Chapter 4 argues that accounting for CMAs reveals the fatal flaw in simultaneism and supports the TSSI's demonstration that Marx's theory of the LTFRP is logical.¹⁷ The failure of the simultaneist interpretation to replicate Marx's accounting for price changes is important in assessing the validity of its criticisms of his theory. As Kliman (2007, 205) shows, the "alleged proofs of Marx's inconsistencies and errors all depend crucially upon one key . . . interpretive error—the notion that inputs and outputs are valued simultaneously in Marx's theory." This interpretation "wreaks havoc on Marx's theories" because it is incompatible with the determination of value by labor time (Kliman 2013, 12, 14–18).

Chapters 4 and 5 argue that Marx's RCA confirms the TSSI's demonstration that by dropping the dual system and simultaneous valuation interpretations we get a substantive solution that is consistent with his value theory and his illustration of the transformation from values to prices (Kliman 2007, 52–53, 164–65). They support the TSSI's fundamental assertion that "valuation is temporal" (Wolff 2009, 421) because according to Marx's accounting theory the function of accounting is accountability for capital, which requires accounts and their valuations to follow the temporal sequence of its circuit, M-C-M'. This is Marx's

"general formula for capital," the advance of money (M) to buy commodities (C) including labor power, to sell for more money (M'). Chapter 2 argues that accounting primarily gives capitalists financial "results control" of agents (managers and workers); that is, it holds them "accountable" or controls them, by setting targets, requiring objective accounts, and punishing or rewarding performance. To hold agents accountable for results, accounts must follow the temporal sequence of advancing capital at time t and setting a target, then measuring results and comparing them to target at time t+1, and they must use current values that hold management accountable for its decisions (to buy, use, or sell assets) when it makes them.

Chapter 5 confirms the TSSI's demonstration that Marx's illustration of the transformation of values to prices is consistent (Kliman and McGlone 1988 1999; McGlone and Kliman 1996; Kliman 2007) by showing that it uses Marx's RCA to balance society's accounts through time while sustaining his three aggregate equalities. This confirms the TSSI's claim to have removed the taint of logical inconsistency from Marx's theory of value, but it leaves open the question of its "truth," or empirical proof, and therefore its practical relevance. Marx's demonstration of the formation of an average rate of profit and prices of production that differ from values is logically consistent with his claim that value is determined by socially necessary labor time, and that total profit is determined by total surplus labor. Clearly, however, "empirical investigation is needed in order to determine whether . . . Marx's theoretical conclusions . . . are correct or not" (Kliman 2007, xiii).

EXTENDING THE TSSI

Showing that Marx proved his theory of value by explaining accounting, chapter 3 argues, is evidence that supports his fundamental claim, highlighted by the TSSI's "production-centered" interpretation of value determination (Kliman 2011b; Freeman 2011), that the production of value and surplus value occurs before the capitalist sells the commodity. Subsequent chapters support this interpretation with detailed accounting evidence: chapter 4 for Marx's RCA, chapter 5 for "cost price" and "profit," chapter 6 for "fixed capital," and chapter 7 for "productive" labor.

Chapter 5 builds on Kliman's (2007, 142) important point, that assuming the production of profit as a form of surplus value before sale would

justify Marx's claim that total profits equal total surplus value because competition then distributes a predetermined total, with supporting evidence. It argues that Marx explained how "total social capital," the capital market, requires individual capitalists to transform the general rate of profit and market prices into "cost prices" that they use to measure and control the creation of value in production. In Volumes 1 and 2 of *Capital*, Marx defined "socially necessary labor time" to mean the average labor time "required to produce an article under normal conditions of production, and with the average degree of skill and intensity prevalent at the time" (1996, 49). However, in Volume 3 he modified it because, as chapter 5 argues, competition for capital imposed an overriding definition, the time implied by "cost price," what accountants call "standard" or "target cost," the maximum cost of production consistent with the capitalist earning the general or "required" rate of profit.

This, chapter 5 concludes, is Marx's accounting explanation of his illustration of the transformation from values to prices, his "accounting solution," explaining cost price and prices of production by using his theory of value to explain the accounting calculations that produced them. Marx substantiated his aggregate equalities by explaining the calculations of individual capitalist firms, not simply by his illustration in Volume 3. Marx, in fact, did not claim that his illustration "confirmed" his theory of value, but that it did not "abolish" it. The "proof" was using his theory of value to explain the accounting principles and practices that produced the value and price data he used. Marx used his theory of value to explain how accounting calculations tended to produce equal rates of profit, to explain accountability for the circulation of capital, and to describe the observable reality of capitalist control through accounting. This dissolves the "transformation problem" because, according to Marx's accounting theory, individual capitalists control the valorization process, the creation of value in production that appears to them as the cost of production, and the realization of profit, to earn at least the general rate of profit.

Believing that he had shown how his theory of value explained empirical reality would justify Marx's decision not to deal with the apparent inconsistency in his illustration that inputs would, in reality, be at prices of production, not values, because "our present analysis does not necessitate a closer examination of this point" (1998, 164). Chapter 5 confirms the TSSI's demonstration that "jettisoning . . . simultaneism and the dual-system is both necessary and sufficient to acquit Marx of the internal

inconsistency charge," and that "the TSSI deduces Marx's aggregate equalities in a logically consistent manner" (Kliman 2007, 4, 167). However, this leaves the task of explaining the empirical relationships between values and prices, because the TSSI's demonstration starts from given values, which it does not explain. As we will see, the TSSI starts from a given "rate of surplus value" (the ratio of surplus value to variable capital), and given values for variable capital and the constant capital transferred, the sum of which Marx called "cost prices" (Kliman 2007, Table 8.1, 143). The given rate of surplus value and cost prices produce the individual and aggregate surplus values and, therefore, the general value rate of profit, which we assume equals the general price rate of profit. Using this rate to mark up the given constant and variable capital values redistributes the total surplus value to give prices of production yielding an equal price rate of profit.

The TSSI interprets the values of constant and variable capital as prices: "The constant capital advanced and the value transferred depends upon the prices, not the values of the means of production" (Kliman 2007, 33). Potts explains that assuming the

sum of *value* transferred to products from used up means of production depends on the *prices* at the start of the period of production . . . does not imply that value has been redefined to equal price. The TSSI recognizes that, for numerous reasons, such as the tendency of the rate of profit to equalize, the price of a particular commodity will almost always differ from its value. (Potts 2015, 16)

Nevertheless, saying that the value transferred "depends on" but does not necessarily equal the price means that, other than its logical relation to the assumed aggregate equalities, the TSSI does not explain the constant capital transferred as "values," but takes them as given, albeit "dependent" on their prices. It is true that the TSSI is "a single system . . . interpretation because values and prices are not held apart in different systems: total *value* and surplus value determine total *price* and profit" (Potts 2015, 16), but what "determine" means is unclear. Kliman (2015, 16, 143) stresses, "In keeping with Marx's solution, the sums of constant and variable capital (and the surplus-values) are *data*, specified at the start. The only derived magnitudes are the prices, profits, and price rates of profit. . . . [T]his is a key difference between Marx's solution and his critics' 'corrections' of it."

To explain the starting sums of constant and variable capital as values transferred that depend on prices, chapters 4 and 5 argue, Marx used his core concept of the "monetary expression of value," the money measure of the "socially necessary labor time" required to make commodities, to explain capitalists' accounts. This concept is the justification for the NI's treatment of variable capital, and the SSSI's and TSSI's treatment of variable and constant capital. Kliman explains the basic idea:

To measure value and price in the same units, a conversion factor is needed. Marx frequently employed such a factor . . . , but did not give it a name. In recent years . . . the term *monetary expression of labor-time* (MELT) has become popular. If each hour of socially necessary labor adds \$60 of new value . . . the MELT is \$60/hr. Multiplying labor-time by the MELT, we get dollar figures; dividing dollar figures by the MELT, we get labor-time figures. (Kliman 2007, 25)

Chapter 5 supports the TSSI's "interpretive move," as Wolff puts it, "to understand values and prices as quite distinct but determined 'interdependently' . . . [which] means that neither is the essence to which the other reduces" (2009, 420), by making the MELT concrete in capitalist accounting principles and practices. It shows that just as in target costing, in Marx's explanation "there is no distinct price system," and because "prices influence value magnitudes" there is "no distinct value system either" (Kliman 2007, 33), and that Marx's accounting theory explains the prices of constant capital transferred as "socially necessary" values calculated from historically "given" price data.¹⁸ If Marx's "socially necessary" values are the accountant's target costs, we know that capitalist calculations of "cost prices" are measures of values, and profit is a form of surplus value, because his theory of value explains the principles accountants use to make them. Chapters 6 and 7 show that Marx also used his idea that only "socially necessary" labor time adds money value to commodities to explain capitalist accounting principles and practices for fixed capital and inventories, principles that make sense only if labor creates value and surplus value in production.

These explanations, the book concludes, were Marx's "proof," empirical evidence that his theory of value is "true." In this sense, it seeks to go beyond the TSSI's focus on logic, its self-denying ordinance to defer the question of "truth." As Kliman (2007, 168) says, TSSI proponents "have continually stressed that our demonstrations are not efforts to prove that Marx's theory is true, but efforts to prove that the theory can be interpreted in a manner that renders it logically consistent."

Kliman accepts, of course, that "at the most basic level, the issue of transformation has to do with how values are related to real world prices" (2007, 140). Moreover, he argues that Marx's illustration of the transformation from values to prices is "true" at the aggregate level:

"Although the law of value would seem to be falsified if we were to confine our attention to individual industries, it holds true as a law pertaining to the *aggregate* economy" (Kliman 2007, 142). More generally, he accepts, "What is at issue . . . is whether or not the law of value actually elucidates the real world facts," "the significance and validity of the aggregate equalities," or "in philosophical terms . . . whether value is actually an essence that underlies price" (Kliman 2007, 147–48).

EXPLAINING THE ECONOMY AND THE INDIVIDUAL ENTERPRISE

Bohm-Bawerk (1898) opened a different line of criticism. He did not argue that Marx's solution was inconsistent, but that he had failed to provide any solution at all. He accepted Marx's proposition that the aggregate price of production equaled the aggregate value of labor incorporated in production, but argued it was a physical tautology, and that the aim of economics was explaining individual prices (Kliman 2007, 144–46). According to Bohm-Bawerk, although Marx claimed in Volume 1 that over the long run individual commodities sold at their values, and he would reconcile this with them actually selling at their prices of production in Volume 3, he had not done this (Kliman 2007, 144–45). Marxists usually reject this interpretation because Bohm-Bawerk based his interpretation on selected "snippets, never even a complete sentence," whereas he ignored other statements that directly contradict it (Kliman 2007, 145–46), but they often accept the corollary that Marx's theory of value works only at the aggregate level.

Demonstrating the transformation from values to prices at the aggregate level is consistent with the central claim of Marx's theory of value that only socially necessary labor time adds money value to commodities in production. However, working only in aggregates effectively accepts Bohm-Bawerk's denial "that Marx had reconciled the law of value with real world prices" (Kliman 2007, 145), and that Marx "locates the labor theory of value at the level of the aggregate production of commodities . . . not, as Ricardo expressed it, in each particular commodity" (Foley 1986, 15). According to the NI, for example, Marx gave us only an "aggregate theory asserting that the labor-time worked by productive labor is the source of all money value-added, whatever prices happen to be" (Mohun 1996, 41), so we cannot use it to explain the prices or costs of individual

commodities and the profits of individual capitalist firms.

Chapter 3 argues, to the contrary, that Marx's analyses of "capital in general" in Volumes 1 and 2 of *Capital*, and "total social capital" in Volume 3, his explanation of accounting calculations and practices, applied also to individual capitals. It concludes that *Capital's* structure follows an accounting logic of applying theory to the representative individual capitalist, the reproduction of aggregate social capital, and functioning of total social capital, in turn.¹⁹

OVERVIEW

Chapter 2 outlines the accounting control model that following chapters argue Marx articulated using his theory of value. It draws parallels between accounting control—its aim, its fundamental valuation concepts, and practices—and Marx's theory of value, which later chapters argue go beyond analogies. It argues that Marx's theory explains the generally accepted objective of financial accounting from around the mid-nineteenth century as capitalism took hold in Britain, and from around the end of the nineteenth century in America, of reporting the stewardship of capital, to hold management and workers accountable for the rate of profit. For this, Marx and accountants agree, capitalists must value tangible assets, that is, fixed assets and inventories, key elements of Marx's constant capital, at their current replacement costs, valued as a "going concern" as accountants say, on the presumption that the business will continue and therefore "maintain" its capital, or as Marx put it, "preserve" the value of "capital in circulation."

Chapter 3 examines Marx's interest in accounts and the impact his investigations had on his critique of political economy. It shows that Marx drew on Engels' access to accounts and knowledge as an employee and partner of Ermen and Engels, to stimulate his studies. Discovering that he could use his theory of value to explain capitalist accounts, including an apparent breakthrough in explaining how capitalists accounted for fixed capital, it argues, precipitated Marx's decision to change the title of his projected series of books to *Capital*, and to decide the structure of its presentation. Marx's decision to start *Capital* with an analysis of the commodity, assuming for parts of Volume 1, all of Volume 2, and the first part of Volume 3, that values equaled prices, dealing later with competition in which they diverged, it concludes, followed an accounting logic.

First, in Volumes 1 and 2, we learn the theory of value and use it to explain how capitalists account for the production and circulation of capital. Second, in Volume 3, we learn how they use accounts to control the valorization process. Volume 1 analyzes how the "aggregate social capital," what in *Grundrisse* Marx had called "capital in general," the sum of all capitals combined, in which the "individual capitalist" is seen as an average "representative," produces and accounts for surplus value and capital.²⁰ The first two parts of Volume 2 analyze how aggregate social capital accounts for the circulation of value, demonstrating that production and circulation are phases of one circuit, that the production of value underlies the circulation of value. The final part of Volume 2 analyzes the "reproduction and circulation" of the aggregate social capital divided into two main branches, one producing the "means of subsistence," and the other the "means of production," by constructing society's consolidated profit and loss account. By contrast, the first two parts of Volume 3 explain individual capitalist's use of accounts to control their "valorization process," producing profit, and their use by "many capitalists" conceived as a living collective, as the aggregate in motion, that chapter 3 argues Marx distinguished from the sum of capitals by calling it "total social capital," to control society's valorization process.

Part 1 of Volume 3 explains how capitalists calculate cost price, profit, and the rate of profit, the relationship between the rate of profit and the "rate of surplus value," the effect of "turnover" on the rate of profit, how capitalists seek economy in the use of constant capital, and the consequences of price changes. In Part 2, Marx explained how competition between "many capitals," between individual enterprises seeking the general rate of profit, and calculations of costs to discharge their accountability underlies the tendency for them all to produce and circulate value so that every enterprise gets an equal rate of profit.²¹ Marxists have failed to understand Marx's concept of "total social capital," the capital market as a controlling "communism of capitalism," chapter 3 argues, and therefore they overlook its dependence on accounting. However, it supports the TSSI's "production-centered" critique of the "marketcentered" interpretation of value determination, its conclusion that Marx's fundamental claim was that "profit is produced before outputs go to market" (Kliman 2007, 142), by showing that Marx used accounting evidence to support it, a conclusion developed and supported in detail throughout the remainder of the book.

Chapter 4 introduces Marx's illustration of the transformation from values to prices in Volume 3, explains economists' standard criticisms and "corrections," and outlines the countercritiques of the NI, SSSI, and the TSSI. The NI's transformation of constant capital, it argues, is inconsistent with Marx's claim that value is the monetary expression of socially necessary labor time, which later chapters argue is his core explanation of capitalist accounting. The chapter shows that the NI's and SSSI's simultaneist "replacement cost interpretation" (RCI) is inconsistent with Marx's explanation of the impact of price changes on the rate of profit, his RCA. It concludes that the TSSI's focus on the temporal determination of value is consistent with Marx's RCA, but adds the need to make CMAs, what Marx called the "tying-up" or "release" of capital, which supports its demonstration that Marx's LTFRP is logical.

Chapter 5 gives Marx's accounting solution, his explanation of the valueprice transformation illustration in Volume 3 of *Capital*, which it argues supports his claim to have shown that socially necessary labor time remained the source of all value with many capitals in competition where prices diverged from values. The two key aspects of this claim are that Marx uses his theory of value to explain how the capitalists' accounting calculations tended to produce equal rates of profit, and that his explanation is historical. It presupposes what Marx saw as the "really difficult" history of total social capital, of capitalists functioning as a living collective, demanding the general rate of profit, and competing individual capitalists using accounts to control their labor processes to transform prices of production into "value" in the form of "cost prices," which accountants call "standard" or "target" costs.

Chapter 5 uses Marx's RCA to confirm the TSSI's demonstration that his illustration of the transformation is consistent. However, Marx's explanation, it argues, was that history created the general rate of profit and total social capital that requires individual capitalists to transform historically determined ("given") market prices into values, which went beyond providing a logical explanation of the transformation of given values into prices of production. Marx's empirical solution, which he said allows us to "glimpse" that value was determined by labor time, was capitalists keeping accounts according to the "law of one cost" whereby identical commodities absorb equal amounts of the "monetary expression of socially necessary labor time."

Chapter 6 shows that Marx's analysis of the "peculiarities" of the circuit

of fixed capital explains traditional capitalist accounting for fixed assets and depreciation, and is consistent with the TSSI. It rejects Marxist economists' criticisms, based on the physicalist-simultaneist interpretation, and their conclusion that Marx's treatment of this key topic exposes flaws in his theory of value.

Chapter 7 rejects critics' claim that Marx's distinction between "productive" and "unproductive" labor creates an "accounting nightmare" (Harvey 2013, 92). It shows that Marx's categories, key elements of his theory of value, explain the accountants' method of calculating "gross" and "operating" profit, which they call "absorption costing," which distinguishes between the "cost of production" and "non-production (general) overheads," and they explain the accountant's "entity concept." Marx argued that capitalists only count labor as productive if it creates surplus value. The chapter shows that unnecessary confusion has arisen in the Marxist literature from not understanding that Marx's use of the accounting entity concept means that productive labor for an individual capitalist can be socially unproductive, for example, the work of advertising or bank executives. The chapter shows that Marx defined labor as socially productive only when it produces surplus value from producing the "means of subsistence" (understood historically and socially as the average level of workers' consumption, and capitalists' luxuries) or "means of production," buildings, materials, machines, raw materials, etc.

Concluding that Marx proved his theory of value by explaining capitalist accounting raises the question why, as he repeatedly stressed, do capitalists, their agents, political economists, and workers, not understand the "essence," but have an "ideological" understanding, limited to capitalism's "phenomenal forms" or "appearances." Marx's answer was that penetrating appearances was difficult, "very complicated," and "very extensive," requiring the work of "science," which explained why capitalists, political scientists, workers, etc. had an inadequate or "ideological" understanding. It was difficult, Marx argued, because the phenomenal forms appeared to be transhistorical categories, whereas they were really the product of a long and complicated history, and, therefore, to explain capitalist ideology and break its grip, Marx needed a theory of value and a scientific theory of history. Assessing whether Marx's theories of history and ideology are scientific is the task of the companion volume, Accounting for History, which advances and defends an accounting interpretation, which the conclusion outlines.

CONCLUSIONS

The standard interpretation of Marx's "transformation problem" and its implications for his theory of value has dominated thinking about his work for more than 100 years. The first question, therefore, is whether Marx's "value theory has been proven internally inconsistent" because, if so, it "would be *necessarily wrong*" (Kliman 2007, 3). If not, the question becomes whether it has empirical validity. Kliman emphasizes that temporal and interdependently determined values and prices "is certainly not what Marx's value theory is 'really about'" (2007, 3), but there are many interpretations of what that is. Marx's work, stretching over many thousands of pages, is often complex, theoretically abstract, and difficult to read. Nobody has yet found the generally accepted interpretive key to silence the critics and unlock its potential as a foundation for progressive research and practical action. However, this book and its sequel argue that elaborating the TSSI as Marx's theory of capitalist accounting control potentially provides such a key.

Why is the role of accounting in *Capital* and in capitalist society almost invisible to Marx's supporters and to his critics? The primary reason is ignorance of a complex, practical activity, of little apparent intellectual interest. Klamer and McCloskey are right, and not just for economists, that "most economists have not read an article on accounting. In fact, most are startled to learn of the existence of academic articles on accounting. Academic accounting? One might as well have academic plumbing" (1992, 145)!

The book's aim is not to defend or promote academic accounting, but to highlight accounting as a social practice worthy of close study by Marxists. It argues that Marx's engagement with accounting influenced the title, presentation, and aims of *Capital* and its analyses and conclusions. Recognizing the role that explaining accounting plays in Marx's critique of political economy shows that the challenge was not to solve a logical "transformation problem," but to use his theory of value to explain how calculations of cost price and profit and their use distributed surplus value evenly across capitals. Recognizing accounting shows there are no inconsistencies or ambiguities in his explanations of fixed capital or productive and unproductive labor. Recognizing accounting, these explanations amount to a production-centered theory of capitalist control.

Marx's explanations show that his concept of value is not "metaphysical," that "the distinction between value and price exists in real

life," by providing evidence that "value" exists not only in personal evaluations of "money's worth" or as a "mental construct" (Kliman 2007, 140, 141), but is observable in the principles and practices of capitalist accounting. It follows that the sum of individual capitalist's profits equals society's total surplus value, which verifies Marx's fundamental claim that "the exploitation of workers in capitalist production is the exclusive source of profit" (Kliman 2007, 140).

On this foundation, *Accounting for History* argues, Marx built his theory of history and its end in socialism. Accounting ties together his theories of history, ideology, and socialism, which provides the "missing link" in Marxists' understanding, it concludes, because they routinely criticize his evolutionary theory of "modes of production" overlooking that he defined this as different ways of extracting surplus labor that required different ways of controlling and accounting for it, which we can test with accounting history. Seen in this way, Marx's "historical materialism" is not logically or philosophically flawed; his theory of ideology has not left Marxists with a "problem"; and his theory of socialism is not a call for "equality" and central planning, but for abolishing the capital market and wage labor and replacing them with a system of social accountability for value.

Marx worked out a philosophy of humanity and its future, a theory of history and class, and a political economy of value, prices, and profits; specialists in these fields and others have extensively discussed, elaborated, supported, but more often criticized, each aspect of his work. Nevertheless, I conclude, with the humility due from a lifelong "plumber," that Marx's accounting theory is an important part of the toolkit Marxists need to understand his work and change the world.

NOTES

1. For the purpose of this book, a "Marxist" is someone who studies Marx's work whatever his or her reservations or disagreements.

2. I will explain my interpretation of these words and phrases in quotation marks, and others to follow, at the appropriate points.

3. The TSSI is the product of collaborating scholars. See Freeman and Carchedi (1996), and Freeman, Kliman and Wells (2004), and particularly Kliman (2007), who provides a detailed synthesis of the TSSI, explains its history, and identifies the major contributors.

4. From August 1861 to around mid-1863, Marx worked under the title *A Contribution to the Critique of Political Economy*, also known as the *Economic Manuscripts of 1861–63*, which include the *Theories of Surplus Value*. Marx began to prepare *Capital* in 1865 (Oakley 1983, 93–94).

5. Some economic historians and accounting academics, by contrast, give accounting a primary role in the development of classical economic theory, including Marx's theory of "capital" (e.g.,

Hicks 1974; Klamer and McCloskey 1992; Chiapello 2007), claiming that he constructed it from accounting, an interpretation chapter 2 questions.

6. Because for Marx "capital" is money advanced to circulate as value through production, which is the source of surplus value, "capital market" means the stock (equity) market, not the money markets. Marx did not discuss the stock market, which became important only after his death, but he anticipated it, as chapter 3 argues, when he conceptualized the owners of capital in aggregate as a living totality, functioning as a whole, as "total social capital," that controls the means of production and distribution. Within total social capital individual capitalists hold well-diversified portfolios of shares in companies controlled by managers, which they did in Britain from the 1880s, and in the United States from the 1920s (Bryer 1993a; 2013a). Chapter 2 explains accounting's "control" function and its role in Marx's theory of developed capitalism.

7. The accounting evidence could have falsified Marx's theory of value because there are many potential ways of keeping and using accounts, as we will see.

8. I exclude myself from the list of accounting academics because, as will become clear, this book is a development of earlier work on Marx and accounting, referenced at the appropriate places, made possible by the ground-clearing advance of the TSSI.

9. I explain below the significance of limiting the book's focus to "traditional" capitalist accounting.

10. "Critical accounting" exists today as largely non-Marxist field—see the aims of the journal *Critical Perspectives on Accounting*. Some critical accounting scholars have advocated a Marxist approach, seeing accounting as a "technology of capitalism" (e.g., Dillard 1991; Tinker 1985), but nobody has explored the links between accounting and Marx's theories of value, history, ideology, and socialism.

11. Using the phrase "transformation problem" usually indicates the writer's view that Marx's solution was inconsistent. I use it within quotation marks to indicate that I disagree with this interpretation. Marx never used the phrase (Kliman 2013, 3).

12. Despite criticism of ROI by economists, it has long been the "most popular approach to incorporating an investment base into a performance measure" (Horngren et al. 1999, 662–63).

13. The term "stewardship" comes from medieval England where stewards, who managed estates, were accountable to the lord who owned them for what Marx called "labor rent" (Bryer 1994b).

14. Marx inherited the problem of explaining prices of production from the "classical school," particularly David Ricardo, which Marx argued had "disintegrated" because it assumed rather than explained them.

15. "Variable capital" is wages for "productive" workers, which is "variable" because it produces surplus value, whereas with "constant capital," for means of production (buildings, machines, raw materials, tools, etc.), the same value comes out of production as goes in.

16. The "historical cost" to the apple producer of \$0.60 is also not relevant.

17. Removing the charge of inconsistency from Marx's LTFRP, his theory that increases in labor productivity tend to decrease the rate of profit, which underlies his theory of crises, is potentially the TSSI's most politically significant contribution (Kliman 2007, 31, 113–38).

18. Price data are "given" in the capitalist's calculations, chapter 5 argues, not in Marx's theory of value, which explains them.

19. Marx's references to "individual capitals," "capitalist firms," or "the capitalist," we will see, are to joint stock companies with managers.

20. Marx wrote *Grundrisse*, notebooks on his "economic studies" (Marx and Engels 1983b, 217), in 1857–1858.

21. The remainder of volume 3 explains the LTFRP and the division of industrial profit into commercial profit, interest, and rent.

Chapter 2

Marx's Theory of Value and Accounting

The affinity between accounting and Marx's theory of value has been recognized by a few accounting academics, for example Most (1963, 175), who concluded, "Marx's contribution to management accounting has been underrated." Management accounting did not exist as a recognized branch of accounting when Marx was writing, and today it provides the foundation for the financial accounts, but according to Most, "it appears that he was well on the way to discovering standard costing, ratios and value analysis when he published *Das Kapital* one hundred years ago" (1963, 175). Most (1963, 178) provided few details, but did not think "it too fanciful . . . to see Karl Marx as the first management accountant, who lost his way by becoming a political economist instead of taking a job in a counting house." Bailey (1978, 14) concluded, "it does seem that Marx, in the course of his studies of the capitalist economy and with the indispensable aid of his life long colleague Engels, did hit upon certain essential features of industrial accounting for the business enterprise," but also gave few details. Bailey (1978) noted parallels with standard costing, cost accounting, depreciation accounting, and replacement cost accounting (RCA), but did not attempt to integrate them within Marx's work in Capital.¹

However, in a series of articles, as Chiapello (2007, 280–81) puts it, "Bryer has often stressed . . . [that] it is possible to derive from Marx a set of accounting principles that are not only very clear, but also consistent with the practices of his own time."² The book develops that work by showing that Marx's explanations of "accounting principles" amount to a theory of capitalist control, which explains how his theory of value, the "essence," produces the "phenomenal forms" or "appearances" of "capital," "profit," "rate of profit," etc. This chapter provides an overview of the links between Marx's theory of value and capitalist accounting's principles and practices, *prima facia* parallels or analogies, by examining the problem of control facing the owners of the means of production and the roles accounting plays in solving it, and highlights some stark differences, which later chapters explore in detail.

MARX'S USE OF ACCOUNTING

Did Marx explain accounting or did he draw on it? Chiapello (2007, 292, 281) argues, an "analysis and understanding of the accounting practices of the second half of the 19th century played a structuring role in Marx's thought," in other words that "Marx used the accounting practices of his time to construct his theory" of value. This is a version of the muchdebated thesis of sociologist Werner Sombart that double-entry bookkeeping (DEB) was an important cause of capitalism.³ Rather than capitalism itself, Chiapello (2007, 293) argues that accounting (including DEB) produced the "notion of capitalism," generally, and in Marx's theory, agreeing with Hicks, an economic historian, that "the classical economists studied by Marx had already taken their concept of capital from accounting." Hicks argued that the concept of capital as a "fund" "came outside—from business practice, from from accounting practice,"—and that

even to this day, accountants are Fundists. It is not true, accountants will insist, that the plant and machinery of a firm are capital; they are not capital, they are assets. Capital, to the accountant, appears on the liabilities side [*sic*] of the balance sheet; plant and machinery appear on the assets side.⁴ Capital, accordingly, is a Fund that is embodied in the assets. (Hicks 1974, 310)

According to Hicks (1974, 309), "Not only Adam Smith, but all (or nearly all) of the British Classical Economists were Fundists; so was Marx (how else should he have invented 'Capitalism'?)." However, first, accountants do not see capital as a "fund," as the sum of the sources of the cash invested in assets, but as the sum of the owners' legal claim against the assets functioning as capital, as a "going concern," the equity, and the legal claims of creditors, the liabilities, as we will see. Second, like accountants, but theoretically, Marx saw "capital" as a "social relation," a system of accountability that produced surplus value for capitalists.

Chiapello's (2007, 292, 283) thesis that Marx constructed his theory of value *from accounting*, rather than my thesis that we can derive a theory of accounting *from Marx*, immediately raised for her the "riddle" of why, therefore, apparently, "Marx said very little about accounting in his writings." Chiapello suggested three possible reasons. First, Marx avoided the language of accounting because he wanted to defeat political economists using their language: "Marx wanted to criticise traditional

political economy by turning its own concepts against it," "even though he was constantly using accounting to grasp meaning" (Chiapello 2007, 291). *Accounting for History* shows that defeating political economy on its own terms was an early ambition of Marx and Engels, which Marx abandoned when he worked out his theory of value when writing *Grundrisse*. Second, Chiapello suggested, Marx avoided the language of accounting because it was ideological.

While it is true that . . . [capitalist accounting systems] correspond almost totally to his concept of capital, Marx would have run the risk of simultaneously legitimising the profit and loss statement, which reduces labour to a cost, brushing aside its value-creating capacity and implying that it is merely one ingredient of production, just another item to be consumed. (Chiapello 2007, 292)

I will argue below that not running this "risk" is evidence that Marx did not derive his theory of value from accounting. Third, the language of accounting was too difficult for workers, and would have been politically embarrassing to use. According to Chiapello (2007, 292), "Marx wanted his book to be accessible to readers with no knowledge of DEB. No specific familiarity with accounting is necessary to read his books, and indeed they have been read by generations of workers and communist militants, who would have found it a problem if their master spoke the accounting language used by the owners and managers." However, any worker capable of reading *Capital* would have no trouble with DEB, and it would not be politically embarrassing for workers to use the capitalist's language if they had a theory that penetrated its ideological disguise. Not satisfied with her own suggestions, Chiapello hoped "Further investigations will perhaps solve this riddle" (2007, 292).

We can solve it by noting that Marx actually made extensive use of accounting—evidenced by what he said in his references to "bookkeeping," but particularly in his many analyses of how the law of value "asserted" itself—but not to construct his theory of value.⁵ As he said in Volume 2 of *Capital*, "The way the books are kept does not of course affect the actual relationships of the things entered in the accounts" (Marx 1978, 255), that is, the method of bookkeeping did not determine or explain value. Rather, he frequently used his theory of value to explain the phenomenal appearances of "profit," "capital," "fixed capital," "circulating capital," "cost price," etc. that he found in capitalist accounts, and he appeared to see the role of their principles and practices in his argument as obvious, needing no stressing. If so, he vastly overestimated his future
readers' likely knowledge of what from the late nineteenth century rapidly became an increasingly complex, arcane, and specialized cog in the practical workings of capitalism.

THE INVISIBLE HAND OF ACCOUNTING

At the aggregate level, it is true that "The Marxists have long had an accounting-driven programme—the transformation problem, calculations of surplus value and so forth" (Klamer and McCloskey, 1992, 155). However, only a few have raised the question, as Foley put it, of "the theory of value and its relation to capitalist accounting practice," and none have explored it, seeing it as a "formal issue" distinct from "the substantive question of the specific character of capitalist production" (1986, 60). Subsequent chapters argue that the relation is substantive because Marx used his theory of value to explain accountants' principles and practices, the foundation of his explanation of capitalism as a system of social control, how the law "asserts itself," through markets, but also through its system of accounting control.

Adam Smith famously argued that self-interest in competitive markets was an "invisible hand" that automatically controlled the economy to maximize economic wealth. Economists today "formalize" his notion of competitive markets as the theorems of welfare economics, the conditions under which markets are "efficient," produce maximum "social welfare" (Stiglitz 1994, 7). The key conditions are "perfect information" and "perfect markets," and there is no problem of control or any role for accountants, who should not exist. Economic theory supports "market liberalism," the creed that we should leave the organization of the world to self-regulating markets (Polanyi 1944), the "Anglo-American model of free market capitalism" with its "core belief that human society should be subordinated to self-regulating markets" (Block 2000, xix, xxii).

Marx also highlighted the importance of markets as a means of social control within capitalism. However, unlike Smith, Marx emphasized that his theory of value explained the prices of commodities (and services) only within the capitalist mode of production where, for the first time in history on a social scale, they were "produced for the purpose of being exchanged" (1996, 84). It did not explain prices generally, or "values" in other forms of society, even those with markets, only prices that appeared from the functioning of the capitalist system of commodity production (Kliman 2007, 19–20), based on "free workers" (Marx 1976a, 874).

Accounting for History supports Marx's claim that in precapitalist societies —whether based on slavery, feudalism, or individual or community systems of commodity production and circulation—the dominant aim of production was consumption, and therefore the measure of "value," was usefulness or utility, which depended on custom, or demand and supply. Commodity exchange, when it occurred, Marx argued, was predominantly a process of "simple commodity circulation," C-M-C, the production of a commodity (C), exchanged for money (M), to exchange for another commodity (C). Under capitalism, by contrast, the dominant aim of production is the maximum rate of profit, and capital in general follows the circuit M-C-M', the investment of money capital (M) to buy or produce commodities (C) to sell them for more money (M') than they cost.

Production for consumption has natural limits, but when the production of unlimited money wealth becomes the aim, increasing labor productivity becomes the overriding concern (Kliman 2011b, 183), and therefore capitalists uniquely take control of the valorization process, the process of producing for profit. Only under capitalism does the "average amount of labor required to produce something acquire . . . practical significance as a regulative law of production, a norm that producers must not exceed if they hope to survive as producers . . . [and does] the law of value emerge as a law dominating production" (Kliman 2011b, 183). The inchoate purpose of capitalist accounting, the book argues, is to enforce this law.

Marx's theory of capitalist accounting control in outline is that the management (directors) of a business entity is "accountable" to the capital market for the circuit of capital, M-C-MM'. Accountable means that capitalists punish or reward management according to the rate of profit it realizes compared to the capital market's required or target rate, and subordinate workers are accountable to management for their contribution to this aim, for their financial performance. The demand for accountability for capital explains why, according to Marx's theory of value, in capitalism, where the purpose of production is selling commodities for profit, "costs of production become significant determinants of their prices" (Kliman 2007, 19, 20). Costs are important to capitalists, accountants, and to Marx, because "Producers must," as Kliman puts it, "produce things that command a sufficiently high value in exchange; they *must* produce efficiently in order not to lose money; and they *must* revolutionize their methods of production in order to keep up with the competition" (2007, 20, emphases added).

The accounting interpretation explains these compulsions, this "profound influence upon the character of the production process, when products are produced as commodities" (Kliman 2007, 20), and its implications for Marx's theory of value, the determination of value, prices, and profits, etc. as follows. First, while not usually stressed by Marxist economists, Marx recognized that the "producers"—the capitalists, or hired managers employed as specialist workers to exploit other workers—are economic "agents" acting for capitalists as a whole, the capital market, the "principal" that chapter 3 argues Marx called "total social capital," and like other workers, managers' and capitalists' interests need not coincide. Second, these agents must produce a "profit" (not simply not lose money, i.e., cash), and they must produce "sufficient" profit to "keep up" with competitors, that is, at least the (risk adjusted) average of rate of profit, the ratio of profit to the capital employed, the accountants' return on capital employed (ROCE) or return on investment (ROI). Third, it was not simply because competitive markets enforced these outcomes, but because, as Marx put it, "their character as values has already to be taken into consideration during production" (1996, 84, emphasis added). In other words, I will argue, because management and workers are accountable for the production and realization of surplus value in the form of "profit," calculated according to the principles and practices of capitalist accounting.

What follows first explains the parallel between the need in Marx's theory of value to calculate and control the cost of production and set prices taking into consideration commodities as value during production, to generate the required rate of profit, and the control functions of accounting. The primary function of management accounting is controlling costs and setting prices to hold subordinate managers and workers accountable for the production and realization of ROI (Bryer 2006a). The primary traditional function of financial accounting is measuring the monetary flows of output, a "profit and loss account," and the stock of capital at a moment in time, a "balance sheet," to enable the owners, the shareholders, to calculate the rate of profit to hold management accountable for its "stewardship" of capital (Bryer 1998, 1999a, 1999b). Marx's theory of capitalist control explains these functions as consequences of the revolutionary change with the development of capitalism from what he called the "formal subsumption" (or "subordination") of labor to the "real subsumption" of labor, the change from an emphasis on physical coercion or direct supervision of labor to forms of "economic" control, including accounting. Second, to understand what managers and workers are accountable for, the chapter explains some important parallels between the accountants' principles and practices and Marx's "circuit of capital" that subsequent chapters elaborate.⁶

ACCOUNTING AND CONTROL

With the transition to capitalism, Marx argued, came a change from direct, physically coercive accountability for production under the slave and feudal modes of production, to indirect forms of economic accountability under capitalism. Marx outlined a history of the labor process as a series of transitions in the "social relations of production."⁷ Using England as his model, as "free" wage labor spread from the end of the seventeenth century, he argued, workers became "subordinated to," controlled by, capitalists because, having no other means of support, "the free worker is in principle ready and willing to accept every possible variation in his labour-power and activity which promises higher rewards" (Marx 1976a, 1034). Wage labor brings the worker into a relationship of economic dependency, which Marx called the "formal subordination" of labor under capital. The transition was in the mode of accountability, from a physically coercive relationship, to "a relationship of sale and purchase, a purely financial relationship," which "is objective in nature, voluntary in appearance, *purely economic*" (Marx 1976a, 1027–28). The absence of all possessions except their labor power imposed economic control on workers. "What brings the seller into a relationship of dependency is *solely* the fact that the buyer is the owner of the conditions of labour"; "*capital*... . [i]s the monopoly . . . buyer of his labour power" (Marx 1976a, 1025–26). Therefore, although the wageworker is nominally a "free agent," unlike the slave who has a master, or the serf who has a lord, being dependent on the market, he "learns to control himself" (Marx 1976a, 1033).

Workers' market dependence gave capitalists enhanced supervisory power in production, which became "an *economic* relationship of supremacy and subordination, since the consumption of labour-power by the capitalist is naturally supervised and directed by him" (Marx 1976a, 1026). Alongside the subordination of labor to the market, therefore, "Within the production process . . . two developments emerge" (Marx 1976a, 1026), the first being that capitalists, motivated by profit, use their market-enhanced power to work their labor harder, and more efficiently, to push it beyond traditional limits, initially using coercive accountability. "As regard capital in the context of the *formal* mode of subsumption, its *productivity* consists in the first instance only in the *compulsion to perform surplus labour*. This compulsion is one which it shares with earlier modes of production, but in capitalism is more favourable to production," so the capitalist can more easily defeat workers' resistance, and the "material conditions of labour are not subject to the worker, but he to them. Capital employs labour" (Marx 1976a, 1054). Workers become accountable to the capitalist in production, but at first only in a "simple form . . . [that] entails the personification of things and the reification . . . of persons" (Marx 1976a, 1054).

However, from this simple and transparent beginning, in the second development the accountability "relationship becomes more complicated . . . and apparently more mysterious, with the emergence of the specifically capitalist mode of production. Here we find it is not only such things—the products of labour, both use values and exchange values—that rise up on their hind legs and face the worker and confront him as 'Capital'" (Marx 1976a, 1054). This is "real subsumption," where the worker not only "faces," is accountable to the capitalist for use values and exchange values, but faces "capital" itself, because the capitalist's "aim is to produce not only a use value, but a commodity; not only use value, but value; and not just value, but also surplus value" (Marx 1976a, 293). Capitalists built the real subsumption of labor on its formal subsumption, which was its "premiss and precondition" (Marx 1976a, 1026), by combining control of "the material elements of the labour process" with the "valorization process," whereby capital controls labor to produce and realize surplus value:

The production process, considered as a unity of the labour process and the process of creating value, is the process of production of commodities; considered as the unity of the labour process and the process of valorization, it is the capitalist process of production, or the capitalist form of the production of commodities. (Marx 1976a, 304)

Marxists emphasize that according to Marx, "the capitalist . . . controls the labourer and his product by his command of wage payments and his ownership of the . . . means of production" (Fine 1975, 24). Marx, however, emphasized that it was "pre-eminently in this sense—which pertains to the valorization process as the authentic aim of capitalist production—that capital as objectified labour (accumulated labour, pre-

existent labour and so forth) may be said to confront living labour (immediate labour, etc)" (1976a, 994). Today the preeminent way that capital controls the labor process to produce and realize profit is by confronting workers with management's accounts (Bryer 2006a). Managers, as personifications of capital, "rise up on their hind legs and face the worker and confront him as '*Capital*' . . . ," and in their accounts we find, "Capital is not a thing," not simply a commodity with an exchange value, but rather "certain specific social relations of production between people appear as relations of things to people" (Marx 1976a, 1054, 1005). There we find "heaped-up wealth confronting the worker [that] grows apace and *confronts him as capital, as wealth that controls him*" (Marx 1976a, 1062; see also, 1969a, 389–90), representations of "wealth" based on use values, exchange values, and values measured as "monetary expressions of socially necessary labor time," as we will see.

Evidence that Marx had accounts and their use by capitalists in mind in making these statements is that he knew the accounts were, in fact, the only place that capital in circulation was constantly visible and controllable. Because in the circuit M-C-M' value changed its form from money to commodities to money while it "preserves and expands itself through all these changes, value requires above all an independent form by means of which its identity with itself may be asserted. Only in the form of money does it possess this form. Money therefore forms the starting point and the conclusion of every valorization process" (Marx 1976a, 255). Between the starting point and conclusion, the commodity appeared in the form of "money of account." As we will see, "Every aspect of . . . [Marx's] representation of capital [as M-C-M'] corresponds to that given by balance sheets taken from DEB accounts of the kind in use in the 19th century, at the time Marx was working on the subject" (Chiapello 2007, 280), which Marx saw as an important foundation of the capitalist's control.

Chiapello concluded, however, "Nowhere in his opus magnum does he directly use accounting language or categories to make his theory understood. And even though capital in circulation is only visible in DEB, he never referred to DEB to show that" (2007, 284). However, this overlooks the fact that capital was visible for Marx precisely because "The capitalist himself wields power only inasmuch as he is the personification of capital. . . . It is for this reason that he always appears in a dual role in Italian bookkeeping. For instance, as the debtor of his own capital" (1976a,

1054).⁸ In Volume 2 of *Capital*, he pointed out the obvious, that it was "By way of bookkeeping," that is, by DEB, that capital's circuits are "registered and controlled" in "money of account," particularly valorization:

As a unity within its circuits, as value in process, whether within the production sphere or the two phases of the circulation sphere, it is only ideally that capital exists in the shape of money of account, at first in the head of the commodity producer, capitalist or otherwise. By way of bookkeeping, which also includes the determination or reckoning of commodity prices (price calculation), the movement of capital is registered and controlled. The movement of production, and particularly of valorization—in which commodities figure only as bearers of value, as the names of things whose ideal value-existence is set down in money of account—thus receives a symbolic reflection in the imagination. (Marx 1978, 211)

As Marx pointed out, we can observe commodities in production "set down" or "expressed as money value" only "in money of account," in the accounts:

The circuit of money capital remains the permanent general expression of industrial capital, in so far as it always includes the valorization of the value advanced. In P . . . P, the money expression of the capital emerges only as the price of the elements of production, thus only as value expressed in money of account, the form in which it is found in book-keeping. (Marx 1978, 140)

Only in the accounts does surplus value become visible on realization as money, is "the value originally advanced, the [say] £100 . . . distinguishable from the surplus value of [say] £10" (Marx 1976a, 252). Marx clearly understood, "The surplus value never comes back materially to the form ΔM , which can only be the result of calculating the difference between M and M" (Chiapello 2007, 280). This was why he saw the function of bookkeeping "as the supervision and ideal recapitulation of the process," which was "*more necessary* in communal [socialist] production than in capitalist," but it was necessary (Marx 1978, 212, emphasis added). To determine the selling prices of commodities and "recapitulate," that is, observe the movement of capital and control it, as enterprises grew in scale capitalists had no choice but to turn to their books.

What the capitalist and Marx found there was the value of commodities in the form of "accounting money." When "the means of labour . . . in the valorization process . . . are not changed into actual money [i.e., sold], they are converted into accounting money; in short they are used as exchangevalues and the element of value they add to the product in one way or another is precisely calculated" (Marx 1976a, 952). When capitalists calculated the selling price of a commodity, it was "the expression of exchange value as exchange value, i.e., of money, and [this was] more precisely [expressed] as money of account" because it was the sum of the capital plus surplus value incorporated in it (Marx 1976a, 955).

In short, what follows argues, according to Marx's accounting theory capitalists achieve real subsumption by going beyond direct supervision to hold managers and workers economically accountable for the circulation of capital; that the accounting parallel with Marx's distinction between the "formal" and "real" subordination of labor is management control theory's distinction between "action" and "results" control. Accountability for the results of the circulation of capital is, according to the accounting interpretation, what Marx meant when he argued, as Fine puts it, that "the nature of capital as self-expanding value imposes an important qualitative objective on its agents: profit maximisation" (Fine 1975, 33).

The Problem of Control

Management control theory (see, e.g., Anthony 1965; Merchant and Van de Stede 2012), distinguishes three main ways that principals (e.g., capitalists) control their agents (e.g., managers and workers), three different aims and appropriate methods (see Table 2.1).

 Table 2.1 Methods of Labor Control

	Personnel Controls	Action Controls	Results Controls
Aim	Dedicated, uncontrolled behavior	Control of observed behavior	Control of unobserved behavior
Methods	Kin	Physical constraint	Targets
	Education	Supervision	Accounts
	Qualifications	Budgets	Punishments and
	Tests	Rules	rewards
	Judgment	Law	

Source: Created by the author.

When principals use "personnel controls" they select appropriately skilled and dedicated agents based on kinship, education, qualifications, tests, and judgment. The aim is producing or selecting the "right person," someone they can trust to behave in their interests without supervision. However, because this requires intimate knowledge and relations with the agent, which is often difficult or impossible, principals usually use "action" and/or "results" controls, where accounting plays important roles.

When principals can accurately predict the outcomes of specified actions they can supervise or monitor the work, use "action controls," either directly controlling the agent's actions, by rules and laws, or through budgets which control through "pre-action reviews" (Merchant and Van de Stede 2012, 83), specifying the required behaviors. However, because the relationship between actions and outcomes is often uncertain or unobservable, and because supervisory costs are often high, principals must often leave it to agents to decide what work to do. Without supervision, principals can observe only outcomes or results and therefore use "results controls," set targets, demand accounts, and hand out punishments and rewards according to the performance they reveal. Holding unobservable agents "to account" by requiring a reckoning and explanation of performance, motivates agents to achieve targets because they know the principal will judge it against the target (e.g., against a required return on capital), scrutinize their explanations of the results, and punish and reward their performance. This is a common meaning of the word "control"—the ability to "call to account, reprove (a person)," which derives from the medieval accounting word "comptroller," meaning control through calculation.⁹

Producing and explaining accounts constrains the agent's choice of behaviors (plans, decisions, actions, inactions) because to achieve the principal's target the agent must engage in planning and take any necessary corrective actions. Accounting is therefore vital for controlling unobservable agents because by reporting their financial results it shapes their decisions, requiring them to be in the principal's interests. Figure 2.1 outlines how it works.

The principal hires an agent, sets a financial target, and requires the agent to produce accounts of results and explain them. The principal hires an "auditor" (discussed below) to check the accounts and report on their fidelity. The principal then hands down a judgment and punishments or rewards, according to the reported results. The anticipation of punishment or reward motivates the agent. To get rewards and avoid punishments, agents have an incentive to calculate the expected costs and revenues from different courses of action, to use forecast accounts and cash flows to guide them toward the most profitable. When agents use accounts to make decisions, we can therefore understand their calculations as anticipating and planning to achieve target results to discharge their accountability. Accounts are therefore also useful to agents, to demonstrate performance against the target or, if not, in persuading the principal that their plans and actions were "reasonable."



Figure 2.1 Results Control. *Source*: Created by the author.

Holding agents accountable for results requires accounts to follow a strict temporal sequence and that they measure the results objectively. The principal sets the target at time 1 and receives a reckoning of the results at time 2 for that period, which in capitalism means a target rate of profit and reporting management's stewardship of capital by means of a profit and loss account and a balance sheet. Throughout history, the function of ensuring agents objectively report results has been the work of the "auditor," a specialized, independent agent who the principal hires to ensure the working agent does not distort the reported results. The principal's reliance on auditors in turn always raises the question, *Quis* custodiet ipsos custodes, "Who will guard the guards?" "Who controls the controller?," "Who audits the auditor?" As auditors cannot be controlled by their "results," principals have always sought to control them using personnel controls, selecting the "right person for the job" (e.g., convicted criminals cannot be accountants), a function performed today by government approved professional accounting institutes and associations. More importantly, principals must seek to regulate auditors by using action controls, by writing detailed rules of accounting and by oversight monitoring and, ultimately, the legal supervision of their application.¹⁰

To control auditors capitalists need a theory of value that allows them to accurately measure and report the value generating activities of their agents. Armed with such a theory, regulators could write and enforce robust rules that (without collusion) leave agents and auditors with no discretion in measuring and reporting results, and against which the principal could judge the auditor's behavior. Rather than a theory of value, traditional accountants have "principles"—rules and methods—which what follows argues are inchoate representations of value, ¹¹ The

most important principle is the objective or aim in producing accounts, which accountants traditionally call "stewardship," an objective Marx's theory explains.

Stewardship Accounting

Marx (1998, 377) distinguished "functioning capitalists," the shareholders, who advance money capital to joint stock enterprises by buying their shares (stocks), from "lending capitalists" who provide additional money capital in the form of debt (loans), the creditors. Through their use of "proprietary DEB," we will see, accountants agree with Marx that the "functioning capitalist . . . derives his claim to profits of enterprise . . . not from his ownership of capital, but from the function of capital . . . in the reproduction process, hence as a result of operations" (1998, 377–78). Accountants focus on the owners' profit because, as Marx puts it, "the capitalist directs the process of production and circulation" (1998, 377–78), derives surplus value from controlling the valorization process. Marx wrote of "the capitalist," but was referring to "personifications of economic categories, embodiments of particular class-relations and classinterests," as social agents of the capitalist mode of production, of its social relations of production, "whose creature he socially remains, however much he may subjectively raise himself above them" (1996, 10). When Marx wrote of the functioning capitalist "directing production," he therefore meant the economic function of "Exploiting productive labour . . . [that] entails exertion, whether he exploits it himself or has it exploited by someone else on his behalf" (1998, 378), by a manager.

Because for Marx managers are workers who specialize in exploiting subordinate managers and workers, in developed capitalism Marx's "functioning capitalists" are the controlling shareholders, those who control managers through financial results, demanding accountability for their capital. Functioning capitalists use accounts to hold their agents, management and other workers, accountable for "capital" and "profit," to give them results control of the enterprise's valorization process, the labor process that produces the return on capital. Chapter 3 argues that in Marx's accounting theory the "functioning capitalist," the proprietor of capitalism, is the stock market, "total social capital," which has an agency problem, holding management accountable for the capital it controls, and the results of its decisions and dealings with the commodity markets.

Results control dominates management accounts today (Merchant and

Van der Stede 2012, xi). What follows justifies the claim that the traditional objective of financial accounting was stewardship, reporting the circulation of the capital of an enterprise, or business "entity," distinct from the personal financial affairs of the functioning capitalists, the owners, to hold management accountable for the results. For evidence, it draws on two leading British authorities from the late nineteenth century, first, because their core ideas, expressed with exceptional clarity during the formative years of the modern accountancy profession, remain as relevant today to understanding capitalist accounting concepts and practices as they were when Marx was writing. Second, because from the 1970s accountants have been divided between supporters of traditional "stewardship," and supporters of the American "decision-usefulness" objective adopted by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), therefore similar unquestioned modern authorities are lacking.¹² Many of their constituents and independent commentators dissented. By adopting the decision-usefulness objective the FASB and IASB have in effect implemented what according to Marx's critique of the neoclassical version of the "Trinity Formula" is a vulgar and distorted ideology (Bryer 2013b).¹³ In Marx's day and throughout the late nineteenth and most of the nineteenth century (with the exception of America during the 1920s), financial accounting was typically and relatively noncontroversially traditional. Today it is necessary to take sides. Marx sides with stewardship supporters and their British ancestors.

In 1914, Dickinson published *Accounting: Practice and Procedure*, an exemplar of British principles written for the American market, which "quickly became a recognized source and achieved such popularity that a number of printings were made" (Kahle 1993, 24). Dickinson, the managing partner of Price Waterhouse in America from 1902 to 1911, played major roles in developing the US profession along British lines (Kahle 1993, 22–23; Carey 1969, 28; Miranti 1990, 58). He argued, "the person or group of persons by or for whom the accounts are kept, who may briefly be termed the 'principal'... [is] [t]he owner of the natural product and the owner of the accumulations which provide for the subsistence of labor during the period of manufacture ... [,] the capitalist" (Dickinson 1914, 191). The objective of the capitalist's accounts was "to show his ... incomings and outgoings, possessions and obligations, in such full detail as will allow him best to *control* his affairs and to determine his own

financial position" (Dickinson 1914, 14, emphasis added). The key statistic was ROCE, "a comparison of . . . gross profit . . . with the total capital employed, including not only fixed but circulating capital necessary . . . [which] will give the rate of return yielded" (Dickinson 1914, 209).¹⁴

Dickinson's view was part of a long British tradition: "Stewardship as a motivation for the preparation of financial statements has long been predominant in Great Britain" (Zeff 2013, 290; see also Williamson and Lipman 1990, 364). An example is Dicksee's best-selling and influential Auditing: A Practical Manual for Auditors, first published in 1892.¹⁵ The duty of the company auditor was "to examine the accounts of their stewardship, prepared by the active partners—i.e., the directors—and to report to the shareholders whether in his opinion those accounts are correct, and fully and fairly disclose the position of affairs, or in what respects they fail to do so" (Dicksee 1912, 11). In 1951, the Institute of Chartered Accountants in England and Wales (ICAEW) argued, "The primary purpose of the annual accounts is to present information to the proprietors, showing how their funds have been utilised and the profits derived from such use" (Zeff 2009, 85). In 1965, the ICAEW "was given counsel's opinion that in law the object of annual accounts is to assist shareholders in exercising their *control* of the company by enabling them to judge how its affairs have been conducted" (Zeff 2013, 290, emphasis added).

During the debate that led to the FASB's conceptual framework in the 1970s, some leading American academics argued that stewardship or "accountability," meaning results control, was the primary objective of financial accounts (e.g., Ijiri 1971, 46–47). Its foundation, as Rosenfield put it, was that "A person who is accountable to another person for his behavior may be required to report his behavior or its results to the other person; in any event he is subject to reward or punishment depending on whether the behavior for which he is accountable fulfils his responsibilities" (1974, 125). When applied to businesses, it meant accountability compared to a target:

An objective of financial statements is to report on the control and use of resources by those accountable for their control and use to those to whom they are accountable. . . . Managers of a business enterprise in particular are responsible for achieving the goal of operating the business successfully. . . . Persons who are accountable to others are judged by an ideal standard—by behavior or results that would be ideal in the circumstances. (Rosenfield 1974, 126)

The traditional "ideal standard" for judging "use of resources" and

"operating the business successfully" is ROCE, which, as Rosenfield (1974, 128–29) argued, "in the final analysis" must be "judged" by the capital market.

Leading commentators in the recent debate supported "stewardship" as an independent objective because it meant results control. To Whittington, a former IASB member (2000–2006), "Stewardship implies accountability by management to investors. The feedback that this provides is relevant to future cash flows because it will affect the future conduct of management and the confidence which investors will place in the entity's prospects" (2007, 190). The European Financial Reporting Advisory Group to the European Union (EU), that approves the use of IFRSs by European groups, recognized, "If financial statements reflect an accountability objective they may control management as well as reporting on them. Because management are aware that they must provide an account of their actions, they are less likely to undertake sub-optimal business strategies or fail to exercise proper diligence" (EFRAG 2013, para. 12). The British Accounting and Finance Association likewise argued that stewardship means designing accounts to be "decision-influencing," that is, for results control (FARSIG 2014, 29).

The FASB countered with the argument that "financial reporting can provide information about enterprise performance but not directly about a management's performance" (Zeff 2013, 286). However, this is true only if the objective is to measure management's "performance" as its contribution to the enterprise's ability to generate *future* cash flows, for "decision-usefulness," but not if the objective is stewardship for the realized rate of profit.¹⁶ The class divide in capitalism, according to Marx, is between capitalists and free wageworkers, in which "management," the board of directors is composed of free wageworkers that function as the collective agent of total social capital. As a social agent, the current management of an enterprise is accountable, that is, is potentially subject to punishment or reward for enterprise performance, for the enterprise's current capital and profit regardless of the "contribution" of past management, who may themselves remain accountable for future results (e.g., claw back). This would explain why, as the FASB admitted, "Management, owners, and others emphasize enterprise performance or profitability in describing how management has discharged its stewardship accountability" (1978 para. 51, emphasis added).

How much profit an enterprise realizes depends partly on management's

skill and effort and partly on the circumstances, but providing an objective record of enterprise performance is a necessary condition for assessing management's performance and accountability. To judge an agent's performance, the principal must adjust the target results to reflect the circumstances, just as management routinely does within the enterprise by, for example, using "flexible budgeting" for ROI. From the stewardship perspective, the appraisal of management's performance is a judgment for the capital market in the circumstances, not for accounting that measures enterprise performance. Shareholders punish or reward management according to whether they believe they can distinguish management's contribution to the enterprise's ROI. One common way financial analysts today estimate management's performance is by comparing an enterprise's financial statements with historical, industrial sector averages, and other benchmarks (e.g., paired comparisons).

Proprietary DEB

An important parallel between Marx's circuit of capital, M-C-M', and accounting is today's ubiquitous use of DEB. DEB appeared and spread as commercial capital flourished, as a method of bookkeeping that self-consciously accounts for the circulation of capital from the perspective of the owner(s), Marx's "functioning capitalist." From their "proprietary perspective," as American accountants call it, the owners' capital ("equity") is calculated using the "balance sheet equation," Equity = Assets—Liabilities.¹⁷ Using DEB, the accountant records every transaction (or relevant event) to maintain that balance, and measures profit as the change in the owners' equity over a period (excluding additional advances or withdrawals of capital). DEB adopts the convention that "debits" (Dr) are uses of capital, and "credits" (Cr) are sources of capital. The rules for adding to, and subtracting from, equity, assets, and liabilities, are therefore those shown in Table 2.2.

Debits record uses of capital that decrease equity (–), increase assets (+), or decrease liabilities (–); credits record sources of capital that increase equity (+), decrease assets (–), or increase liabilities (+). As equity is the controlling or functioning capital, using "double entry" bookkeeping the accountant records all transactions twice, both entries passing through the owners' equity account, but for equal exchanges, such as buying an asset for cash, the entries in the owners' equity account cancel, so accountants ignore them. For buying an asset for cash, for example, the full double

entries are (1) Dr Asset, Cr Equity for the acquisition; (2) Dr Equity, Cr Cash for the payment. However, as the Dr and Cr entries to the equity account cancel, for an asset acquisition the accountant would simply Dr Asset, Cr Cash.

For unequal exchanges, however, a cash sale of merchandise for more than it cost, for example, Marx's M-C-M', accountants must do the full "double" entries to reveal the change in the proprietors' equity account, the profit or loss. In other words, (1) Dr Cash with the amount received from the sale and Cr Equity with the owners' "revenue" (from the Latin for "return") from the sale; then (2) Dr Equity and Cr Inventory with the cost. For example, selling an item for £10 that cost £5, the double entries are as shown in Table 2.3.

Consistent with these bookkeeping entries, which leave a profit of £5 in the owners' equity account, Marx argued in *Grundrisse*, "Capital is . . . posited as value-in-process . . . as *circulating capital*," where the "point of return is at the same time the point of departure and vice versa—namely the *capitalist*" (1986, 460), which is the perspective of proprietary DEB.

Table 2.2 The Rules of Double-Entry Bookkeeping

	Equity	Assets	Liabilities
Debit	-	+	-
Credit	+	-	+

Source: Created by the author based on Hatfield (1909, 27).

Table 2.3 Double-Entry Bookkeeping for an Unequal Exchange

	£	£
On receipt of the cash		
Dr Cash	10	
Cr Equity (sales revenue)		10
On transferring control to the customer		
Dr Equity (cost of sale)	5	
Cr Inventory (cost)		5

Source: Created by the author.

Accountants use DEB to produce profit and loss accounts for periods, and balance sheets at intervals, usually at least annually, to report on the sources and uses of the capital employed. If the only capital in the above example was the inventory that cost £5, with no other costs, and no liabilities, the opening and closing balance sheets, using the traditional British layout that reversed the balances in the entity's accounts (explained below), and the profit and loss account for this transaction, reported to the proprietor, are shown in Table 2.4.

British merchants used DEB to calculate their rate of profit in the

seventeenth and eighteenth centuries (Edwards, Dean, and Clarke 2009), which became dominant in Britain during the nineteenth century as industrial capitalism emerged. Chapter 3 shows that Marx learned and used this "Italian method," which deepened his understanding of the aggregate circuit of capital, showing him how to produce profit and loss accounts for its two main branches, means of production and subsistence, and consolidate them. As there was no central controller, and therefore no guarantee of balance, these accounts showed that crises were inevitable, which convinced him that merely balancing society's accounts did not explain how capitalism worked in reality. This, chapter 3 argues, encouraged him to think about how competition and "total social capital," capitalists (shareholders) as the collective proprietor, using accounts to control individual enterprises to maximize the rate of profit, could help to explain crises.

The balance sheets in Table 2.4 follow the traditional British layout that reversed the balances in the "ledger," the account books, to present them from the owner's perspective, "who should therefore be credited with what he possesses and charged [debited] with what he owes" (Dickinson 1914, 36). British balance sheets, Marx in effect agreed, signified that the capitalist proprietor, the functioning capitalist, was the controller accountable to himself as owner, for whom the assets are sources of capital, and equity and debt are its uses. He was referring to British balance sheets—capital on the left ("debits"), assets on the right ("credits") —as evidence of capitalist control, when as we saw he argued that a capitalist "wields power" only as the "personification of capital," which was why he had a "dual role in Italian bookkeeping" as "the debtor of his own capital" (Marx 1976a, 1054). The capitalist proprietor was the controller of the entity and the owner of the capital advanced as equity, for which as controller he was accountable to himself as its owner, as a "debtor" that "owed" the capital, but who as owner-controller was the residual beneficiary or "creditor" of all its sources, the assets, after meeting its legal debts.

 Table 2.4 Balance Sheets and Profit and Loss Account

	Opening I	balance sheet	
	£		£
Dr		Cr	
Equity capital	5	Inventory (cost)	5
			==
	Profit and	loss account	
	£		£
Dr		Cr	
Cost of sales	5	Sales	10
Profit	5		
	10		10
			==
	Closing b	alance sheet	
	£		£
Dr		Cr	
Equity capital	5	Inventory	-
Profit	5	Cash	10
Total equity	10	Total assets	10
	==		==

Source: Created by the author.

In the entity's accounts, Marx recognized, using DEB from the capitalist controller's perspective, doing "capitalist accounting," assets were uses of capital (debits) and therefore a commodity's value did not depend on buying it from the market, as it did to a peasant for whom self-produced raw materials, such as coal used in coal mining, appeared free:

Coal... only appears as a means of production at a stage of development when the exploiter of the mine has graduated as a capitalist, who uses double entry book-keeping, in which he not only owes himself his advances, i.e., is a debtor against his own funds, but his own funds are debtors against themselves. Thus just here, where in fact no raw material figures in expenditure, *capitalist accounting* must prevail from the outset, making the illusion of the peasant impossible. (Marx 1969b, 48, emphasis added)

To the capitalist self-produced coal used in the production process costs the same as coal sold, which the accountant debits (adds) to the cost of the coal produced with the capitalist's "funds," money capital, so in the entity's accounts, as its controller, "his own funds are debtors against themselves," are assets, uses of capital. By contrast, the peasant farmer "does not understand capitalist book-keeping and hence does not reckon seeds etc., as part of the capital advanced" (Marx 1969b, 155) to production. However, if a capitalist farmer uses self-produced seed, "it figures only in the book-keeping as a component of the value of the capital advanced" (Marx 1978, 280), as though the farmer had sold the seed corn to himself, which was his "debtor," a debit. As Marx said, "in so far as a part of his product again directly serves the same capitalist producer as means of production, the producer appears as selling this to himself; this is how the matter figures in his book-keeping" (1978, 281). When capitalists sell their commodities, they likewise charge (debit) their customers the full cost, including a share of past expenditures on fixed capital for its "wear and tear," an important element of what accountants charge as "depreciation," as we will see. When iron producers sell to machinery manufacturers and buy machines from them, "The producer of iron debits the machinery manufacturer for the wear and tear of the machinery used up in producing the iron and the machinery manufacturer debits [the producer of iron] for the wear and tear of his machinery in constructing the machines" (Marx 1969a, 145). The critical issue is for what values of assets are managers and workers "debited," held accountable, in production.

ACCOUNTING AND VALUE

Marx argued that when capitalism appeared, wage labor became the source of "value," which was determined by the "socially necessary labor time" required to produce a commodity (or service), and capitalists took a surplus value in the form of "profit" by not paying workers the value they added over its "cost price."

Cost Price and Profit

At the beginning of Volume 3 of *Capital*, Marx discussed how value and surplus value appear as phenomenal forms to the capitalist. Rather than measure the value of commodities by the socially necessary labor time of production, the social "cost" of the commodity, capitalists measure "cost" by adding the costs of means of production (c) and labor power (v), c + v, which Marx called the "cost price" of the commodity, and its value is c + v + s, where s = surplus value. However, as far as the capitalist is concerned the surplus value appears as the addition of profit (p) to cost price (k), so the selling price of the commodity seems to be k + p, and the origin of the profit appears to be the capital advanced or the market by selling above cost.

Marx called the surplus value realized as money the "profit." If prices equal values, surplus value equals profit. However, in Part 2 of Volume 3 of *Capital* he dropped the assumption that prices equal values, accepted that realized profit often does not equal the surplus value that the

capitalist's workers would otherwise have produced in the absence of competition for capital. Marx's challenge here was to show that despite the fact that "surplus value" did not exist in the consciousness of the capitalist, that he could nevertheless explain an individual capitalist's profit as a share of society's total surplus value that gave each capital an equal rate of profit. Chapters 4 and 5 argue that he did this by elaborating his theory of capitalist accounting, using his theory of value to explain the capitalists' accounting calculations that produced this result.

Measures of Value

Marx called the work that produced a commodity's use values "concrete labor," and he called the labor time that produced value "abstract labor," which he argued was determined by the current socially necessary labor time required to produce the commodity. Marx's theory of value therefore meant that "the value of newly-produced items determines the value of already-existing ones," and that "any labor spent on the production of any commodity in excess of . . . the socially necessary labor-time does not count as value-creating labor" (Kliman 2007, 21), but is a loss. In principle, accountants also revalue existing commodities to their current values (as we will see below) and, like Marx, they routinely distinguish between the actual cost of concrete labor and materials etc. and their abstract costs, that they call "standard" or "target" costs, also treating any expenditure over the "standard" as a loss.

Marx's theory measures value in two ways, in money and in socially necessary labor time, two ways of measuring the same thing (Foley 1986, 14; Ramos and Rodriguez 1996; Kliman 2007, 24), just as Fahrenheit and Centigrade are two ways of measuring temperature. Marx's two measures, however, are interdependent. Money is not just a unit of account or means of exchange, is also a store of value; time is not just labor time, as "abstract" socially necessary labor time it is also money value. In Volume 1 of *Capital*, Marx argued, "The value, or in other words, the quantity of human labour contained in a ton of iron, is expressed in imagination by such a quantity of the money-commodity as contains the same amount of labour as the iron" (1996, 106). For example, "Suppose two equal quantities of socially necessary labour to be respectively represented by 1 quarter of wheat and £2 (nearly 1/2 oz. of gold), £2 is the expression in money of the magnitude of the value of the quarter of wheat, or is its price" (Marx 1996, 111). Sometimes, Marx simply referred to "value" or

"price" to mean the "monetary expression of value" (Kliman 2007, 24). Marxist economists call it the "monetary expression of labor time" (MELT) (Kliman 2007, 25).

Capitalist accounts appear to measure only in money. Chapter 5 shows, however, that Marx remeasured the money amounts he found in accounts into equivalent socially necessary labor times, which it argues explains the accountants' principle that "costs attach," his explanation of the transformation from values to prices, which explains cost prices as "standard" costs, the capitalists' inchoate measure of the production of value, his "law of one cost." Showing Marx explaining how his theory of value determines prices of production through accounting undermines the thesis that he derived it from accounting. If he had, there would be no difficulty in explaining prices of production simply as the product of calculation, but this would leave unexplained why these particular calculations, which is Marx's focus.

Current Costs and Values

Marx argued that the value of a commodity is the sum of the values transferred from the means of production used up and the new value added by "living labor," by workers in the production process, by the socially necessary time they work, and the intensity and skill employed. However, "how much value is transferred from the means of production has been the subject of considerable controversy" (Kliman 2007, 22). TSSI supporters "interpret Marx as having held that the amount of value transferred . . . depends upon (a) the current cost, rather than the historical cost, or original cost, of the means of production, and (b) the socially average expenditure on the means of production" (Kliman 2007, 22). TSSI supporters disagree about which "current cost." An important element of this controversy is what precisely Marx meant by "constant capital," the capital value used to acquire means of production. Marxists find his discussions "confusing," as Kliman puts it:

Marx . . . holds that the using-up of means of production simply transfers value to the products. What goes into production comes out: value neither increases nor decreases. . . . Marx also used the term constant capital in a rather different sense. He refers to the sum of value transferred as the constant capital component of a commodity's value. This is somewhat confusing since . . . the value transferred can differ from the actual amount advanced for means of production that have subsequently been used up. (Kliman 2007, 23)

The question is what Marx meant by measuring surplus value as "The amount by which the capital value at the end of the process exceeds *the*

original capital value advanced" (Kliman 2007, 23, emphasis added). The answer, subsequent chapters argue in detail, is that Marx's rules of valuation are implicit in his expanded form of the circuit of "industrial" capital, which explains accountants' rules and methods.¹⁸ Accountants have debated what "current cost" to use and how to account for them, and they have used "current costs" in periods of significant price changes rather than historical costs. As we will see, Marx agreed with the accountants, which supports the TSSI.

The Circulation of Capital

In Volume 2 of *Capital*, Marx expanded the general formula for capital, M-C-M', to the circuit of industrial capital, M-C . . . P . . . C' (C + c)—M' (M + m) (see Figure 2.2).

In its circuit, capital performs three functions in three phases. In the first phase, M-C, money capital (M) is advanced and spent on necessary commodities (C), on labor power (LP) and the means of production (raw materials, buildings, plant, etc.) (mp).19 In the second phase, the process of production consumes these use values (. . . P . . .) to produce commodities or services with use values possessing a greater exchange value, C' = (C + c), than the cost (defined below) of those consumed. In the third phase, C' are sold for M' = (M + m), a greater amount of money than is currently required to maintain the circulation of capital at its existing operating capacity, where the increment (m) is surplus value. If the enterprise pays out the entire surplus as dividends and interest, there is what Marx called "simple reproduction" (see Figure 2.2). If the surplus (or part of it) is reinvested, the capital increases and there is "extended reproduction."



Figure 2.2 The Circuit of Industrial Capital. *Source*: Created by the author.

Capital has two phases in the "circulation sphere," as money to buy commodities (M), or as commodities to be sold for money (C'), and one phase in the "sphere of production" (P). In the circulation sphere, capital functions on the markets as "capital of circulation," and whilst in production as "productive capital." In the terminology of late nineteenth century British accountants, capital exists as "floating" capital on the market, or as capital "fixed" in production (Dicksee 1907, 162).20 Marx's distinction between capital of circulation and productive capital explains the traditional accounting rules of asset valuation, that (1) the value of capital in the sphere of circulation is the "lower of cost or market" (i.e., selling price), and (2) the value of capital in the sphere of production is the "lower of cost or recoverable amount" (Bryer 1998, 1999). "Cost" for accountants means current replacement cost for tangible fixed assets and inventories if this differs significantly from their historical cost. It had the same meaning for Marx, we will see below, and in detail in chapter 4.

According to Marx's theory of value the "instruments of labor" such as machines, tools, factories, etc.—what he called "fixed capital"—transfer their value "bit-by-bit" to commodities, which chapter 6 shows explains why accountants spread the cost of "fixed assets" over their useful lives by systematically charging "depreciation." Marx eventually worked out how workers transferred the value of fixed capital to the product over its useful life, which we will see explains the accountants' depreciation methods. Just as accountants distinguish between "fixed" and "current" assets, between assets consumed over more than one "operating cycle" or less than one, Marx distinguished "fixed" from "fluid" or "circulating" capital, between capital consumed over more than one "circuit of capital" or within one. As IAS 1 Presentation of Financial Statements says, "When an entity supplies goods or services within a clearly identifiable operating cycle, separate classification of current and non-current assets . . . provides useful information by distinguishing the net assets that are continuously circulating as working capital from those used in the entity's long-term operations" (para. 62). It defines the operating cycle as "the time between the acquisition of assets for processing and their realisation in cash or cash equivalents" (IASB 1997, para. 68).

Marx distinguished between "productive" and "unproductive" advances of circulating capital. Chapter 7 shows that his distinction between "productive" labor that added value to commodities and "unproductive" labor, expenditures on what he called the "pure circulation costs," those involved in buying and selling commodities, most bookkeeping costs, etc., that do not, explains why accountants calculate profit using the method of "absorption costing." Marx called these unproductive costs elements of "the *faux frais* of production" (1978, 209); accountants call them "non-production overheads."21 For Marx, these outlays are deductions from surplus value, which explains why accountants charge them as "period costs" directly against revenue in the period incurred rather than adding them to inventories. Marx's distinction between unproductive overheads and productive expenses, for example on the maintenance of fixed assets, storage, and transport, which, he argued, were further advances of capital, charged as part of the cost of production, explains what accountants call "production overheads." Accounting for the "Going Concern"

Marx's theory that a business is capital in circulation explains the accountants' principle of accounting for a "going concern." From the 1850s, British accountants adopted the principle of "conservative" accounting, accounting to "conserve" or "maintain capital" (Bryer 1991, 1993a, 1998), which Dicksee (1907, 198–99) influentially articulated as the accountants' "going concern" theory of valuation, which meant the value the market would put on a firm's assets if it changed hands as a continuing business. Dicksee argued, "It being the primary object of most ordinary undertakings to continue to carry on operations, it is but fair that the assets enumerated in a Balance Sheet be valued with that end in view," not the "contingency of liquidation" (1905, 160).²² "Going concern" remains a fundamental premise of accounting valuation, as IAS 1 Presentation of Financial Statements makes clear: "An entity shall prepare financial statements on a going concern basis unless management either intends to liquidate the entity or to cease trading, or has no realistic alternative but to do so" (IASB 1997, para. 25).

Because the purchaser of a going concern could buy equivalents to its assets on the market at their current replacement prices, the purchaser would pay no more than this for them. Insurance companies have long used this principle to determine what accountants today call an asset's "deprival value," their view that the maximum value of an asset is its current replacement cost, based on the "principle of substitution." As Bonbright influentially put it, "When a property is replaceable, its owner has the option of replacing it with an effective substitute in case he is deprived of its use Recognition of this . . . has led appraisal writers to lay down the rule that the replacement cost of property ordinarily sets the

approximate *upper limit* of its value" (1937, 156–57).²³

When replacement costs of tangible assets change significantly, Marx and accountants agree that businesses should use "replacement cost accounting." There is evidence of RCA in late-nineteenth-century Britain as the costs of cotton mills, etc., fell (Bryer 1991). American railroads, government agencies, and the courts, debated RCA following the Civil War during the deflationary period 1865–1896 (Boer 1966). During the 1920s and 1930s, Schmidt in Germany and Limperg in Holland (and others) theorized RCA (Tweedie and Whittington 1984, 18–32). RCA was the core of the systems of "inflation accounting" used in Britain, the United States, Australia, Canada, and New Zealand in the 1970s and early 1980s (Revsine 1973; Sandilands 1974).

Marxists generally accept that Marx argued, "What regulates the production of value is the amount of labor *currently* needed to produce the commodities, an amount that is always changing," "only labor necessary at the *current* social level of development of productive technique adds value to the commodity" (Foley 1986, 17, emphases added). However, they differ over exactly what Marx meant. Chapter 4 shows that Marx, accountants, and the TSSI, measure profit as the difference between the current replacement cost when the capital goes into production and the price realized from the sale of the commodity, and they reject the simultaneist "replacement cost interpretation" (RCI) advocated by the SSSI and others, but there is more to it.

For Marx and accountants, "profit" appears only after maintaining the value of the capital necessary to produce the same quantity of goods and services, to maintain what accountants call "operating capital." Chapter 4 explains that doing this requires what accountants call "capital maintenance adjustments" (CMAs) (FASB 1984, para. 48; IASB 1989, para. 109), which Marx called the "tie-up" and "release" of capital. Dicksee distinguished "wasting" that reduced value through use, which was an expense, from "fluctuation [which] is something altogether apart from trading profit and loss, being merely the accidental variation (owing to external causes) in the value of certain property owned, but not traded in" (1905, 162–63). "Fluctuations" should appear only in the balance sheet reserves, as CMAs. Accounting for CMAs, chapter 4 shows, supports the TSSI's demonstration that Marx's LTFRP is logical, his claim that advancing constant capital to increase labor productivity created a tendency for the rate of profit to fall, which he argued underlay periodic

crises. Chapter 5 shows that accounting for CMAs confirms the TSSI's refutation of Bortkiewicz's charge that Marx's value-price transformation illustration is "inconsistent."

Rates of Profit

Marx measured the "rate of surplus value" (that he also called the "rate of exploitation") as the ratio of surplus value (s) to variable capital (v), (s/v) (1976a, 669–70). He knew that capitalists did not see or care about this ratio, but focused on the rate of profit, the ratio of profit (p) to capital advanced (C), p/C, or s/C if prices equal values. Capitalists maximize the rate of profit, Marx argued, by shortening the "turnover" time of capital, that is, increasing the sales (which accountants call "turnover") from the same or less capital, by increasing worker productivity, increasing the length of the working day, and cutting wages. In doing this, Marx argued, capitalists focused on the "visible surface phenomena," and did not see the "invisible essence" that produced it:

As far as the individual capitalist is concerned, it is evident enough that the only thing that interests him is the ratio of surplus-value . . . to the total capital advanced . . . , whereas not only do the specific ratios of this excess value to the particular components of his capital, and its inner connections with them, not interest him, but it is actually in his interest to disguise these particular ratios and inner connections. (Marx 1981, 134)

Underlying the rate of profit, according to Marx, were three relationships:

<u>s</u>	<u>s</u>]	_ <i>v</i>	v+c
C	v	v+c	$\begin{bmatrix} C \end{bmatrix}$

Where s = surplus value, C = total capital employed, v = variable capital (production wages), c = constant capital (nonlabor cost of production, materials, fixed asset depreciation, etc.) (Foley 1986, 92). Marx's rate of profit is the product of the rate of exploitation (s/v), the division of value added (v + s); the "organic composition of capital" (v/[v + c]), the proportion of variable to total capital; and the "rate of turnover of capital" ([v + c]/C), how many times the capitalist sold and recovered the capital each year.

Marx knew from Engels that, in practice, the division of value added between wages and profits, the turnover of capital, and other ratios, did interest capitalists.²⁴ What Marx meant was that capitalists take no interest in them as categories of value. Capitalists have their own version of Marx's formula, without the "organic composition of capital," often called the "DuPont formula" after Donaldson Brown, the DuPont corporation's chief accountant, who developed it in the 1920s, that ROI = $p/S \ge S/C$, where p = profit and S = annual sales (Bryer 2013b).²⁵ Capitalists and accountants do worry about cutting costs, increasing prices and sales, and reducing turnover time.

However, they do not recognize Marx's distinction between variable and constant capital and therefore his concept of the "organic composition of capital," which according to his theory of value, assuming a constant rate of exploitation and a constant rate of turnover, determined the rate of profit. Ignoring turnover, as $s/C = s/v \times v/(c + v)$, if s/v is constant, assuming that prices equalled values, it was clear that the rate of profit depended on the proportion of variable to total capital. Marx knew that, in reality, as rates of profit did not vary according to different value compositions of capital, his task was to explain how, nonetheless, his theory of value explained equal rates of profit, and the tendency for the average to decline as capitalists reduced the proportion of variable to constant capital. As we will see in chapters 4 and 5, to explain his theory of the LTFRP and the equalization of RCA and target costing.

The changing composition of capital and RCA is also important to what Marx called "The General Law of Capitalist Accumulation," "the influence of the growth of capital on the lot of the labouring class" (1996, 607). According to Marx, "The most important factor in this inquiry is the composition of capital and the changes it undergoes in the course of the process of accumulation" (1996, 607). He distinguished: (1) the "technical composition of capital," the notional physical ratio of labor to material means of production;²⁶ (2) the "organic composition of capital" that measures the technical composition assuming the relative values (prices) of constant and variable capitals do not change; and (3) the "value composition" that measures the technical composition at current values (prices). As he explained:

The composition of capital is to be understood in a two-fold sense. On the side of value, it is determined by the proportion in which it is divided into constant capital or value of the means of production, and variable capital or value of labour-power, the sum total of wages. On the side of material, as it functions in the process of production, all capital is divided into means of production and living labour-power. This latter composition is determined by the relation between the mass of the means of production employed, on the one hand, and the mass of labour necessary for their employment on the other. I call the former the *value-composition*, the latter the *technical composition* of capital. Between the two there is a strict correlation. To express this, I call the value-composition of capital, in so far as it is determined by its technical

composition and mirrors the changes of the latter, the *organic composition* of capital. (Marx 1996, 607–8)

In short, changes in the technical composition of capital, as measured by the changes in the organic composition, measure how the value composition would have changed assuming constant prices, whereas the value composition refers to the changed ratio after accounting for changes to input prices (Brewer 1984, 72–73).

As labor productivity increased, Marx argued, so did the technical and hence the organic composition (defining it as c/[v + c] or c/v, the form in which it is usually discussed). Increasing labor productivity meant the value of constant capital would fall, which to some extent offsets the rise in the technical composition, but he claimed that the value composition nevertheless rises. This trend, he argued, driven by the "concentration" and "centralization" of capital, the trend towards bigger businesses owned by fewer people, and growth of the "credit system," the money market and joint stock companies, meant that the demand for labor power tends to fall, giving rise to a "reserve army" of labor that holds wages down. This was his "absolute general law of capital accumulation," that "The greater the social wealth . . . the greater is the industrial reserve army . . . , the greater is . . . pauperism" (Marx 1996, 638), an empirical prediction, but chapter 4 shows that underlying it was Marx's RCA.

In Volume 3 of *Capital* Marx argued that an increasing value composition, combined with the tendency for the rate of surplus value to remain constant, also drives the falling rate of profit, his LTFRP, which he claimed underlies periodic crises that further worsen the lot of the working class. However, according to most economists, who almost invariably adopt the simultaneist interpretation, Marx's claim that increasing labor productivity by using a higher proportion of constant capital created a tendency for the rate of profit to fall, was logically inconsistent with his theory of value. According to simultaneists, increased labor productivity directly causes the rate of profit to increase. Understanding Marx's RCA shows, however, that it does not.

One apparently stark disjuncture between accounting and Marx's theory of value is the view that "his theory recognizes that price and value can differ quantitatively, and therefore the amount of profit a firm or industry receives can differ from the amount of surplus value it produces" (Kliman 2007, 26). Marxists commonly argue this means that although Marx measures the rate of profit as s/C, "there is also implicit in his work a

second rate of profit, Π/C , where Π is the total profit received throughout the period. These two rates are commonly called the value rate of profit and the price rate of profit, respectively" (Kliman 2007, 26). Accountants work only with the price rate of profit and do not recognize this distinction. Chapters 4 and 5 argue that neither does Marx at the firm or industry level, for whom society's value rate of profit equaled its price rate, and for individual firms the value rate was a counterfactual rate of profit they would earn in the absence of developed capitalism.

Accountants also do not recognize that "the value produced in an industry [or firm] equals cost price plus surplus-value" (Kliman 2007, 27). Again, chapters 4 and 5 argue, for Marx, for individual industries or firms, "value produced" was historically hypothetical, a counterfactual. The challenge is to show, as Fine puts it, how then "The labour theory of value is not a metaphysical notion, despite the impossibility of empirically calculating values" (1975, 22). Chapters 3–7 argue it is not metaphysical because Marx used it to explain how "In the aggregate, the production of value and surplus-value does determine price, profit, and the rate of profit" (Kliman 2007, 28). He did this by articulating his accounting theory for individual capitalist firms as representatives of "capital in general," using his theory of value to explain how they calculate "cost price" and "profit." As we will see, Marx claimed only that his illustration of the transformation from values to prices in chapter 9 of Volume 3 of Capital did not "abolish" his theory of value, but chapter 5 concludes that he could justifiably claim to have "proved" it by using it to explain the accounting that produced this result.

CONCLUDING COMMENTS

There are clear similarities between Marx's theory of value and traditional accounting principles and practices, and some stark differences. The question is whether Marx's underlying "essence" explains the inchoate "appearances" of the "phenomenal forms" in capitalist accounting. Subsequent chapters argue that it does because to explain how his theory of value operated Marx articulated a theory of accounting for the categories he found in reality, in the accounts he examined, and in political economy, which dissolves the major controversies that surround his theory of value.

The next chapter examines Marx's interest in accounting and the help Engels provided in pursuing it. Discovering that he could use his theory of value to explain accounting, it hypothesizes, had a major impact on his work. By enabling him to use his theory to explain both "capital in general" and "total social capital," it suggests, this discovery decided its presentation—allowing progression from the abstract underlying "essence" to the complex factual "appearance," combined with a historical and political presentation—and its title, *Capital*. The volumes of *Capital*, it argues, follow an accounting logic, moving from accounting by "capital in general" in Volumes 1 and 2, to the use of accounting for control of "many capitals" in competition by "total social capital" in Volume 3. This interpretation supports Marx's claim that he started *Capital* with the commodity as an "objective social *concretum*," his theory that abstract labor created value in production before a commodity's sale, and therefore supports the TSSI's "production-centered" critique of "value-form theorists" who argue that value appears only in the market.

Against this background, chapter 4 engages in an accounting critique of important developments in Marxist economics since the 1980s based on criticizing the standard interpretation of Marx's "transformation problem." It supports the TSSI's criticisms of the NI and SSSI's only partial rejections of the standard interpretation, its complete rejection of all dualist and simultaneist interpretations, but adds CMAs to the TSSI's understanding of Marx's RCA and LTFRP. Chapter 5 gives Marx's accounting solution to the "transformation problem." Chapter 6 and 7 reexamine criticisms of Marx's treatment of fixed capital, and his categories of "productive" and "unproductive" labor, respectively, and conclude that Marx's accounting theory dissolves them.

NOTES

1. I explain these accounting methods at the appropriate places.

2. Chiapello cites Bryer 1991, 1993a, 1994, 1998, 1999a, 1999b, 2000a, and 2000b.

3. The chapter explains DEB. For a seminal accounting critique of Sombart's thesis, see Yamey 1949. Bryer (1993b, 2016b) argues that commercial capitalism caused DEB.

4. Like Irving Fisher (Bryer 2013, 600), Hicks treats equity as a "liability," whereas for accountants and Marx "equity" is a distinct category, as we will see.

5. Marx used the term "capitalist accounting" once, in *Theories of Surplus Value*. He occasionally used "accounting," but more often used the nineteenth-century equivalent of "bookkeeping," which appears once in Volume 1 of *Capital*, 14 times in Volume 2, 4 times in Volume 3, and 3 times in *Theories of Surplus Value*.

6. The focus is on parallels between the accountants' traditional objective and their valuation principles for tangible assets, and in later chapters on Marx's use of his theory of value to explain them. There are parallels with other aspects of accounting, and explanations, including the definition and measurement of equity, liabilities, revenue, intangible assets, gains and losses, and consolidated accounts, some aspects of which the book explains as it proceeds, but it does not

explore them any in detail.

7. *Accounting for History* defends Marx's concept of the social relations of production with evidence from accounting history.

8. A later section explains what "debtor of his own capital" meant. British accountants called DEB "Italian bookkeeping" in the nineteenth century because it first appeared in Europe in fourteenth-century Italy (Bryer 1993a). Chapter 3 explains Marx's use of DEB.

9. Shorter Oxford English Dictionary On Historical Principles, 3rd ed. 2 vols. s.v. "control."

10. Because from Marx's perspective, "The executive of the modern state is nothing but a committee for managing the *common* affairs of the whole bourgeoisie" (Marx and Engels 1976, emphasis added), accounting and auditing are "public goods," necessary services to capitalists generally, requiring state supervision (laws). In America, the Securities Acts 1933–1934 delegate writing accounting law to the FASB. US GAAP has an estimated 25,000 pages of rules (Stice and Stice 2014, Appendix A-1).

11. Recognition of this need underlies the FASB and IASB's adoption of "decision-usefulness," which is based on a "conceptual framework" derived from economic theory.

12. The IASB publishes International Financial Reporting Standards (IFRSs) and International Accounting Standards (IASs), which are currently applicable to listed groups in over 100 countries, including those in the EU. Many IASB and FASB standards retain key features of traditional capitalist accounting, and chapters 4, 6, and 7 use particular IASs to illustrate Marx's explanations.

13. Accounting for History discusses the implications for critical Marxist accountants of this infiltration of modern financial reporting by neoclassical economics.

14. I explain "fixed" and "circulating" capital below.

15. Dicksee's *Auditing* appeared in 19 editions (14 in his lifetime), was popular in Britain and the United States, and was the model for Montgomery's equally famous American equivalent, *Auditing Theory and Practice* (1912) (Chatfield 1996, 204). Dicksee was a prolific writer, the first professor of accounting in England, and a lecturer at the London School of Economics.

16. It is not possible to hold an agent accountable for subjective expectations of the future.

17. Sprague (1907) influentially articulated what became known, following Paton (1922), as the "proprietary perspective," criticizing Fisher's (1906) alternative "economic entity perspective," keeping accounts from the perspective of the business entity, from management's perspective, not the owners,' developed by Paton (1922). The economic entity perspective abolishes Marx's view of capitalism by abolishing the distinction between equity (owners) and liabilities (lenders), between Marx's "functioning" and "lending" capitalists, which reduces the balance sheet equation to Assets = Liabilities, and "DEB" to debits = credits (Bryer 2013b). The FASB and IASB now adopt this perspective in their conceptual frameworks.

18. Critics argue that Marx overemphasized the production of tangible commodities, but by "industrial capital" he meant "every branch of production that is pursued on a capitalistic basis," including the consumer service industries (Marx 1978, 133), as we will see in chapter 7.

19. For Marx, money became productive capital only by exploiting labor so that, for example, speculative profits did not come from exploitation, although the value did.

20. According to Storey (1959, 235), Dicksee's "distinction between types of assets was not unlike those of the classical and neo-classical economists," noting Adam Smith and John Stuart Mill (see also, Walker 1978, 12). However, Dicksee's "fixed" capital was unlike Smith's because, like Marx's "productive capital," Dicksee's "fixed" category included raw material and work-in-progress inventories, which for Smith were "circulating" capital.

21. To Marx's critics, "This ruling is . . . of secondary importance" because "the increase in the value of labour power would offset increase in the value of commodities" (Brewer, 1984, 95). However, it matters to accountants for measuring the cost of production, gross profit, and operating profit, and to Marx who explains them.

22. Some argue that by going concern value for fixed assets Dicksee meant historical cost (Kitchen 1974, 127; Chatfield 1977, 235), but the evidence is against them (Storey 1959, 237; Walker 1978, 12; Bryer 1993a, 663–64). Dickinson recommended revaluing an acquired business'

assets to their "fair, going value" (1914, 187).

23. Only tangible assets have exact substitutes, which would explain why accountants traditionally value intangible and monetary assets (other than cash) at their historical cost.

24. Capitalists do take an interest in disguising the rate of exploitation when they face politically conscious and accounting literate workers, as they did, for example, in America from the 1930s to the 1950s (Bryer 2016).

25. See the Appendix to chapter 3.

26. This is "notional" because the use values of labor and means of production are incommensurable.

Chapter 3

Accounting and the Production of Capital

Marx's letters include several questions to Engels about how capitalists kept their accounts (Bryer 1994; Chiapello 2007), particularly from 1858 when he was writing *Grundrisse* to the publication of Volume 1 of *Capital* in 1867, to which Engels responded. Engels' father was a textile manufacturer who removed him from school before graduation to train in business (Wheen 1999, 76–77). After working in Europe, in 1842 he came to Manchester to work in a branch of his father's partnership to learn to be a "good tradesman" (Chiapello 2007, 285), a business executive, despite his radical inclinations.¹

Marx was well versed in philosophy, but before he met Engels his "practical knowledge of capitalism was nil" (Wheen 1999, 75; Chiapello 2007, 285). Engels, by contrast, had "invaluable first hand knowledge of the machinery of capitalism" (Wheen 1999, 83), and knew from his training and experience that accounting was a vital cog. A letter to Marx in 1850 about disagreements between his father and Peter Ermen (a partner in the Manchester firm of Ermen & Engels), shows that Engels understood the importance of orderly accounts for controlling capital, and how to construct and use them:

The balance for the year 1849/50 has not yet been struck; debits and credits are in the most splendid confusion. Father would seem to have been pressing them again, so I hear, and tomorrow they will set about putting this in order . . . If Peter Ermen takes over the management of the office . . . this will greatly interfere with my examination of the books. . . . I have abstracted the essentials, however In a few days' time I shall send Father Ermen Bros' complete accounts for 1849/50, duly classified and set out, as also those of Ermen's bleaching concern, so that he may see how these gentlemen carry on business with his capital. (Marx and Engels 1982, 253)

In 1844, while working for his father, Engels published *Outlines of a Critique of Political Economy*, his first theoretical publication, which kickstarted Marx's study of political economy, and set the direction for his later work.² It fitted well with Marx's materialist philosophy because Engels drew on practical reality to criticize the received theories of political economy. His paper denounced Adam Smith for defining value solely as the "cost of production," and John-Baptiste Say for defining value solely as "utility" (i.e., demand), and criticized both for sneaking their opponent's ideas into their theories by the back door. In practice, he argued, both the cost of production and the utility of the consumer (effective demand) determined value: "Value is the relation of production costs to utility. The first application of value is the decision as to whether a thing ought to be produced at all; i.e., as to whether utility counterbalances production costs" (Engels 1975, 426). Engels knew from his business experience that when capitalists applied "value" to the decision whether to produce or not, they calculated expected profit, and would not produce without it.

Engels criticized the idea that the cost of production was the sum of rent, profit and wages, because neither Smith's theory of rent nor Ricardo's theory dealt with obvious practicalities. Smith's theory did not account for varying land fertilities, and Ricardo's theory assumed that in practice landlords could instantly withdraw inferior land from production if prices fell (Engels 1975, 428–29). More significantly, he argued, no economist recognized that, in reality, capital and labor were "identical," and not just in the sense all admitted, that capital was stored-up labor. In practice, in the process of production, "the momentarily postulated separation of capital and labour is immediately superseded by the unity of both"; "capital is nothing without labour, without movement" (Engels 1975, 431). After their unity in production, at its end the capitalist separated capital and labor and started the cycle again, typically on a larger scale. It was as a businessman accountant that Engels knew, "After this separation [of capital and labor] is accomplished, capital is divided once more into the original capital and profit—the increment of capital, which it receives in production; although in practice profit is immediately lumped together with capital and set into motion with it" (1975, 430). The relationship between the cost of production, market prices, and value; the practical inadequacy of Ricardo's theory of rent; and how capital and labor were both "separated" and "identical" were all questions that preoccupied Marx for many years. Chapter 5 argues that Marx's eventual understanding of these issues underlay his solution to the "transformation problem."³

Marx studied political economy and wrote the *Economic and Philosophical Manuscripts* in 1846 (Marx 1975) and with Engels wrote *The German Ideology* (Marx and Engels 1976a) in 1845–1846. After engaging in political writing and activism, they came to Britain in 1850,

where Marx continued to work on political economy. In April 1851, he wrote to Engels that as far as his library work was concerned, "I am so far advanced that I will have finished with the whole economic stuff in 5 weeks time," and promised, "I shall complete the political economy at home" (Marx and Engels 1982, 325), but made little progress. During the early 1850s, there are only two letter exchanges on accounting, one in March 1851 in which Marx asked "how do merchants, manufacturers, etc., account for the portion of their income which they themselves consume" (Marx and Engels, 1982, 324), an interest in the capitalist's "capital account," which chapter 7 discusses. The second was in February 1851 when Marx constructed balance sheets to explain Lord Overstone's theory on currency circulation.⁴ Marx created a numerical example of four balance sheets for the Bank of England (Marx and Engels 1982, 276–77). Following British practice, in the left-hand column appeared "Capital," "Rest" (the undistributed profits) and "Deposits" (the liabilities), and in the right-hand column "Government securities," "Bills of exchange," and "Bullion or coin," the assets.⁵

Preoccupied with politics, Marx regularly repeated his determination to complete his critique of political economy, but only in late 1856 after many detours did he turn, this time in earnest in anticipation of an imminent revolution in Europe, to write what became *Grundrisse*, notebooks for his planned work on "Economics" (Oakley 1983, 52).

WRITING GRUNDRISSE

In April 1857, Marx began to write the chapter on "Capital." In December he wrote to Engels about the "nightmare" it was causing him: "I am working enormously, mostly till 4 a.m. The job is . . . to lay down the outlines of my 'Economy' (it being absolutely necessary, for the public, to get to the bottom of this thing, and, for myself, individually, to get rid of this nightmare)" (quoted by Prinz 1969, 444). In January 1858, Marx wrote to Engels asking for "practical" information to stimulate his theoretical analysis of "the circulation of capital," the focus of what eventually became *Capital*.

In my economic work I have now reached a point at which I could do with some information on practical matters from you, since nothing of the kind is to be found in theoretical writings. I mean, the *circulation* of capital—how it varies in various kinds of businesses; the effects of the same on profits and prices. If you can provide me with any information on the subject, it would be very welcome. (Marx and Engels 1983b, 256)

Working out the effects of the circulation of capital on profits and prices would preoccupy Marx for several years. Engels provided him with accounting information, particularly about the circuit of fixed capital, which later gave Marx serious theoretical problems. This was the subject of their letters in March 1858, when Marx was still writing the "Chapter on Capital." He wrote to Engels asking him whether Charles Babbage was right that in Manchester manufacturers replaced machinery every five years. Engels replied:

Babbage is quite wrong. The most reliable criterion is the percentage by which a manufacturer writes down his machinery each year for wear and tear and repairs, thus recovering the entire cost of his machines within a given period. This percentage is normally 7½, in which case machinery will be paid for over 13¹/₃ years by an annual deduction from profits, i.e., will be replaceable without loss. (Marx and Engels 1983b, 279–80)

Engels gave an example calculation for wear and tear for the first two years of a machine that deducted depreciation at 7½% of the original balance each year "when I draw up my balance sheet," that is, using what accountants called the "straight-line" method.⁶ He pointed out that "its difficult to say anything positive" because the length of life of machinery depended on decisions about replacing components and improvements, but argued, "if this calculation wasn't more or less right, practice would have changed years ago" (Marx and Engels 1983b, 280).⁷ He guessed, "Ten to twelve years are enough to bring about changes in the bulk of machinery, thereby necessitating its replacement to a greater or lesser extent" (Marx and Engels 1983b, 281). Marx (1983b, 282) replied, "The figure of 13 years corresponds closely enough to the theory" of crisis he was attempting to formulate (Clarke 1994, 263), and he moved on to other accounting questions:

Another question in respect of which I require only one example (approximate), is how, e.g., in your own mill or rather manufacturing business, floating capital is apportioned over raw material and wages, and what portion on average you leave in the bank. Further, how you *calculate* turnover in your books. Here the theoretical rules are very simple and self-evident. But it is nevertheless just as well to have some inkling of how things look in practice. The method of businessmen is, of course, partly based on illusions and even greater than those of the economists; on the other hand it rectifies the latter's theoretical illusions by means of practical ones. (Marx and Engels 1983b, 283)

Marx used the contemporary accounting terms, "floating capital" for current assets, and "turnover" for the ratio of sales or cost of sales to capital. He wanted to know the proportion of "raw materials and wages" in the finished goods—in other words, we shall see below when he asks
again, he wants a breakdown of the cost of production—and how much capital was in the bank, owed by debtors, etc. In the same letter, he used illustrative accounting information from the *First Report of the Factory Commissioners* that he found in Malthus's *Principles of Political Economy* (1836) to calculate the rate of return on sales (see Table 3.1), but he also wanted to calculate the cost of production (Marx and Engels 1983b, 283).

Capital sunk in building and r Floating capital	nachinery £10,000 £7,000
£500	interest on 10,000 fixed capital
£350	interest on floating capital
£150	Rents, taxes, rates
£650	Sinking fund of 6½ p.c. for wear and tear of the fixed capital
£1,650	
£1.100	contingencies (?), carriage, coal, oil
	0
£2,750	
£2,600	wages and salaries
£5,350	
£10,000	for about 400,000 lbs raw cotton at 6d
£15,350	
======	
[£]16,000 [sales] for 363,000 4.2 p.c. Hence the wages o	Ibs twist spun. Value [£]16,000. Profit [£]650, or about f operatives here about 1/6.

 Table 3.1 Illustrative Accounting Information

Source: Marx and Engels (1983b, 283).

Marx was not happy with the "about 1/6" proportion of operatives' wages to sales which he simply assumed [£2,600/£16,000 = 1/6.15], complaining, "It is a great pity that the above statement does not show the *number* of operatives, or the proportion of actual wages to what appears as salaries" (Marx and Engels 1983b, 283). This information would have allowed Marx to distinguish "productive" from "unproductive" workers and therefore to calculate the "cost of production," and the ratios underlying the rate of profit, accurately.⁸ He used these accounts in *Grundrisse* to illustrate calculating the rate of surplus value, the rate of profit, and the rates of turnover of fixed and floating capital (Marx 1986, 485–87). There is no evidence of a reply from Engels to the question of the practical calculation of turnover, and Marx asks it again nearly 10 years later.⁹

Marx and Engels here talked in the language of accounting, but this did not mean that Marx (or Engels) then had an articulated theory. His questions show that he did not, but he persisted with his questions and analysis until he did. His comment that he was interested in accounts because "The method of businessmen is, of course, partly based on illusions and even greater than those of the economists; on the other hand it rectifies the latter's theoretical illusions by means of practical ones" (Marx and Engels 1983b, 283), suggests that he thought capitalists had no theoretical illusions in their accounts.¹⁰ It also implies that he used his theory of value to explain the capitalist's practical accounts to confront and rectify the theoretical illusions of the economists, particularly the illusion that the only value of interest to capitalists was market price, as we shall see later, and in chapters 5–7.

Businessmen had "practical illusions," but it was important to Marx's theory of value that, as he put it in Volume 3 of *Capital*, "the nature of surplus-value impresses itself on the capitalist's consciousness in the course of the immediate production process, as we were shown by his greed for the labour time of others" (1981, 135). As he carefully said, for without it his theory would have little practical relevance, compared to market prices the "surplus value and the rate of surplus value . . . are, relative to this, the invisible essence" (Marx 1981, 134, emphasis added). The capitalist has to have at least an inchoate "inkling of the source of his profit" (Marx 1981, 135), an intuitive understanding that productive labor is the source of surplus value. In Marx's accounting theory, this "inkling" that capitalists get their surplus only from productive labor, from controlling the circulation of capital through production is, chapter 5 argues, because this is inchoately embedded within the "calculative mentality" of capitalists as a class, of "total social capital," in its generally accepted accounting principles and practices.¹¹ Marx began to work this out when he used three fundamental capitalist accounting principles —DEB, absorption costing, and the "entity concept," that accountants keep accounts for business "entities," separate from their owners-to understand and transcend Quesnay's path-breaking Tableau economique, producing accounts for the economy as a whole from the accounts of its branches.¹²

QUESNAY'S TABLEAU, DEB, AND ACCOUNTING FOR SOCIETY'S CAPITAL

In June 1861, at the beginning of his most productive three years, during which he wrote the *Economic Manuscripts of 1861–63*, Marx asked Engels, "If it could be done very briefly, without making undue demands on you, I should like to have a sample of Italian book-keeping (with explanations). It would help throw light on Dr Quesnay's Tableau

economique" (Marx and Engels 1985, 381). Chiapello (2007, 289) is probably right that learning "DEB may even have contributed something extra to Marx: his understanding of the overall economic circuit," but not because "The basis used by Marx in developing his own theory was the *Tableau Economique* by Dr. François Quesnay." Learning DEB helped Marx to understand Quesnay's *Tableau*, but he used DEB to correct it, to make his own *Tableau* consistent with social reproduction under capitalist conditions, not as the basis of his theory.

From his study of DEB Marx would learn how it accounted for flows of capital, from sources to uses, and how capitalists used it to produce departmental profit and loss accounts and combine them at the level of the firm. He would learn that it was necessary to distinguish between "capital" and "revenue" at the level of the individual firm or departments of production, as Adam Smith did, and at the level of society, which Smith did not (Bryer 2013b). This accounting "entity concept" was critical to Marx's understanding of the economic reproduction of society because it allowed him to reconstruct Quesnay's Tableau and thereby reveal the "nonsensicality of subsuming the *gross product* of a society *simply under* revenue (which may be consumed annually)" (Marx and Engels 1985, 485) as Smith did. Smith's accounting was nonsense, Marx discovered, because by reducing the value of all commodities to the sum of wages, profit, and rent, Smith forgot the need to replace the constant capital (see: Marx 1969a, chapter III). Marx wrote to Engels, "if this were so, a society would have to start each year *de novo*, *without capital*" (Marx and Engels 1985, 485)!

Marx stayed in Manchester in April 1862, where he probably wrote his "Digression" on Quesnay in the *Theories of Surplus Value* (Marx 1969a, 484). In July 1863, he sent Engels his own *Tableau* as a complex diagram, and a diagrammatic representation of Quesnay's very different *Tableau*. Marx's *Tableau* in effect used DEB to produce integrated departmental profit and accounts for a two-sector ("department") economy, one producing the means of subsistence, and the other the means of production, showing how the accounts of both sectors balanced individually and overall (Marx and Engels 1985, 485–87, 490–91). What follows first presents Marx's diagram of his *Tableau* as DEB accounts and then compares them to Quesnay's accounts according to his *Tableau*.

Marx's Tableau

In Marx's example (see Marx and Engels 1985, 485–87, 490–91), society has opening money capital of £1,166.66 (all numbers are millions) that it invests in two departments, £500 in the means of subsistence department (MOS), and £666.66 in the means of production department (MOP). The MOS department spends £400 on means of production (constant capital) and £100 on wages (variable capital). It sells its output for £700 and makes a profit (surplus value) of £200. The MOP department spends £533.33 on constructing its own means of production and spends £133.33 on wages. It sells its output for £933.33 and makes a profit of £266.66. The departments distribute all their profits to their capitalist owners as cash who spend it on means of subsistence. The workers spend all their wages on means of subsistence.

Tab	ole 3	3.2 I	Marx	's D	oub	le	Entri	ies

		£m	£m
[1]	Dr Means of subsistence—wages	100.00	
	Cr Means of subsistence—sales		100.00
[2]	Dr Means of subsistence-means of production	400.00	
	Cr Means of production—sales		400.00
[3]	Dr Means of subsistence—profit	200.00	
	Cr Means of subsistence—sales		200.00
[4]	Dr Means of production—wages	133.33	
	Cr Means of subsistence—sales		133.33
[5]	Dr Means of production—means of production	533.33	
	Cr Means of production—sales		533.33
[6]	Dr Means of production—profit	466.67	
	Cr Means of subsistence—sales		466.67

Source: Created by the author based on Marx's example (see Marx and Engels 1985, 485-87, 490-91).

To explain the circulation of society's capital Marx in effect produced two departmental profit and loss accounts and aggregate social accounts using double entries (see Tables 3.2 and 3.3). He recognized that each transaction had two sides—each involved a use of capital (a debit, Dr) and a source of capital (a credit, Cr). The debit sides of the departmental and "gross product" (social) accounts record the costs of production (wages and means of production) and the balance of profit. The credit sides record the sales, the consumption of the outputs of the two departments, the means of subsistence paid for by wages or profits, and the means of production paid for from money capital. The numbers in the left-hand column of Table 3.2 indicate the double entries in the accounts in Table 3.3.

Marx (1985, 490–91) also sent Engels a diagram and explanation of Quesnay's very different *Tableau*, which linked together the transactions between farmers, who for Quesnay were the "productive class," the landlords or "*proprietaire*," and the manufacturers, his "sterile" or

"unproductive class." Marx (1969a, 308) reproduced this diagram in *Theories of Surplus Value* (see Figure 3.1), but this time with a lettering system that shows the lines joining up the classes are double entries, mapping out Quesnay's "debits" and "credits."

Quesnay's Tableau

In Quesnay's example (see Marx (1991, 308–9), farmers pay 2,000 million, their annual surplus, to the landlords as rent. The landlords spend 1,000 million of the rent on food and 1,000 million on manufactured goods. Farmers buy 1,000 million of means of production from the manufacturers and sell them 1,000 million of raw materials and 1,000 million of food.

Depart	ment 1—Means	of Subsistence (MOS)	
10	£m	10	£m
Dr		Cr	
Wages [1]	100.00	Wages (MOS) [1]	100.00
Means of production [2]	400.00	Wages (MOP) [4]	133.33
•		Profit (MOS) [3]	200.00
Profit [3]	200.00	Profit (MOP) [6]	266.67
Production	700.00	Sales	700.00
Depart	ment 2—Means	of Production (MOP)	
80	£m	19	£m
Dr		Cr	
Wages [4]	133.33	MOS [2]	400.00
Means of production [5]	533.33	MOP [5]	533.33
Profit [6]	266.67		
Production	933.33	Sales	933.33
Service Market Service		1.222.040	
	Gross Produc	ct (Society)	
	£m		£m
Dr		Cr	
Wages	233.33	MOS	700.00
Means of production	933.33	MOP	933.33
Profit	466.67		
Production	1,633.33	Sales	1,633.33

Table 3.3 Marx's Accounts of the Reproduction and Circulation of Society's Capital

Source: Created by the author based on Marx's example (see Marx and Engels 1985, 485-87, 490-91).

Quesnay's *Tableau* starts when the farmer "pays 2,000 million in money to the landlord" (Marx 1991, 308), which the landlord then spends on food from the farmer and on manufactures from the "sterile class," who spend their incomes on manufactures and food/materials respectively. Marx (1969a, 308) said his lettering system made Quesnay's *Tableau* "clearer" by showing "what Quesnay regards each time as the starting point of a circulation, as a, a', a'', the following link in the circulation as b, c, d, and as b', b'' respectively." All the "starting points," a, a', a'', are debits (Dr, uses of capital). The ending points c, d, b', b'' are credits (Cr, sources of capital) (see Table 3.4).



Figure 3.1 Marx's Solution to Quesnay's *Tableau. Source*: Created by the author based on Marx's example (see Marx 1985, 490–91; 1969a, 308).

Starting with the landlord receiving 2,000 rent requires the farmer to have a fund of 2,000 to pay it, (a) and (a"), to start the process. This, as Marx pointed out, creates the problem that the "the landlord buys, with the 1,000 millions which he has received from the farmer, 1,000 worth of commodities from the farmer. He pays the farmer with money he has received from the farmer without any equivalent," so "no reproduction takes place" (1969a, 310). In other words, according to Quesnay, the farmer pays the landlord 2,000 money before the landlord pays the farmer 1,000 for food, which the farmer needs to pay the landlord 2,000 rent!

In Quesnay's *Tableau*, money did not circulate as value, as M-C-M', but "serves the farmer as *means of payment* to the landlord" and serves the landlord as a means of purchase (Marx 1991, 311). Money did not flow back to the farmer, the starting point in the process of reproduction, as an equivalent value he had produced: "It is as if the farmer had given the landlord tokens or tickets for products for the value of 1,000 millions. When the landlord cashes in these tokens, they flow back to the farmer and he redeems them" (Marx 1969a, 311).

Tabl	le 3.4	Quesnay	's Dou	bl	le	Entri	es
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Ques	nay's double entries:		
(a)	Dr Landlord—rent received	2,000	
(b)	Cr Farmer—sales of food to landlord		1,000
(c)	Cr Manufacturer—sales of manufactures to landlord		1,000
(a')	Dr Farmer—rent fund	2,000	
(b')	Cr Manufacturer—sales of manufactures to farmer		1,000
(d)	Cr Farmer—sales of food to manufacturer		1,000
(a'')	Dr Manufacturer—purchase of food from farmer	1,000	
(b'')	Cr Farmer-sales of materials to manufacturer		1,000

Source: Created by the author based on Marx (1991, 308-9).

In short, Quesnay produced precapitalist cash accounts for each class, starting from the farmer's rent fund, rather than capitalist accounts of the

production and distribution of value by society's departments, which we can see by adding the implied double entries to the farmer's cash account for [a], [a''] and [d] that Quesnay omitted (see Table 3.5).

The "annual gross product" in Quesnay's *Tableau*, Marx concluded, was 5,000 million, but according to Quesnay this meant, adding in the initial advance of 2,000 million to their "annual advances [of 3,000 million], *the farmers lay out* . . . *5,000 millions* . . . [of which] [t]he sterile class disposes of a fund of 2,000 millions" (Marx 1969a, 308, emphasis added). In other words, according to Quesnay, the farmers were the source of the entire annual gross product, all 5,000 million. However, when we understand his example as a system of social reproduction, represented using Marx's accounts of production and sales, the farmers produced an annual value of 3,000 million, including a surplus value of 2,000 million, and the manufacturers produced 2,000 million, including a surplus value of 1,000 million (see Table 3.6).¹³

	Landlo	rd	
Dr		Cr	
Rent received [a]	2,000	Farmer (purchase of food) [b] Manufacture (purchase of manufactures) [c]	1,000 1,000
	2 000		2 000
	2,000		2,000
	Farme	1r	
Dr		Cr	
Rent fund (a')	2,000	Rent paid [a]	2,000
Landlord (sale of food) [b]	1,000	Manufacturer (purchase of materials) [b']	1,000
Manufacturer (sale of food) [a''] Manufacturer (sale of materials) [d	1,000] 1,000	Balance c/f	2,000
	5,000		5,000
	Manufac	turer	
Dr		Cr	
Landlord (sale of manufactures) [d	1,000	Farmer (food) [a"]	1,000
Farmer (sale of manufactures) [b']	1,000	Farmer (materials) [d]	1,000
	2.000		2.000

Table 3.5 Quesnay's Cash Accounts

Source: Created by the author based on Marx (1991, 308-9).

Table 3.6 Marx's Production and Sales Accounts

Farmer's profit and loss account						
Dr		Cr				
Means of production [1]	1,000	Landlords (food) [2]	1,000			
Rent [2]	2,000	Manufacturers (materials) [3]	1,000			
		Manufacturers (food) [4]	1,000			
Production	3,000	Sales	3,000			
	=====		====			
Manu	facturer's profi	t and loss account				
Dr		Cr				
Materials [3]	1,000	Farmers [1]	1,000			
Surplus value [4]	1,000	Landlords [2]	1,000			
Production	2,000	Sales	2,000			
	=====		====			

Source: Created by the author based on Marx (1991, 308-9).

In *Grundrisse*, Marx had developed only a "simple reproduction scheme . . . designed to address the problem of the realisation of surplus value through the sale of the increased product," from which he concluded that expanded reproduction required capitalists to use surplus value to expand the employment of capital (Clarke 1994, 269). However, the "much more elaborate version of the reproduction scheme" (Clarke 1994, 191) produced in the Digression on Quesnay would have shown Marx that the capitalist class had a control problem. Producing accounts that demonstrated even society's simple reproduction showed not only how it was possible. It also implied, "The interdependence of the various branches of production mean[t] that if one [commodity] cannot be sold, then the circulation of all commodities is disrupted, so that the possibility of overproduction in one branch immediately implies the possibility of general overproduction" (Clarke 1994, 191). Always incipiently, and frequently in reality, society's accounts would not balance, and capitalism would be in crisis. As capitalism had no central planning authority, this probably raised for Marx the question of whether and if so how capitalists individually and collectively "controlled" its "departments," that is, sought to ensure that they functioned in its interests, produced the maximum rate of profit, despite the fact that its control system did not prevent, and probably produced, periodic crises.

Marx's answer, we will see, was that "total social capital," the capital market, controls the departments, whether industrial sectors or individual firms, through holding them accountable for the general rate of profit. Chapter 5 argues that results control by total social capital underlay Marx's explanation of how accounting for cost price produced the transformation from values to prices in Volume 3 in practice, which he

wrote following his excursion into Quesnay, DEB and branch accounting, in 1864–1865. In short, Marx's explanation was that total social capital controlled departments or individual firms by controlling the accounting principles and practices they used, principles and practices that his theory of value explained.

In the meantime, Marx continued studying accounting at the level of the firm and quickly ran into a major problem in understanding how capitalists account for fixed capital that temporarily threw him, as Engels put it, "off the rails" (Marx and Engels 1985, 414). Confidence that he could explain the "peculiarities" of accounting for fixed capital appears to have been the watershed in understanding capitalist accounting that prompted Marx to choose the title of "*Capital*" for his work, and to decide the structure of its presentation.

CAPITALIST ACCOUNTING AT THE LEVEL OF THE FIRM

Engels gave Marx more information from the accounts of his firm when he visited Manchester in August and September 1861. Marx used these (plus later) figures in Contribution to the Critique of Political Economy (Marx 1988, 161–62), and Volume 1 of *Capital* (Marx 1996, 228–29) to illustrate how to calculate the rate of surplus value. In August 1862, Marx again wrote to Engels asking for practical guidance: "In my critique I have demolished so much of the old stuff that there are a number of points I should like to consult you about before I proceed" (Marx and Engels 1985, 411). At the top of the list, "One point which you, as a practical man, must have the answer," "piles or no piles," was the question: "What becomes of this fund, which yearly replaces [in his example] 1/12 of the machinery?" (Marx and Engels 1985, 411). In other words, what happened to the capital returned for what accountants call the "wear and tear" or "depreciation" of fixed assets? Marx's comments and questions show that in addition to seeking support for his conclusion that it was "in fact, an accumulation fund to extend reproduction," he was struggling to get beyond the political economists' simple idea of depreciation:

Let us assume that a firm's machinery at the outset = $\pounds 12,000$. It wears out on an average in 12 years. If then $\pounds 1,000$ is added to the value of the goods every year, the cost of the machinery will have been paid off in 12 years. Thus far A. Smith and all his successors. But in fact this is an average calculation. Much the same applies to machinery having a life of 12 years as, say, to a horse with a life—or useful life—of 10 years. Although it would have to be replaced with a new horse after 10 years, it would in practice be wrong to say that 1/10 of it died every year. Rather . . . machinery (at least some types of machinery) runs better in the second year than in

the first. At all, in the course of [a useful life of] . . . 12 years does not 1/12 of the machinery have to be replaced *in natura* each year? (Marx and Engels 1985, 411)

Marx here asked fundamental questions about calculating the depreciation charge, rather than merely assuming an average calculation that, if (say) the life of machinery is 12 years, the capitalist always recovers 1/12th of its initial cost each year. Engels bluntly replied, "on the question of wear and tear . . . I rather suspect you have gone off the rails," noted that "Depreciation time is not, of course, the same for all machines," but promised "more about this" (Marx and Engels 1985, 414). Marx understood that labor transferred the value of the fixed capital to commodities, but his questions show that he was struggling to overthrow the political economists' assumption that every use value of an item of fixed capital transferred the same value, their view that the consumption of use values alone determined this transfer.

It was possible to envisage replacing parts of machine *in natura* as they wore out. If a horse lasts ten years, Marx knew the capitalist recovered its cost over this period. However, his conclusion, that for a horse "it would be wrong to say that 1/10 of it died every year," questioned the assumption of political economists that the transfer of its value to the product was a simple physical process, as it was, for example, with raw materials or components. This, we will see in chapter 6, was one of what Marx recognized were the "peculiarities" of the circuit of fixed capital.¹⁴

His question about machines that run better in their second year raised a related but different point. If we allocate equal amounts of its value to each of the fixed capital's outputs, and its technical efficiency, that is, its outputs for given equal amounts of labor, changes over its life, we will see in chapter 6 that this would contradict Marx's theory that, assuming constant prices, all identical commodities have the same value. Older machines, for example, that produced less, would have higher total unit costs, because with equal amounts of labor they would have higher unit labor costs than newer machines. If we drop this assumption, in extreme cases, in the second year of such a machine's life, we could have the absurdity of "negative depreciation," that is, an appreciation in value through use, a clear nonlabor source of value, and a catastrophe for Marx's theory of value if true.

Chapter 6 shows it is not true, first because Marx did not assume that labor necessarily transferred an equal amount of value from fixed capital to each unit of output, and, second, even where he did, correct accounting shows that unequal technical efficiency over its lifetime does not cause problems for his theory of value. Assuming constant prices, all commodities produced by a machine over its life do have the same value. Nevertheless, his question shows that Marx had not yet understood that run-in costs were additional socially necessary costs of producing the machine.¹⁵ That is, he had not yet worked out that, as we will also see in chapter 6, capitalists added these costs to the cost of the machine and spread them over its lifetime such that each use value the machine produced cost the same amount, just as they did with all other necessary costs. Exactly the same principle applied to the recovery of the total cost of keeping and using a horse that (assuming equal operating costs) the capitalist spreads evenly over the horse's use values, for example working life, the distances it travels, or the loads it pulls.

There is no further correspondence on this issue until 1867, but in December 1862 when Marx resumed work on "The Chapter on Capital," turning to draft the section on "Capital and Profit" (Oakley 1981, 89), whether through discussions with Engels or by other means, he made clear he had jumped back onto the accounting rails. Marx now, as we will see in detail in later chapters, confidently outlined what became his explanation of capitalist accounting for the cost of production, including the costs for the "wear and tear" of fixed assets:

The value of a *commodity* is determined by the total labour time, *past* and *living*, which enters into it . . . ; hence not only by the labour time which is added in the final production process, but by the labour contained in the fixed capital and the circulating capital, or in the conditions of production of the labour last to be added, by the labour time contained in the machinery, etc., the *matières instrumentals* . . . [such as the coal consumed, the heating, lighting, etc . . .] and the raw material, in so far as their value reappears in the commodity, which is entirely the case with raw materials and . . . the *matières instrumentals*, whereas the value of the fixed capital only reappears partially in the product—in proportion to its wear and tear. (Marx 1991, 136–37)

Chapter 6 shows that Marx's analysis of the transfer of fixed capital's value "in proportion to its wear and tear," not necessarily a constant proportion over its life, is consistent with capitalist fixed asset and depreciation accounting principles and practices. It rejects criticisms by Marxist economists and others that his analysis of this important topic contradicts his theory of value, and concludes that Marx's theory of accounting for fixed capital completed his theory of "capital in general" begun in *Grundrisse*. The link between this discovery and his decision in December 1862 to change the title of his work from *A Contribution to a Critique of Political Economy* to *Capital* is, chapter 5 argues, that it was

through theorizing the cost of production as "cost price," as "capital," that Marx found the accounting solution to the transformation from values to prices.¹⁶ This was the important prize, which could explain why Marx finished the *Economic Manuscripts of 1861–63* and turned to write what became Volume 3 of *Capital* in 1864–1865 with this question in his mind, leaving until later the details of fixed capital to what became Volume 2.¹⁷

In May 1868, Marx wrote to Engels that he wanted to use the accounting data he had on his factory in what became Volume 2 of *Capital*, which he had used in Volume 1 to illustrate the rate of surplus value, but he needed further data to calculate the rate of profit. He wanted to know the amount of capital advanced for the fixed assets and the rates of depreciation, the way Engels calculated the turnover of circulating capital, and the amount of circulating capital advanced:

For the *rate of profit*, the following would be necessary: 1. The missing data for the capital advanced for the *factory building* and the percentage of the sinking fund for this. Ditto warehouse. In both cases the rent should be given, if paid. Also the office costs and cost of staff for the warehouse. With regard to the steam engine, no data is given of the *percentage at* which the weekly wear and tear is calculated, and therefore the capital advanced for the steam engine is not visible either. 2. *Now the real question*. How do you calculate the *turnover* of the *circulating part of capital* (i.e. raw material, auxiliary materials, wages)? I would like to receive this answered in *detail*, even illustrated, particularly the turnover calculation of the circulating capital advanced. (Marx and Engels 1988, 30–31)

On May 10, Engels provided estimates of some of the requested information (Marx and Engels 1988, 32–33), but told Marx that the figures he had were not for Engels' factory, owned by Henry Ermen, but for Gottfried Ermen's, and informed him that he could not give him any more details because Gottfried had forbidden his sons from divulging any more. Engels suggested contacting Henry Ermen, "But I fear, Monsieur Gottfried has long taken these old *account books* into his own custody, and then Henry Ermen will not be able to help you either" (Marx and Engels 1988, 33). Engels responded to the second question:

As far as calculating the turnover of circulating capital is concerned, I do not really know what you mean by this. We calculate only the *total turnover*, that is the total of annual sales. If I understand rightly, you want to know how many times a year the circulating part of capital is turned over, or, in other words, how much circulating capital is *in business*. This however differs in almost all cases. (Marx and Engels 1988, 32)

One problem was that prosperous owners of spinning mills often had "spare capital" for investment or speculation, but for working capital Engels estimated that on average a mill-owner would need an additional "1/5 [to] 1/4 of the fixed capital in circulating capital" (Marx and Engels,

1988, 32).

Marx replied, "In your last letter, you made a mistake on one point. The notes you yourself wrote late one evening in my notebook [when Marx visited Engels in Manchester in 1861], which still exists," showed that the figures came from Engel's mill (Marx and Engels 1988, 36, 573).¹⁸ Marx explained that he could not find what he wanted in accounts, of which he had plenty, which was the breakdown of the components of circulating capital advanced, and the amount "turned over," that is, sales.

Incidentally, the main thing for me was to ascertain the magnitude of the *advanced* circulating capital, i.e., advanced in raw material, etc., and wages, as against circulating capital *turned over*. I have enough statements, part of them from manufacturers, handed in either to the Commissioner's or to private economists. But everywhere only the annual accounts. (Marx and Engels 1988, 36)¹⁹

In summary, an examination of Marx and Engels's letters from the late 1850s shows Marx developing a close interest in accounting. They clearly show, as Chiapello concluded from reviewing some of them, "From a very early period, Marx was able to view matters from an accounting perspective. The language of accounting was not unknown to him, and he used it in his arguments" (Chiapello 2007, 288). It is also clear that "Engels' position in business and his intimate, practical acquaintance with the system Marx theorised played a central role that has often been overlooked in Marxology" (Chiapello 2007, 290), even by those who recognize an affinity between his theory of value and capitalist accounting, who invariably ignore Engels's role, and overlook Marx's explanation of accounting.

MARXIST ECONOMICS AND ACCOUNTING

We saw in chapter 2 that in Volume 2 of *Capital* Marx recognized the importance of "bookkeeping" to capitalists in controlling the valorization process. Like accountants, he thought of "capital" as money invested for recovery with a return, and distinguished "fixed" from "circulating" capital, and "productive" from "capital of circulation." He shared their idea of "capital maintenance." We will see in chapters 6 and 7 that the stocks (balances) in Marx's circuit of capital explain the fixed assets and inventories we find in capitalist's balance sheets, and the flows of value and surplus value explain the costs and profit that appear in profit and loss accounts.

Some Marxist economists have recognized an affinity between capitalist

accounting and Marx's circuit of capital, but they have not probed it. Sweezy (1942, 63) claimed that c + v + s = total value "is in effect a simplified version of the modern corporate income statement," which "constitutes the analytic backbone . . . of Marx's economic theory."²⁰ He was right, "Total value is equivalent to gross receipts from sales, constant capital to outlay on materials plus depreciation, variable capital to outlay on [productive] wages and salaries, and surplus value to all income" (Sweezy 1942, 63), but he did not explain the links between Marx's theory of value and the underlying principles and practices of accounting.²¹

Brewer (1984, 35) notes, "Accountants and businessmen use the term [capital] in a sense closer to that of Marx" than to economists, but does not say what "capital" means to an accountant. Foley argues that the circuit of capital, "M—C . . . P . . . C'—M' . . . corresponds directly to the income, or profit and loss statement, of a capitalist firm" (1986, 33). He is right, we will see, that capitalist accounts measure the cost of production (C) as the "capital outlays" on "labor and nonlabor inputs to production over a period of time" (Foley 1986, 68), that M' is sales that returns as money capital, and that gross profit is therefore sales minus the cost of production. Foley (1986, 68; 2000, 11) adds that the "stock variables in the circuit of capital model correspond to the categories on the asset side of the balance sheet of the firm," and "When we turn to Volume 3 of *Capital* we find Marx firmly in control of capitalist accounting categories underlying profit and profit rate measures. He clearly distinguishes stocks and flows . . . and the definitions of accounting cost." "Indeed," we will see, "it is striking that the ordinary conventions of capitalist accounting reflect the labor theory of value concepts so faithfully," both insisting "on a strict rule of conservation of value" (Foley 1986, 69, 2000, 12). This "ordinary convention" requiring the "conservation of value" is the accountants' principle that particular "costs attach," which we shall see in chapters 5 and 7, Marx's theory of value explains. Finally, Foley is right that "All the circuit of capital variables for a real capitalist firm . . . can be determined from ordinary accounting data" (1986, 69, 70), including surplus value —assuming that prices equal value, or that total surplus value equals total accounting profit. If so, it is true that "Capitalists calculate the rate of profit as the ratio of surplus value to the stock of capital tied up in their production" (Foley 1986, 76). However, Foley does not explore the "ordinary conventions" of accounting.

Marx defined the rate of profit as the ratio of surplus value "over the

advanced total capital" (1998, 46), that is, not simply the capital originally invested, but the capital "tied up," "advanced" to, or "invested" in circulation. This is what we find in capitalists' balance sheets. The total capital advanced is the sum of "part of the capital [that] exists as commodity capital that is being transformed into money . . .; another part [that] exists as money capital that is being transformed into productive capital; [and] a third part as productive capital being transformed into commodity capital" (Marx 1978, 184). In other words, at any point in time, capital functions as (1) money or claims to it (e.g., debtors) waiting to be transformed into necessary use values, or to be distributed to investors, (2) the cost of necessary use values for the production of finished commodities or services (e.g., plant, buildings, stocks of raw materials, and work in progress), or (3) stocks of finished commodities and other commodities for sale. Foley (1986) models the circuit of capital mathematically using "accounting conventions" (essentially, that "costs attach"), assuming prices do not change. Foley does not recognize that his model of simple reproduction generates the widely used "Du Pont" formula, developed in America in the early twentieth century (Bryer 2013a), for decomposing the rate of profit, to facilitate the financial control of large corporations.²²

In an early general treatment of the TSSI, Freeman appealed to "bookkeeping" against the simultaneous valuation "metaphysics" of neoclassical economics to justify the temporal accumulation and disbursement of stocks of value, and appealed to "normal accounting practice" to justify calculating profit as "the change in gross worth of the business, just as the capitalists calculate it" (1996, 251, 258).²³

However, neither Freeman, Foley nor any other Marxist economist has explained what "capitalist accounting categories" are, what capital is "tied up" or "released" if prices of constant capital change, and how, if at all, this differs from the "capital advanced," and how price changes effect the rate of profit. They have not studied how capitalist accountants measure "gross worth," how they value and depreciate fixed capital, calculate the cost of production, calculate profit, recognize losses, etc. Most importantly, they have not considered the importance of accounting in holding individual capitals and their workers accountable for the rate of profit.

This neglect, chapters 4 and 5 argue, has prevented them from recognizing Marx's explanation of his illustration of the transformation

from values to prices in chapter 9 of Volume 3. Economists fail to see that his aim was not only logical, correct accounting for values and prices, their correct aggregation, but also empirical, an explanation of how his theory of value worked as a system of accountability in competitive markets in practice. Chapter 5 argues that economists overlook that Marx used his theory of value to explain how in competition the capitalists' accounting calculations tended to produce equal rates of profit. Chapters 6 and 7 respectively argue that neglect of accounting underlies confusion and misplaced criticisms of Marx's theory of fixed capital, and his distinction between "productive" and "unproductive" labor.

However, first we must understand the limits of the economists' view that Marx's explanation of the transformation from values to prices of production was only or largely a question of logical accounting. This is the so-called "linear interpretation," that from the beginning of *Capital* "Marx constructs the labour theory of value as the solid foundation, the fixed building block which, when built upon, will tell us all we need to know about capitalism" (Harvey 2006, 3). Harvey is right, "The accuracy of his transformation procedure is vital to the linear interpretation because Marx appears to be deriving exchange values out of the fixed building block of the value theory" (2006, 3–4). It is certainly true, "Marx's analysis of the 'laws of motion' of capitalism stands or falls, according to this interpretation, with the logical coherence of the transformation," but according to Harvey it is "incorrect" (2006, 4). Harvey (2006, 2) therefore prefers what he calls the "dialectical" interpretation, that there are no fixed meanings to "highly abstract and seemingly a priori concepts," which readers will come to understand only by using them in manifold contexts as Marx "bit by bit illuminates for us different aspects of the intricate complexities of capitalism" (see also, Brewer 1984, 21).

What follows supports but modifies what Harvey calls the "linear" interpretation.²⁴ It argues that Marx started by explaining "material" reality (the capitalist commodity) using his theory of value and carried this through the three volumes, and agrees that the TSSI provides a logical accounting solution to the value-price transformation, but argues that the accounting logic of *Capital* as a whole is nonlinear, a qualitative shift occurring in Volume 3. According to the accounting interpretation, Marx started by explaining the accounts of what in *Grundrisse* he called "capital in general" and in *Capital* Volumes 1, 2, and part of 3, the accounts of "aggregate social capital" or the "collective capitalist," of which the

individual commodity or capital is a representative fraction. For most of Volume 3, by contrast, Marx explained the use of accounts by "many capitals" incorporated into "total social capital," by capitalism as a living whole, as the aggregate capital in motion. The accounting logic of *Capital*, in short, is that we first learn why and how capitalists in general account for the production and circulation of commodities, and then how total social capital controls individual capitalists under competition by holding them accountable for the general (required) rate of profit.

THE ACCOUNTING LOGIC OF CAPITAL

Marx developed the concepts of "capital in general" and "many capitals" after working out his theory of surplus value while writing Grundrisse, which caused him to revise his theory of history. In the Economic and Philosophical Manuscripts of 1844 (Marx 1975) and German Ideology (Marx and Engels 1976a), Marx saw history as driven by the market. In *Grundrisse* he formulated the concept of the "mode of production" as a system of social relations of production, different ways of extracting surplus labor, and "history," the transitions from one mode to another, as the product of class conflict over the most appropriate relations to best develop the "forces of production."²⁵ Now, instead of competition driving the history of production through increasing the division of labor, the history of production had created capitalist competition. Rather than competition explaining capitalist production, capitalist production explained competition. In Grundrisse, Marx therefore decided to deal first with "capital in general" as system of social relations of production that produced surplus value, before dealing with circulation and finally competition between "many capitals" that redistributed it. As Heinrich (1989, 64–65) says, "Marx's economic analyses of the 1840s . . . were primarily directed at market processes, where Marx regarded competition as the crucial mechanism for explaining a very diverse range of phenomena. The Grundrisse marked an entirely new understanding of competition." Marx's new view was that:

Competition in general, this essential locomotive force of the bourgeois economy, does not establish its laws but is their executor. Hence unlimited competition is not the presupposition for the validity of the economic laws but the consequence—the form of appearance in which their necessity realizes itself Competition . . . does not *explain* these laws; rather, it lets them be *seen*, but does not produce them. (Marx 1973, 552)

This left the problems of working out the "economic laws" and using

them to explain the forms of appearance of "capital," "cost," "profit," "rate of profit," etc. in competition. To work out his laws of capitalist production and circulation of value, as the foundation for explaining capitalist competition, Marx first analyzed "capital in general," working at the level of society as a whole, abstracted from competition. Qualitatively, in Grundrisse, "capital is capital in general, i.e. the incarnation of the qualities which distinguish value as capital from value as pure value or as money But we are still concerned neither with a *particular* form of capitals nor with an *individual* capital, as distinct from other individual capitals. We are present at the process of its becoming" (Marx 1973, 310). The primary qualitative distinction between money and capital at its "becoming" was its employment in pursuit of surplus value, in which it took different forms. Quantitatively, "we are concerned here with capital as such, [let us] say the capital of the whole society. The differentiation, etc. of capitals does not concern us yet" (Marx 1973, 346, emphasis added). From this perspective, "If I regard *the total capital of e.g. a nation* as distinct from total wage labour . . . then I regard it in general" (Marx 1973, 852, emphasis added). In short, "in quantitative terms, Marx's concept of *capital in general* refers to the total capital invested in the capitalist economy as a whole" (Moseley 1995, 17), and in this context his references to an ". . . 'individual capital' . . . [are] simply [to] a 'representative' part of capital-in-general" (Fine and Harris 1979, 7).

In *Capital*, Marx did not use the phrase "capital in general," but Marxists generally agree that this remained its focus. Most would agree that "in the whole first volume of *Capital* Marx talks about an average or typical capital, which is in fact the aggregate capital, or a scale model of the aggregate capital" (Foley 1986, 6). Many accept that Marx continued to employ the category of capital in general throughout *Capital* (Rosdolsky 1977, 51), continued to deal with the whole society as an undifferentiated individual, or the individual as the ideal-typical representative of the whole (Moseley 1997, 12). However, neglected by Marxists, Marx developed another conceptualization in Volume 3, seeing society's capital as more than the sum of its parts, more than an "emergent totality." Marx also conceptualized society by using what Piaget (1971) called the "scheme" or concept of "operational structuralism," a totality formed by its functioning or operation, that, what follows argues, Marx distinguished from "capital in general" in *Capital*, by distinguishing between "aggregate social capital" and "total social capital," the aggregate in motion.²⁶ As Piaget put

it:

Over and beyond the schemes of atomist association on the one hand and emergent totalities on the other, there is however a third, that of operational structuralism. It adopts from the start a relational perspective, according to which it is neither the elements nor the whole that comes about in a manner one knows not how, but the relations among the elements that count. In other words, the logical procedures or natural processes by which the whole is formed are primary, not the whole, which is consequent on the system's laws of composition, or the elements. (Piaget 1971, 8–9)

Leaving aside "atomistic association," the conception of orthodox economists, Marx's aggregate social capital or "capital in general" is an "emergent totality," where the whole as the sum of the parts is primary. In his concept of "total social capital," however, the "laws of composition" of the "many capitals" become primary, "the elements of a structure are subordinated to laws, and it is in terms of those laws that the structure *qua* whole or system is defined" (Piaget 1971, 5, 7). According to the accounting interpretation, Marx's "laws of composition" derive from his theory of value that explains the phenomenal forms that appear under competition as a system of accounting control by "total social capital."

Marx's development of his concept of capital in general into total social capital, his concept of many capitals as a totality, is consistent with the hypothesis that only having resolved the problem of accounting for fixed capital was Marx confident that he could fully explain the production and circulation of capital in general. Only then could he fully explain how individual capitalists' accounts measured costs as the "monetary expression of socially necessary labor time," and therefore be confident that he could explain how under competition, where prices and values diverged, capitalists still accounted for cost and profit as phenomenal forms of value using the same principle, and that total profit still equaled total surplus value. Secure in this knowledge, he could then prove his theory of value from the start while simultaneously simplifying, politicizing, and historicizing the presentation of the production of surplus value in Volume 1, knowing he could defer circulation to Volume 2, and competition to Volume 3. Marx summarized his progression through *Capital* on the first page of Volume 3: in Volume 1, "we investigated the . .. process of capitalist production, taken by itself," and, in Volume 2 "the process of circulation . . . [where] we showed . . . that the capitalist production process, taken as a whole, is a unity of the production and circulation processes" (1981, 117). In Volume 3, "Our concern is rather to discover and present the concrete forms which grow out of the *process of* *capital's movement considered as a whole*" (Marx 1981, 117). His task was to develop the concept of "capital in general," from capitalism seen as an aggregated totality of production and circulation, into the concept of "total social capital" as the living totality controlled by competition and accounting calculations and practices.

In short, what follows argues, Marx's approach to writing *Capital* is consistent with him knowing from explaining the accounts of aggregate social capital in Volumes 1 and 2 that he could also explain the accounts of "many capitals" and their use by total social capital in Volume 3. This knowledge would allow Engels to confidently taunt Marx's rivals in his Preface to Volume 2 to come up with their own explanation before he published Volume 3, and it would justify Marx's claim that "The laws thus found . . . hold good no matter how the surplus value is later divided among the producer, etc" (Marx and Engels 1988, 23). Marx had an explanation that worked for capital in general and total social capital. Having completed his 1861–1863 manuscripts, Marx was confident his approach would fulfill his intellectual project and make it accessible to a wide audience. Starting from capital in general had the added advantage that he could hope to reach activists and workers with Volume 1's simple world containing one capitalist, where for key demonstrations value equaled price, knowing that the same accounting principles underlay the detailed circuits of capital, and would allow him to postpone explaining "many capitals" to Volume 3.

FROM "CAPITAL IN GENERAL" TO "TOTAL SOCIAL CAPITAL"

Rosdolsky (1977) highlighted the importance of Marx's idea of capital in general in *Grundrisse*. Heinrich (1989, 64) argued that Marx had difficulties applying the concept to competition when he was writing the second draft of *Capital* in the early 1860s, eventually abandoned it, and this explains the structure of *Capital* and the virtual absence of the phrase in its three volumes. Burkett (1991) and Moseley (1995) show, to the contrary, that Marx did maintain the idea throughout *Theories of Surplus Value* and Volume 1 of *Capital*. However, Moseley and others overlook Marx's concept of total social capital as the developed form of capital in general in Volume 3. Marxists do not distinguish "capital in general" from "total social capital." Rosdolsky (1977) uses the terms indiscriminately. Oakley discusses only capital in general, which he defines as "a fully

aggregated analysis in which capital was viewed as a uniform totality" (1983, 68). Moseley (2000a, 286) distinguishes only "between 'capital in general' (or 'total social capital') on one side, and 'many capitals' (or 'competition')" on the other (see also Foley, 1986). According to Moseley, "in quantitative terms, Marx's concept of *capital in general* refers to the total capital invested in the capitalist economy as a whole (i.e. the 'total social capital')" (1995, 17). McGlone and Kliman (1996, 34) equate Marx's "concept of total social capital" in Volume 3 with his focus on "the collective capitalist" in Volume 2, that is, with capital in general.

Marx distinguished two forms of capital in general in *Grundrisse*, seeing as an "abstraction," and as a "real existence," by which, what follows argues, he meant the aggregate capital in motion, acting as a living individual, that he later called "total social capital." "Capital in general as distinct from particular capitals, does indeed appear (1) only as an *abstraction*; not an arbitrary abstraction, but . . . which grasps the specific characteristics which distinguish capital from all other forms of wealth . . . (2) however, capital in general, as *distinct* from the particular real capitals, is itself a *real* existence" (Marx 1973, 449). Heinrich (1989, 68–69) argues that this distinction showed "Marx's uncertainty" about the concept of capital in general, claiming, "Marx never specified what he understood by this real existence; in fact, he used the expression only once." Burkett (1991, 59), however, shows that in *Grundrisse* and correspondence, "Marx ... clearly states that the 'real existence' of 'capital in general' is nothing but the more concrete realisation of the abstract concept of capital as value-in-process. This realisation occurs through development of the credit system on the level of 'many capitals.'" Neither Burkett nor other Marxist explain, however, how "many capitals" become a totality. Fine and Harris (1979, 8) for example say that "having developed the concept [of capital in general], Marx transforms it by then producing the concept of competition between capitals." However, they see this as "competition between different fractions of the bourgeoisie (industrial, merchant and financial capitalists) and also the landlord class" (Fine and Harris 1979, 8, 17), rather than competition between individual capitals seen as elements of total social capital.

He did not retain the phrases, but Marx retained the distinction between capital in general as an "abstraction" and a "real existence," which appears in the Moscow editions of Volume 2 of *Capital* as the distinction between the "aggregate social capital" as the sum of parts, and "total social capital"

as a structured totality.²⁷ In these editions, translated by Ernest Untermann, the distinction is between the "aggregate capital" as the sum of the parts and "total social capital" as "the form of the motion of the sum of individual capitals." The Penguin edition of Volume 2 (Marx 1978) translated by David Fernbach uses "total social capital" 78 times, whereas the Untermann translation (Marx 1997) uses it only 5 times.²⁸ In most cases where the Fernbach translation uses "total social capital," the Untermann edition uses "aggregate social capital" (e.g., Marx 1997, 110, cf. 1978, 184; 1997, 141, cf. 1978, 215).²⁹ In the Untermann translation of Volume 2, we will see, "total social capital" always means "the form of movement" of the whole seen as a differentiated living individual, rather than seeing the individual as a representative fraction of an aggregated whole.

Both editions of Volume 1 use "total social capital" in chapter 25, The General Law of Capitalist Accumulation, but this translation is questionable because all usages mean the total seen as the sum of parts. Discussing the composition of capital, Marx noted that taking the average "in all branches of production, gives us the composition of the total social capital of a country, and with this alone are we, in the last resort, concerned in the following investigation" (1996, 608). Discussing accumulation, "The growth of social capital is effected by the growth of many individual capitals . . . , [which] increase in such proportion as they form aliquot parts of the total social capital," the aggregate, but there is also the "splitting-up of the total social capital into many individual capitals" (Marx 1996, 620, 621), dividing the total. In short, "accumulation ... [is] the absolute increase of the total social capital," and the "laws that regulate the general movement of wages" concern "the ratio between the working-class—i.e., the total labour-power—and the total social capital" (Marx 1996, 623, 632).³⁰

Marx began Volume 1 of *Capital* with a chapter on commodities, which is consistent with a focus on capital in general (Burkett 1991, 65). The reason he gave was that "The wealth of societies in which the capitalist mode of production prevails appears as an 'immense collection of commodities'; the individual commodity appears as its elementary form. Our investigation therefore begins with the analysis of the commodity" (Marx 1976a, 125). As Harvey says, "We begin with what is in effect a conclusion" (2006, 1), which was that the commodity "is the simplest *social* form in which the product of labour manifests itself" (Marx 1989c, 544), emphasis added). Marx explained that he did "not proceed on the basis of 'concepts' hence not also from the 'value concept'" (1989c, 544), but from the material reality of a mass of commodities because, he argued, we could understand the single commodity only as an element, a part or representative fraction, of this socially created mass.³¹ In the first three chapters of Volume 1, Marx analyzed the use value, exchange value, and value, of the commodity, and the money form, requiring readers to follow his logical proofs, to undertake, as he admitted, "the fatiguing climb of its steep paths [to] have a chance of gaining its luminous summits" (1976a, 104). Accountants agree with Marx's approach of valuing commodities as representative elements of a total mass when they calculate the capitalist's cost of production, as we will see in later chapters.

However, in the Preface to Volume 1, Marx also gave a biological analogy that is consistent with a conception of the whole as structured totality when he stressed, "the commodity-form of the product of labour ---or the value-form of the commodity---is the economic cell-form" (1976a, 90). He accepted, "To the superficial observer, the analysis of these forms seems to turn upon minutiae. It does in fact deal with minutiae, but so similarly does microscopic anatomy" (Marx 1976a, 90) in explaining the functioning of living bodies. This analogy, I will argue, is consistent with another reason for starting with a detailed analysis of the value of a commodity. This was that understanding the social process of the production of an individual commodity's value, as an "economic cell form" of total social capital, was the key to understanding how capitalism controlled society's valorization process. From his study of capitalist accounts Marx eventually concluded the same control principle, that value was the monetary expression of socially necessary labor time, applied both to capital in general and total social capital.

Also consistent with continuing to work in *Capital* with the concept of capital in general is that when explaining the origin of surplus value in chapter 7 of Volume 1, throughout Volume 2, and Part 1 of Volume 3, Marx put aside questions arising from competition by explicitly assuming that individual commodity prices equal their values. He had done the same in Part 2 of *Theories of Surplus Value*. "In so far as crises arise from *changes in prices and revolutions in prices*, which do not coincide with *changes in the values* of commodities, they naturally cannot be investigated during the examination of capital in general, in which the prices of commodities are assumed to be *identical* with the *values* of

commodities" (Marx 1969b, 515, see also 97). Starting from the commodity as a representative of capital in general, and then showing that surplus value cannot arise from buying and selling, also had the political advantage of allowing Marx to turn next to the origin of surplus value and the distinction between constant and variable capital by explicitly assuming that prices equal values. In chapters 6 and 7, Marx analyzed one production process controlled by one capitalist "as representative of capital as a whole," and assumed that commodities sell at their value (Brewer 1984, 39).³² This assumption, putting aside unequal exchange, allowed him to claim that he had demonstrated that labor alone in production was the source of the capitalist's surplus value.³³ Marx explained, at the end of chapter 5 of Volume 1, "Contradictions in the General Formula of Capital," where he gave his demonstration that capital in general could not extract surplus value from circulation, that it still had somehow to come from the exchange of "equivalents":

The conversion of money into capital has to be explained on the basis of the laws that regulate the exchange of commodities, in such a way that the starting-point is the exchange of equivalents. Our friend, Moneybags, who as yet is only an embryo capitalist, must buy his commodities at their value, must sell them at their value, and yet at the end of the process must withdraw more value from circulation than he threw into it at starting. His development into a full-grown capitalist must take place, both within the sphere of circulation and without it. These are the conditions of the problem. *Hic Rhodus, hic salta*! (Marx 1996, 176–77)

Marx's answer was that capitalists buy labor power at value and the capitalist gets surplus value by extending the working day beyond the time necessary to produce the worker's means of subsistence. Workers could then plainly see that capitalists exploited them even if they bought and sold commodities, including their labor power, at their values (Duménil 1983–1984, 443; Mohun 1994a, 396). Assuming prices equaled values therefore allowed Marx to focus on explaining the "process in question" (1996, 176), which was how capitalists in general acquired surplus value.

Was Marx's assumption justified as a historical fact? Engels argued in his supplement to Volume 3 of *Capital* that it was, that it accorded with Marx's history of precapitalist societies, claiming that the "Marxian law of value holds generally . . . for the whole period . . . from . . . Egypt . . . and . . . Babylon . . . during a period of from five to seven thousand years" (1998b, 883–87). It is not necessary to believe this to justify Marx's explicit assumption because he defined capital in general, in which it is implicit, historically, as "an abstraction which grasps the specific characteristics which distinguish capital from all other forms of wealth

—or modes in which social production develops" (Marx 1973, 449). What distinguished the capitalist mode of production historically, Marx discovered in *Grundrisse*, was the way its social relations of production extracted surplus labor in the form of surplus value, and we could understand this only as a whole, initially as capital in general.

To set the historical context for his focus on the production of surplus value in chapter 4 of Volume 1 on the "General Formula for Capital," Marx therefore first introduced the "simplest form of the circulation of commodities" (1996, 158). This was his circuit C-M-C, the production and "transformation of commodities into money, and the change of the money back again into commodities; or selling in order to buy" (Marx 1996, 158), called by Engels "simple commodity production."³⁴ Marx did not argue that the circuit C-M-C described a historically distinct type of society, a distinct mode of production. Rather, this circuit appeared within different precapitalist modes of production. It was for Marx the general historical backdrop, a summary of systems of commodity production and circulation in which surplus labor was usually the aim, but where unfree labor made surplus value impossible, against which to analyze capitalism as a qualitatively different historical form, where surplus value was the overriding aim.

In this sense, Engels (1998a, 16) was right, "in the beginning of his first book Marx proceeds from the simple production of commodities as the historical premise, ultimately to arrive from this basis to capital." However, Marx did not "ultimately" work his way from simple commodity circulation to capitalism. He immediately added, "But alongside of this form we find another specifically different form: M-C-M, the transformation of money into commodities, and the change of commodities back again into money; or buying in order to sell" (Marx 1996, 158). This was Marx's "general formula for capital," which he analyzed for "capital in general" in chapter 5 of Volume 1 of *Capital*, as the sum of all individual capitals, as one aggregate capitalist (Moseley 1995, 55). As Kliman (2011b, 186–88) says, Marx argued there from the viewpoint of the "economy as a whole" that surplus value could not come from market exchange because any gains and losses to individuals from buying and selling above or below what commodities were "worth," however we defined this, netted to zero (see also, Moseley 1995, 34).³⁵ In chapter 7, Marx explained the origin of surplus value as unpaid labor by assuming each commodity's value equaled their price, within capital in general. In chapter 10, "Marx's theory of the determination of the working day and absolute surplus-value also clearly applies to the economy as a whole" (Moseley 1995, 35). Similarly, according to Marx, "the establishment of a norm for the working day presents itself as a struggle over the limits of that day, a struggle between *collective capital*, i.e., the class of capitalists, and collective labor, i.e., the working class" (Moseley 1995, 35, emphasis added).

For most of Volume 2 Marx studied the whole as the "aggregate capital of the capitalist class," as the "form of movement common to all industrial capitals," but he also distinguished this from studying the whole "simultaneously also as a form of movement of the sum of the individual capitals" (1997, 102–3), as the sum of social capital in motion:

Marx distinguished "movement as the movement of a single individual" in his later discussions from the "algebraic sum of movements" by calling the former "total social capital."³⁶ It was "because the circuit C' . . . C'presupposes in its description the existence of another industrial capital in the form $C (= L + mp) \dots$ [that] it itself demands to be considered not only as the general form of the circuit, i.e. as a social form in which every individual industrial capital can be considered" (Marx 1978, 176–77). We must see it "not only as a form of motion common to all, individual industrial capitals" (Marx 1978, 177). We must "at the same time" also see it "as the form of motion of the sum of individual capitals, i.e. of the total social capital of the capitalist class, a movement in which the movement of any individual industrial capital simply appears as a partial one, intertwined with the others and conditioned by them" (Marx 1978, 177, emphasis added). In discussing the "peculiarities" of the circuit of commodity capital, Marx noted that the value composition of commodities varied depending on whether, "C' . . . C' is regarded as the *form of the movement* of the total social capital or as the independent movement of an individual industrial capital" (1997, 104, emphasis added). In Part 3, "The

The fact that the social capital is equal to the sum of the individual capitals . . . and that the aggregate movement of social capital is equal to the algebraic sum of the movements of the individual capitals, *does not in any way preclude the possibility that this movement as the movement of a single individual capital, may present other phenomena than the same movement does when considered from the point of view of a part of the aggregate movement of social capital, hence in its interconnections with the movements of its other parts, and that the movement simultaneously solves problems the solution of which must be assumed when studying the circuit of a separate, individual capital instead of being the result of such study. (Marx 1997, 103, emphasis added)*

Reproduction and Circulation of the Aggregate Social Capital," the distinction becomes relevant for the first time. Marx again distinguished the movements of an individual capital, as a part of aggregate social capital, from "total social capital" as the movement caused by their interaction:

But in both the first and the second Parts it was always only a question of some individual capital, of the movement of some individualised part of social capital. . . . However the circuits of the individual capitals intertwine, presuppose and necessitate one another, and form, precisely in this interlacing, the movement of the total social capital. (Marx 1997, 351)

To account for the movement that resulted from the interactions of individual capitals, the assumption that products always found a buyer and the necessary inputs were available for production, natural for the aggregate capital, was "no longer adequate in the study of the total social capital and of the value of its products" (Marx 1997, 393). Marx showed through his "reproduction schemas," his consolidated social accounts, that the "aggregate social capital" can reproduce itself assuming simple reproduction, and also with expanded reproduction, to demonstrate only that the aggregate accounts can add up, which also shows how crisis prone capitalism is, but he knows he has only begun to explain it as total social capital in motion. In chapters 20 and 21 of Volume 2, Marx constructed the accounts of "total social capital." However, this was only a formal result, the result of assuming the opening data and relationships and working through the accounts to the aggregate social capital. Having shown that simple and expanded reproduction was logically possible does not explain how, as he had already noted, "In capitalist society . . . where social reason only asserts itself only post festum . . . [and] great disturbances may and must constantly occur," and there is no "need of society to calculate beforehand" (Marx 1997, 314). In short, he had not explained how it works in reality, in competition, according to capitalism's operational laws.

His aim in Volume 3, therefore, was "not to make general reflections on this unity," but to go beyond it to "discover and present the concrete forms which grow out of the *process of capital's movement considered as a whole*" (Marx 1981, 117). These concrete forms encountered in everyday life were profit, interest and rent, which Marx argued all came from surplus value. In 1868, Marx explained to Engels the qualitative shift between Volumes 1 and 2, which had the same "premises," and Volume 3.

In Book II, as you know, the *process of circulation* of capital is described on the basis of the

premises set forth in Book I. Hence the new formal categories which spring from the process of circulation, such as fixed and circulating capital, turnover of capital, etc. . . . In Book III we come to the transformation of surplus value into its different forms and component parts. (Marx and Engels 1988, 21)

To explain this transformation, in Volume 3 Marx conceptualized total social capital as the whole in motion caused by differences between individuals, where the whole was not just the sum of the parts, but a structured totality, the outcome of interactions between the parts according to laws. He gave his explanation of the transformation from values to prices in Volume 3, where he analyzed, as it said in the subtitle, "capitalist production as a whole," but now understood as total social capital, aggregating the effects of competing individual capitals into the movements of "one single capital" (Marx 1981, 255). There he explained the "form in which . . . [t]he configurations of capital . . . appear on the surface of society, in the action of different capitals on one another, i.e. in competition, and in the everyday consciousness of the agents of production themselves" (Marx 1981, 117). By the "form of configurations of capital" that "appear on the surface of society," he meant particularly its organization into joint stock companies that compete with each other and for capital. By the "everyday consciousness" of the agents Marx meant their ideology, determined by the phenomenal forms, the categories that appear in reality and in capitalist accounts, and in the principles and practices underlying them, understood as a "structured discourse" (Mepham 1972, 13) around their rate of profit mentality.³⁷

Arthur (2002, 141) sees "two contradictory discourses in Marx," "capital in general" versus "many capitals."

The one asserts that total capital is an effective power and individual capitals simply replicate its categories as aliquot parts of it, picking up their share of the total surplus value as if they were merely shareholders in a single enterprise. The other discourse insists that capital necessarily exists as many capitals *confronting* one another in competitive struggle, that only thus are determinations of capital in general enforced on each other. (Arthur 2002, 141)

Marx's discourses are not contradictory once we understand that the second discourse refers to total social capital as a structured totality in which capitalist accounting enforces the determinations of capital in general through "generally accepted accounting principles" (GAAP) and the risk-adjusted general rate of profit as the target or "required return" for each individual capitalist. Total social capital becomes for Marx an "effective power" in competition, as an all-encompassing joint stock enterprise with many branches, within which, as he put it in *Grundrisse*,

individuals posit themselves and others as "general beings," as joint stock companies:

The influence of individual capitals on one another thus becomes precisely their positing as general beings, and the suspension of the seeming independence and independent survival of individuals. This suspension takes place even more in credit. And the most extreme form to which suspension proceeds, which is however at the same time the ultimate positing of capital in the form adequate to it—is the joint stock company. (Marx 1973, 657–68)

In Volume 1 Marx (1996, 339) described the joint stock company as having the power of the "collective capitalist," as the Moscow edition puts it. Or as the Fowkes (Penguin) translation puts it, "This power of Asiatic and Egyptian kings, of Etruscan theocrats, etc. has in modern society been transferred to the capitalist, whether he appears as an isolated individual or, as in the case of the joint stock company, in combination with each other" (Marx 1976a, 452, emphasis added). In other words, Marx there saw the joint stock company as the representative of the capitalists "combined" into one "collective." In Volume 2, he contrasted the "collective capitalist" of "departments" with the "collective labourer" (see, e.g., Marx 1978, 516; 1997, 440). However, in Volume 3, where the joint stock company becomes the ultimate expression of the credit system, Marx does not use the phrase "collective capitalist." Instead, the joint stock company expresses the "idea . . . that each particular capital should be viewed simply as a fragment of the total capital, and each capitalist as in fact a shareholder in the whole social enterprise" (Marx 1981, 312), that is, of total social capital. Consistent with this, as Marx (1997, 67) had defined it in Volume 2, "M-M' . . . may be regarded as the form of the total social capital," as the investment of money capital in shares and ultimately the receipt of more cash in return, from dividends and from selling shares. Rather than "collective" capitals, in Volume 3 joint stock companies are "social" capitals. Marx (1998, 432) argued that the development of the "credit system" was necessary "to effect the equalisation of the rate of profit . . . upon which the entire capitalist production rests," underlying which was the "Formation of stock companies," as "social undertakings." Their

capital, which in itself rests on a social mode of production and presupposes a social concentration of means of production and labour-power, is here directly endowed with the form of social capital (capital of directly associated individuals) as distinct from private capital, and its undertakings assume the form of social undertakings as distinct from private undertakings. It is the abolition of capital as private property within the framework of capitalist production itself. (Marx 1998, 432, 434)

Capital abolished as private property becomes a private share of social property. To control it, with social capital came the "Transformation of the actually functioning capitalist into a mere manager, administrator of other people's capital, and of the owner of capital into a mere owner, a mere money-capitalist" (Marx 1998, 434). Joint stock companies and stock markets were only in their early stages of development when Marx was writing. The divorce of ownership from control in Britain existed only in railways, and large-scale production began to appear only after limited liability became generally available from 1856, and public listings only began to become common from the 1880s in the United Kingdom, and after 1900 in the United States. Schumpeter (1943, 34) was right that "to predict the advent of big business was, considering the conditions of Marx's day, an achievement in itself." In Volume 3 of Capital, published in 1894, Engels (Marx 1981, 1045) recognized that in Part 5 Marx had theorized "the position the stock exchange holds in capitalist society," observing that since Marx wrote it, "the stock exchange becomes the most pre-eminent representative of capitalist production." With the advent of large joint stock companies run by managers in Britain in the later nineteenth century, there was a rapid acceleration in the importance of accounting and its regulation (Bryer 1993a, 1998, 2014), which Marx predicted would transform the capitalist's "bookkeeping" into "social bookkeeping":

Book-keeping, as the supervision and ideal recapitulation of the process, becomes ever more necessary the more the process takes place on a social scale and loses its purely individual character; it is thus more necessary in capitalist production than in the fragmented production of handicraft and peasant economy, more necessary in communal production than in capitalist. The costs of book-keeping are, however, reduced with the concentration of production and in proportion to its increasing transformation into social book-keeping. (Marx 1978, 212)³⁸

Some Marxists question whether the "general rate of profit" in Volume 3 is different from the "average rate" in Volumes 1 and 2 (Arthur 2002, 133–36). According to the accounting interpretation, the answer is that under total social capital the "average" rate becomes the "general" rate by enforcement through accounting, enforcement of GAAP, to become the "general," that is, the "required" rate of profit or return on capital. Marxists overlook the role of accounting in holding capitalists together as a class, as a joint-stock enterprise against workers as a class. They overlook that its common rules, enforced as the "laws of accounting" for capital (Bryer 1997, 1998), allow capitalists to fully socialize capital, to form a total social capital through the capital market, by holding well-

diversified portfolios, and simultaneously to promote a competitive system of individual enterprise disciplined by the general rate of profit for the benefit of all capitalists. When Marx wrote, the money market and bankers, who were the "representatives of social capital," dominated the capital market, and "confronted" capital in the individual spheres as an "organised mass":

In the money-market only lenders and borrowers face one another. . . . The competition of individual spheres does not affect it. They are all thrown together as borrowers of money, and capital confronts them all in a form, in which it is as yet indifferent to the prospective manner of its investment. It obtains most emphatically in the supply and demand of capital as *essentially the common capital of a class*—something industrial capital does only in the movement and competition of capital between the various individual spheres. . . . Moreover, with the development of large-scale industry money-capital, so far as it appears on the market, is not represented by some individual capitalist, not the owner of one or another fraction of the capital in the market, but assumes the nature of a concentrated, organised mass, which, quite different from actual production, is subject to the control of bankers, *i.e.*, the representatives of social capital. (Marx 1998, 366)

In April 1868, Marx wrote to Engels explaining the "method by which the rate of profit is developed," his explanation of the transformation from values to prices (Marx and Engels 1988, 23). Again, he stressed, "What the competition among the various masses of capital . . . is striving for is capitalist communism, namely that the mass of capital employed in each *sphere of production* should get a fractional part of the total surplus value proportionate to the part of the total social capital that it forms" (Marx & Engels 1988, 23). Today the "concentrated, organised mass" of capital is the global capital market, particularly the stock market, where investment bankers, financial companies, investors, and professional analysts, who are the "representatives of social capital," subject production to capitalist control. Marx summarized his explanation toward the end of Volume 3 that the equalization of the rate of profit resulted from the functioning of the total social capital that paid "dividends" to its individual shareholders in proportion to their capitals, based on the average or general rate of profit:

We have seen that the average profit of the individual capitalist, or of every individual capital, is determined not by the surplus-labour appropriated at first hand by each capital, but by the quantity of total surplus-labour appropriated by the total capital, from which each individual capital receives its dividend only proportional to its aliquot part of the total capital. This social character of capital is first promoted and wholly realized through the full development of the credit and banking system. (Marx 1998, 601–2)

Chapter 5 concludes that total social capital is Marx's social mechanism

for controlling the production and distribution of profit to individual capitalists who compete for a share of total surplus value under the discipline of the general rate of profit, enforced through accounting—that this was his explanation, his dissolution, of the "transformation problem."

ACCOUNTING FOR THE PRODUCTION AND REALIZATION OF VALUE

Based on Marx's discussion of his method in Grundrisse, Marxists often explain the structure of *Capital* as progressing from the "abstract" to the "concrete," to "the concentration of many determinations" (1973, 100–8). However, whereas many see *Capital* as a movement from abstract concepts and theory to "more complex and specific outcomes" (Fine and Saad-Filho 2004, 7), whereby "we come closer and closer to understanding capitalist society" (Harvey 2006, 2), to empirical reality, which is true, Marx also claimed that his initial abstractions had captured objective reality in thought. His plan, as he put it in the *Preface to a Contribution to a Critique of Political Economy*, was to "advance from the particular to the general" (Marx 1971, 19). He claimed in his Notes on Wagner that the particular he had started from in *Capital* was the capitalist commodity as a "concretum," whose values, as he had said, were "objective expressions of essentially identical labour" (Marx 1989c, 538; 1996, 53). As we will see, according to the TSSI and the accounting interpretation, he claimed to start from value as an "objective" social reality created solely by abstract labor in production, prior to and regardless of the sale of the commodity on the market.

By contrast, many readers of Marx believe that "the process of abstraction of labour defies quantification" (Perelman 1999, 721). The reason, some argue, is that according to Marx, abstraction reflects qualitative social relations, and therefore "The quantitative equivalent of Marx's abstract labour . . . as a category cannot appear empirically within the capitalist system" (Pilling 1972, 288). Marx accepted, according to this view, that "divorced from its expression as exchange value, value is simply an abstraction, without practical reality. It cannot stand on its own: it is not a category designating a reality which is manifested through exchange value" (Elson 1979, 134); the "value categories of *Capital* have no *direct* empirical counterpart" (Yaffe 1994, 82, see also Meek 1977, 121). In other words, in production, "There is no manifestation of value in terms of its substance, abstract labour, nor of its measure, socially

necessary labour-time[;] . . . the reduction of labour to abstract labour is something that can only be done by the market" (Himmelweit and Mohun 1994, 158; see also, Mohun 1994b, 3; 1996, 33; 1985; Reuten 1988, 1993). According to Harvey (2006, 14), "Marx breaks out of the tautology," that "the standard of value is that aspect of human labour which creates value!" he had created for himself by defining socially necessary labor as abstract labor, by arguing, "the commensurability of commodities achieved through exchange renders that labour embodied in them equally commensurable" (see also Pilling 1972, 282–84).

This "market-centered" interpretation is "the position, commonly . . . held by value-form theorists, that products acquire their values—and, a fortiori, their prices—if and when they are sold" (Kliman 2011b, 178). According to this school, Marx's "production-centered," "embodied labor" theory of value is "asocial," "trans-historical," and Ricardian, whereas adopting a "market-centered," "abstract labor" theory is "historical" and non-Ricardian (Kliman 2011b, Table 1, 181).³⁹ In short, "the widely held position among value-form theorists [is] that commodities acquire their ('actual') values at the moment they are exchanged and through the act of exchange" (Kliman 2011b, 186). For example, Heinrich argues, "Whilst in commodity production, labour is *privately* expended and receives its social [gesellschaftlich] character, its recognition as part of social labour, subsequently [nachträglich], in exchange" (1999, 204, quoted by Freeman 2011, 167). If so, clearly Marx's "theory that value is determined by labortime becomes meaningless. . . . It all depends upon whether or not the commodity is subsequently sold" (Kliman 2007, 37).⁴⁰

By contrast, according to the TSSI, for Marx's theory of value to make sense, "Labor must be abstract already in the production process if it is to create the product's value as well as the product itself" (Kliman 2007, 37). If so, it "follows that the product's value is created in production and comes into being at the moment when the product is produced, rather than being 'established' only subsequently, when the product goes to market" (Kliman 2007, 37). It also follows, we will see, that "*Being sold is not the same as having a price*. A commodity is sold when it changes hands. But all commodities have a price long before being sold" (Freeman 2011, 167). The questions are what Marx said and meant, but importantly, what evidence is there that value as abstract labor "comes into being," objectively, during the production of a commodity, of "how and when it acquires a price" (Freeman 2011, 167) before sale? The market-centered interpretation argues, "Society [i.e., the market] . . . can be the only accountant of socially necessary labour time" (Pilling 1972, 288). By contrast, actual accountants agree through their principles and practices that the production of value is prior to the sale of the commodity, and that some, all, or more than its produced value is then, as Marx and accountants say, "realized," converted into money. Chapters 4–7 argue that accountants inchoately agree that objectively measurable value as "abstract labor" exists, and is observable in capitalist accounting, in recording the social reality of the cost of production, and in holding workers accountable for target cost, and they agree that this is distinct from accountability for sales. What follows argues that Marx reached this conclusion in *Capital*, which supports the TSSI's critique of value-form theorists.

In Grundrisse, "The value (the real exchange value) of all commodities (labour included) is determined by their cost of production, in other words by the labour time required to produce them" (Marx 1973, 136–37). This meant that "the determination of prices has nothing to do with actual sale; money, in sale, serves only as its measure" (Marx 1973, 213). "Value or real exchange value," the average price, was "latent" (hidden, potential) until sold when it became "manifest" (observable, actual) as the specific money price. As Marx put it, "The commodity exists doubly, in one aspect as a specific product whose natural form of existence ideally contains (latently contains) its exchange value, and in the other aspect as manifest exchange value (money), in which all connection with the natural form of the product is stripped away again" (1973, 147). In A Contribution to the *Critique of Political Economy*, he argued, "Universal social labour is . . . not a ready-made pre-requisite but an emerging result" (Marx 1971, 45), that is, it emerged from production, but "there is no clear distinction between value and exchange value" (Elson 1979, 130). Here again Marx apparently saw exchange value as the only evidence and measure of value: "Social labour-time exists in these commodities in a latent state, so to speak, and becomes evident only in the course of their exchange" (1971, 45). This comment implies, "According to Marx's theory, the qualitative and quantitative determination of value overlaps production and exchange ... so that value is 'latent' in the sphere of production; it can be actualised only by being sold" (Murray 2005, 72). However, this residual of his market-based view did not persist.

Reuten (1988, 43, 49) argues that in Volume 1 of *Capital* "Marx derives

the concepts of exchange value and abstract labour from the examination of exchange as such," but in *Capital* Marx did not distinguish between "latent" (hidden, potential) and "visible" (actualized) value, and went beyond the "cost of production" as simply total social labor time. There, we will see, he distinguished between the production of value that appeared in accounts as monetary expressions of constant and variable capital in Volumes 1 and 2, and as "cost price" in Volume 3, and throughout, the "realization" of value or price that appeared as money.⁴¹ Rather than "latent," in Volume 1 Marx argued that the labor embodied as value in commodities had a "phantom-like objectivity" (1976a, 128), an "unsubstantial reality" (Marx 1996, 48), a purely "social substance" (Marx 1976a, 128; 1996, 48).⁴² Value was a socially objective reality that, like a phantom, we could not touch, but we could see it in the existence of a commodity, which was "realized human labour" (Marx 1996, 104), a use value that the capitalist strove to produce at a cost, with a higher value and market price that materialized through its "realization" as money. Marx used "realization" "in the ordinary accounting sense" (Kliman 2011b, 180) to mean the transformation of use value into money:

A commodity strips off its original commodity-form [only] on being alienated, *i.e.*, on the instant its use-value actually attracts the gold [i.e., money], that before existed only ideally in its price. The realization of a commodity's price, or of its ideal value-form, is therefore at the same time the realization of the ideal use-value of money; the conversion of a commodity into money. (Marx 1998, 118)

For accountants, "realization" also means recognizing a sale only on transferring control of a commodity (use value) in exchange for money or a legal claim to money (Kohler 1970, 362), by crediting "revenue" as the return of money capital to equity, and debiting its "cost" to equity to reveal a gross profit or loss. Marx's explanation of the accountants' accumulation of cost and realization of revenue, undermines Reuten's (1988) "more nuanced version" of the market-centered interpretation (Kliman 2011b, 180), and supports the TSSI's production-centered interpretation, by providing evidence of the social objectivity of value.

Reuten (1988) argued that because capitalists' produce for exchange they engage in an "ideal precommensuration" of commodities to money during production, before exchange, "giving commodities an 'ideal' or 'anticipated' (but not 'actual') value ahead of time" (Kliman 2011b, 180). Reuten claims this "show[s] how capitalist market-exchange affects the *process of* production" (1988, 42). However, Reuten's theory reduces

"production" to flows of use values and money, to series of predicted cash outflows and inflows, and reduces "a surplus of value" or "profit" to net cash inflow:

Because exchange in the market is not accidental but systemic, the abstraction of the equation of a product to some definite amount of money can be anticipated in production. Production is production for exchange and useful objects are produced as commodities: that is, with a view to sale for money. So production is considered as potential money expansion, as valorisation (money \rightarrow production \rightarrow more money). Before the actual exchange this is an anticipation. Nevertheless commodities produced do ideally represent an amount of value, ideal money. In this sense the actual abstraction in the market is anticipated by an ideal abstraction and the actual commensuration in the market is anticipated by the ideal precommensuration. (Reuten 1988, 54)

"Profit" therefore is a "surplus *of* value," that is, net cash flow: "As both inputs and outputs are necessarily reduced to value [i.e., money] as a common denominator, this social-universal form is the external driving force of the units of production. More precisely, the external driving force is a surplus of value [i.e., money] above the value initially laid out (i.e., profit)" (Reuten 1988, 51). In short, Reuten's formula, money \rightarrow production \rightarrow more money, reduces to money \rightarrow ideal money \rightarrow actual money, that is, to M-M'.

Capitalists do engage in an "ideal precommensuration" of production in money, but this anticipated money value, the expected market price, appears as an element in a cash flow forecast and, perhaps, in a present value calculation, which has no observable link to "abstract labor," to "productive" labor, in Marx's sense. In this world of use values, cash outflows, and market prices, all necessary inputs are "productive" because there is no way of objectively allocating cash inflows to the use values that coproduce them: the problem is "incorrigible" (Thomas 1974). "Ideal precommensuration" also occurs in the calculation of target costs, that chapter 5 argues does have a connection to Marx's abstract labor, which value-form theorists overlook, that chapter 7 shows applies only to "productive" labor, and that it explains the accountants' "absorption costing." Value-form theorists overlook that capitalists primarily do their "commensuration" temporally, *ex-post* in their accounts, in which output is realized money revenue, but the inputs are "costs" not cash flows, and the surplus is "profit" not net cash inflow. Value-form theory, in short, is inconsistent with capitalist accounting, whereas the TSSI's productioncentered interpretation is consistent, which supports Kliman's (2011b) defense of it as a social, historical, and non-Ricardian, embodied labor
theory of value.

Kliman (2011b, 192–94) highlights Marx's treatment of "intra-firm trade" in Volume 1 of *Capital* when discussing the accounts of capitalist farmers who retain corn for seed rather than buying seed corn from the market, what accountants call "self-constructed assets," as evidence against the market-centered interpretation, because Marx counts them as value even though there is no external sale.⁴³ For Marx this decision was "unimportant" because although these farmers did not turn the seed corn into "actual money they converted [it] into accounting money . . . and the element they add to the product is precisely calculated . . . as things sold him qua producer," that is, they treated them as "commodities he has bought (or that can be bought)" (1976a, 951–53). Accountants agree, for example, in IAS 16, Property, Plant and Equipment, which requires that "The cost of self-constructed assets is determined using the same principles as for an acquired asset" (IASB 2000a, para. 22), and accounted for the same way. As Kliman says of Marx, "this line of argument makes sense only if the products have determinate values and prices before they enter into circulation and irrespective of whether they enter into circulation" (2011b, 193).44

Kliman (2011b, 194) surmises, "The underlying reason why value-form theorists focus on sale is presumably that they want to say (as Marx did) that products which *cannot be sold* are not commodities; they have neither a value nor a price." Accountants agree with Kliman's conclusion that "as the case of intra-firm trade makes clear, there is a crucial difference between cannot be sold and have not been sold" (2011b, 194). However, Marx's and accountants' requirement that capitalists write down commodities (inventories) that "cannot be sold" to the "lower of cost or market" (see, e.g., IASB 1993, para. 9), which may be zero, also only makes sense if a prior value existed that management controlled before the fall in market price (Bryer 1999b, 699–700). As Marx put it in Volume 2 of *Capital*, "It is only in so far as consumption is productive consumption . . . that it falls within the actual circuit of capital . . . [and] the condition for consumption to occur is that surplus-value is made by means of the commodities thus consumed" (1978, 155). Therefore, if the market price of finished commodities falls below their cost for whatever reason, the capitalist will make no surplus value, consumption was not productive and capital is lost. For example, if commodities "get spoiled, and lose, together with their use-value, the property of being bearers of exchange value, . . .

[b]oth the capital contained in them and the surplus-value added to it are lost" (Marx 1978, 206).

Following chapters argue that Marx used his theory of value to explain key principles and practices of capitalist accounting—its use of replacement cost accounting (RCA), target costing, its methods of accounting for fixed capital, its use of absorption costing to measure the cost of production-that also make sense only if labor creates value in production. The same is true of accounting's recognition of "revenue," the return of capital, only when it becomes "realized," that is, returned as money or an enforceable debt, on transferring control of the use value, rather than on receiving the money. This "realization principle" appears to contradict Marx's production-centered view that value and surplus value appear in production. However, it is consistent with it because like Marx accountants measure revenue at the commodity's current market price, the realized value, not necessarily the monetary value of the seller's legal claim to payment, which the seller could allow the customer to defer and pay according to a plan, or pay discretionarily, with or without interest, etc. In Volume 1 of *Capital*, Marx saw realization as evidence of the prior creation of value in production. He argued, "It is only by being exchanged that the products of labour acquire, as values, one uniform social status, distinct from their varied forms as objects of utility" (1996, 84), that is, the one uniform social status of being value in the form of money, by exchanging them for the same, more, or less, money value.

Commodities therefore have a "social status" for Marx as a money value accumulated in production, as "embodied value," before the sale. Marx immediately added that, following the expansion of the market, "useful articles are produced *for the purpose* of being exchanged . . . their character as values has therefore to be *taken into account*, beforehand, during production" (1996, 84, emphases added). Neither capitalists nor anyone else consciously "see in these articles the material receptacles of homogenous human labour" (Marx 1996, 84). "Value . . . does not stalk about with a label describing what it is" (Marx 1996, 85), its social character, but according to Marx it underlies the capitalist's purpose of realizing a surplus by producing a commodity with a value greater than the value of the means of production and labor power consumed. "Our capitalist . . . *wants* to produce a use-value that has a value in exchange . . . ; a commodities used in its production, that is, the means of production

and the labour power, that he purchased with good money in the open market" (Marx 1996, 196, emphases added).

It is because capitalists aim to produce a commodity with a value that will realize the anticipated surplus and on average succeed that, according to Marx, "The value of a commodity is expressed in its price before it enters into circulation, and it is therefore a precondition of circulation, and not a result" (1976a, 260). Capitalists do not leave the process of creating value in production to chance, but control it to produce a commodity with a value equal to its market price to realize the required rate of profit, an aim that accountants define as their primary function. This shows the historical specificity of capitalism in Marx's theory because, as Kliman says, "Efficient utilization of labor becomes an overriding concern only when the goal of production becomes the potentially infinite production of abstract wealth, rather than a satisfactory amount of concrete useful products" (2011b, 183). Only under capitalism does the "average amount of labor required to produce something acquire . . . practical significance as a regulative law of production, a norm that producers must not exceed if they hope to survive as producers . . . [and] the law of value emerge as a law dominating production" (Kliman 2011b, 183), and does capitalist accounting emerge to enforce it.

Chapter 5 shows Marx using his theory of value in Volume 3 of *Capital* to explain how accountants' costs have objective social existence as value, first as "target" costs, the purchases made "with good money on the open market," that the capitalist controls to produce total social capital's required rate of profit. Second, chapters 6 and 7 show Marx explaining the accountants' accumulated "costs of production" as socially defined elements of accumulated value, and the surplus value, which exists ideally for the capitalist, but has objective social existence as the saleable use values of commodities, produced to command the market price, to realize the required rate of profit. As Freeman (2011, 168, 169) says, "For the same reason that all use-values are social," because every commodity is "one of a general type," "all the ratios in Marx's derivation [of value and money] are themselves average, social magnitudes. Consequently the 'price' of a commodity is itself social," is "the average of its type," as are its costs, as they are in accounting.

A change from a residual market-centered view of measuring value to a fully worked out production-centered theory could explain Marx's comment in a letter to Engels on August 15, 1863, that, following his

decision in December 1862 to change the name of his project to *Capital*, he "had to turn everything upside down" (Marx and Engels 1985, 435). Oakley (1983, 110) argued, "it is not possible to be sure what Marx meant by this assertion," but suggested that he was attempting to justify to Engels "his own relative tardiness" compared to Lassalle who had finished his *Economy*. Marx's justification, apart from having to study unknown historical materials, was "how much I have had to chop about" (Marx and Engels 1983, 92).⁴⁵ However, he assured Engels, "In one respect I am making good progress with my work. In the final draft, it seems to me that things are taking a tolerably *popular* form, apart from a few unavoidable M-C and C-Ms. . . . In any case, it is 100% easier to understand than No. 1" (Marx and Engels 1983, 92), which arguably was the real justification for the delay, the consequences of the theoretical breakthrough that made this possible under the title of *Capital*.

Oakley (1983, 111) admits, "the remark can be read as a reference to the revisions that Marx realized he would have to make in order to present Capital in a coherent form." In particular, "Marx had known since notebook X of the 'Critique' that that treatment of competition between capitals involved some vital analytical developments beyond the category capital in general but necessarily articulated to it" (Oakley 1983, 110). Notebook X was Marx's Digression on Quesnay's Tableau economique (Marx 1989a, 204). Having extensively explored Theories of Surplus Value, by notebook XVI, the chapter on "Capital and Profit," Marx concluded that the answer to two major questions—"How is the amount of profit related to the rate of profit? . . . But secondly, how does a *general rate of profit* originate . . . ?—are connected with production costs" (1991, 91). The vital analytical development of Marx's concept of capital in general, rarely mentioned in the *Theories of Surplus Value*, within which to understand the connection between the general rate of profit and production costs, was, chapter 5 argues, its conceptualization as total social capital in Volume 3 of *Capital*.

We saw earlier that Marx's decision to change the title to *Capital* followed Engel's jibe that he was "off the rails" in his understanding of depreciation accounting. Shortly after this Marx sat down to write the "Capital and Profit" section of the "Third Chapter" of what had been the *Critique* (Oakley 1983, 89). In this chapter, for the first time he confidently spelt out the relationship between value and the "cost of production," including "wear and tear" (Marx 1991, 78–103, 136).⁴⁶

Having done this, Marx did not continue with the *Critique*, but "started the critical theory over again" (Oakley 1981, 109), "returned to the point of departure from which we proceeded in considering the general form of capital" (Marx 1991, 80). He went back, in other words, to rework his presentation, to start from the most elemental cell of capital in general, the commodity, now confident he has the theoretical principles to explain competition for capital in which the individual capitalist controlled the labor process to produce and realize the desired result, the required general rate of profit. Before this, when "Marx was struggling to draw up the plan of Capital he was uncertain how to present the early chapters on commodities or money: were they part of the thematization of capital itself or were they merely introductory" (Arthur 2002, 58). Marx argued that commodities were "capital" in Grundrisse but, as his question on depreciation accounting showed, he was not confident he could explain how all commodities were capital, particularly fixed assets. However, in January 1863 he immediately goes on to write a plan starting with opening chapters on the commodity and money and ending with an analysis of competition (Oakley 1983, 90–91).

Marx argued in Grundrisse, "The action of the individual capitals upon one another has the effect, precisely, of forcing them to behave as *capital*" (1987, 47). Competition forces individual capitalists to behave as capital —to calculate as capital—for example, to cut costs and otherwise seek maximum profits, because they are capitalists in the first place. Competition did not create the capitalist mentality, but expressed it. "Competition merely *expresses* as real, posits as an external necessity, that which lies within the nature of capital; competition is nothing more than the way in which the many capitals force the inherent determinants of capital upon one another and upon themselves" (Marx 1973, 651). We saw that in *Grundrisse*, capital in general has an abstract but also a real existence in which "Capital exists and can only exist as many capitals, and its self-determination therefore appears as their reciprocal interaction with one another" (Marx 1973, 414). In other words, Marx argued, "the rule of capital can only be made real in and through competition" (Rosdolsky 1977, 42) and, we will see, in and through accounting calculations and practices.

However, this left the question of what that "inner nature of capital, its essential character" (Marx 1973, 414) was exactly. In 1863, Marx knew he could start with a detailed analysis of the "inner essence" of capital,

starting with the commodity and capital in general as the representative individual capitalist, and defer his analysis of competition to what became Volume 3, knowing he would use the same principles to analyze this essence under competition. In a letter to Kugelmann, where Marx first reveals his decision to change the title to *Capital*, he explains, "all it comprises is what was to make the third chapter of the first part, namely 'Capital in General.' Hence, it includes neither the competition between capitals nor the credit system. What Englishmen call 'the principles of political economy' is contained in this volume. It is the quintessence" (Marx and Engels 1985, 385). Oakley finds these comments "confusing" (1981, 109), whereas seen as Marx's response to working out his explanation of accounting they are clear. To Englishmen, political economy was the "science" of the "management of the economy by the state" (Bullock, Stallybrass and Trombley 1977, 659), which to Marx meant control by capital, that is, by individual capitalists as elements of capital in general, and by total social capital, based on the quintessence that value is the "monetary expression of socially necessary labor time."

CONCLUDING COMMENTS

Marx knew from Engels the importance capitalists attached to their accounts. From his questions, Engels' answers, and self-study, Marx taught himself DEB and other principles and practices of capitalist accounting, knowledge that enabled him to transcend Quesnay's *Tableau* and, following chapters show, test his theory of value, which provides detailed evidence supporting the TSSI's production-centered interpretation.

Discovering that he could use his theory of value to explain accounts, including an apparent breakthrough in explaining how capitalists accounted for fixed capital, coincided with Marx's decision to turn everything "upside down," and work to the title of *Capital* with a plan for its presentation according to the logic of accounting.

Marxists have failed to understand Marx's concept of "total social capital," the capital market as a controlling "communism of capitalism," and they therefore overlook its dependence on accounting and, we will see, the roles it and accounting play in his explanation of the phenomenal forms by the invisible essence of value.

Marx's analysis of "cost prices," the costs of production he found in capitalist accounts, following chapters argue, is consistent with him explaining accountants' fundamental, but inchoate, principle of "costs attach," which for Marx meant measuring capital using the "monetary expression of socially necessary labor time," redefined in *Capital* Volume 3 from the perspective of total social capital.

Chapter 4 introduces Marx's illustration of the transformation from values to prices, but the focus is how economists understand it, their criticisms, and the responses of the NI, SSSI, and TSSI. It highlights the accounting limitations of the NI and SSSI, explains Marx's RCA, and supports and extends the TSSI's accounting for changes in the price of constant capital.

Chapter 5 gives Marx's accounting explanation of the transformation, his explanation of the accounting that produced it, his "law of one cost," which became the social law of capitalism and accounting, that identical commodities have the same "socially necessary" cost, which he said allows us to "glimpse" the determination of value by socially necessary labor time.

NOTES

1. Engels first worked for 20 months (1842–1844), and then for 20 years (1850–1870), first as a clerk, and from 1864 as a partner, for Ermen and Engels, established in 1830, with factories in Manchester and Germany, which built a thriving business in the cotton industry (Bailey 1978, 12). Engels led the life of a respected business executive, becoming a member of the Manchester Cotton Exchange, whilst also working as the intellectual partner and economic supporter of Marx and his family who lived in London.

2. Marx (e.g., 1976a, 253) referenced this article several times in his later work, calling it a "brilliant essay on the critique of economic categories" (Marx and Engels 1975, 615).

3. Oakley (1983, 24) provides little evidence to support his claim that Engel's paper "lacks sophistication"; that "it is appropriate to see the piece as a *catalyst* in Marx's intellectual development only in the sense that it in no way directed or limited his subsequent studies" (cf. Meek 1973, 140).

4. Lord Overstone was a leading nineteenth-century banker and economist.

5. The only other mention of accounting during this period was in July 1851 when, buoyed by the favourable reception to the *Communist Manifesto*, Engels wrote to Marx that to establish a revolutionary administration he wanted "office clerks . . . accustomed to hard work and intelligible book-keeping" (Marx and Engels 1982, 394). *Accounting for History* analyzes the role of accounting in Marx's conception of socialism.

6. In both years, Engels added "Expenditure on repairs" to the depreciable cost of the machine (Marx and Engels 1983b, 280). He also depreciated the repairs occurring in the second year at 7.5%, apparently inadvertently adding a year to the machine's life.

7. In August 1867, Engels in effect admitted that he had given Marx the wrong method for his firm, which actually used what accountants call the "declining balance method," and that he did not know how other manufacturers did it! "I must ask some other manufacturers whether our practice is the customary one or an exception. The question is whether, with an original outlay of £1,000 on machinery, where £100 is written off in the 1St year, the rule is to write off 10% of the £1,000 in the second year, or of £900, etc. We do the latter, and understandably the matter goes on thereby *in*

infinitum, at least in theory. This complicates the arithmetic considerably" (Marx and Engels 1987, 409). Chapter 6 explains the declining balance method and the theoretical complications it introduces, which Marx dealt with in Volume 2 of *Capital*.

8. Chapter 7 argues that Marx used his distinction between "productive" and "unproductive" labor to explain the accountants" cost of production.

9. In *Grundrisse*, Marx (1986, 560) calculated turnover rates using the cost of production rather than the more normal sales, but this does not affect the rate of profit (see the Appendix to this chapter).

10. By "practical illusions," Marx meant, we will see, that businessmen saw "cost" rather than socially necessary labor time, "profit" rather than surplus value, and they believed that they earned profit from all their capital on the market. *Accounting for History* shows that these perceptions were, Marx argued, ideological inversions of social reality that left the categories "practically adequate" (Sayer 1979).

11. Chapter 5 argues that this link to accounting is evidence supporting Marx's theory of value. Chapters 5, 6, and 7 respectively show Marx using his theory to explain capitalist accounting for cost price and prices of production, fixed capital, and inventories. *Accounting for History* explains the concept of the "calculative mentality" of the ruling class—the way it extracts and therefore calculates "surplus labor"—and its role in Marx's theory of history.

12. Quesnay was a member of the French "Physiocratic" school of economics, which argued that only agriculture created value. He published his *Tableau* in 1758. Marx's work on his own *Tableau* anticipated modern national income accounts. Chapter 7 explains Marx's social accounting.

13. Quesnay ignored the cost of labor and therefore understated the value created and consumed.

14. The other "peculiarity" was that labor transferred fixed capital's value over more than one circuit of capital, which required additional expenditures.

15. Run-in costs are the additional costs incurred in using new machines (increased maintenance, reduced output, and/or higher costs) in getting the machine to the normal level and cost of operating it. A horse's efficiency also increased when it was broken in and used.

16. Oakley (1981, 105–9) leaves unanswered the question why Marx changed the title of his project to *Capital* and whether at this point Marx compromised his ambitions or felt he could better accomplish them under the heading of *Capital*. Subsequent chapters argue for the latter interpretation.

17. Exactly when Marx resolved the details of his problem with fixed capital is unclear. Towards the end of *Theories of Surplus Value* he created an unfinished "thought experiment" that begged the solution, chapter 6 shows, but it first appears in Volume 2 of *Capital*.

18. The data Marx (1996, 228–29) used in Volume 1 of *Capital* to illustrate calculating the rate of surplus value came from Henry Ermen's spinning mill.

19. "Accounts" probably meant only the summary balance sheets that would not disclose sales, the cost of production, or give detailed breakdowns of the capital employed.

20. c = constant capital; v = variable capital and s = surplus value.

21. It became common from the 1970s to criticize Sweezy and other Marxists who suggested "Marx's value theory can in some sense be empirically "verified," unlike the value theory of marginal utility analysis," for being "positivists," because "abstract labour . . . as a category cannot appear empirically within the capitalist system" (Pilling 1972, 288). The following section criticizes that conclusion.

22. See Appendix A.

23. Freeman's (1996, Table 11.11, 258) calculation of profit by comparing opening and closing "gross worth" is single entry bookkeeping.

24. Marxists dispute the meaning of Marx's "dialectical" method, whether he had one, and if so whether it is relevant. Many who in Harvey's sense support the "linear" interpretation, but who would call themselves "fundamentalists" (Burkett 1991, 49–50), claim to support a "dialectical" interpretation. Smith, for example, argues, "a theory can be said to follow a dialectical logic if (a)

categories that articulate simple and abstract social structures are ordered prior to categories that define more complex and concrete structures; and (b) each category fixes a structure that incorporates the structures presented in the prior categories. In this sense early categories are principles for the derivation of later ones" (1989, 328). As we will see, in this sense Marx's accounting logic is "dialectical."

25. Accounting for History examines this revision.

26. In English, the difference between "aggregate" and "total" is that whereas "aggregate" means, "To gather together in one whole," to add up, "total" can also mean "the whole of something," as in "total eclipse" of the sun (*Shorter Oxford English Dictionary On Historical Principles, 3rd ed.* 2 vols. s.v. "aggregate," "total"). As we will see, this labeling of the distinction appears only in the Untermann translation (Moscow edition) of Volume 2 (Marx 1997), which what follows supports.

27. Burkett (1991, 61) suggests that Marx dropped the phrase "capital in general" because "*Capital* was meant to be "more accessible to the working-class, a consideration which [for Marx] outweigh[ed] everything else" (Marx, 1967, I, 21)," which is consistent with replacing the "abstract" and "real" versions with more concrete expressions.

28. There is clearly room for interpretation. According to the Google English-German translator, "total social capital" translates into German as "gesamtkapitals," and "aggregate social capital" translates as "gesellschaflichen gesamtkapitals," whereas SDL Freetranslation.com translates both as "Soziales Kapital ingesamt." In other words, any of these three German phrases could translate as "aggregate" or "total" social capital. However, there is little disagreement between the Moscow edition (Marx 1998) of Volume 3, which uses "total social capital" 37 times, and the Penguin edition's (Marx 1981) 34 times.

29. The different translation probably resulted from Mandel's (1978, 16) introduction: "Marx introduces a new and passionately interesting object of study: the reproduction and circulation ('turnover') of the total social capital. While formally this is the title of only the third Part of Volume 2, it could well be argued that it expresses the underlying subject-matter of the whole volume." The title of Part 3 in the Moscow edition (Marx 1997) is "Aggregate Social Capital," which I will argue is a fairer description of what Marx achieved there, demonstrating in his "reproduction schema" only that we can add up the sum of the interacting parts.

30. The Eden and Cedar Paul translation agrees with the second and fifth uses, but uses "total capital" for the first and third uses, and "social capital" for the fourth (Marx 1930).

31. Pilling (1972, 285) points out that critics of Marx's theory of value often ignore that "Marx is here pointing out to Wagner and others that he started as a materialist from 'real active living men' and not as an idealist who starts always from 'concepts,'" which the following section argues is critical to understanding it.

32. Because Marx's initial focus when analyzing capital in general was the "representative commodity" he did not need to assume that prices equalled values for individual commodities in Parts 1 and 2 of Volume 1 of *Capital*. Seeing all capitals as one capitalist made the assumptions equivalent.

33. This demonstration, of course, begged the question of whether his theory of value explained the capitalists' profits in reality.

34. Arthur (2005, unpaginated) shows that Engels invented this phrase, and argues he invented its history, as a misleading embellishment, "because it seemed that in the third volume of *Capital* Marx abandoned the law of value in favour of another principle of price determination. Of course, in Marx's procedure values are a stage in the process of generating the Volume III "prices of production." But, if such values are not *empirically* present because they are superseded by these prices of production, are they not merely fictitious? Engels reacted to this possibility by interpreting the stages of Marx's presentation *historically* in order to ensure that the values were indeed empirically visible, but, of course, in the *past*, before capitalism "modified" the relationships involved." Engels did invent the phrase, but as workers must produce commodities before they circulate, calling C-M-C "simple commodity production" is not a distortion. Chapters 4 and 5 argue

that Marx's explanation of the transformation from values to prices was that prices of production appear in a historical process, not that values had a historical existence, and that in Marx's explanation they are hypothetical values, historical counterfactuals, and not fictitious values.

35. Marx's demonstration proceeds on the assumption that "the actual worth of the commodity is already determined prior to and apart from exchange," not that it equals value, because he does not make this assumption until the end of chapter 5 (Kliman 2011b, 188). The following section discusses Marx's theory of the determination of value in production before and regardless of sale.

36. Marx (1969a, 209) first used a virtually identical phrase, "whole social capital" in the notebook following his digression on Quesnay in *Theories of Surplus Value*, criticizing Ricardo for neglecting that "the *general level of profit* . . . presupposes movements of capital in all directions —or a *distribution*, determined by competition, of *the whole social capital between its different spheres of employment*."

37. *Accounting for History* gives an accounting interpretation of Marx's theory of ideology.

38. The Moscow edition here translates "communal" as "collective" (Marx 1997, 138–39). Because by the word "communal" Marx here probably meant socialism, and as according to the accounting interpretation he did not mean collective or central planning (Bryer 2016), it is unlikely that by "communal" Marx here meant, unlike an individual joint stock company, a planned "collective." *Accounting for History* explains Marx's (1981, 742) conclusion that the development of the banking and credit system, particularly the formation of joint stock companies, "abolishes the private character of capital and thus inherently bears within it, though only inherently, the abolition of capital itself," and his view that bookkeeping would be even "more necessary" in socialism than capitalism.

39. Value-form theorists are "inspired by Marx's work," but seek to remove the perceived lingering influence of classical economics. Kliman argues their distinctions are "untenable" (2011b, 177, 180, 181–85).

40. Kliman shows that Marx's theory of money, as the expression of socially necessary labor time, would also be meaningless; that acceptance of the value-form interpretation implies the quantity theory of money is correct (Kliman 2011b, 189–92). Freeman shows that the value-form paradigm rules out crisis, and "Taken literally . . . implies that labor can only be abstract if capitalism succeeds" (2011, 166).

41. In Volume 1, Marx (1996, 97) argued, the process of exchange "develops the latent contrast" between use value and value, which led to money as a practical means of exchange and equating commodities, but did not argue that value was latent in a commodity and made objective on exchange. "It is not money that renders commodities commensurable" and therefore not exchange (Marx 1996, 104). "It is because all commodities, as values, are realised human labour, and therefore commensurable, that their values can be measured by one and the same special commodity, and the latter be converted into the common measure of their values, *i.e.*, into money. Money as a measure of value, is the phenomenal form that must of necessity be assumed by that measure of value which is immanent in commodities, labour-time" (Marx 1996, 104), as we will see it is for accountants, who apparently necessarily, but inchoately, measure the cost of production as the monetary expression of socially necessary labor time.

42. Towards the end of *Theories of Surplus Value*, Marx also concluded, according to the "real science of political economy [which] ends by regarding the bourgeois production relations as merely historical ones," "The phantom of the world of goods fades away and it is seen to be simply a continually disappearing and continually reproduced objectivisation of human labour. All solid material wealth is only transitory materialisation of social labour, crystallisation of the production process whose measure is time, the measure of a movement itself" (1972, 429).

43. We saw in chapter 2 that Marx made the same point in *Theories of Surplus Value* and Volume 2 of *Capital*.

44. Kliman (2011b, 177, 193), therefore, criticizes value-form theorists' "sharp distinction between revenues obtained in the market and those obtained through intra-firm trade, or costs incurred in the market and costs incurred in intra-firm trade," arguing that it generates "actual"

revenues and costs," and "*actual* profit" and "*actual* investments of value." IAS 16 requires recognition of actual cost as investments of value, but "any internal profits are eliminated in arriving at . . . costs" (IASB 2000a, para. 22), because there is no revenue, the separation of use values from value through their conversion into money.

45. Alternatively, as the marxists.org/archive website translates the phrase, "had to turn everything round"

(https://www.marxists.org/archive/marx/works/download/Marx_Engels_Correspondence.pdf).

46. Chapter 6 discusses his explanation of fixed capital.

Chapter 4

An Accounting Critique of Marxist Economics

For parts of Volume 1, all of Volume 2, and Part 1 of Volume 3 of *Capital*, Marx assumed that the market price of all commodities equals their value, and that each capital is representative of the whole. From Part 2 of Volume 3 he dropped this assumption. Classical political economists had highlighted the problem that assuming commodities sold at their value conflicted with the fact that competition between capitalists tended to equalize rates of profit such that every individual capital earned the general rate of profit. If commodities sold at their values, capitals with a higher organic composition of capital than average, those using a higher proportion of variable capital to constant capital, should get higher rates of profit than capitals having a lower organic composition. Marx probably knew from Engels that in practice capitalists added profit to the cost of production to calculate minimum prices, the familiar cost-plus-profit pricing formula of today. The challenge was to show how, even though commodities did not exchange at their values, "the law of value regulates the prices of production" (Marx 1981, 281).

Marx (1981, 255–56) gave an example of the transformation, apparently from values to prices, with five capitals of the same size but different organic compositions, summarized in Table 4.1.

Each capital has the same rate of exploitation (100%), which (assuming all capitals have the same turnover time) when multiplied by the variable capitals gives the individual capitals' surplus value, and their different rates of profit. Adding together variable capital (v) (productive wages), the constant capital, "used up c" (the means of production, some of which is wear and tear for fixed capital), and surplus value, gives the "value of the commodities." From the totals for surplus value of 110 and the total capital invested of 500, Marx derived the average value rate of profit of 22% [110/500]. Applying this rate of profit as a mark up on the cost prices (c + v) gives the "prices of the commodities," the profits, and the uniform price rates of profit of 22%.

Table 4.1 Marx's Illustration

Capitals	Organic composition of capitals of 100	Rate of suplus value (%)	Suplus value \$ = 100% x v)	Rate of profit (%)	Used up c	Value of commodities (C+ V + S)	Cost price (c + v)	Price of commodities (1 + f)(c + v)	Profit (price – cost)	Rate of profit (r)
1	80c + 20v	100	20	20	50	90	70	92	22	22
11	70c + 30v	100	30	30	51	111	81	103	22	22
111	60c + 40v	100	40	40	51	131	91	113	22	22
IV	85c + 15v	100	15	15	40	70	55	77	22	22
v	95c + 5v	100	5	5	10	20	15	37	22	22
Totals	390c + 110v	1223	110	- 63	202	422	312	422	110	22

Sciarce: Marx (1981, 255-56)

Marx explained that the logic of his illustration was that the capitalists in each department got back the capital they advanced, the cost price, but took only their relative share of surplus value:

Although the capitalists in the different spheres of production get back on the sale of their commodities the capital values consumed to produce them [i.e., cost price], they do not secure the surplus value and hence profit that is produced in their own sphere in connection with the production of commodities. What they secure is only the surplus-value and hence profit that falls to the share of each aliquot part of the total social capital, when evenly distributed, from the total surplus-value or profit produced in a given time by the social capital in all spheres of production. (Marx 1981, 258)

His explanation of the distribution of surplus value was that "total social capital" was, in effect, the all-encompassing joint stock company in which "different rates of profit are balanced out" in competition between individual capitals and, we will see, by calculations. In this process,

Every 100 units, every capital advance, whatever may be its composition, draws in each year, or any other period of time, as falls to the share of every 100, the profits that accrue to 100 units in this period of time as the nth part of the total capital. The various different capitals here are in the position of shareholders in a joint stock company in which the dividends are distributed evenly for 100 units, and hence are distinguished, as far as the individual capitalist is concerned, only according the size of the capital that each of them has put into the common enterprise, i.e., according the number of shares. (Marx 1981, 257, 258)

"The really difficult question here" was the formation of the general rate of profit, "how does this equalisation lead to the general rate of profit, since this is evidently the result and cannot be a point of departure" (Marx 1981, 274). On average, "For capitals of mean or approximately mean composition, the price of production . . . coincides exactly or approximately with the value, and the profit is the surplus value they produce" (Marx 1981, 274), and there was no problem. The question was how "The rate of profit is thus the same in all spheres of production, because it is adjusted to that of these average spheres, where the average composition of capital prevails" (Marx 1981, 273).

Marx criticized Ricardo for not attempting to explain the general rate of profit, but merely assuming it (Moseley 1995, 20). To derive rather than

assume it, Marx argued that the equalization must result from the exchange "not . . . simply . . . [of] commodities, but as the products of capitals" (1981, 275). Marx's explanation of "many capitals" in competition and the general rate of profit was capitalism's history. This was the "really difficult" question, and the general rate of profit was its result. Rather than detailed history, which was not possible, his answer in Volume 3 was the historical counterfactual: "The rates of profit prevailing in the different branches of production are . . . originally very different. These different rates of profit are balanced out by competition to give a general rate of profit which is the average of all these different rates" (Marx 1981, 257).

By "originally," Marx apparently meant precapitalist, because to bring out the "salient point" of the "whole difficulty" (1981, 275–76), later in the chapter he imagined the historical absence of capitalism, a counterfactual world of what Engels called "simple commodity producers," and hence the absence of total social capital and the general rate of profit. "To put it the capitalist way," "in capitalist terms" (Marx 1998, 174; 1981, 276), that is, seeing "simple commodity producers" from the capitalist's perspective, as if they were capitalists, as in his table, we have different rates of profit. As Marx put it, "Let us suppose the workers are themselves in possession of their respective means of production and exchange their commodities with one another. . . . Under these conditions, the differences in the profit rate would be a matter of indifference" (1981, 276–77). Clearly, as Arthur (2005, unpaginated) says of a similar "passage in which Marx presupposes the worker owned his own product" in Volume 1 of *Capital*, it "is written in hypothetical mode," "is counter-factual in character."

Without capitalism and its history, there is no general rate of profit, and therefore "it is quite appropriate to regard the values of commodities as not only *theoretically* but also *historically prius* to the prices of production" (Marx 1998, 176). Values are theoretically prior in capitalism, but historically, in all precapitalist societies, there were no prices of production, just prices determined by other than the general rate of profit which, given regular, mutual, and nonmonopolistic trade, "approximately correspond to their values" (Marx 1998, 176). Marx argued, therefore, that this

applies to conditions *in which the laborer owns his own means of production*, and this is the condition of the land-owning working farmer and the craftsman, in the ancient as well as in the modern world. . . . It holds not only for this primitive condition, but also for subsequent conditions, based on slavery and serfdom, and for the guild organization of handicrafts. (Marx 1998, 176)¹

Accounting for History shows that "simple commodity production" was an important aspect of the histories of the ancient slave and feudal modes of production; Bryer (2012, 2013) shows it was important in semicapitalist America during the nineteenth century.

The difficult history of capitalism was the history of its social relations: "Capital arrives at this equalization [of the rate of profit] to a greater or lesser extent, according to how advanced capitalist development is in a given national society" (Marx 1981, 297). The history of the socialization of capital—beginning in England in the late sixteenth century, rapidly growing from the mid-nineteenth century, and spectacularly as the capital market from its end (Bryer 2000a, 2000b)—is the interconnected histories of merchants, farmers, landlords, peasants, workers, industrialists, joint stock companies, the capital market, and accounting (Bryer 2004, 2005, 2006a, 2006b, 2006c). With the development of capitalism came competition for capital and with this came the formation of the general rate of profit. The competition is for capital in the different spheres: "competition of capitals in *different* spheres . . . brings forth the production price that equalizes the rates of profit between those spheres" (Marx 1981, 281).

Within total social capital, all capitalists hold the "market portfolio," a value-weighted share of all companies, who demand the general rate of profit, adjusted for risk and other "compensating" factors. The demand for rates of profit at or above the average acts as a selective mechanism in leveling up disparate rates of profit toward the moving, value-weighted general rate of profit. Capital flows into those sectors earning over the average thereby tending to reduce its rate of profit, and flows out from sectors offering below average, which tends to increase their rates of profit (Marx 1981, 297). In a developed capitalist economy, therefore, prices will tend to prices of production and not to values.

To understand how Marx explained his illustration of the transformation from values to prices, and how, as he claimed, underlying it was the determination of value by labor time, chapter 5 argues that we must understand it as a counterfactual history of the formation of total social capital and the general rate of profit. As we will see, Marx argued that capitalism became more sophisticated in its calculations as it developed, and the general rate of profit, instead of simply emerging through competition, becomes consciously calculated in advance to reflect expected differences in rates of profit from the average by building in "grounds of compensation" (1981, 312). These calculations produce what today capitalists and accountants know as the "required return," the demanded rate of profit, which chapter 5 argues is a key element of Marx's accounting explanation, what he meant when he said that prices fluctuate around prices of production rather than values, because commodities are "exchanged as the products of capitals" (1981, 275). Chapter 5 concludes that the principle underlying the calculations that achieve this is what Marx meant when he said the "cost price" allowed us to "glimpse" (1998, 171) that socially necessary labor time determined value.

THE STANDARD CRITICISMS OF MARX'S SOLUTION

Economists generally ignore history and focus on the claimed inconsistency, incompleteness, and vagueness of Marx's solution and his explanation. The major complaint is that he did not deal with an apparent contradiction in his table. This was, as he highlighted, "the fact that . . . the elements of productive capital are, as a rule, bought on the market, and . . . their prices include profit . . . so that the profit of one branch of industry goes into the cost-price of another" (Marx 1998, 159). The same applied to the commodities workers buy, but he appeared to dismiss the issue: "Under capitalist production, the general law acts as the prevailing tendency only in a very complicated and approximate manner, as a never ascertainable average of ceaseless fluctuations" (Marx 1998, 160). He warned readers, "It is necessary to remember this modified significance of the cost-price, and to bear in mind that there is always the possibility of an error if the cost-price of a commodity in any particular sphere is identified with the value of the means of production consumed by it" (Marx 1998, 164), but appeared to brush it aside. "Our present analysis does not necessitate a closer examination of this point" (Marx 1998, 164). Marx seemed to admit that his theory of value worked only at the aggregate level. It was "only an accident if the surplus value, and thus the profit, actually produced in any particular sphere of production, coincides with the profit contained in the selling price of a commodity" (Marx 1998, 167).

Do these and other comments show that Marx gave only "perfunctory" attention to the "transformation problem," effectively dodging the "crucial question" of how, after the transformation of values into prices of production, he could still claim that value regulated prices (Meek 1977, 109, 107)? Is it true that Marx "seems to have regarded the problem as a detail" (Brewer 1984, 138), and ignored it, or that he "resorts to evasion to

bring closure," and that he "retreats to a position that there is no general rigorous quantitative relation between surplus-value and unpaid labor time" (Foley 2000, 12, 13)? Alternatively, did Marx solve "it in a simple, straightforward manner" (Kliman 2007, 141)? What follows argues that Marx's solution is simple and straightforward, but to understand his explanation we must understand his accounting, particularly for price changes, discussed later, which chapter 5 shows provides the simple solution to the apparent problem of inputs at prices of production that underlies the TSSI's demonstration of Marx's logical consistency.

In the 1970s, following the lead of Sraffa, but based on Bortkiewicz's (1906–1907) "standard interpretation," seeing the economy as a physical system of "commodities producing commodities," many Marxist economists accepted it was impossible to solve Marx's "transformation problem" to satisfy his three aggregate equalities, and therefore abandoned the idea that value was determined by socially necessary labor time. The "givens" in Marx's theory were supposed to be physical quantities of use values, technical coefficients of their conversion from one use value to another, and the real wage, defined as a given bundle of use values for workers (Mohun 1994a, 400). From these assumptions, the neo-Ricardians derived a physical rate of profit simultaneously with prices of production, and claimed to disprove Marx's theory of value in the process (Moseley 2000a, 283). Many Marxists accepted:

Consider a two-sector economy with agriculture producing the means of subsistence ("wheat") and industry producing the means of production ("steel"). To produce wheat and steel requires steel and labor in definite proportions. If relative labor hours determine the exchange prices of steel and wheat, and capitalists get an equal return on all capital, according to the neo-Ricardians Marx should have solved the following simultaneous equations (Roemer 1990, 1728):

$$p_s = (1+r)(p_s a_s + w l_s) \tag{1}$$

$$p_w = (1+r)(p_s a_w + w l_w) \tag{2}$$

Marx's approach to the transformation problem must either be abandoned or completely restructured, which poses serious problems for the whole system of analysis presented in *Capital*. Value and surplus-value would be wholly metaphysical concepts if they could not be linked to actual prices and profits. (Brewer 1984, 138)

Where:

- r = required rate of return on capital
- ps = price of steel per unit
- pw = price of wheat per unit
- aw = amount of steel required for wheat production per unit
- as = amount of steel required for steel production per unit
- lw = labor hours producing wheat per unit
- ls = labor hours producing steel per unit
- w = money wages per unit of labor

We have two equations and four unknowns (ps, pw, r, and w). To reduce the unknowns, dominant solutions impose a "normalization condition" (which requires for example total price to equal total value, or that total profit equals total surplus value) and assume a constant real wage. However, as Moseley (2000a, 283) says, this interpretation leads to wellknown "damaging criticisms." First, that Marx was logically inconsistent by not transforming the input values of constant and variable capital. Second, "correcting" his "error" means "Marx's two aggregate equalities (aggregate price = aggregate value, and aggregate profit = aggregate surplus value) cannot both be true simultaneously" (Moseley 2000a, 283). Third, "the price rate of profit is in general not equal to the value rate of profit," and finally, "the entire Volume 1 value analysis is 'redundant' because the same price of production and rate of profit that are derived by transforming values into prices of production could also be derived direct from the given physical quantities" (Moseley 2000a, 283). Having concluded that Marx's solution was inconsistent, Bortkiewicz "corrected" it by requiring the simultaneous per-unit values of inputs and output, and their per-unit prices, to be equal, which "severed . . . value and price . . . into wholly separate systems of determination" (Kliman 2007, 157), with devastating results for Marx's theory of value.

The standard interpretation was influential, appearing in various forms, each preserving only one of Marx's aggregate equalities by imposing conditions, yet in the early 1980s, some Marxists began to question the dual systems and simultaneity interpretations on which these results depend (Kliman 2007, 160–61).

The New Interpretation

The NI's critique of the standard interpretation starts from capital in

general and the assumption that over a defined period the money value of all new commodities produced equals the monetary expression of the total labor hours worked, which must equal those that society has deemed "socially necessary." If so, each commodity consumes a particular share of the total social labor and money gives the owner the right to a particular share of that social labor. If the money value of every commodity equals its money price, we have "equal exchange," but in aggregate, Foley (1982, 38) and others conclude, "the labor theory of value is valid for *any* commodity producing system, no matter what deviations of price from labor values that economy exhibits." They mean *could* be valid. If the prices of commodities are proportional to embodied social labor we get Marx's "extremely simple and powerful . . . way of looking at capitalist production" (Foley 1982, 40). As with competition this is not the case, the issue for the NI becomes which of Marx's propositions to maintain in making the transformation (Foley 1982, 40).

One proposition is that the value of money equals its claim to a proportion of total social labor; the other is that the value of labor power equals the bundle of use values it commands. The NI chooses to maintain Marx's core claim, that labor adds money value in production, but limits its application to total value added and the value of labor power.² Mohun (1996) summarizes Marx's "basic claims" according to the NI:

$$MVA = \frac{LVA}{VM}$$
$$LVA = \sum V + \sum S$$
$$w = \frac{VLP}{VM}$$
$$W = wH = \frac{VLP.H}{VM}$$
$$\sum W = \frac{\sum V}{VM}$$

 $MVA = \sum W + \sum \prod$

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MVA = \frac{\sum V}{VM} + \frac{\sum S}{VM}
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Where:

MVA	=	aggregate money value added
LVA	=	aggregate labor value added (hours)
VM	=	value of money
W	=	wages per hour
Н	=	hours worked
VLP	=	value of labor power per hour (hours) ³
V	=	variable capital (hours)
S	=	surplus value (hours)
W	=	money wages
П	=	money profit

To maintain these claims the NI abandons the standard interpretation's assumption that variable capital equals the value of the means of subsistence, replacing it with a given money wage determined by class conflict before consumption (Mohun 1994a, 400–2, 403, 405; Foley 1982). This, it argues, is consistent with Marx's core idea that the value labor "embodies" in commodities is the money value of socially necessary labor time, not the value of the use values commanded by the workers' wages. Unlike the commodities they sell from which capitalists realize surplus value, they do not produce and sell workers for profit (Foley 1986, 43–44). Labor reproduces itself, which means that unlike other commodities, on average labor power always sells at its "socially necessary" value, the money price of the socially necessary labor time required for the workers' subsistence or reproduction, whatever the real wage, or the price setting process for produced commodities (Mohun 1994a, 1996). The money price of socially necessary labor time is therefore the NI's measure of the value of labor power and the value of money. Chapters 5–7 argue that for Marx this money price was the "essence," the core idea underlying capitalist accounts, which he used to explain them.

According to the NI, therefore, we can solve the standard interpretation's equations (1) and (2) (above) by taking the money wage (w) as given and requiring only society's total value added at market prices to equal the

total socially necessary labor time value added, converted into money using the aggregate "money value added per productive labor hour" (m):⁴

$$S(p_s - p_s a_s) + W(p_w - p_s a_w) = m(l_s S + l_w W)$$

Where:

S = total production of steel

W = total production of wheat

$$m = \frac{S(p_s - p_s a_s) + W(p_w - p_s a_w)}{l_s S + l_w W}$$

= money value added per productive labor hour

The left-hand side gives the price of the total physical net product; the right-hand side expresses this as the monetary equivalent of the total socially necessary labor time. Given S, W, m, and w, "prices and the profit rate are given" (Roemer 1990, 1728). Foley (1986, 101) shows that value added, surplus value, and the aggregate rate of surplus value, are unchanged by this transformation; that total value added at market prices equals the monetary expression of total social labor time; and surplus value equals the monetary expression of unpaid labor time. He concludes the "basic claims of the labor theory of value" are met (Foley 1986, 101). Others were not so easily satisfied.

The Single System Critique

The NI does not reproduce all Marx's claims because it "corrects" the supposed "defect" in his method that commodities sell at prices of production, whereas his table assumes that purchasers buy them at value, by transforming the value of constant capital into prices of production (Moseley 2000a, 313). This means that the NI only finds equality between total profits and total surplus value and between money value added at market prices and labor value added, but not between the total labor value of production and total production in prices (Moseley 2000a, 284). This result, if correct, would be damaging because, as Kliman (2007, 163) says, "The equality of total price and total value . . . was surely regarded by Marx as a fundamental result of his own solution." Marx claimed the following in his solution (see Table 4.1):

The aggregate price of the commodities I to V would therefore equal their aggregate value, i.e., the sum of the cost-prices I to V plus the sum of the surplus-values, or profits, produced in I to V. It would hence actually be the money-expression of the total quantity of past and newly applied labour incorporated in commodities I to V. And in the same way the sum of the prices of production of all commodities produced in society—the totality of all branches of production —is equal to the sum of their values. (Marx 1998, 158–59)

Dumenil (1983–1984) maintains total value added because, he claimed, this avoids "double-counting" the profit element in constant capital, counting it once when the commodity is produced, and again when it becomes constant capital in commodities to which it is an input (Foley 1982, 39). However, consistent with the principle of consolidated accounts, which eliminate unrealized profits on intercompany trading in calculating the cost to the "group," Marx was right that there was no problem of aggregation. He accepted, "This statement seems to conflict with the fact that under capitalist production the elements of productive capital . . . prices include profit which has already been realised . . . so that the profit of one branch of industry goes into the cost-price of another" (Marx 1998, 159). However,

if we place the sum of the cost-prices of the commodities of an entire country on one side, and the sum of its surplus-values, or profits, on the other, the calculation must evidently be right. . . . Nobody ever includes his own profit in his cost-price. If there are, therefore, n spheres of production, and if each makes a profit amounting to p, then their aggregate cost-price = k—np. Considering the calculation as a whole we see that since the profits of one sphere of production pass into the cost-price of another, they are therefore included in the calculation as constituents of the total price of the end-product, and so cannot appear a second time on the profit side. (Marx 1998, 159)⁵

Supporters of a single system interpretation agree that the "doublecounting" argument is irrelevant (e.g., Moseley 2000a, 311) because, in addition to interpreting the value of variable capital as the money value workers receive as wages, they interpret constant capital value as the money value cost of the means of production.⁶ Making the values of constant capital depend on the prices of means of production, "the SSSIs do away entirely with the notion of a distinct value system in which constant and variable capital depend on the values of inputs (means of production and subsistence)" (Kliman 2007, 163).

Moseley (2000b) argues that Marx had no need to transform constant capital into prices of production because he took this as a "given" money magnitude from Volumes 1 and 2 of *Capital*, just as he took variable capital as "given" in money. He is right that Marx took variable and constant capital as "given" money amounts, but not because they come

from Volumes 1 and 2. Chapter 5 argues that Marx explained why constant and variable capitals were "given" money amounts for the capitalist by explaining the accounting that produced them. In his explanation, it argues, individual capitalists transform the historically "given" general rate of profit and prices of production into the accountant's "standard" or "target cost," Marx's "cost price," the maximum "socially necessary" cost of production for capitalists to earn the general rate of profit, regardless of its components, and how much of the supplier's profit the cost includes.

If we construe constant capital within a single value-price system, the MELT becomes the total value realized from production (sales revenue) per hour of social labor time, both direct and indirect labor time. Marx's aggregate identities then hold by definition, as we can see by adapting Fine, Lapavitsas, and Saad-Filho's "simple formal presentation" of the NI (2004, 5–6). If TR = total revenue, P = profit, w = the money wage rate, Cm = the money value of the constant capital advanced, CLT = the social labor time embodied in constant capital, L = total social labor time, S = surplus value, and m = the MELT including constant capital, we get the solution shown below (page 121).

In this interpretation, money remains the social expression of value, but of the whole commodity, of its sales price, which includes variable and constant capital, not just value-added. By dropping the NI's dual system interpretation of constant capital, the SSSI and the TSSI maintain all of Marx's three aggregate identities (Kliman 2007, 34, 163–65).⁷ Some dualists "have argued that the single interpretations contradict Marx's theory that a product's value is determined by the amount of labor needed to produce it," that is, by the labor time required for the means of production consumed and the labor time freshly added (Kliman 2007, 34). They dispute that Marx argued that the product's value is simply the "the amount of labor needed to acquire them . . . that is, their money price divided by the MELT" (Kliman 2007, 34). However, consistent with the single system interpretation, we will see in chapter 5 that Marx used his theory of value (the MELT) to explain why capitalists use the same principle, that the cost of each identical use value is equal, to account for both labor and the means of production.

$$TR = Cm + wL + P$$

$$P = TR - Cm - wL$$

$$S = (L + CLT) - (wL + Cm)m$$

$$As$$

$$m = \frac{L + CLT}{TR}$$

$$S = P \frac{(L + CLT)}{TR} = Pm$$

The SSSI or TSSI?

Foley also did not include constant capital within the NI's MELT because, he admitted, he did not know how to value them if prices and technology changed.

At the time . . . there seemed to be no plausible interpretation of the labor time equivalent of the constant capital or capital invested since these measures will in general be equal neither to the historical labor embodied in the means of production, nor to the labor that would be required to reproduce them with contemporary technology. (Foley 2000, 24; see also Mohun 1996, 34)

Duménil admitted that merely because "inventories can be carried over from one production period to another has long been a source of great trouble for Marxist economists" (1983, 442).

The SSSI and TSSI agree that constant capital is the "sum of value needed to acquire the means of production" (Kliman 2007, 165), but they disagree about which prices Marx used to value it. The SSSI argues that Marx used simultaneous valuation, required capitalists to "retroactively revalue inputs at output prices," whereas the TSSI argues he used "the output prices of the previous period" (Kliman 2007, 165). While the TSSI and SSSI's both "preserve Marx's aggregate equalities, their implications and results are radically different. The SSSI's, like other simultaneist interpretations, make value redundant, while the TSSI does not" (Kliman 2007, 165). The SSSI's make "value" redundant because, as we will see in the following section, simultaneous valuation reduces "value" to current market prices. The SSSI and TSSI agree, "the values of previously produced commodities, and the sum of values transferred to them, are determined by the value of new products" (Kliman 2007, 97). The issue is whether "the sum of value transferred from an input to a newly produced

commodity depend on the input's price when it enters production, as the TSSI holds, or upon the cost of replacing the input when the new commodity is completed, as the replacement-cost interpretation holds" (Kliman 2007, 97).

TSSI supporters "deny that there is any sense in which Marx held, or in which his theory implies, that inputs entering production now and outputs emerging later must have the same prices or values" (Kliman 2007, 34–35). What follows supports the TSSI's interpretation by showing that, with one clarification, it is consistent with Marx's and capitalist accounting for input price changes, whereas the SSSI is not. The TSSI argues that a product's value is not the sum of the new value added by living labor and the postproduction replacement cost of the used-up means of production (and similarly for the price of a product). However, in Marx's accounting we will see that the postproduction replacement costs of the used-up means of product, but the TSSI is right that this does not affect the rate of profit in the period when the prices change. This accounting, we will see, supports the TSSI's demonstration that Marx's LTFRP is logical.

Understanding Marx's accounting for price changes is also fundamental to the TSSI's refutation of Bortkiewicz's charge of internal inconsistency, the claim that buying inputs at value but selling outputs at prices of production would prevent simple reproduction (Kliman and McGlone 1988, 1999; McGlone and Kliman 1996; Kliman, 2007). Buying at cost price (value) and selling at prices of production is a price change, and the solution to this apparent problem is therefore correct accounting for price changes. The TSSI refutation, which shows that "simple reproduction does occur" even though "Period 1's inputs are bought at their value, but period 2's inputs are bought at . . . the prices of production that prevail at the end of period 1" (Kliman 2007, Table 8.2, 150, 151, 152), chapter 5 shows, in effect employs Marx's replacement cost accounting (RCA). Bortkiewicz argued that these differences would disrupt reproduction, whereas correct accounting shows they do not. "Simple reproduction and uniform profitability do require that supplies equal demands, but they can be equal even if the input and output prices *of Period* 1 are unequal," if the output prices of period 1 are the input prices of period 2, which they must be (Kliman 2007, 151, 153).

The TSSI's accounting for price changes removes the charge of "internal contradiction." However, taking the opening values of constant capital,

variable capital, and surplus values as given "data," chapter 5 argues, the TSSI leaves unexplained the empirical relevance of Marx's theory of value to determining the prices of production. Marx's accounting solution explains his value-price data, which was his answer to the question of how competition and capitalists' calculations operationalized the transformation of values to prices, determined the values (cost prices) of inputs, and equal price rates of profit, in reality.

ACCOUNTING FOR CHANGES IN THE VALUE OF CONSTANT CAPITAL

When input prices change markedly, capitalists have debated and often used "replacement cost accounting." RCA adjusts historical cost accounts for changes in the input prices of tangible assets (inventories and fixed assets) to their current replacement costs "Historical cost accounting" measures assets at their original costs and charges these to the profit or loss account. RCA updates historical costs of tangible assets to their current replacement prices at each closing balance sheet date. It charges the profit and loss account with the current replacement costs consumed in producing the commodity or service at the time of its sale, and makes "capital maintenance adjustments" (CMAs).

IFRSs, like US GAAP, recognize two "concepts of capital maintenance" (International Accounting Standards Committee 1989, para. 104). One, associated with historical cost, is "financial capital maintenance." "Under this concept a profit is earned only if the financial (or money) amount of the net assets at the end of the period exceeds the financial (or money) amount of net assets at the beginning of the period, after excluding any distributions to, and contributions from, owners during the period" (International Accounting Standards Committee 1989, para. 104 [a]). The other, associated with RCA, is "physical (or operating) capital maintenance." "Under this concept a profit is earned only if the physical productive capacity (or operating capability) of the entity (or the resources or funds needed to achieve that capacity) at the end of the period exceeds the physical productive capacity at the beginning of the period" (International Accounting Standards Committee 1989, para. 104 (b)). Physical capital maintenance means CMAs: "All price changes affecting the assets and liabilities of the entity are viewed as changes in the measurement of the physical productive capacity of the entity; hence, they are treated as CMAs that are part of equity and not as profit" (International Accounting Standards Committee 1989, para. 109). In the accounting literature, and often in practice, the "most popular operating capacity concept . . . considers the capacity of the company's assets to produce the same *volume* of goods and services," which requires "adjustments to be made for changes in the capacities of productive assets" (Tweedie and Whittington 1985, 23). In other words, capitalist accountants generally agree that the replacement cost of the "modern equivalent asset" is relevant, not the replacement cost of the existing asset (e.g., Inflation Accounting Steering Group 1976, para. 5.15).

Marx's RCA supports the TSSI by measuring constant capital in the closing balance sheet at current replacement cost, and rejects the SSSI's replacement cost interpretation (RCI) requiring the revaluation of constant capital in the opening balance sheet at closing prices. It supports the TSSI criticism that simultaneous valuation "produces an incorrect measure of profitability, one that systematically undervalues the capital advanced when values are falling" (Kliman 2007, 122). However, Marx's RCA does not follow the TSSI in charging the profit and loss account with the constant capital consumed at opening prices. Rather, it charges current replacement costs by making CMAs, revaluing capital and tangible assets in the closing balance sheet to closing prices. What follows argues that Marx's accounting for CMAs clarifies and supports the TSSI's interpretation of disputed passages in Volumes 1 and 3 of *Capital* and the *Economic Manuscripts of 1861–63*, particularly a lengthy numerical example where Marx, in effect, does RCA.

The Debate

Moseley (2000a, 1) highlighted as "A fundamental issue in the current debates over Marx's value theory . . . precisely what was Marx's assumption regarding the determination of constant capital, *in the case when the labor-time required to produce the means of production changes.*" Moseley (2000a, 1) concluded, "The most commonly held interpretation of this issue, and my own interpretation, has been that Marx assumed that constant capital is determined by the *'current reproduction costs'* of the means of production." This meant, "if the labor-time required to produce the means of production changes anytime between the initial investment of capital and the eventual recovery of this capital through the sale of commodities, then the value of the existing constant capital would also change in order to reflect the current reproduction costs of the means

of production" (Moseley 2000a, 1). It is true, as Moseley and others argue, that Marx often argued that "current reproduction costs" determined the value of constant capital, but the questions are what this means, and how would the value of existing constant capital "change" to "reflect" changed "reproduction" costs? Some argue that Marx also appeared to endorse "original value" or historical cost.

Although he does not explicitly say so, Marx conducted his discussions in the early chapters of Volume 1 of *Capital* of the general formula for capital, M-C-M', assuming constant prices. Overlooking this, he could appear at times to mean historical cost when he says that capitalists calculate surplus value as the increment over the "original value" (Marx 1996, 165). Constant prices are implicit in M-C-M', because with capital in circulation, "through all these changes preserving itself and expanding," "Value now . . . becomes value in process, money in process, and, as such, capital," with a "life process of its own" (Marx 1996, 165–66). To "preserve" capital in circulation, in its own life process, capitalists must "maintain capital," maintain M, which means constant prices or making CMAs if prices change.

Marx implicitly assumed constant prices in chapters 4–7 of Volume 1 of *Capital* when he calculated surplus value by reference to the "original value," but reminded readers that capital in circulation has its own "relations with itself," its own logic. Compared to C-M-C, he argued, "value . . . in the circulation M-C-M, or the circulation of capital . . . presents itself as an independent substance, endowed with a motion of its own . . .: instead of simply representing the relations of commodities, it enters now, so to say, into private relations with itself. It differentiates itself as original value from itself as surplus-value" (Marx 1996, 165). Only in chapter 8 did Marx introduce changes in the values (prices) of constant capital, concluding that they change the value the worker transfers to the commodity. For example, if

the exchange-value of . . . cotton varies, either by rising to six times its former value or falling to one-sixth of that value . . . the spinner puts the same quantity of labour into a pound of cotton, and therefore adds as much value, as he did before the change in the value. . . . Nevertheless, the value that he transfers from the cotton to the yarn is either one-sixth of what it was before . . . or . . . six times as much as before. The same result occurs when the value of the instruments of labour rises or falls, while their useful efficacy in the process remains unaltered. (Marx 1996, 211–12)

For Marx, "it follows that . . . the means of production transfer their value to the product only so far as along with their use-value they lose also their

exchange-value. They give up to the product that value alone which they themselves lose as means of production" (1996, 213). Marx thought it "strikingly clear" what he meant by "the means of production never transfer more value to the product than they themselves lose during the labour process by the destruction of their own use value" (1996, 214), but his students do not agree.

Some advocate a historical cost interpretation (e.g., Ernst 1982), or a semi-historical cost interpretation (Freeman 1995, 1996), but there is a "substantial body of evidence that Marx rejected historical-cost valuation" (Kliman 2007, 97).⁸ Many more have argued for an SSSI "replacement cost interpretation." Moseley (2000b) surveyed Marx's discussions of price changes of constant capital, concluding that they all support the RCI, but Kliman shows that several "passages contradict the replacement cost interpretation" (2007, 101). Kliman (2007, 102) highlights Marx's criticisms in the Economic Manuscripts of 1861-63 of Sir George Ramsay's claim that "if productivity rises, so that a smaller share of total output is needed to replace inputs, the profit rate must rise," as evidence of "passages [that] disconfirm the replacement cost interpretation in an especially striking way." Marx gave an extended numerical example which, as Kliman says, leaves "little wiggle room" for the "multiple interpretations [by] an imaginative interpreter" (2007, 102). The accounting interpretation supports Kliman's (2007, 102–3) conclusion that Marx was not a simultaneist requiring input and output prices to be equal. However, whereas Kliman argues in effect for a "modified historical cost" interpretation, Marx used RCA, calculating CMAs to analyze the effects of changes in productivity on the rate of profit.

Marx's Critique of Ramsay

Marx constructed his example to examine "the influence that a change in the value of constant capital exerts on the rate of profit" (1991, 267), to clarify his theory that changes in labor productivity influenced the money rate of profit by reducing or increasing the value of the constant capital required, and was unrelated to the physical rate of profit. Marx's RCA example supports Kliman's conclusion that "these passages disconfirm the replacement-cost interpretation," confirms that he was not a "physicalist," and by removing ambiguity dissolves the controversies surrounding textual interpretations, which removes the need to concede that the "contested passages *need not* be construed as the replacement cost interpretation

construes them" (2007, 102, 105, emphasis added). Marx's accounting shows there is only one interpretation. It confirms that in Marx's calculations, rather than simultaneous valuation at postproduction prices, "the value of used-up constant capital is determined before [production], and is thus a determinant of the value of the product" (Kliman and McGlone 1999, 41). However, the example also shows that Marx then adjusted this "sum of value, already in existence before production, [which] emerges from production unchanged" (Kliman 2007, 100), to closing (postproduction) prices, that is, in effect, he calculated a CMA, to reveal the impact on the capitalists' calculations of the rate of profit.

Consistent with the TSSI, Marx showed that increases in labor productivity that reduced the input prices of constant capital postproduction had no effect on rate of profit for that year. However, he also showed that price changes did affect the capital at the end of the year, and increased the rate of profit in the following year. Marx's example contradicts the RCI and the view (e.g., Mirowski, 1989) that his "texts flipflopped between historical and replacement cost valuation" (Kliman 2007, 110). We will see later that it also supports Kliman's demonstration of the logical consistency of Marx's LTFRP by demonstrating its accounting possibility.

Marx's Example

In Marx's example (see Marx 1991, 266–74) a capitalist farmer advances capital of £120 at the beginning of year 1 when the price of corn is £2/qr.⁹ The farmer buys 20 qrs of seed corn at the beginning of year 1 for £40, spends another £40 on other constant capital, and further £40 for labor. The farmer produces 100 qrs of corn and sells them at the end of year 1 for £2/qr. In year 2, the farmer repeats the investment of 20 qrs of seed corn costing £40, spends another £40 on other constant capital and £40 on labor, but production costlessly doubles to 200 qrs, and therefore the price drops to £1/qr at the end of year 2. At the end of year 2, the farmer sells the 200 qrs for £1/qr. Assume that the farmer buys seed corn, other constant capital, and pays wages, at the beginning of the first day of the year, and makes sales and withdraws all the profits at the end of the last day of the year.¹⁰

The questions are: (1) What is the farmer's profit in year 2 after the price change, and (2) what is the rate of profit?

Marx calculated the farmer's profit as £80 in year 1, which is equivalent

to a surplus of 40 qrs of corn. For year 2, Marx also calculated the farmer's profit as £80 even though this was now equivalent to a physical surplus of 140 qrs of corn (Kliman 2007, Table 6.2, 102).¹¹ Marx's calculations show that the money rate of profit is constant at 66.7% (£80/£120), whereas the physical rate increases from 66.7% (40qrs/60qrs) in year 1 to 233.3% (140qrs/60qrs) in year 2, which shows that Marx was not a physicalist (Kliman 2007, Table 6.2, 102, 103). Calculating the profit in year 2 as £80, we will see, "is valid only if the value transferred from the seed corn is determined by its preproduction value of £2/qr. . . . If we use the seed corn's replacement cost in Year 2, £1/qr . . . profit would exceed £80" (Kliman 2007, 103). Kliman (2007, 103) references other examples from which "Marx draws similar conclusions," and concludes that Marx does use £2/qr.

However, Marx questioned whether year 2's profit was £80, and it is important to understand how he convinced himself it was £80. Marx first, in effect, produced historical cost accounts, which calculated year 2's profit as £80, but then adjusted them to closing current replacement cost, charging the seed corn in year 2's profit and loss account at £1/qr, which produced a "surplus" of £100 for year $2.^{12}$ Consistent with RCA, however, Marx (1991, 268) concluded that this extra £20 was a return of surplus capital at the new input prices, which proved his argument that "Anyhow, the rise in the *rate of profit* is not due to the *value* [of constant capital] remaining unchanged, as Ramsay supposes." The seeming rise in the rate of profit in year 2 (and the actual rise in year 3, assuming no further changes, as we will see), in other words, was not due to the increased physical rate of profit, but to the fall in the value of constant capital.

MARX'S RCA ACCOUNTING

There is no argument about year 1's profit or rate of profit. At the beginning of year 1, the farmer advances £120 of capital and spends it on seed corn, other constant capital, and wages. The double entries in the farmer's ledger in Table 4.2 produce the opening balance sheet shown in Table 4.3.¹³

At the end of the year, the farmer sells the 100 qrs of corn for \pounds 200, charges the \pounds 120 costs, leaving a profit of \pounds 80, which the farmer withdraws as cash (see Tables 4.4 and 4.5).

There is no question here, as Marx had said in the preceding chapter, that "Profit . . . expresses . . . the increment of value which the total capital

receives at the end of the process of production and circulation, over and above the value it possessed before this process of production, when it entered into it" (1991, 91). Year 1's profit was unequivocally "an excess over and above the capital advanced" (Marx 1991, 133). Marx therefore calculated the rate of profit using the capital originally advanced (£80/£120). In this sense, as Kliman (2007, 125) says, "Marx measured profit and the rate of profit essentially the same way that businessmen and investors do" when holding management accountable. Because Marx repeats this calculation for year 2, Kliman (2007, 102, Table 6.2) concludes this refutes the RCI.

Table 4.2 Opening Double Entries

	f	£
When the farmer advances the capital	2500570	
Dr Cash	120	
Cr Capital advanced		120
When the farmer buys seed corn, etc.		
Dr Seed corn	40	
Dr Other constant capital	40	
Dr Wages	40	
Cr Cash		120

 Table 4.3 Opening Balance Sheet—Year 1

	f		£
Dr	190.53	Cr	1000000
Seed corn	40	Capital advanced	120
Other constant capital	40		
Wages	40		
Total assets	120	Total capital	120
	===		===

Before concluding that £80 was the correct figure for calculating the rate of profit after the change in price, however, Marx considered alternative calculations of the profit and capital for year 2. One possibility was to assume the farmer liquidated his business at the end of year 2, which also gave a "profit" of £80:

The matter would be simplified if we could consider it *d'abord* without regard to the production process, that is, if we assumed that the tenant farmer was withdrawing from the business and selling his whole product. Then he would indeed have to sell 120 quarters to recover his outlay of £120 (to reimburse himself). In this way he would recover the capital advanced. Thus, a surplus of 80 quarters would remain, not of 140, and since these 80 qrs = £80, they are worth in absolute terms as much as surplus in the first case. (Marx 1991, 269)¹⁴

Given his definition of capital as "value in circulation," Marx could not assume liquidation, but assuming reproduction he found "the matter is altered to a certain extent" in year 2 (1991, 269). To examine the impacts of the price change at the end of year 2, he, in effect, first produced historical cost accounts, but then adjusted them to current prices. Starting from the same opening balance sheet for year 2, accounting for the seed corn at its opening cost of £2/qr (see Table 4.6), he calculated year 2's profit as £80 (see Table 4.7).

Table 4.	4 Clos	ing D	ouble	e Entries
----------	--------	-------	-------	-----------

	£	£
Dr Cash	200	
Cr Sales		200
Dr Profit and loss – seed corn	40	
Dr Profit and loss – other constant capital	40	
Dr Profit and loss – wages	40	
Cr Total assets		120
Dr Profit and loss – profit paid to farmer	80	
Cr Cash		80

Table 4.5 Profit and Loss Account—Year 1

	Dr	Cr
	£	£
Sales		200
Less:		
Seed corn (20 x £2)	40	
Other constant capital (20 x £2)	40	
Labor (20 x £2)	40	(120)
Profit		80
		===

Marx reasoned: "His total product [in year 2] = 200 qrs = $\pounds 200.^{15}$ But $\pounds 120$ out of this $\pounds 200$ replaces the 60 qrs which he has expended, each one of which cost him $\pounds 2$. There thus remains a profit of $\pounds 80$ which = the remaining 140 qrs" (1991, 268), which seemed straightforward, but Marx was not convinced: "How does this happen?"

Another possibility was that year 2's profit was £140 because the value of "the qr has fallen from £2 to £1," "But since there was a surplus of 140 qrs, it seemed that it had to come to £140, for one qr is worth just as much as any other" (Marx 1991, 268, 269). Accepting this calculation would mean Marx accepting the simultaneist/physicalist RCI, "correcting" input prices to closing replacement cost, retrospectively charging £1/qr for all inputs, which gives a profit of £140 for year 2, and a rate of profit of £140/£60 (233%) (see Tables 4.8 and 4.9).

Against this calculation, Marx argued, "The quarter is now worth £1, but each of the 60 quarters expended in production cost £2. They cost the farmer as much as if he had expended 120 of the new quarters. The

remaining 140 quarters are worth £80, or no more than the remaining 40 were worth previously" (1991, 268). Kliman (2007, 124) is therefore right that, in rejecting the physicalist measure of profit Marx rejected the simultaneist interpretation, that the "replacement-cost rate" of profit "is a meaningful measure because it is the '*potential* profit rate'... and therefore the rate that governs investment decisions."

Marx, however, was not satisfied. He realized that if an increase in productivity caused a fall in the input price of constant capital the capitalist "has laid out less objectified labour," and therefore "The account will therefore work out . . . [such that] the rate of profit would have risen" (Marx 1991, 268). In his example, the account worked out as follows:

The farmer replaces the 20 qrs of seed corn *in natura* out of his own product. . . .¹⁶ The rest of his expenditure [expressed in qrs] increases in the same ratio as the qr is devalued (provided wages do not fall). To replace the remaining portion of constant capital, he now needs 40 qrs instead of 20. Altogether he must now lay out 100 qrs, compared to 60 previously; but he need not lay out 120, the amount corresponding to the to the depreciation of the corn, because the 20 qrs used as seed, which were worth £40, are replaced by 20 [qrs] (since in this context only their use value matters), which are worth [£]20. (Marx 1991, 269–70)

	£		£
Dr		Cr	
Seed corn	40	Capital advanced	120
Other constant capital	40		
Wages	40		
Total assets	120	Total capital	120
	===		====

Table 4.6 Opening Balance Sheet—Year 2

Table 4.7 Profit and Loss Account—Year 2

	Dr £	Cr
		£
Sales		200
Less:		
Seed corn (20 x £2)	40	
Other constant capital (20 x £2)	40	
Labor (20 x £2)	40	(120)
Profit		80
		===

Table 4.8 RCI Profit and Loss Account—Year 2

	Dr £	Cr
		£
Sales		200
Less:		
Seed corn (20 x £1)	20	
Other constant capital (20 x £1)	20	
Labor (20 x £1)	20	(60)
Profit		140
		===

Table 4.9 RCI Closing Balance Sheet—Year 2

	£		£
Dr		Cr	
Cash for seed corn	20	Capital advanced	60
Cash for other constant capital	20		
Cash for wages	20		
Total assets	60	Total capital	60
	==		==

Marx could therefore understand why, apparently contradicting his calculation of profit as £80 in year 2, the farmer would calculate a "surplus" of £100 for year 2. If the farmer continued in business, of the 200 qrs he produced he needed only 20 qrs for seed corn, and needed to sell 80 qrs at £1/qr to recover the other constant capital and cost of labor. Marx concluded that this left the farmer with another "gain" of 20 qrs worth £20 at £1/qr, over the £80 profit calculated using the opening cost of £2/qr, which gave a "surplus" in year 2 of £100:

So evidently he has made a gain . . . of these 20 qrs, now worth £20. His surplus is therefore not £80 but £100. . . . This is an unquestionable fact, and . . . the farmer can sell 20 qrs more at the new value, thus gaining £20. In the course of *reproduction*, moreover, the farmer obtains the surplus of £20 on the same outlay, because the labour has become more productive, without the rate of surplus value having risen or the workers having performed more surplus labour. . . . This then is a rather peculiar phenomenon. (Marx 1991, 270)

Marx explained this "peculiar phenomenon," the £20 "surplus," as a return of capital, a "release of a portion of the capital previously tied up in constant capital" (1991, 271). In effect, he adjusted his historical cost profit and loss account to current replacement cost with a negative CMA (which accountants call a "cost of sales adjustment"). As before, the farmer recognizes his revenue and historical expenses, but then adjusts the capital advanced and reduces the charge for seed corn to its current replacement cost, which produces the "surplus" of £100 (see Tables 4.10 and 4.11).

Table 4.10 RCA Double Entries

	£	£
Dr Cash	200	
Cr Sales		200
Dr Profit and loss – seed corn	40	
Dr Profit and loss – other constant capital	40	
Dr Profit and loss – wages	40	
Cr Total assets		120
Dr Capital advanced – CMA	20	
Cr Seed corn – CMA		20
Dr Profit and loss – profit to farmer	80	
Cr Cash – payment of profit to farmer		80
Dr Profit and loss – surplus returned to farmer	20	
Cr Cash – return of capital to farmer		20

Table 4.11 RCA Profit and Loss Account—Year 2

	Dr £	Cr £
Sales (200 x £1)		200
Less:		
Seed corn (20 x £2)	40	
Less Seed corn CMA (20 x £1)	(20)	
Other constant capital (20 x £2)	40	
Labor (20 x £2)	40	(100)
Profit		100
		====

To continue at this scale at £1/qr the farmer needs only £20 for seed corn, and therefore only £100 capital, and can withdraw the £20 "surplus" capital, in addition to the profit of £80, requiring a corresponding negative CMA in the balance sheet recording the reduction in the capital required.

Immediately after harvest at the end of year 2, the TSSI is right that "a sum of value, already in existence before production, emerges from production unchanged" (Kliman 2007, 100). At that point, the farmer's balance sheet will show this by carrying the seed corn at its cost of £40 (see Table 4.12).

However, assuming an instantaneously following sale at the new price of $\pm 1/qr$, the farmer devalues the capital advanced in the closing balance sheet at the end of year 2 by repaying the unnecessary ± 20 capital for seed corn (see Table 4.13).

Marx concluded, "What this phenomenon amounts to is this: release of a portion of capital previously tied up in constant capital, or the conversion of a portion of the capital into revenue" (1991, 271). In other words, the farmer calculates the surplus of £20 as a negative CMA and therefore "will not consider that he has obtained a larger profit, but that a portion of his
capital previously tied up in production has been freed" (Marx 1991, 272).¹⁷ To make the point that because it corrected a fluctuation in the input price of constant capital, this £20 did not count as profit in calculating the rate of profit for year 2, Marx compared his farmer with a new farmer who starts under the new price of £1/qr:

	£		£
Dr		Cr	
Seed corn	40	Capital advanced	120
Other constant capital	40		
Wages	40		
Total assets	120	Total capital	120
	====		===

Table 4.12 RCA Preclosing Balance Sheet—Year 2

Table 4.13 RCA Closing Balance Sheet—Year 2

	£		£
Dr		Cr	
Cash for seed corn	20	Capital advanced	120
Cash for other constant capital	40	CMA	(20)
Cash for wages	40		
Total assets	100	Total capital	100
	====		====

How little the above phenomenon has to do with the determination of the rate of profit, becomes clear if one considers the case of a farmer . . . who enters the business under the new conditions of production. . . . He now has to advance £20 to buy 20 qrs of seed, £40 as previously [to buy the other elements of constant capital], £40 for wages, so that his outlay of capital = [£]100. And profit is £80, that is 80%. The amount of profit has remained the same, but its rate has increased by 20% [80%/66²/₃%]. Thus one can see that the fall in the value of seed (or of the price which has to be paid to *replace* the seed) has in itself nothing to do with the increase in the amount of profit [in year 2], but *implies* merely an increase in the rate of profit. (Marx 1991, 272, emphasis added)

The £20 CMA has "nothing to do with the increase in the profit," and does not count in the calculation of the rate of profit, because the farmer did not extract it from labor that year. Instead, the farmer advanced capital to production at the beginning of the year, of which it turned out £20 was superfluous. Marx "implies" that the rate of profit for a new farmer would increase to 80% in year 3 (assuming the conditions stayed the same) if the profit was £80, giving a higher rate of profit than the existing farmer earned in year 2. However, by calculating the total "surplus" of the existing farmer in year 2 as £100, Marx also implied that under the new

price the profit in year 3 would be £100 on a capital of £100, which it would.

To reinforce his point that the increase in productivity did not cause an immediate increase in profit, Marx also contrasted the calculations for his farmer with the effects of an equal fall in wages paid by another farmer by £20, which did, but implied that the profits of his farmer would catch up the following year:

Suppose for example, that . . . the price of the seed . . . remains the same, that is, £40 (20 qrs) and that the rest of the constant capital costs £40 (20 qrs), but that wages . . . fall from £40 to $[\pounds]20$ (from 20 qrs to 10). . . . The capital advanced is now $[\pounds]100$ instead of $[\pounds]120$ just as in the case when the seed fell by half. But the profit is now $[\pounds]100$, i.e., 100%, whereas in the other case, where the capital advanced was likewise reduced from $[\pounds]120$ to $[\pounds]100$, it was 80%. . . . But in the former case, the surplus remained unchanged— $[\pounds]80$ (and since $[\pounds]40$ was paid as wages, [the rate of surplus value] was 200%). In the latter case, the surplus value rises to $[\pounds]100$ (and since wages now come to $[\pounds]20$, [the rate of surplus value increases] to 500%). (Marx 1991, 273–74)

The farmer who cut wages by £20, the "latter case," would produce accounts for year 2 shown in Tables 4.14 and 4.15, called Marx's second case.¹⁸

In the following year (year 3, not considered by Marx), if prices and everything else stayed the same, the farmer in the first case would also produce a profit of £100 on a capital of £100 from the fall in the input price of seed corn (see Tables 4.16 and 4.17).

However, as Marx implied from his comparison of the first case (where productivity rises and constant capital falls), with the second case (where wages fall), in year 3 the rate of profit would increase to 100% because the farmer in the first case advanced £20 less constant capital for seed corn.¹⁹ As Marx put it, in year 2 "in that other case £20, or a sixth of the capital . . . is set free. *But in the former case, the surplus value remained unchanged* —*£80*" (Marx 1991, 274, emphasis added), implying that, as the farmer in the first case would also advance less capital the following year, the profit in the first case would increase.

Marx compared the surplus value (profit) of £80 in year 2 in the first case to the opening capital and surplus value of £100 in the second case, 80% rather than 100%. The adjusted closing capital in year 2 in the first case is also £100, but Marx's comparison highlights the impact of the £20 increased surplus value extracted in the second case on the rate of profit.²⁰ Assuming conditions are unchanged, the fall in constant capital means the first farmer's rate of profit will increase to 100% in year 3.

	Dr f	Cr f
Sales (100 x £2)	-	200
Less:		
Seed corn (20 x \pm 2)	40	
Other constant capital (20 x £2)	40	
Labor (10 x £2)	20	(100)
Profit		100
		===

Table 4.14 The Second Case: Profit and Loss Account—Year 2

Table 4.15 The Second Case: Closing Balance Sheet—Year 2

	£		£
Dr		Cr	
Cash for seed corn	40	Capital advanced	100
Cash for other constant capital	40	1000 • Per 101 100 000 000 000	
Cash for wages	20		
Total assets	100	Total capital	100
	===		===

Table 4.16 The First Case: Profit and Loss Account—Year 3

	Dr	Cr
	£	£
Sales (200 x £1)		200
Less:		
Seed corn (20 x £1)	20	
Other constant capital (40 x £1)	40	
Labor (40 x £1)	40	(100)
Profit		100
		===

Table 4.17	The First	Case:	Closing	Balance	Sheet-	-Year	3
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	£		£
Dr		Cr	
Cash for seed corn	20	Capital advanced	100
Cash for other constant capital	40	•	
Cash for wages	40		
Total assets	100	Total capital	100
	===		===

Table 4.18 summarizes the above discussion.

Writing Marx's rate of profit (r) as $[s/v] \times [v/c] \times [c/(c + v)]$, where s/v = the rate of exploitation, v/c = the organic or value composition of capital, and c/(c + v) = the turnover of capital, in the first case in year 3, r =

 $[\pounds100/\pounds40] \times [\pounds40/\pounds60] \times [\pounds60/\pounds100] = 100\%$, and in the second case, when wages are $\pounds20$, r = $[\pounds100/\pounds20] \times [\pounds20/\pounds80] \times [\pounds80/\pounds100] = 100\%$. The higher proportion of variable capital in the first case, caused by the fall in the price of seed, which caused the "value composition" to increase to 66.67% $[\pounds40/\pounds60]$ compared to the previous "organic composition" of 50% $[\pounds40/\pounds80]$, offsets the lower rate of exploitation of 250% $[\pounds100/\pounds40]$ compared to the second case of 500% $[\pounds100/\pounds20]$. Therefore, Marx (1991, 274) concluded, "In this [second] case, not only has rate of profit risen but the *profit* itself, because the rate of surplus value has risen and consequently the surplus value itself. This differentiates this case from the other, something which Ramsay does not grasp." Whereas in the first case the rate of profit increased because constant capital fell, which changed the composition of capital and the rate of exploitation, in the second case it increased because cutting wages increased profit which changed the rate of exploitation and the composition of capital.

	Year 1	Year 2	Year 3
First Case	£	£	£
Price per qr	2	1	1
Closing balance sheet:			
Capital advanced	120	120	100
CMA		(20)	
Assets:			
Cash for seed	40	20	20
Cash for other constant capital	40	40	40
Cash for wages	40	40	40
Total assets	120	100	100
Profit and loss:			
Sales	200	200	200
Less:			
Seed	40	40	20
CMA	-	(20)	-
Other constant capital	40	40	40
Wages	40	40	40
Profit/Surplus*	80	*100	100
Rate of profit	80/120	80/120	100/100
Second Case			
Price per qr		2	
Closing balance sheet:			
Capital advanced		100	
Assets:			
Cash for seed		40	
Cash for other constant capital		40	
Cash for wages		20	
Total assets		100	
Profit and loss:			
Sales		200	
Less:			
Seed		40	
Other constant capital		40	
Wages		20	
Profit		100	
Rate of profit		100/100	

Table 4.18 Summary—Accounting for Price Change
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* Marx called the £100 in year 2 'surplus' because it includes the £20 CMA.

To differentiate the cases, to explain the change in the rate of profit in the first case, Marx in effect recognized that if input prices change following production the capitalist revalues the constant capital in the closing balance sheet and profit and loss account. When prices fall because labor productivity increases, as in Marx's example:

Since one part of the labour expended, i.e., the part contained in the constant capital (in seeds in this case), has diminished, the value of the product falls if *production* continues *on the same scale*, just as the value of 100 lbs of twist falls if the cotton it is made of becomes cheaper. But the ratio of variable capital to constant capital increases (without the *value* of the variable capital increasing). In other words, the ratio of the total capital outlay declines in relation to the surplus, hence the rate of profit rises. (Marx 1991, 268–69)

In the first case, the seeming increase in the rate of profit in year 2, and the actual increase in the rate of profit in year 3, came from the reduction of necessary constant capital, the CMA that ends up in the capitalist's "pocket" to spend or invest, as Marx showed in his final case:

Let us assume that . . . [a manufacturer] has laid out £100 in cotton twist and made a profit of £20. The product therefore amounts to £120. It is assumed that £80 out of the outlay of £100 has been paid for cotton. If the price of cotton falls by half, he will now need to spend only £40 on the cotton and £20 on the rest, that is £60 in all (instead of £100) and the profit will be £20 as previously, the total product will amount to £80 £40 thus remains in his pocket. He can either spend it or invest it as additional capital Thus it is not the fact that the farmer replaces his seed corn in kind which is the key, for the manufacturer buys his cotton and does not replace it out of his own product. What this phenomenon amounts to is this: release of a portion of the capital previously tied up in constant capital, or the conversion of a portion of the capital into revenue. (Marx 1991, 270–71)

AN ACCOUNTING DETERMINATION OF COMPETING INTERPRETATIONS

Marx's RCA strengthens the TSSI's interpretation of contested passages, its "pre-production reproduction cost understanding of value transfer" (Kliman 2007, 104). Kliman highlights the "three strongest candidates," one each from Volumes 1 and 3 of *Capital*, and the *Economic Manuscripts of 1861–63*. From Volume 1, chapter 8 on constant and variable capital:

The definition of constant capital given above by no means excludes the possibility of a change of value in its elements. Suppose the price of cotton to be one day sixpence a pound, and the next day, in consequence of a failure of the cotton crop, a shilling a pound. Each pound of the cotton bought at sixpence, and worked up after the rise in value, transfers to the product a value of one shilling; and the cotton already spun before the rise, and perhaps circulating in the market as yarn, likewise transfers to the product twice its, original value. It is plain, however, that these changes of value are independent of the increment or surplus-value added to the value of the cotton by the spinning itself. If the old cotton had never been spun, it could, after the rise, be resold at a shilling a pound instead of at sixpence. (Marx 1996, 219–20)

This passage, as Kliman (2007, 98) says, "repudiate[s] historical cost valuation, but that is not in dispute," but Marx's comment that the changes in value are "independent of the . . . surplus value added . . . by the spinning" is also consistent, as we have seen, with the fact that they give rise to CMAs.

Kliman's second passage is from Section 2, Chapter 6, *Capital* Volume 3, on "Appreciation, Depreciation, Release and Tie-Up of Capital," which he says similarly repudiates historical cost. Just before this passage (given below), harking back to his analysis of Ramsay, Marx argued, "the general law that with other conditions being equal, the rate of profit is inversely proportional to the value of the raw materials," for example, to be "absolutely true for capital newly invested in a business enterprise" (1998, 113). For existing businesses, Kliman's passage also repudiates historical cost valuation for opening inventories of raw materials or finished products, but here Marx adds that revaluation is also necessary for work-in-progress:

If the price of raw material, for instance of cotton, rises, then the price of cotton goods—both semi-finished goods like yarn and finished goods like cotton fabrics—manufactured while cotton was cheaper, rises also. So does the value of the unprocessed cotton held in stock, and of the cotton in the process of manufacture. The latter because it comes to represent more labour-time in retrospect and thus adds more than its original value to the product which it enters, and more than the capitalist paid for it. (Marx 1998, 113–14)

If the price of raw materials rises, the capitalist should retrospectively also revalue "cotton in the process of manufacture," to the current price. Kliman (2007, 98) sees an apparent simultaneist threat to the TSSI: "The TSSI may at first seem incompatible with . . . Marx stat[ing] that the value transferred from the cotton to the yarn rises retroactively, after the cotton entered production." His defense is that in Volume 1 the yarn "was *previously produced*, 'spun before the rise' in value" (Kliman 2007, 98), but this does not apply to the work-in-progress inventories in the comment in Volume 3. This, however, is not simultaneist accounting because, according to Marx's RCA, while we should revalue work-in-progress to the new price, and charge it through the profit and loss account when finished and sold, we should (here) make a positive CMA to reveal the "tie-up" of additional constant capital. "By tie-up of capital," Marx meant, "that certain portions of the total value of the product must be reconverted into elements of constant and variable capital if production is to proceed

on the same scale" (1998, 112). As we saw, "By release of capital we mean that a portion of the total value of the product which had to be reconverted into constant or variable capital up to a certain time, becomes disposable and superfluous, should production continue on the previous scale" (Marx 1998, 112).

When prices fall the "release" of capital or negative CMA postpones the increase in the rate of profit to the following year. As Marx put it, "when the price of raw material falls . . . [o]ther circumstances remaining the same, this increases the rate of profit. The commodities on the market, the articles in the process of production, and the available supplies of raw materials depreciate in value and thereby counteract the attendant rise in the rate of profit," because it "would be associated with a loss in the value of capital" (1998, 114). As we have seen, the "loss in the value of capital" is a negative CMA, which "counteracts" the apparent rise in the rate of profit, postponing it to the following period, by distinguishing between a return of capital from the return on capital.²¹ Similarly, a "gain" in the value of capital is a positive CMA that exactly "compensates" for a decrease in the rate of profit by postponing it to the following period. As Marx said when introducing the topic, recognizing the tie-up and release of capital was necessary to correct the "impression that not only the rate, but also the amount of profit—which is actually identical with the amount of surplus value—could increase independently of the movements of the quantity or rate of surplus value" (1998, 112).²²

The final candidates for simultaneist interpretation are the 10 sentences of the "controversial" passage (Kliman 2007, 98), in the chapter on capital and income, before Marx's critique of Ramsay. These sentences are Marx's initial ideas on accounting for input price changes. They show him deciding he must first account for the price when constant capital enters production (sentences [1], [4], [5]), but then for price changes during or after production (sentences [2], [3], [6], [7], [8], [9], and [10]):

[1] But the value of the material and means of labour only re-appear in the product of the labour process to the extent to which they were preposited as values, i.e., were values before they entered into the process. . . . [2] If later on more or less labour time were to be required to manufacture these particular use-values . . . their value would have risen in the first case and fallen in the second. . . . [3] Hence although they entered the labour process with a definite value, they may come out of it with a value that is larger or smaller. . . . [4] But this change in the value of material and means of labour involves absolutely no alteration in the circumstance that in the labour process into which they enter . . . they are always preposited as given values, values of a given magnitude. [5] For in this process itself they only emerge as values in so far as they entered as values. . . . [6] If their general conditions of production have changed, this reacts back on them. [7] They are an objectification of more or less labour time, of more or less value

than originally; but only because a greater or smaller amount of labour time is now required than originally for their production. . . . [8] If [their] value changes before the new product of which they are the elements is finished they nevertheless relate to it as independent, given values preposited to it. [9] Their change of value stems from alterations in their own conditions of production, which occur independently of the labour process into which they enter. . . . [10] For it they are always values of a given, preposited magnitude, even though . . . they are now preposited as of a greater or smaller magnitude than was originally the case. (Marx 1988, 78–79, numbering added)

Kliman reconciles all the sentences with the TSSI by distinguishing between "the inputs' own values and the amounts of value they transfer" (2007, 99). However, when inputs pass into and through production they do not have their "own value," and they do not "transfer" value. Inputs enter into production at given values for the labor process, which transfers these given values to the finished commodity by adding value.²³ According to the accounting interpretation, we can read the passage as Marx's first attempt at distinguishing the opening value "transferred" or "preserved" by the labor process, for which it is accountable, from external changes in value caused by changing prices, for which it is not accountable. Shortly before the above passage, Marx observed, "The material and means of labour are . . . only preserved as exchange values by being consumed in the labour process as use value" (1988, 76). The labor process transfers whatever value they have to the finished product by preserving their use values for the commodity: "the worker is not concerned in the labour process with the value of the means of production but rather with their use value" (Marx 1981, 324).²⁴ It was only, Marx said in Volume 1 of *Capital*, "by virtue of its special character, as being a concrete, useful process, that . . . labour . . . both transfers the values of the means of production to the product, and preserves them in the product" (1996, 211).

Rather than simply an argument for using historical input prices, we can therefore read the passage as a whole, but particularly the concluding sentences [9] and [10], as an accountability argument. The capitalist (enterprise manager) holds production accountable for the rate of profit realized on the current value of the capital advanced, but also calculates, is accountable for, the change in the value of constant capital postproduction. As Marx put it, value reappears from the labor process only if "preposited," presupposed, that is, calculated on entry [1, 5, and 6], "preposited as given values, values of a given magnitude" [4], for which it is accountable.²⁵ Changes in value caused by changes the labor time required [2 and 3], that occur "only because" [7] of a change in prices "independently of the labour process into which they enter" [9], to produce

the inputs, do not change that accountability [4, 7, and 8], although it does add another dimension. For accountability for the capital advanced to the labor process and its circulation, capitalists make CMAs in the profit and loss account, and in the closing balance sheet that "now preposited [the capital] as of a greater or smaller magnitude than was originally the case" [10], as Marx later precisely worked out in his example.

THE ACCOUNTING POSSIBILITY OF THE LTFRP

The RCA reading also supports the TSSI's demonstration that Marx's "law of the tendential fall in the rate of profit" (LTFRP), elaborated in Volume 3 of *Capital* (1981, 317–38), is logically consistent. Marx argued that capitalists tended to adopt more productive, labor-saving technologies, which increased the technical composition of capital, which increased the organic composition of capital, the proportion of constant to variable capital, which assuming a constant or more slowly rising rate of exploitation, tended to cause the rate of profit to fall. The proportion of constant capital increased, Marx argued, because individual capitalists seek "relative surplus value." They seek to increase the rate of exploitation to get an excess rate of profit over the risk-adjusted general rate by advancing constant capital for means of production (particularly fixed capital) to increase labor productivity. However, as this investment and productivity increase becomes general, competition enforces the fall in the value of the products, causing the general rate of profit to fall (Marx 1981, 373–74).

Marx's LTFRP assumes that labor time determines value, and presumes a given total workforce and labor intensity, total wages and profits, continual investment in constant capital to increase labor productivity, and competition for capital and labor that tend to equalize rates of profit and the rate of exploitation over time. Marx hypothesized that the tendency for the rate of profit to fall, combined with capitalism's tendency to "overproduction," to produce "surplus capital," periodically overrides the "counteracting tendencies" of increasing rates of exploitation, scientific revolutions creating new commodities, markets, etc., causing crises that were self-correcting through "devaluations" of capital that would restore the rate of profit (1981, chapters 14 and 15).

Marx's law is not a prediction that the rate of profit will fall, but a prediction "of what would occur if there was no destruction of capital value or other 'counteracting influences' such as the tendency of the rate

of surplus-value to rise" (Kliman 2011, 25). In capitalist accounting, these "devaluations" are of two types. First, those that arise because the input price of constant capital falls, which using RCA automatically "devalues" the capital though CMAs, but as we have seen they merely "condition the fall in the profit rate, and . . . delay it" (Marx 1981, 356). Second, there are losses that arise from "surplus capital," from capitalists' tendency to overproduction, from write off, which "devalue" capital through "the competitive struggle in which the loss is divided very unevenly and in very different forms" (Marx 1981, 362).

Kliman (2007, 114) criticizes Okishio's (1961) theorem that "appears to prove that rising productivity cannot lead to a falling rate of profit . . . [because] it overlooks the price effect, or, more precisely spirits it away by valuing inputs and outputs simultaneously." Many commentators accept that Okishio's theorem, which argues that if real wages are constant an increase in productivity always increases the rate of profit, revealed a fundamental inconsistency in Marx's theory of value. However, Marx's RCA shows that an increase in the productivity of labor does not increase the amount of profit generated from the capital advanced to production, or the rate of profit, for that year. Moreover, capitalists would not "retroactively reduce the capital that was advanced at the start. . . . What's done is done" (Kliman 2007, 123). They would calculate CMAs to adjust the closing constant capital, and distinguish the sources of their "profits" for the year, as Marx did, which shows "it is only the rate of profit in subsequent years, not the *current year's* rate, which tends to rise as a result of the cheapening of means of production" (Kliman 2007, 123). The rate of profit subsequently rises, but the immediate cause of this increase is the fall in constant capital, which is the indirect result of the increase in labor productivity, not its direct result-the causal chain is increased labor productivity \rightarrow decreased constant capital \rightarrow increased rate of profit —which means, "Subsequent rising-rate-of-profit examples are irrelevant" (Kliman 2007, 134). On this basis, Kliman (1996, 1997; Kliman and Freeman 2000; Kliman, 2007), as we will see below, refutes Okishio's claim to have proved that increases in labor productivity can never decrease the rate of profit. However, exploring subsequent rising-rate-ofprofit examples is relevant to demonstrating the accounting possibility of Marx's LTFRP, to revealing the necessary conditions for an increase in productivity to lead to a "tendential" fall in the rate of profit.

Consider Marx's capitalist farmer examples. In the first case, where

production costlessly doubled, in year 3 the rate of profit = [£100/£40] x [£40/£60] x [£60/£100] = 100%, and in the second case, when wages fall to £20, the rate of profit = [£100/£20] x [£20/£80] x [£80/£100] = 100%. If the proportion of constant capital increased in the first case, or the rate of exploitation fell in the second, the rate of profit would fall. In the second case, the rate of exploitation is 500% [£100/£20]. If it tended to fall to back to the initial rate of 200% [£80/£40], profit would tend to fall from £100 to £80 (2 x £40), and the rate of profit would tend to fall from 100% [£100/£100] to 80% [£80/£100]. Combining the tendency for the proportion of constant capital to increase, with the tendency for the rate of exploitation to remain constant, illustrates the possibility of the LTFRP.

Suppose Marx's farmer in the first case is a representative individual who advances an additional £40 of constant capital to double output in year 2, expecting the price to remain at £2/qr and to earn a rate of profit of 150% (£240/£160), but that all farmers do the same, so total output doubles and the price falls.²⁶ The price falls to £1.20/qr at the end of year 2 because the additional constant capital is socially necessary and therefore the farmer can recover the £40 additional cost, and his revenue is £240 for 200 grs of corn ($\pounds 240/200$ grs = $\pounds 1.20/$ gr). The farmer's capital initially increases to £160 and (excluding the CMA) profit stays at £80, reducing the rate of profit to 50% (\pounds 80/ \pounds 160) in year 2.²⁷ In the assumed conditions, the rate of profit returns to 66.7% (£96/£144 = £80/£120) in the following year.²⁸ The composition of capital, however, has fallen from an organic composition of 50% (\pounds 40/ \pounds 80) to a value composition of 38% (\pounds 40/ \pounds 104).²⁹ Therefore, if through class struggle the rate of exploitation tended to fall back to 200% (from $240\% = \pounds 96/\pounds 40$), which was Marx's initial assumption in his example, profit would tend to fall to £90.66 (£45.33 x 2), and the rate of profit would tend to fall to 60.7% (£90.66/£149.33).³⁰ Table 4.19 summarizes the accounting.

Marx's (1981, 317–18) general illustration of the LTFRP in Volume 3 of *Capital*, which he intended to depict the "actual tendency of capitalist production," its history, shows the rate of exploitation and the amounts of wages and profit as constant over time, and an increasing proportion of constant capital in a growing total capital. The justification for assuming constant amounts for total wages and profit was that "If we take a given working population," assume a given working day, intensity of labor, and rate of exploitation, according to his theory of value, "then the total labour of these . . . workers always produces the same magnitude of value" (Marx

1981, 323). It follows that "as the mass of constant . . . capital . . . grows, so there is a fall in the ratio between this magnitude [profit plus wages] and the value of the constant capital" (Marx 1981, 323), and with a constant rate of exploitation the rate of profit falls.

Kliman (2007, 158, 163–66, Tables 9.4 and 9.5) gives a similar twoperiod example that contrasts the SSSI's calculation of an increased rate of profit when labor productivity costlessly doubles in period 2, with the TSSI's calculation of a fall, which is consistent with the temporal interpretation of Marx's LTFRP, but does not fully illustrate or explain Marx's accounting. Following Marx's RCA, Table 4.20 reproduces and extends Kliman's example to the end of year 3, revaluing the opening constant capital in year 3 at output prices (rounded down) from year 2, which demonstrates the possibility of Marx's LTFRP from a fall in the organic and value compositions of capital, given a constant rate of exploitation.³¹

Table 4.19 Accounting for a Falling Rate of Profit

Year	s/v		w/c	v/c		c/K		
1	80/40	x	40/80	x	80/120	=	66.7	
2 Expected	240/40	x	40/120	x	120/160	=	150.0	
2 Actual	80/40	x	40/120	x	120/160	=	50.0	
3	96/40	x	40/104	x	104/144	=	66.7	
Long run	90.66/45.33	х	45.33/104	х	104/149.33	=	60.7	

Source: Created by the author.

Department 1 produces the means of production and department 2 the means of consumption. Starting from given physical quantities and a given MELT (Kliman 2007, Table 9.1, 158), in period 1 the SSSI and the TSSI give the same result.³² Now "Imagine that labor-saving technological progress now takes place in both branches. In the next period [period 2], the same amount of output is produced, using the same amount of means of production, but each branch uses only half as much living labor as before," but the real wage rate, the rate of surplus value, and the MELT are the same (Kliman 2007, 164–65). The SSSI calculates a rise in the rate of profit for period 2 to 23%, whereas the TSSI calculates a fall to 10.5%.³³ The TSSI's rate of exploitation is constant in periods 1 and 2 (48/24 or 24/12). The fall in the rate of profit from 20% in period 1 to 10.5% in period 2 therefore results from the fall in the organic composition of capital from 0.111 (24/216) to 0.055 (12/216) not offset by the increase in turnover from 0.9 (216/240) to 0.947 (216/228). Kliman therefore rejects the SSSI's conclusion that increases in labor productivity could not cause the money rate of profit to fall "in relationship to the physicalist rate" (2007, 120). Marx's RCA supports the TSSI criticism of the SSSI's solution for period 2, which retroactively restates all inputs to output prices including wages, effectively adopting physical accounting, to produce its increased money and physical rate of profit in period 2 of 23%.

							s/(c + v)	$\pi/(c+v)$
	с	V	s	w	π	р	(%)	(%)
Period 1: SSSI a	& TSSI							
Department 1	192	8	16	216	40	240	8.0	20.00
Department 2	24	16	32	72	8	48	80.0	20.00
Total	216	24	48	288	48	288	20.0	20.00
Period 2: SSSI								
Department 1	113.05	1.82	10.18	125.05	26.44	141.42	8.9	23.00
Department 2	14.13	3.64	20.26	38.13	4.09	21.87	114.5	23.00
Total	127.19	5.47	30.53	163.19	30.53	163.19	23.0	23.00
Period 2: TSSI								
Department 1	192	4	8	204	20.63	216.63	4.1	10.50
Department 2	24	8	16	48	3.37	35.37	50.0	10.50
Total	216	12	24	252	24.00	252.00	10.5	10.50
Period 3: TSSI								
Department 1	113	4	8	125	20.20	137.20	6.80	17.27
Department 2	14	8	16	38	3.80	25.80	72.70	17.27
Total	127	12	24	163	24.00	163.00	17.27	17.27
			and a second	1	. du			

 Table 4.20 Extending Kliman's Example

Source: Created by the author based on Kliman's example (see Kliman 2007, 163, 166, Table 9.4, 9.5).

Period 3 extends the TSSI's period 2 results by revaluing constant capital using the new price at the end of period 2, which produces a fall in the rate of profit from 20% in period 1 to 17.27% in period 3.³⁴ Following the price change, the value composition increases in period 3 to 0.944 (12/127), and turnover reduces to 0.913 (127/139). However, they are, respectively, below and above the ratios in period 1 before labor productivity increased, whereas the rate of exploitation remains constant at 200% (48/24 = 24/12) and therefore over the three years the rate of profit falls.

TAUTOLOGIES OR EMPIRICAL HYPOTHESES?

Foley accepts that the NI "is a set of definitions rather than an empirical hypothesis" (2000, 28). In other words, it is a tautology (Fine, Lapavitsas and Saad-Filho 2004, 5), and so are the SSSI and the TSSI. The difference, we will see further in chapter 5, is that the TSSI is a logical tautology consistent with Marx's theory of value, which means that in conjunction with other assumptions (e.g., about accounting), it could generate hypotheses which it would be meaningful to test empirically.

By contrast, the NI's equations merely say, "LVA is by definition the sum of aggregate variable capital . . . and aggregate surplus value . . . and . . . MVA is by definition the sum of the aggregate wages of productive

labor . . . and aggregate profits" (Mohun 1996, 41). Following Gillman (1957) and Shaikh (1978), Foley suggests making the NI operational "in terms of accounting data from capitalist firms," arguing that the NI's categories "have measurable correlatives," and therefore we can "test hypotheses in the labor theory of value framework by looking at the actual accounts of capitalist firms" (1982, 37, 38, 46). Foley asserts that accounting categories do not necessarily "*directly* correspond to the relevant labor theory of value categories" (he suggested the division of surplus value and the identification of productive labor), but he does not probe into these "subtle issues" (1982, 38, 46).

Economists generally rest content with a circular definition of profit as "revenues minus costs" (e.g., Fine 1977), or the equally unhelpful tautology from the NI that profit = money value-added (i.e., profit + wages)—wages. Shaikh and Tonak (1994) criticize the NI for this omission, but they do not rectify it. Whereas Marx argued that price and profits were monetary forms of value and surplus value, the NI "abandons this altogether by defining surplus value to be a form of profit," which means, "The whole relation between surplus value and profit is turned on its head" (Shaikh and Tonak 1994, 179). In other words, whereas Marx, we will see, defines individual profits as forms of surplus value, the NI in effect defines individual surplus values as fragments of total "profits," but without defining "profits." Foley claims that the definitional advance of the NI was to "regard as the key Marxian insight, the quantitative equivalence between capitalist gross profit and unpaid labor" (2000, 22). However, as neither Foley nor anyone else has theorized "capitalist gross profit," explained the principles capitalists use to measure it, how do we know that individually, or in total, it equals surplus value? We cannot observe surplus value or the counterfactual value of commodities that would exist in the absence of total social capital and competition. How, therefore, do we know that the sum of profits in Marx's illustration (see Table 4.1) equals £110 because it is the sum of surplus values, or that the sum of the prices of production equals £422 because this is the sum of commodity values?

There is, as Kliman (2007, 142) says, "little explanation or justification of Marx's claim that the total amount of profit is unchanged" in chapter 9 of Volume 3. However, he had no need to according to the TSSI because, as Kliman points out, "If profit is produced *before* outputs go to market, then competition . . . cannot alter the total amount of profit that already

exists" (2007, 142). Chapter 3 showed that this was Marx's developed "production-centered" view.³⁵ The critical question, therefore, only partially answered there, is the evidence that profit is produced as a form of surplus value before realization, to justify the claim that the sum of individual realized profits equals total surplus value, which following chapters address in some detail.

Fully grasping the idea that value and price were determined interdependently as the monetary expression of socially necessary labor time was the real advance of the TSSI, the next chapter argues, because this concept is the foundation of Marx's theory of accounting. It shows that the TSSI's correct accounting for price changes refutes Bortkiewicz's charge that Marx's illustration of the value-price transformation is inconsistent. However, to address Kliman and McGlone's (1988, 57) criticism of the prevalent view of *Capital* "as a narrowly 'economic' work," it argues, we must understand Marx's explanation of the accounting that produces the transformation in reality. Kliman and McGlone (1988, 58, 69) persuasively argue that Marx gave a "dialectical" explanation of "how value becomes prices of production" in the context of the capitalist system as a whole and its history, but they accept that their demonstration "does constitute a response to the criticism that Marx 'failed' to account for the transformation of input prices' consistently. The following chapter argues that Marx had no pressing need to respond to this apparent "problem" as he had dissolved it by using his theory of value to explain the practical accounting transformation of market prices into values. In short, while the TSSI ably defends Marx's illustration, its defense is not Marx's explanation of how the transformation occurs in reality.

CONCLUDING COMMENTS

Only the TSSI provides the framework for penetrating the complexities of Marx's RCA and accounting for his LTFRP. However, its demonstration of the consistency of his value-price transformation starts from given value data.

The next chapter extends the TSSI by arguing that Marx used his theory —that value was the monetary expression of socially necessary labor time, but "socially necessary" meant more than average technical and social efficiency—to explain the accountants calculation of the cost of production using the principles of "costs attach" and "standard" or "target" costing, that produced his data. This explanation, it concludes, gave Marx his empirical accounting solution to the "transformation problem," his explanation of how we can "glimpse" that socially necessary labor time determined the value of commodities exchanged as "products of capitals," and is evidence that profit as a form of surplus value is produced before it is realized.

Its basis was Marx's conclusion that understanding the commodity from the perspective of total social capital was the key to explaining the transformation, to resolving the "whole difficulty," which "arises from the fact that commodities are not exchanged simply as *commodities*, but as *products of capitals*" (1998, 174), "many capitals" in competition. Exchange occurred, Marx argued, within total social capital at "prices of production" based on "cost price," the *capital* advanced to produce commodities, but in the calculations that produced these prices we could see that "socially necessary labour time" still determined value.

NOTES

1. Arthur (2005, unpaginated) suggests that Engels overstated the importance of these comments, in "which something like the content of the idea of a stage of simple commodity production was mentioned," but Marx clearly referred to all precapitalist societies.

2. The NI accepts the standard interpretation that there are two sets of accounts of constant capital to reconcile, one in socially necessary labor time, and the other in money (e.g., Moseley 1993; Loranger 2004).

3. The socially necessary labor time (variable capital) produced per hour to reproduce the worker.

4. Foley (2000, 7) calls this the "monetary expression of labor time" (MELT), following Ramos-Martinez and Rodriguez-Herrera (1996).

5. Consider two firms, one of which produces the constant capital of the other. The combined (general) rate of profit of the two firms r = [S1 + S2]/[C1 + V1 + C2 + V2], where S = surplus value, C = constant capital, and V = variable capital. Therefore, C1 = [C2 + V2][1 + r] = C2 + C2r + V2 + V2r. Thus, r = r[C2 + C2r + V2 + V2r + V1 + C2 + V2]/[C2 + C2r + V2 + V2r + V1 + C2 + V2]/[C2 + C2r + V2 + V2r + V1 + C2 + V2].

6. See also Moseley (1993) and Wolff, Roberts and Callari (1984).

7. The other two identities are: P/[wL + Cm] = S/[wL + Cm]m, and TR = [L + CLT]/m.

8. Freeman argues that when prices change the value of constant capital is an average of stocks produced at earlier and new prices, because this is the "only coherent way to resolve this contradiction" of aggregating stocks at different prices (1996, 256), but RCA accounts for stocks at current replacement prices, which removes the need for any "cost flow assumption." Alternatively, he suggests, "My capital is everything I need [for example] to sell sausages, its size is their current worth, and my profit is the rate it grows. That is how my banker sees it and that, under capitalism, is how it is" (Freeman 1996, 251), which implies that "current worth" is the selling prices of the assets, because this is how bankers usually value loan collateral.

9. Marx's "farmer" represents society (capital in general) that produces only corn, measured in quarters (qrs) of a hundredweight.

10. Assuming wages in advance is unrealistic, but it simplifies the accounting by avoiding the

need to accumulate the value of labor in inventory and accrue a liability for wages during the year. Similarly, the assumption that the farmer buys and uses the seed and other constant capital on day 1 simplifies the accounting.

11. The equivalent surplus of corn in year 1 = 100 (production)-20 (seed corn)-20 (other constant capital)-20 (labor) = 40, and in year 2 = 200-20-20=140.

12. Marx distinguished "surplus" from "profit," as we will see.

13. Tables 4.2–4.18 are created by the author based on Marx's example (see Marx 1991, 266–74).

14. Marx (1991, 269) shows "80 qrs = £40," which is incorrect. See Marx (1972, 343), or the marxists.org/archive website (https://www.marxists.org/archive/marx/works/1863/theories-surplus-value/ch22.htm, 1025).

15. The value of the 200 qrs of corn produced in year 2 remains £200: "Since the 200 qrs are the product of the same amount of labour [as the 100 qrs in year 1], then once again they are likewise = only £200" (Marx 1991, 267).

16. It makes no difference if the farmer retains 20 qrs for seed corn.

17. The reverse accounting applies to a "rise in prices of the ingredients [of constant capital] [that] has the opposite effect of a fall in prices . . . If production is to be continued on the old scale, then a greater outlay of capital is necessary. Therefore, apart from a fall in the rate of profit, extra capital must be employed or a part of the revenue must be converted into capital, although it will not have the effect of extra capital" (Marx 1991, 271). "If the value of cotton, coal, etc. rises . . . additional money capital is then necessary, i.e., money capital is tied up. Conversely, if these prices fall, money capital is set free" (Marx 1978, 187).

18. "Other case" means the hypothetical new farmer who starts at the end of year 2, whereas the "former case" means the farmer who started in year 1, called below the 'first case'; "latter case" means the farmer who cut wages by £20, called below the 'second case.'

19. Marx avoided the need to analyze three years by introducing his imaginary new farmer who advances only £100 at the new prices.

20. Marx made clear in Volume 3 of *Capital*, "If wages fall in consequence of a depreciation in the value of labor-power . . . a portion of the capital hitherto invested wages is released. Variable capital is set free. In the case of new investments of capital, this has simply the effect of its operating with a higher rate of surplus-value. . . . But in the case of already invested capital, not only does the rate of surplus-value rise but a portion of the capital already invested in wages is also released" (1998, 116).

21. Maldonado-Filho (1994, 12) discusses Marx's "release" and "tie up" of capital from the TSSI's perspective. The accounting analysis supports his conclusion that the "neo-Ricardian criticisms of Marx's theory of value and its conclusion that 'no value magnitude plays any significant role in the determination of the rate of profit (or prices of production)' (Steedman 1977, 65) [is] . . . unsound." Maldonado-Filho (1994, 9) concludes that changes in input prices of constant capital "changes the rate of profit since r1 = S/[(C - d)+V]," where r1 = the rate of profit in the first period of production when prices change, S = surplus value, C = constant capital, d = the change in constant capital, and V = variable capital. However, we saw that the rate of profit changed in the period following the price change.

22. Tie-up and release of capital applies also to the appreciation or depreciation of variable capital, the rise or fall in the prices of worker's means of subsistence, but these do not give rise to a CMA (see: Marx, 1998, 116–18).

23. Chapter 5 argues that Marx's theory of how the labor process preserves and transfers the value of constant capital explains the accountants' principle that, in calculating the cost of production, certain "costs attach," and chapter 7 that it underlies his distinction between "productive" and "unproductive" labor.

24. Mohun and Veneziani (2007, 144) presume the correctness of the RCI when they argue that, according to the TSSI, in effect, "an inventory revaluation because of price changes . . . [s]hould be included as part of the value created by living labour," which implies that the TSSI argues that

"value is dissociated from labour performed." This is not the case, as we have seen.

25. As the labor process must preserve value by producing products, it is therefore accountable for input use values (e.g., waste) as well as the cost of finished commodities.

26. Expected sales are 200 qrs x $\pounds 2 = \pounds 400$. Capital and expenses are $\pounds 160$ ($\pounds 40$ seed corn + $\pounds 80$ other constant capital + $\pounds 40$ wages) and expected profit is $\pounds 240$ ($\pounds 400 - \pounds 160$).

27. Okishio's theorem says that the rate of profit cannot fall unless real wages rise (Fine and Saad-Filho 2004, 121), but because the price of corn does not fall until the end of year 2, here they are constant at 20 qrs (\pounds 40/ \pounds 2) in years 1 and 2.

28. The farmer's expenses in year 2 are £160 (£40 + £80 + £40), leaving a profit of £80 (£240 – £160). In year 3, seed corn costs £24 (20 qrs x £1.20). The CMA (£40 – £24 = £16) at the end of year 2 is Dr Capital £16, Cr P&L £16. Expenses in year 3 are £144 (£24 + £80 + £40). Profit in year 3 is (£240 – £144) = £96 on a reduced capital of £144 (£160—£16), or 66.7%. Real wages rise in year 3 to £40/£1.20 = 33.33 qrs but the rate of profit increases.

29. Constant capital in year $3 = \pounds 24$ seed corn + $\pounds 80$ other constant capital = $\pounds 104$. In year 3, the organic composition of capital, "restricted to changes in production without any references to value change in circulation," would be 33.33% ($\pounds 40/\pounds 120$), whereas the "formation of the VCC [value composition of capital of $38\% = \pounds 40/\pounds 104$] is associated with the counteracting tendency" (Fine and Saad-Filho 2004, 113, 110).

30. If x = the necessary fall in profit/increase wages, [96-x]/[40 + x] = 2, and x = 5.33. Long-run profit = £96 - £5.33 = £90.66; capital = £144 + £5.33 = £149.33; wages = £40 + £5.33 = £45.33.

31. In Table 4.20, c = constant capital; v = variable capital; s = surplus value; w = product value; π = profit; p = prices of production; s/(c + v) = the value rate of return; $\pi/(c + v)$ = the profit rate of return.

32. Given c, v and s in period 1, we first calculate the general rate of profit = 48/(216 + 24) = 20%, which gives us prices of production, for example, for department 1 (192 + 8) x 1.2 = 240, and its profit of 40, etc. The SSSI follows the same procedure.

33. Whereas the TSSI starts period 2 using the opening prices, the SSSI starts from the closing prices of period 2 (Kliman 2007, 165), which is the starting point of the TSSI calculations for period 3.

34. The calculations follow the same procedure as years 1 and 2. As Marx did, I ignore the impact of the CMA (216-127 = 89) on the profits and rate of profit reported in period 2.

35. Kliman (2007, 142) highlights Marx's comments in chapter 23 of Volume 3: "The proportion in which the profit is divided, and the different legal titles by which this division is sanctioned, are based on the assumption that profit is already in existence Profit is produced before its division is undertaken, and before there can be any thought of it" (Marx 1998, 379). As Kliman (2007, 142) says, "The temporalist character of Marx's reasoning is striking."

Chapter 5

Marx's Accounting Solution to the "Transformation Problem"

To prove that the total profits of individual capitalists, of many capitals in competition where prices and values diverged, must equal total surplus value, Marx had to show that profit "is only an illusory manifestation of surplus value" (Marx and Engels 1988, 21), that "in its essence profit consists of surplus value" (Marx 1991, 97). To substantiate his claim that the transformation process apportions total surplus value to individual capitalists in the form of profit according to the size of their capital, he needed evidence that the production of profit occurs before realization, because competition could then redistribute but not change the total amount of profit, which must equal total surplus value (Kliman 2007, 142). For evidence, Marx pointed to capitalists' measurements and calculations, to their accounts. In the *Economic Manuscripts of 1861–63*, he argued,

Just as the surplus value of the individual capital in each particular sphere of production is the measure of the absolute magnitude of the profit—in so far as this is merely a converted form of surplus value—so is the total surplus value produced by the total capital, hence of whole of the class of capitalists, the absolute measure of the total profit of the total capital. (Marx 1991, 98–99)

An individual capitalist's surplus value is "the *measure* of the absolute magnitude" of individual profits, that are its "converted form," Marx says, because individual capitalists *measure* profit as a "converted form" of total surplus value, that is, *calculate* their profit using principles explained by his theory of value, and therefore they sum to total surplus value.¹ Total surplus value is "the absolute *measure* of the total profit," that is, it provides the foundation of the capitalist's calculations of required profit, based on the general rate of profit, which when applied to the aggregate social capital sets their aggregate limit. Therefore, he continued, the distribution of total surplus value "only represents the result of the *particular mode of calculation*," forced on capitalists because of "*competition of capitals* with each other" (Marx 1991, 99–100, first emphasis added). This mode of calculation tended to produce equal rates

of profit because "individual capitalists . . . *calculate* the same . . . profit . . . in proportion to . . . production costs, *so that the division of the total surplus value as it is present in empirical profit can take place*" (Marx 1991, 103, emphasis added). Accountable and under pressure from competition, individual capitalists calculate their results by keeping accounts of the circulation of capital, that measure the accumulation of the cost of production and the realization of profit, which they inchoately measure as "converted forms" of value and surplus value. The outcome, Marx claimed, is that on average each capitalist's profit is a share of total surplus value proportional to the capital each advances.

Marx highlighted the importance of measurement and calculation in *Grundrisse*, where he first formulated the idea that competition distributed surplus value (Meek 1977, 99–101) and proposed the solution that capitalists transformed surplus value into profit by calculations. As he put it, "The transformation of surplus value into the form of profit, *this method* by which capital calculates surplus value, is necessary from the standpoint of capital, regardless of how much it rests on an illusion about the nature of surplus value, or rather veils this nature" (Marx 1973, 767, emphasis added). Marx did not say explicitly in *Grundrisse* whether he thought the redistribution of surplus value was consistent with his theory of value. In early August 1862, shortly before he ran into his problem with depreciation accounting, Marx wrote to Engels giving him a long example of the transformation of surplus values into profits. Again, "there is no reference whatever in this letter to the question of whether, after the transformation, one can say that the 'law of value' still remains operative" (Meek 1977, 102).

However, in the later parts of the *Economic Manuscript of 1861–63*, written after the chapter on "Capital and Profit," where Marx was confident he could explain capitalist accounts, including depreciation accounting, he brought out for the first time the apparent complication that capitalists acquire constant capital at cost prices including a profit, not at their values. Now, for the first time, Marx makes what Meek (1977, 102) calls the "bald statement," that "this important deviation of cost-prices from values brought about by capitalist production does not alter the fact that cost-prices continue to be determined by values" (Marx 1972, 168). If Marx had recently worked out that he could use his theory of value to explain capitalist accounting we could read this statement, not as "bald," but confident. It is consistent with Marx now believing that capitalists

accounted for costs and revenues using an inchoate theory of value, calculating their profits as though they were surplus values.

Evidence supporting this interpretation is that in Volume 3 of *Capital* Marx explicitly built on his analysis of capital in general in Volumes 1 and 2 to deal with total social capital and competition. Immediately after presenting his table in chapter 9 of Volume 3, Marx commented that the average rates of profit shown for each sphere of production must "be deduced out of the values of the commodities" (1998, 156), that is, using his analysis of capital in general from Volumes 1 and 2. Marx explained in Volume 1 that he deferred competition to Volume 3 because the reader must first "have a clear conception of the inner nature of capital," the "laws immanent in capitalist production," that then "assert themselves as coercive laws of competition" (1996, 321). To understand capitalist competition it was, in other words, first necessary to understand the accounting rules of the game for capital in general, for the representative individual capitalist, capitalists' GAAP. Marx therefore dealt with capital in general, its circuit of capital, in Volumes 1 and 2, putting aside the complexities of the phenomenal forms of profit, interest and rent that arose in competition. There the whole—"the aggregate capitalist"—was the sum of its parts: "The aggregate capital appears as the capital stock of all individual capitalists combined" (Marx 1997, 432).

In *Grundrisse*, Marx claimed but had not demonstrated, "The fundamental law in competition . . . is that . . . value and surplus value . . . is determined not by the labour contained in it, or by the labour time in which it is produced, but rather by the labour time in which it can be produced, or, the labour time necessary for production" (1973, 657). Now, however, he knew he could use the concept of "socially necessary" labor time to explain the "general form of surplus value" he found in accounts and how the production of surplus value was its simultaneous distribution to capitalists (and then to landlords, shareholders and creditors) as profits. Marx explained his decision to start with capital in general in a letter to Engels discussing a critical review of Volume 1 of *Capital*:

Curiously, the fellow has not detected the . . . fundamentally new element . . . in the book . . . that in contrast to *all* previous political economy, which *from the outset* treated the particular fragments of surplus value with their fixed forms of rent, profit and interest as already given, I begin by dealing with the general form of surplus value, in which all these elements are undifferentiated, in solution as it were. (Marx and Engels 1987, 514)

This is consistent with Marx knowing when he wrote Volumes 1 and 2

that the basis of capitalist accounting for profit under competition—the principles underlying the accounts of individual capitalists that he saw, discussed with Engels, and used—was accounting for the monetary expression of socially necessary labor time. This was the "general form of surplus value," the theoretical "solution" into which Marx claimed he had dissolved the "phenomenal forms." He claimed, what follows argues, that he could explain capitalists' calculation of profit and show how under competition this distributed surplus value evenly across all capitals, which showed how his theory of value operated, how it "asserts itself."

In one sense, Moseley (2000a, 287) is right that the "assumption throughout Volume 3, which is repeated many times, is that the total amount of surplus-value is determined prior to its division into individual parts." Marx assumed, as he put it in the *Economic Manuscripts*, "What is available for them to divide among themselves is only determined by the absolute quantity of the total profit or surplus value" (1991, 99), but capitalists do not first produce the total surplus value and then redistribute it as profit. Their production of surplus value is simultaneously its distribution as profit. Capitalist production and competition—and the calculations they stimulate—simultaneously determine individual profits and distribute total surplus value:

To show that Marx's conception of prices of production was not vague or senseless, we must understand his explanation of the relationship between values and prices for the individual capitalist. That is, his explanation of how "the laws, immanent in capitalist production . . . assert themselves as coercive laws of competition, and are brought home to the mind and consciousness of the individual capitalist as the directing motive of his operations"; how "the laws of the production of value are . . . realised for the individual producer" (Marx 1996, 321, 329). His explanation was that competition and calculations realize these laws, simultaneously produce and distribute surplus value as profit, because individual capitalists keep their accounts as though socially necessary labor time is money. This tightening of the capitalist aphorism that "time is money"—defining "time" as "socially necessary labor time"—follows from Marx's definition

A general rate of profit . . . presupposes that the rates of profit in every individual sphere of production taken by itself have previously been reduced to just as many average rates. These particular rates of profit = s/C in every sphere of production, and must . . . be deduced out of the values of commodities. Without such a deduction the general rate of profit (and consequently the price of production of commodities) remains a vague and senseless conception. (Marx 1998, 156)

of the "value of money" as the socially necessary time required to produce one monetary unit (\$, £, etc.) of value, the MELT.

THE COST OF PRODUCTION

This key principle first appears in chapter 7 of Volume 1 of *Capital* when Marx (1996, 196–97) turns to "examine production as a creation of value," the valorization process, where his "first step is to calculate the quantity of labour realised" in production. This is the lesson from the first example in which the cost of materials and the wear and tear of a spindle used in yarn spinning "amounts to twelve shillings or the value of two day's work" (Marx 1996, 199), assuming the cost of a day's labor power is 6s:

We know that the value of each commodity is determined by the quantity of labour expended on and materialised in it, by the working-time necessary, under given social conditions, for its production. This rule also holds good in the case of the product that accrued to our capitalist, as the result of the labour-process carried on for him. Assuming this product to be 10lbs. of yarn, our first step is to calculate the quantity of labour realised in it. . . . For spinning the yarn, raw material is required; suppose in this case 10lbs. of cotton. We have no need at present to investigate the value of this cotton, for our capitalist has, we will assume, bought it at its full value, say of ten shillings. In this price the labour required for the production of the cotton is already expressed in terms of the average labour of society. We will further assume that the wear and tear of the spindle, which, for our present purpose, may represent all other instruments of labour employed, amounts to the value of 2s. If, then, twenty-four hours' labour, or two working-days, are required to produce the quantity of gold represented by twelve shillings, we have here, to begin with, two days' labour already incorporated in the yarn. (Marx 1996, 197)

To measure the labor contained in a commodity, Marx reckoned all the inputs to production in monetary expressions (costs) of their socially necessary labor times, thereby explaining the accountants' principle that "costs attach." This is the idea (also called "absorption costing") that we should measure the cost of production by summing the costs of production workers, materials and production overheads.² Wells (1978, 106), an accounting academic, noted that the "costs attach" principle "bears a striking resemblance to that enunciated earlier by classical economists," particularly by Marx, in whose idea of socially necessary labor, he thought, we find its "ultimate expression." Accountants do not have a theory that explains the "power of cohesion" (Paton and Littleton 1940, 13) of the costs of production. However, if we can operationalize it, Marx's "monetary expression of socially necessary labor time" does because it gives the capitalist something "cardinally measurable [that] can be added or subtracted to one another, not merely ranked" (Elson 1979, 137). We can add the costs of production, Marx argues, because

expressing socially necessary time in money reduces heterogeneous labor to a common unit of measurement:

The labour required for the production of the cotton, the raw material of the yarn, is part of the labour necessary to produce the yarn, and is therefore contained in the yarn. The same applies to the labour embodied in the spindle, without whose wear and tear the cotton could not be spun. Hence, in determining the value of the yarn, or the labour-time required for its production, all the special processes carried on at various times and in different places, which were necessary, first to produce the cotton and the wasted portion of the spindle, and then with the cotton and spindle to spin the yarn, may together be looked on as different and successive phases of one and the same process. . . . Here, on the contrary, where we consider the labour of the spinner only so far as it is value-creating, *i.e.*, a source of value, his labour differs in no respect from the labour of the man who bores cannon, or (what here more nearly concerns us), from the labour of the cotton-planter and spindle-maker incorporated in the means of production. It is solely by reason of this identity, that cotton planting, spindle making and spinning, are capable of forming the component parts differing only quantitatively from each other, of one whole, namely, the value of the yarn. Here, we have nothing more to do with the quality, the nature and the specific character of the labour, but merely with its quantity. And this simply requires to be calculated. (Marx 1996, 197–99, emphasis added)

Marx (1985, 117) stressed this feature of his theory when he gave it its first public outing in *Value, Price and Profit* in 1865. To know whether such things as wages were "high" or "low," he said, we need a theory comparable to the theory of temperature that revealed their natural limits. In Marx's theory, costs "attach" if we can reckon all the necessary costs of production—those that produce use values for sale—as the socially necessary labor time "Expressed in gold" (Marx 1996, 204):

It is not money that renders commodities commensurable. Just the contrary. It is because all commodities, as values, are realised human labour, and therefore commensurable, that their values can be measured by one and the same special commodity, and the latter be converted into the common measure of their values, *i.e.*, into money. Money as a measure of value, is the phenomenal form that must of necessity be assumed by that measure of value which is immanent in commodities, labour-time. (Marx 1996, 104)

Throughout his examples, Marx works from monetary amounts in accounts to derive the equivalent socially necessary labor time. In his example, 10 lbs of cotton cost 10s and the accountant calculates that the wear and tear of the spindle cost 2s which, given the money wage of 6s for a 12-hour day, "we have here . . . two day's labour already incorporated in yarn" (Marx 1996, 197). These labor times together with the labor hours of spinning give the cost or monetary value added by living labor or monetary expression of the labor time attaching to the yarn. Just like accountants, for Marx, "viewed as a *value-creating process*, the . . . labour process presents itself under its quantitative aspect alone," and so the cost of labor power, materials and wear and tear only count as "so many hours

or days" useful labor, or so much money capital (1996, 206). As he said, and capitalist accountants inchoately agree, it is only because all valuecreating labor is equal that production costs attach, "that cotton planting, spindle making and spinning, are capable of forming the component parts, differing only quantitatively from each other, of one whole, namely, the value of the yarn" (Marx 1996, 199).³

Foley (2000, 20, emphasis added) argues that Marx's breakthrough was to "translate flows of money in real world capitalist accounts into flows of labor-time and vice versa." It is certainly true that "Marx's theory implies the existence of a quantitative equivalence in any particular period between the monetary unit and social labor time," but it is potentially misleading to add, "Marx constantly uses this conception to move back and forth between money and labor accounts" (Foley 2000, 7). In Volumes 1 and 2, Marx worked in monetized labor-time accounts, that is, with accounts of the circulation of capital measured as the monetary expression of socially necessary labor times. He evidently did not operate with two accounting systems; one in labor time and the other in market prices (cf. Bailey 1978, 12; Desai 2002, 61), nor are Marx's "specific examples . . . always couched in money terms, never in terms of hours of labour-time" (Elson 1979, 139). Elson sees "pressure on commodity producers to represent labour-time expended in production in *money terms*, to account in money terms for every movement" (1979, 170, emphasis added). Mosley (2000a, 289) stresses, "Marx's key concept of capital is defined in terms of money, not in terms of labor time." These comments are potentially misleading because according to Marx capitalists do not primarily account for flows of "money," that is, cash, but for flows of capital, money value that circulates as commodities. Marx "holds that value has two measures, money and labor time" that are interdependent (Kliman 2007, 24). "Money as a measure of value is a necessary form of appearance of the measure of value which is immanent in commodities, namely labour-time" (Marx 1971, 188), so although he "generally measures commodities values in terms of money, [and] he sometimes measures them in labor-time, and occasionally compares the two" (Kliman 2007, 24), they remain expressions of each other.

Marx did not translate flows of money in capitalist accounts into flows of labor time and vice versa, but in the accounts he studied he found labor time already translated into money value, into capital, which he explained. His argument, in short, was that we know capitalists produce profit as a form surplus value because they account for all capital, variable capital and constant capital, using principles and practices consistent with value being the monetary expression of socially necessary labor time. In Volume 3, he used this approach to analyze "cost price" and its relationship to value, and the effect of turnover on the rate of profit, which led to his discovery of "target cost," his and the accountant's solution to the "transformation problem."

MARX'S ACCOUNTING SOLUTION

Marx said the big change in Volume 3 was that whereas "In Books I and II we dealt only with the value of commodities," "the cost price has now been singled out as a part of this value, and . . . the price of production of commodities has been developed as its converted form" (1998, 162). If cost price (cost of production) is "part of value" and prices of production are "converted" values, profit is also a "converted value," a share of total surplus value. In *Grundrisse*, Marx defined profit as "the excess over the advances made by capital"; "the excess of the price of the product over the price of the production costs" (1987, 144), without spelling out what "production costs" are exactly. In *Capital* by contrast, while an individual capitalist's "cost prices are specific [to his sphere of production]" (Marx 1981, 259), how capitalists account for the "cost of production" is not specific to any particular capitalist. All capitalists account for "socially necessary costs." As he put it in Volume 1, "The real value of a commodity is . . . not its individual value but its social value; that is to say, the real value is not measured by the labour time that the article in each individual case cost the producer, but by the labour time socially required for its production" (Marx 1996, 322). In Volumes 1 and 2 of Capital, Marx did not "propose any particular method for the measurement of labor time" (Foley 2000, 17), defining it simply as the time "required to produce an article under normal conditions of production, and with the average degree of skill and intensity prevalent at the time" (Marx 1996, 49). However, in Volume 3 Marx developed the idea in *Grundrisse* that under competition total social capital imposed an overriding, specifically capitalist definition of "socially necessary" to mean what accountants call "standard cost" or "target cost," the cost necessary to give the capitalist the "required return" (Drury 2000, 891).

As capitalism develops, Marx argued in Volume 3, its calculations become more sophisticated. Rather than the general rate of profit simply

emerging through competition for capital, capitalists calculate the rate of profit they require in advance, building in "compensating factors":

As soon as capitalist production has reached a certain level of development, the equalisation between the various rates of profit in individual spheres which produces the general rate of profit does not just take place through the interplay of attraction and repulsion in which market prices attract or repel capital. Once average prices and the market prices corresponding to them have been established for a certain length of time, the various individual capitalists become *conscious* that *certain differences* are balanced out in this equalisation, and so take these into account in their calculations among themselves. These differences are actively present in the capitalist's view of things and are taken into account by them as grounds for compensation. (Marx 1981, 311–12)

For example, "Experience shows . . . that if one branch of industry, e.g. cotton, yields extraordinarily high profits at one time, it may bring in very low profits at another, or even run at a loss, so that in a particular cycle of years the average is more or less the same as in other branches" (Marx 1981, 311). "Capital soon learns to reckon with this experience" (Marx 1981, 311), individual capitalists quickly adjust their required rates of profit to reflect the factors that experience shows influences their average returns, particularly for risk:

This idea . . . that each particular capital should be viewed simply as a fragment of the total capital, and each capitalist in fact as a shareholder in the whole social enterprise, partaking in the overall profit in proportion to the size of the capital . . . is the basis for the capitalist's calculations, for example . . . capital investments that are exposed to greater risk, as in shipping . . . receive compensation through increased prices. . . . In practice . . . any circumstance that makes one capital investment less profitable than another and another one more so . . . is invariably taken into account as a valid basis for compensation, without there being any need for the constant repetition of the activities of competition itself in order to demonstrate the justification for including such motives in the capitalist's calculations. (Marx 1981, 312)

Accounting and finance textbooks agree, "the required rate of return . . . which is the minimum acceptable rate of return on an investment . . . is the return that the organisation could expect to receive elsewhere for an investment of comparable risk" (Horngren et al. 1999, 418). Likewise, Marx's general rate of profit is not merely the result of competition, but becomes "an actual presupposition of the capitalist mode of production" (1981, 275), sets the calculative framework within which production and competition takes place.

Today the general rate of profit is the "required" rate of return on capital, and the "cost of production" is not simply expenditures, specific costs, but the accountants' "standard" or "target" costs, predetermined maximum costs of production (see, e.g., Drury 2000, 671). Most, an accounting academic, was right that Marx's "concept of 'social labour-time'... can

be seen to resemble the 'standard time' of the cost accountant. . . . The 'standard' as Marx saw it, was what we might term the 'actual average' for the most recent period" (Most 1963, 175). Accountants typically build up a standard cost from detailed study of the necessary technical and labor inputs, design and "value engineering" studies, observation based on trial runs, and work study. The majority of firms set standards that are "difficult" but "achievable," or base them on an average of past performance (Drury 2000, 680). However, as for firms to survive their historical averages must have equaled the required rate of profit, these averages are also "difficult." Target costing takes standard costing to its logical conclusion, that the commodity markets and capital market determine what "socially necessary labor" is because its "cardinal rule," "do not launch products that cannot be manufactured at their target cost," applies equally to an existing product, which "is scrapped" if this ceases to be the case (Cooper and Slagmulder 1999, 180).⁴

Marx concluded in *Grundrisse* that under competition the law of value apparently, "it seems," worked in reverse: value did not determine price, price determined value:

The individual capital is in reality only placed within the conditions of capital as such, although it seems as if the original law were overturned. *Necessary* labour time as determined by the movement of capital itself; but only in this way is it posited . . .[;] the positing of a general rate of profit. As a consequence of the market price, capitals then redistribute themselves among different branches. Reduction of production costs etc. In short, here all determinants appear in a position, which is the *inverse* of their position in capital in general. There price determined by labour, here labour determined by prices etc. etc. (Marx 1973, 657)

In Volume 3, Marx expanded on the idea that under competition it appeared that "labour [was] determined by prices etc. etc," that "*Necessary* labour time [w]as determined by the movement of capital itself." This appearance is a false semblance, the inverse of the real process of determining value in production. However, to understand this real process, to reconcile appearance and reality, it was necessary to understand that the capitalist controlled the valorization process and engineered the costs down to, or below, the "socially necessary" level, to target cost, to "deliver the average rate of profit," or if not exit the field:

In capitalist production it is not simply a matter of extracting, in return for the mass of value thrown into circulation in the commodity form, an equal mass in a different form—whether money or another commodity—but rather of extracting for the capital advanced in production the same surplus-value or profit as any other capital of the same size, or a profit proportionate to its size, no matter in what branch of production it may be applied. The problem therefore is to sell commodities, and this is a minimum requirement, at prices which deliver the average rate of

profit, i.e. at prices of production. (Marx 1981, 297)

The individual capitalist must produce at a cost price and sell at a market price to deliver at least the average rate of profit, that is, must produce at the standard or target cost. Underlying appearance was the reality that these costs measured the monetary expression of "socially necessary" labor time as total social capital defined this. We saw that Marx warned readers that capitalists purchased constant capital at prices of production, "to bear in mind too that if the cost price of a commodity is equated with the value of the means of production consumed in producing it, it is always possible to go wrong" (1981, 265). However, he concluded, "even if a commodity's cost price may diverge from the value of the means of production consumed in it, this error in the past is a matter of indifference to the capitalist" (Marx 1981, 265).

Capitalists could be indifferent to past "errors" if the meaning of "socially necessary" was target cost. "The cost price of the commodity is a given precondition," but a transformed social precondition: "As a general rule, the principle that the cost price of a commodity is less that its [total] value has been transformed in practice into the principle that its cost price is less than its price of production" (Marx 1981, 265). Behind the transformed principle was total social capital: "For the total social capital, where price of production equals value, this assertion is identical to the earlier one that the cost price is less than value" (Marx 1981, 265). Therefore, even though this principle "has a different meaning for the particular spheres of production" (Marx 1981, 265), because for them cost price did not now necessarily equal value, this was the principle they followed.

Marx's transformed rate of profit explains the accounting concept of target cost. Given the market price of the commodity (S(t)) and the required rate of profit (r), target cost is the maximum cost of production (C(t)). The appendix to chapter 3 decomposed the rate of profit into sales margin and turnover of capital:

$$r = \frac{\frac{qS(t)}{[1+q]}}{C(t)[Tf + Tp + Tr] + FC(t)}$$

The rate of profit (r) equals the profit mark-up (q/(1 + q)) multiplied by the sales for period t, divided by the constant capital multiplied by the sum of its turnover times (the sum of time as cash (Tf), in production (Tf), and

on the market (Tr)), plus the fixed capital (FC(t)) invested for period t. If r, S(t), T*f*, T*p*, T*r* and FC(t) are given, C(t) becomes the target cost:

As

$$\frac{qS(t)}{[1+q]} = S(t) - C(t)$$

$$r = \frac{S(t) - C(t)}{C(t)[Tf + Tp + Tr] + FC(t)}$$

$$C(t) = \frac{S(t) - rFC(t)}{1 + r[Tf + Tp + Tr]}$$

For example, if r = 0.2, $S(t) = \pounds 12$, FC(t) = 0, and Tf + Tp + Tr = 1 year, the target cost is:

$$C(t) = \frac{\pounds 12 - 0.2x0}{1 + 0.2x1} = \pounds 10$$

In general, the higher the required return and the longer the turnover period, the lower the required target cost.⁵

Target cost is the "cost price" (c + v) in Marx's table (see Table 5.1), his accounting solution where the capitalist sees only market prices and the general rate of profit.

For example, the target cost price for Capital I:

$$(c+v) = \frac{92 - 0.22x30}{1.22} = 70$$

Neither individual capitalists nor anyone else can see or work out the "original" surplus values, rates of surplus value, or the value rates of profit. Nobody can calculate these values because they are hypothetical historical "counter-factuals," the values that would exist in the absence of total social capital, competition, and the general rate of profit. What are not hypothetical are the required rate of profit of 22% and the market prices that the laws of value, competition, experience, and calculations, give to the individual capitalist, and the costs of production they imply. As Kliman says, "Of course, capitalist businesses do not know or care about value or surplus value as measured in labor time. They know about and care about money prices and money profits" (2011, 15). Capitalists see only the market prices of commodities (prices of production), costs (variable capital and used up c), profit, and the general rate of profit, and care nothing for hypothetical values. However, through the principles capitalists use in their accounts they show us that they do "care" about

value, albeit unconsciously.

Capitals	Organic composition of capitals of 100	Rate of surplus value (%)	Surplus value (s = 100% x v)	Rate of profit (%)	Used up c	Value of commodities (c+ v + s)	Cost price (c + v)	Price of commodities (1 + r)(c + v)	Profit (price – cost)	Rate of profit (r)
1	80c + 20v				50		70	92	22	22
11	70c + 30v				51		81	103	22	22
111	60c + 40v				51		91	113	22	22
IV	85c + 15v				40		55	77	22	22
V	95c + 5v				10		15	37	22	22
Totals	390c + 110v						312	422	110	

Table 5.1 Marx's Accounting Solution

Source: Created by the author based on Marx's example (see Marx 1981, 255-56).

According to the accounting interpretation, the general rate of profit and prices rather than the values, rates of surplus value, value rates of profit, surplus values, and values of commodities in his table, are the historically given *data* for Marx's accounting solution, but this does not mean that Marx's theory of value does not explain them. According to his theory, the value rate of profit on the average capital equals the price rate of profit, and its commodities sell at value. Competition for capital, experience, and calculations, generalize this rate of profit and generate market prices consistent with it across all capitals.

Support for this interpretation is, as we saw, that Marx argued it was only when through competition that "average prices and the market prices corresponding to them have *been established* for a certain length of time" (1981, 312, emphasis added), that capitalists consciously take into account "compensating factors" compared to the average capital in calculating the required rate of profit. Price data are "given" historically in Marx's theory in the sense that they emerge from a continuing "total process of change" or adjustment by producers and consumers through time in the allocation of societal labor to particular commodities, not from "demand and supply" (Carchedi 1996, 174). In this process, capitalists offer commodities for sale at prices of production they calculate will give them the general rate of profit or better, and where they cannot get these prices they will endeavor to engineer costs down, but will continue to produce only if they can earn the general rate of profit.

As Carchedi says, "the Marxian theory of prices also includes the formation of market prices," which is that "individual values [costs] are *directly* transformed into, and realize themselves as, market prices that . . . in their turn, tend towards production prices without ever reaching them" (1996, 164). They do because "the allocation of value to the different goods is not arbitrary but tends towards that allocation which allows all commodities to be sold at a price at which all capitals realize the average

rate of profit" (Carchedi 1996, 175). Rosdolsky suggested that, in addition to the "... 'technological' meaning" of socially necessary labor in Volume 1, "we also encounter another meaning [in Volume 3], according to which labour can count as 'socially necessary' if it corresponds to the aggregate requirements of society for a particular use value" (1977, 51, 89). In other words, labor counts as socially necessary only if it meets a "social want" (Marx 1998, 183–84), but this must be consistent with total social capital's demand for the general rate of profit.

We cannot deduce value from price, that is, use only logic to move "from the realm of appearance back to essence" (Pilling 1972, 296), but we can start from historically given prices to reveal through "investigation" the empirical determination of cost by value. We must, Marx said, "derive" the transformation of surplus value into profit from the transformation of the rate of surplus value into the rate of profit:

Given the profit rate as the "historical starting point" and "visible surface" phenomena, we must then "investigate" or show how in practice this revealed the "invisible essence." Competition does not reveal the invisible essence: "What competition does *not* show . . . [is] that it is values that stand behind the prices of production and ultimately determine them" (Marx 1981, 311). Nor do capitalists see it because "It *appears* to them . . . that the profit which they pocket is something different from the profit they extort" (Marx 1981, 313). From the capitalist's perspective, "the grounds for compensation do not simply equalize their participation in the total surplus value, but they *actually create profit itself*, since profit seems to derive simply from the addition to the cost price made with one justification or another" (Marx 1981, 313).

This leaves "the *form* of surplus value as profit," the way that capitalists calculate profit, as the only way to "investigate" or observe in the "visible surface phenomena," in the rate of profit, the "invisible essence" of value and surplus value (Marx 1981, 134). It leaves us with the interpretation that value and surplus value "was to be investigated," that is, used to explain the capitalist's accounting practice that calculated profit as a "form of surplus value." In short, the determination of value by labor time is

It is the transformation of surplus-value into profit that is derived from the transformation of the rate of surplus-value into the profit rate, not the other way round. In actual fact, the rate of profit is the historical starting point. Surplus-value and rate of surplus-value are, relative to this, the invisible essence to be investigated, whereas the rate of profit and therefore form of surplus-value as profit are visible surface phenomena. (Marx 1981, 134)

visible only in the principles and practices underlying the accounting calculations that produce the cost price as a monetary expression of "socially necessary" labor time using historically given price data.

At the end of chapter 9 of Volume 3, Marx concluded, "only in the form" of the cost prices that capitalists calculated could we "glimpse that the value of commodities is determined by the labour contained in them" (1998, 171, emphases added). When capitalists contemplated increasing labor productivity by investing in more fixed capital to save labor, for example, they calculated only the reduction of the cost price, ignoring that, according to the law of value, the per unit surplus values also falls, but which nevertheless allowed us to "glimpse" the determination of value by labor time:

The changes in the labour-time required, and hence the changes in their value, thus appear in regard to the cost-price, and hence to the price of production, as a different distribution of the same wage for more . . . commodities. . . . What the capitalist, and consequently also the political economist, see is that the part of the paid labour per piece of commodity changes with the productivity of labour, and that the value [i.e., cost price] of each piece also changes accordingly. What they do not see is that the same applies to unpaid labour contained in every piece of the commodity, and this is perceived so much less since the average profit actually is only accidentally determined by the unpaid labour absorbed in the sphere of the individual capitalist. *It is only in such crude and meaningless form [i.e., cost price] that we can glimpse that the value of commodities is determined by the labour contained in them.* (Marx 1998, 171, emphasis added, [my insertions])

As the Fernbach translation puts it, "The fact that the value of commodities is determined by the labour they contain now continues to percolate through only in this crudified [*sic*] and naïve form" (Marx 1981, 272) of cost price. Marx "deduced" or "derived" this result by seeing the value of commodities from the individual capitalist's perspective as cost price, by which, as they see it, they merely "recover the value of the capital consumed" (1998, 157). However, he explained it in reality from the historical starting point of a given general rate of profit and given prices.

Finally, and also consistent with proposing an empirical explanation of how his theory of value "operated," Marx did not claim that his illustration of the transformation of values to prices "confirmed" his theory of value, merely that it did not falsify or "abolish" it:

Just as little is the law of value changed by the circumstance that the equalisation of profit, i.e., the distribution of the total surplus-value among the various capitals . . . bring about a divergence between the regulating average prices and the individual values of commodities. This again affects merely the addition of surplus-value to the various commodity-prices, *but does not abolish surplus-value itself, nor the total value of commodities as the source of these*

THE TSSI'S REFUTATION OF BORTKIEWICZ'S CHARGE OF INTERNAL INCONSISTENCY

Marx claimed his analysis of price changes was general: "since we are here concerned with the effects . . . price variations have on the rate of profit, it matters little what is at the bottom of them. The present statements apply equally if prices rise or fall under the influence of the credit system, competition, etc., and not on account of fluctuations in value" (1998, 114). Clearly, therefore, "the equalization of industry rates of profit (assuming that everything else remains constant) brings about the phenomena of release and tying up of productive capital" (Maldonado 1994, 5), which means that in any demonstration of its logic we must account for them.

Kliman and McGlone (1988, 1999), McGlone and Kliman (1996), and Kliman (2007) refute Bortkiewicz's "proof" that Marx's illustration in chapter 9 of Volume 3 of *Capital* is internally contradictory.⁶ The accounting interpretation confirms their refutation because they demonstrate that Marx's replacement cost accounting (RCA) produces social accounts that balance through time when inputs are initially at value and outputs are at prices of production, here accounting for the price changes, in effect, including CMAs.

Bortkiewicz argued that if the inputs were at values but output prices included a profit mark up, "input and output prices would differ," and "this difference would prevent simple reproduction (in physical terms) from taking place" (Kliman 2007, 150). Bortkiewicz claimed that industry sales and purchases would not coincide, which proved that Marx's illustration was economically "illogical" (Kliman and McGlone 1999, 56) because, in effect, the social accounts would not balance.⁷ Marx did not assume anything about reproduction, but Bortkiewicz's requirement that Marx's solution hold for simple reproduction is "unexceptionable since Marx's solution was meant to hold true universally" (Kliman 2007, 149).

Kliman and McGlone (1999) and Kliman (2007) show that Bortkiewicz's conclusion is erroneous using a two-period example with given physical and initial value-price data for three departments. The TSSI's calculation of surplus values, value rates of profit, and prices of production, produce uniform rates of profit in periods 1 and 2 that allow simple reproduction,

that is, produce social accounts that balance (see Table 5.2), which refutes Bortkiewicz's charge.

In period 1, capitalists in Departments I (means of production), II (means of subsistence), and III (luxuries) advance a total of 400 for means of production (c) in the proportions 70%, 20%, and 10%, respectively.⁸ They advance 240 as variable capital (v) to Departments I, II, and III in the proportions 30%, 40%, and 30%, respectively.⁹ With an assumed uniform rate of exploitation of 66.67%, the total surplus value (s) is 66.67% x 240 = 160, distributed across the departments in proportion to their variable capitals.¹⁰ As total surplus value equals total profits (π) of 160, the uniform rate of profit in period 1 is 160/640 = 25%, which when applied to the cost prices (c + v) produces the departmental prices of production (p) and profits (π).¹¹ In short, from the starting values for c and v in each department and their totals, and the general value rate of profit, Kliman's table calculates the price rate of profit, the prices of production for each department, and their profits for period 1.¹²

Table 5.2 Refuting Bortkiewicz

Period	Dept	r	С	V	C + V	5	W	π	р	s(c + v)	$\pi/(c + v)$
1	1		280	72	352	48	400	88	440	13.6%	25.0%
	11		80	96	176	64	240	44	220	36.4%	25.0%
	111		40	72	112	48	160	28	140	42.9%	25.0%
	Total		400	240	640	160	800	160	800	25.0%	25.0%
2	E.	66	308	66	374	54	428	102	476	14.4%	27.3%
	11	44	88	88	176	72	248	48	224	40.9%	27.3%
	111	30	44	66	110	54	164	30	140	49.1%	27.3%
	Total	140	440	220	660	180	840	180	840	27.3%	27.3%

Source: Kliman 2007, Table 8.2, 150.

To refute Bortkiewicz's claim that reproduction would be interrupted because demand in input prices would not equal supply in output prices —for example, demand for c in period 1 is 400 whereas supply is 440 — "what is needed . . . is that the output prices of Period 1 equal the input prices of *Period 2*. But they are always equal" (Kliman 2007, 151). The output prices of period 1 are the input prices to period 2, distributed among the departments in the same physical proportions as in period 1.¹³ Correct accounting for the price changes then allows simple (physical) reproduction to occur and Marx's three aggregate equalities to hold in both periods (W = total value of production = p = total price of production; total s = total π ; total s/(c + v) = total π /(c + v)). Using the prices at the end of period 1 for Departments I and II, of 440 for constant capital, and 220 for variable capital, respectively, as inputs to period 2, a capitalist in general calculates the total s and therefore the total π of 180 in year 2. This gives

the new general value rate of profit and therefore the equal price rate of profit for period 2 of 27.3%.¹⁴ The given physical relations between the departments gives new values for c, v and s, new prices of production, and new departmental profits, which also meet Marx's three general equalities. Reproduction is possible at the new prices because r = the capitalists' consumption of luxuries, is the consumable profits of period 1 after making CMAs for constant and variable capital at the new prices. For example, in period 2 the capitalists from Department I consume 88—[(308 + 62)—(280 + 72)] = 66, and make a CMA of [88—66] = 22 to report the tying up of additional capital. Department I's closing balance sheet at the end of period 1 (opening balance sheet for period 2) therefore would show initial capital (352) + CMA (22) = 374 of equity capital = constant capital (308) + advance wages (66) = 374 of assets. This accounting decisively refutes Bortkiewicz's charge of internal inconsistency.

Whereas the TSSI naturally starts from given cost prices, according to the accounting interpretation Marx also investigated how his theory of value explained the determination of prices of production and cost prices in reality. From this perspective, interpreting Marx's conclusion that "The cost price of the commodity is a given precondition, independent of his, the capitalist's, production," to mean that he "took the cost price as a datum, a given magnitude of value represented by a given price," "established in the immediate past" (McGlone and Kliman 1996, 35–36) is arguable. McGlone and Kliman see the capitalist's specific cost as the beginning of "one particular period of capitalist production and circulation within the process of history" (1996, 36). However, according to the accounting interpretation, Marx argued that it was competition for capital, the evolving general rate of profit, and individual calculations of required returns and targets costs, that explain how the transformation occurs in reality.¹⁵ It agrees that the "general rate of profit is determined *in* production, before circulation commences" (McGlone and Kliman 1996, 41), but historically, and by producing to target cost. In short, Marx meant target cost when he said the "whole difficulty" stemmed from commodities being exchanged "as the products of capitals," which supports the TSSI's insistence that "Capital values, not the value of means of production and labour power, constitute the starting point of Marx's illustration" (McGlone and Kliman 1996, 35), if by "capital" we mean target cost.

It is unarguable that, according to Marx, "a sum of money always represents a sum of value," and "Hence the initial input 'values' in Marx's
illustration . . . are actually sums of money which . . . implicitly represent sums of value" (McGlone and Kliman 1996, 35). However, starting from given initial values or prices, the assumption that money is an expression of value, and a central calculator, while valid to refute Bortkiewicz's charge of internal contradiction, leaves real-world transformations and prices unexplained as monetary expressions of socially necessary labor time. Kliman's (2007, 149) example is "similar to Bortkiewicz's" except that "it depicts two periods rather than one," but again, although valid as a refutation of Bortkiewicz, it is not clear that Marx's example represents one "period," or the beginning of a series of discrete periods. Chapter 4 argued that Marx intended it to represent the counterfactual historical transformation to total social capital. The accounting interpretation therefore supports the TSSI's conclusion, that "values and prices are determined interdependently" because "prices of production and average profit depend on the general rate of profit, s/C," and "prices influence value magnitudes" (Kliman 2007, 33), but does so by explaining this "dialectical" interrelationship as the product of observable social practice driven by competition and accounting calculations.

TARGET COSTING AS A SOCIAL PRACTICE

Target costing became an established social practice in developed capitalism because total social capital, the capital market, became the dominant social power, the "form in which capital becomes conscious of itself as a *social power*," "with the capitalist as its functionary," "which confronts society as a thing" (Marx 1981, 297, 373). The social power behind its demand for the general rate of profit explains why "The cost price is a given precondition, independent of his, the capitalist's, production" (Marx 1981, 265). Rather than a central calculator, in Marx's accounting solution the capital market sets the individual capitalist's maximum cost through the required rate of profit, which implies a maximum standard or target cost, given the market price of the commodities.

Target cost is the maximum cost of production because capitalists seek an excess rate of profit by cost cutting (Marx 1981, 373). Not simply competition enforced the cost price, but active management by the capitalist to hit or beat targets:

The rule, that the labour time expended on a commodity should not exceed that which is socially necessary for its production, appears, in the production of commodities generally, to be

established by the mere effect of competition; since to express ourselves superficially each single producer is obliged to sell his commodity at its market price. In manufacture, on the contrary, the turning out of a given quantum of product in a given time is a technical law of the process of production itself. (Marx 1996, 350)

Accounting enforces this "technical law" by controlling the production of value through budgeted profit and loss accounts and balance sheets based on standard or target costs (Bryer 2006a; 2013a). Consistent with this, Marx argued, "the cost price of the commodity is by no means simply a category that exists only in capitalist bookkeeping" (1981, 118). The capitalist's specific costs were mere expenditures and, in this sense, "The category of cost price has nothing to do with the formation of a commodity value or the process of capital's valorization . . . [but,] cost price does none the less, in the economy of capital, present the false semblance of an actual category of value production" (Marx 1981, 118–19). For Marx, cost price is the "false semblance" of value production because as a phenomenal form or category it hides the origin of surplus value, disguising it as profit produced by the total capital advanced or earned on the market. Cost price is nonetheless an "actual category of value production" because costs are outlays of *capital*, money advanced by total social capital to finance production and return with at least the average rate of profit. "The capitalist cost of the commodity is measured by the expenditure of *capital*, while the actual cost of the commodity is measured by the expenditure of *labour*" (Marx 1998, 28).

If the capitalist sees cost price as "part of the commodity value" (Marx 1998, 32), this was because, according to Marx, the capitalist measured value as the monetary expression of socially necessary labor time, at the accountants' standard or target cost. Accountable and under competition, the capitalist therefore sees "Profit . . . [as] the excess of the value of the product or rather the amount of money realised in circulation for the product . . . *above* the value of the capital that entered the formation of the product . . . [which] appears as *costs of production of the commodity*" (Marx 1991, 81). Like the accountant, Marx thought that the "capitalist is inclined to regard the cost price as the true *inner* value of the commodity, because it is the price required for bare conservation of his capital" (1998, 42, emphasis added), that is, the price required for capital maintenance:

But there is also this, that the cost price of a commodity is the purchase price paid by the capitalist himself for its production, therefore the purchase price determined by the production process itself. For this reason, the excess value, or the surplus value, realised in the sale of a commodity *appears to the capitalist an excess of its selling price value over its value*, instead of

an excess of its value over its cost price, so that accordingly the surplus incorporated in a commodity is not realised through its sale, but springs out of the sale itself. (Marx 1998, 42, emphasis added)

Like accountants, Marx's capitalist regards cost price as "value" and "a certain value is capital when it is invested with a view to producing profit" (1998, 41), that is, "value" equals standard or target cost. This explains why Marx defined profit as "the excess of the money recovered at the end of the circulation of capital over and above the cost price that is 'presupposed'..." (Moseley 2000a, 298), and why capitalists account for costs over standard cost as a "period cost" (Drury 2000, 680), not as a value-creating "cost of production."

Understood as standard or target costs, Marx had no need to transform either variable or constant capital. He knew that when capitalists bought their inputs at prices of production, value and cost could diverge. However, he argued, "the most important thing in determining surplus value is not whether these figures are expressions of actual values, but how they are related to one another, i.e., whether v = 1/5 of the total capital, and c = 4/5" (Marx 1998, 205). What matters to the capitalist is not the "value" of constant capital, but its cost that the capitalist treats as value, and, therefore, the profits that the capitalist treats as surplus value. If the capitalist treats profit as surplus value "the price of production = cost price + profit = k + p = k + s; i.e., in practice it is equal to the value of the commodity" (Marx 1998, 205).

This is Marx's accounting solution to the "transformation problem." His explanation went beyond illustrating a logical transformation from values to prices to explain how in practice under total social capital and competition individual capitalists control the advances of constant and variable capital to the cost price necessary to equalize the required rate of profit. This interpretation supports McGlone and Kliman's (1996, 34) view that a "dialectical" understanding of "the term 'transformation' differs from its use as a synonym for a mathematical mapping," which we have seen certainly renders irrelevant the criticism that Marx "failed . . . to map a self-contained set of values onto another, self-contained set of prices of production." However, Marx attempted no "mathematical mapping" from costs to prices either, because his explanation was that capitalists, by accounting for standard or target cost, through their measurement and control of production, unwittingly transform the general rate of profit and prices of production into value and surplus value, measured as the monetary expression of "socially necessary" labor time in production.

CONCLUDING COMMENTS—THE "LAW OF ONE COST"

Standard and target costing is only one manifestation of Marx's "law of one cost," the principle that the costs of production of identical commodities will tend to be equal, within and across firms. This follows from the conclusion that if "the magnitude of the value of a commodity represents only the quantity of labour embodied in it, it follows that all commodities, when taken in certain proportions, must be equal in value" (Marx 1996, 55). The same must therefore be true of their components, costs on one side, and profit on the other. Accountants agree by valuing commodities at standard or target cost, which makes the cost of each identical commodity equal.

Accountants also agree, the following two chapters argue, by defining cost of production to include the "wear and tear" or "depreciation" of "fixed capital," the "direct" costs of labor and materials, and other "production overheads," and by excluding "non-productive" overheads. The failure of Marx's critics to understand that he uses his theory of value to explain these accounting distinctions, they argue, repudiates the charge that his treatment of "fixed capital" and concepts of "productive" and "unproductive" labor reveal fundamental flaws in his theory value.

Chapter 7 argues that Marx used his theory of value to explain why in calculating the cost of production, accountants distinguish between "production overheads"—"indirect" expenditures that help to produce the use values embodied in commodities or services—and "non-production overheads," those necessary for capital to function, but which do not produce use values for sale. Accountants call expenditures on factory buildings, machinery, rent, etc., "production overheads" because they provide use values for production. They add these costs to the cost of production, even though they do not necessarily create embodied use values in the commodity or service. Factory buildings, for example, provide shelter and other use values for production. Clearly, "The making of goods would be impossible without the incurrence of such overhead costs as depreciation, material handling, janitorial services, repairs, property taxes, heat, light, and so on" (Horngren 1977, 87). Consistent with Marx's definition of cost price as the socially necessary cost, accountants allocate all production overheads to the cost of production using the principle that each use value (commodity or service) produced has the same cost regardless of the actual pattern of expenditure. They study the consumption of production overheads (called "activity based costing") and allocate expenditures evenly according to the use values they provide (Drury 2000, 23).

This is why the accountants' costs of production "are more properly called *normal* costs, rather than actual costs, because they include an average or normalized chunk of overhead" (Horngren 1977, 89). Accountants calculate the average cost of a planned mass of commodities. If, for example, "management has committed itself to a specific level of fixed costs in the light of foreseeable needs far beyond the next thirty days ... [f]ew people support the contention that an identical product should be inventoried . . . [with] different overhead rates . . . not representative of typical, normal production conditions" (Horngren 1977, 89). Similarly, "[i]t would be illogical to load any single month with costs that are caused by several months operations" (Horngren 1977, 90), for example, expenditures on repairs, just as it would be illogical to charge heating expenditures only to winter production. Instead, to calculate the cost of production, the accountant's allocations apply Marx's law of one cost.

Accountants continue to follow these procedures despite the fact that, influenced by economists, "For decades, textbooks used in cost and managerial accounting courses have pointed out the fallacies in relying on full cost numbers for any purpose" (Hemmer 1996, 419). An interesting question is, therefore, why in the face of "such criticism, traditional practices of cost allocation appear to have remained in use" (Hemmer 1996, 419). A possible explanation is that capitalists and accountants unconsciously follow Marx's theory of value (Bryer 2006a).

Fixed asset depreciation, maintenance, and repairs are often large production overheads that accountants allocate to commodities, but they are problematic for economists. The following chapter shows that fixed assets cause no problems for Marx or accountants who, consistent with Marx's law of one cost, allocate their total costs equally across all use values, which refutes criticisms of inconsistency and vagueness. Chapter 7 shows that Marx, in effect, used his distinction between "productive" and "unproductive" labor to explain the accountants' method of "absorption costing," which it argues refutes the many criticisms that it creates, as Harvey puts it, an "accounting nightmare" (2013, 92).

NOTES

1. This implies that if capitalists calculate profit with principles that are inconsistent with

Marx's theory of value, using "fair value" accounting, for example, total "profit" and total surplus value will diverge.

2. Chapter 7 argues that Marx works out his categories of "productive" and "unproductive" labor by, in effect, explaining absorption costing.

3. Moreover, this is why neither accountants nor Marx includes other costs, non-production overheads such as sales costs, in the cost of production, as we will see in chapter 7.

4. Japan was the first to use the label of "target costing" as a recognized technique, but the idea is implicit in capitalist accounting's focus on the rate of profit, which, if insufficient, tells capitalists that actual costs exceed the target. There is evidence of the idea in the mid-eighteenth century in the Scottish Carron Company (Bryer 2006b), and today target costing "is widely used among different industries round the world" (Horngren et al. 1999, 386).

5. For example, if the required annual rate of profit increased to a 30% return, the target cost must fall to $C(t) = \frac{12}{1 + (0.3 \times 1)} = \frac{9.23}{1 + (0.3 \times 1)}$. For turnover periods greater than one year, the required rate of profit equals the turnover period multiplied by the required annual return, further reducing the target cost. For example, if the turnover period was three years and the required annual rate of profit was 20%, the total required rate of profit is 60% over the three years and the target cost falls to $C(t) = \frac{12}{1 + (0.6 \times 3)} = \frac{12}{24.29}$.

6. See also Carchedi (2005).

7. Marx's critics rely on Bortkiewicz's alleged proof—"which to this day remains the sole one" (Kliman and McGlone 1999, 56)—that Marx's theory of value is "illogical," but as Kliman and McGlone (1999, 56) point out, Bortkiewicz's "actual objection was economic, not logical."

8. The constant capital of Department I, for example, is $70\% \times 400 = 280$. The example assumes that the "value of each type of good equals \$1 per unit in Period 1," so these numbers represent both physical and financial measures (Kliman 2007, 149). McGlone and Kliman (1996, 41) show that this assumption is not essential.

9. For example, the variable capital of Department I is $30\% \times 240 = 72$.

10. For example, the surplus value of Department I is $30\% \times 160 = 48$.

11. For example, Department I's price of production is $1.25 \times 352 = 440$, and its profit is 440-352 = 88.

12. As we saw in chapter 4, the workers of each department are accountable for the prices of constant capital at which they enter production, not for the closing prices. Therefore, the rate of profit in period 1 is 25% and not 140/660 = 21.21%, the rate of profit in period 2 assuming constant input prices, which is not the case in Kliman's example because, as explained below, the input prices of period 2 change the general rate of profit for period 2 and hence the prices of production.

13. For period 2, capitalists in each department buy means of production and luxuries, and capitalists and workers buy means of subsistence, at the end of period 1, at the prices of production of the outputs of period 1.

14. As the total value added (v + s) = 400 is constant, the price of v determines s. Thus, in period 2 the general value rate of profit = [400-220]/660 = 27.3%. Values, rates of profit, and prices continue to change in following periods, but as McGlone and Kliman (1996, 44) show, "Were simple reproduction . . . to continue, *ad infinitum*, and were collective capitalists always to continue exchanging exactly at prices of production, *ad infinitum*, then the social capital would asymptotically approach . . . [a] static equilibrium," and "Marx's results still hold."

15. McGlone and Kliman (1996, 45–46) also give an aggregate one-period general solution that does not require simple reproduction, two departments, or the assumption that no outputs can be both means of production and consumption, but it starts from given initial input prices.

Chapter 6 Fixed Capital

Marx often highlighted the importance of the instruments of production and technological change in capitalism for increasing labor productivity, particularly machinery, which appeared in the "peculiar" form of "fixed capital." According to his theory of value, labor transfers the value of constant capital to the product. Some advances of constant capital, for raw materials, ancillary materials, power, etc., transfer their value within one circuit of capital, which Marx called "circulating" or "fluid" capital, whereas others for factories, machines, etc., transfer their values over their lifetimes that extend beyond one circuit of capital that, following accountants and political economists, he called "fixed capital."

The "peculiarities" of fixed capital compared to many (but not all) other elements of constant capital were, for Marx, that its use values were not embodied in the commodity, just its value, which it uniquely transferred "bit-by-bit": "fixed capital does not circulate in its use form. It is rather its value that circulates, and this does so gradually, bit by bit, in the degree to which it is transferred to the product that circulates as a commodity" (1978, 238). The key question was measuring the transfer of the value of fixed capital, the "degree" of its transfer to the products, how big the "bits" were. Marx ran into this problem in 1862 and, chapter 3 suggested, his discovery that he could explain capitalist accounting, including fixed capital, precipitated decisions on the presentation of his work and its title. This chapter supports that claim by showing Marx using his theory of value to explain how capitalists account for "fixed assets."

The contrary common view of economists, as Harvey (2013, 109) puts it, is that, "For Marx, fixed capital is a vital if problematic category. Some commentators have gone so far as to suggest it punches a fatal hole in Marx's labor theory of value." Harvey demurs, but only because he interprets Marx's theory of fixed capital subjectively, and abandons any notion of objective quantification, as we will see. He is right that there has been "a lot of debate, both in Marxist economics and in bourgeois theory, over how to value fixed capital," which many find a "very thorny and

difficult problem" (Harvey 2013, 138). However, the chapter argues that Marxist economists, including Harvey, find Marx's analysis of fixed capital problematic because they adopt a physicalist-simultaneist interpretation, whereas for Marx and accountants whose focus is accountability for capital, who adopt the temporal interpretation, fixed capital poses no problems.

As industrial capitalism developed from the mid-nineteenth century, capitalists and accountants faced the problem of charging unprecedented large costs for "fixed assets" to the profit and loss account, for which they developed methods of allocation to measure "depreciation." The chapter first explains the traditional capitalist principles of fixed asset accounting. Second, it shows that Marx explained these principles. Third, it rejects the criticisms by Marxist economists. Finally, it reexamines Marx's misunderstood concept of "moral depreciation."

FIXED ASSETS AND DEPRECIATION

Accountants traditionally define "fixed" assets as those an entity intends to use, and actually uses, on a "continuing" or "permanent" basis, usually for more than one year. For Dicksee, they were "Capital assets . . . acquired, and . . . permanently retained, not with a view to their being eventually realized at a profit in the ordinary course of business, but with a view to their being used for the purpose of enabling trading profits to be made in other ways" (1905, 5). The same physical asset, a car for example, might be a fixed asset for a business using it as a taxi, or a current asset for a car dealer that sells it. The classification of an asset as "fixed" or "current" depends on *bona fide* intention, that is, intention backed by actual use. As IAS 16 Property, Plant and Equipment says, fixed assets "are tangible items that: (a) are held for use in the production or supply of goods or services . . . ; and (b) are expected to be used during more than one period" (IASB 2000a, para. 6).¹ IAS 1 Presentation of Financial Statements clarifies that, consistent with Marx's circuit of capital, assets are "current" if an entity "expects to realise the asset, or intends to sell or consume it, in its normal operating cycle," which is "the time between the acquisition of assets and their realisation as cash or equivalent" (IASB 1997, para. 66 (a), 67). Entities, therefore, use "fixed" assets over more than one operating cycle or circuit of capital.

Accountants account for the cost of fixed assets "on the assumption that every fixed asset, with the exception of land, can yield a limited quantity

of useful services and has a limited life" (Kohler 1970, 150). Therefore, as IAS 16 puts it, "Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life" (IASB 2000a, para. 6). The depreciable amount is "the cost of the asset, or other amount substituted for cost, less its residual value" (IASB 2000a, para. 6), where the "other amount" could be replacement cost, and "residual value" is the estimated net realizable value of the asset at the end of its useful life at current prices. Accountants traditionally define "depreciation" as the "cost of lost usefulness," the cost of the decline in the asset's services, mainly from use or "ordinary wear and tear," but also from deterioration from disuse, and from the costs of technical and market obsolescence (Kohler 1970, 149–50).

Accountants have many different methods of depreciation—the "straightline," "per-unit," "accelerated," "declining balance," "annuity," etc. (see, e.g., Kohler 1970, 150–59)—methods that allocate the depreciable amount in different patterns over a fixed asset's life. To choose the appropriate method, during the second half of the nineteenth century, UK accountants agreed on the general principle that depreciation charges should equalize the total costs of providing the services (use values) of a fixed asset over its life (Bryer 1993a, 657–65). These costs are (1) the initial outlay (purchase price or production cost) less the residual value and (2) the total operating expenditures for maintenance, repairs, fuel, etc. When management has determined the "useful economic life" of a fixed asset (discussed below), the accountant selects the depreciation method so that the total cost of each unit of service over its life is equal.

According to Marx's "law of one cost," each identical use value should have the same cost price because the value of commodities is a fractional part of the socially necessary value of an aggregate mass, and there is therefore no reason why the first unit of service of a fixed asset should cost any more or less than the last. Accountants agree. Baxter, for example, argued:

A depreciating asset's costs cannot differ in principle from those of other inputs bought ahead in bulk—for instance, a big store of materials, or labour hired (and paid for in advance) on an unusually long contract. . . . In other words, a depreciating asset is . . . much the same thing as slow-moving stores; and the accountant should cost the consumption of a machine and of a stock pile in consistent ways. (Baxter 1971, 26)²

Just as the cost of issues for each unit from a material store would be equal, so therefore "the charge for each unit of the asset's inputs should surely be the same" (Baxter 1971, 39). However, as Baxter pointed out, repeating the conclusion drawn by late nineteenth-century British accountants, highlighting one of "peculiarities" Marx saw in the circuit of fixed capital, "there is an important difference between the total costs per unit of stores and fixed assets. The outlay pattern for stores is normally restricted to little more than their replacement cost; whereas the pattern for machines, etc., includes many other outlays—for instance, repairs" (1971, 39). It followed, "to charge a constant total cost per unit of machine input . . . does not mean that the depreciation ingredient must be constant" (Baxter 1971, 39). Rather, the accountant "must trim depreciation cost to make it the varying complement of the other costs; a good depreciation method must take cognisance of the whole pattern" (Baxter 1971, 39), and must result, in short, in a constant total charge per unit of service over the asset's useful economic life.

Useful Economic Life

An entity determines the useful economic life of a fixed asset by calculating its "optimal" replacement period, the period that will minimize the expected costs of operating at the planned level of output or period of use, which may be shorter than its technical life. As IAS 16 says, useful life is "defined in terms of the asset's expected utility to the entity" (IASB 2000a, para. 57). Useful life is "(a) the period over which an asset is expected to be available for use by an entity; or (b) the number of production or similar units expected to be obtained from the asset by the entity" (IASB 2000a, para. 6). For example, the estimated economic life of a truck might be 200,000 miles, and the life of a building 60 years. Accountants divide the causes of decreases in the economic life of an asset between (1) physical, mainly use, but also accidents and disasters, and (2) economic, mainly technical and market obsolescence, but also, for example, inadequacy of scale as a business grows (Mosich and Larsen 1982, 485–86).³ Determining the expected useful life is clearly, as IAS 16 says, "a matter of judgement based on the experience of the entity with similar assets" and the "asset management policy of the entity" (IASB 2000a, para. 57), which management usually justifies by a calculation based on a forecast of the asset's cash outflows.

Consider, for example, a machine with a current cost of £4,000 and a technically maximum life of four years. The only additional costs in using the machine are for maintenance. Table 6.1 shows the maintenance costs

for each year of the machine's life, the total costs for each possible replacement cycle, the residual values for machines of various ages, and the net cost per cycle.

Ignoring the required "cost of capital" or discount rate, the two-year cycle would be optimal. However, including the cost of capital at (say) 7% per annum, Table 6.2 shows that the three-year cycle is optimal.⁴

The calculation of optimal economic life should, accountants agree, also "make some allowance for the chance of obsolescence" (Baxter 1971, 21), allow for expected deterioration in product or service quality over the asset's life compared to those of a new asset, and falling sales receipts, in the expected cash outflows. Making these adjustments will shorten the useful life of the asset.

Replacement Period	1 year	2 years	3 years	4 years
	£	£	£	£
Initial outlay (end t=0)	4,000	4,000	4,000	4,000
Maintenance				
Year 1	-	-	-	-
Year 2	2	200	200	200
Year 3	-	-	400	400
Year 4	51		-	600
Total cost per cycle	4,000	4,200	4,600	5,200
Less: Residual value	2,400	2,100	1,400	600
Net cost per cycle	1,600	2,100	3,200	4,600
	====	=====		=====
Average net cost per year	1,600	1,050	1,067	1,150

Table 6.1 Calculating Useful Economic Life (Cash Flows)

Source: Created by the author based on Baxter's example (see Baxter 1971, 13, 15).

Cost Allocation

Accountants have traditionally defined depreciation, as the UK's Statement of Standard Accounting Practice 12 *Accounting for Depreciation*, for example, put it, as

 Table 6.2 Calculating Useful Economic Life (Present Value)

Replacement Period	1 year	2 years	3 years	4 years
	£	£	£	£
PV of initial outlay (end t=0)	4,000	4,000	4,000	4,000
PV of maintenance costs:				
Year 1	-	-	-	7
Year 2	-	175	175	175
Year 3	-	-	327	327
Year 4	-	-	-	458
Total cost per cycle	4,000	4,175	4,502	4,960
Less: Residual value	2,243	1,834	1,143	458
Net cost per cycle	1,757	2,341	3,359	4,052
	====	====	====	====
Annual equivalent cost	1,880	1,295	1,280	1,329

Source: Created by the author based on Baxter's example (see Baxter 1971, 13, 15).

the measure of the wearing out, consumption or other reduction in the useful economic life of a fixed asset, whether arising from use, effluxion of time or obsolescence through technological or market changes. Depreciation should be allocated so as to charge a fair proportion of cost or valuation of the asset to each accounting period expected to benefit from its use. (Accounting Standards Committee 1977, para. 3)⁵

According to the traditional principle, therefore, the straight-line method is appropriate, allocates a "fair" proportion of cost or valuation, only if operating costs for repairs, maintenance, fuel, etc. are constant in each period.

Consider an asset costing £1,250 with a useful life of three years and a residual value of £50. The services provided by the asset are constant each year and the operating outlay for repairs, etc. is £100 a year (see Table 6.3).

With constant output, the straight-line method gives an equal cost per unit. If output is not constant, but repair costs, etc., per unit of output are constant, charging straight-line depreciation per unit of output also gives an equal cost per unit of output. Following the same logic, an "accelerated method," charging more of the fixed asset's initial cost in the earlier years than the later years, is appropriate if the operating outlays for repairs, etc., rise over the asset's useful economic life.

Suppose, modifying the previous example, that operating costs increase from £100 in year 1, to £640 in period 2, and £826 in year 3. Assume the services provided by the asset in each period are equal (see Table 6.4).

Table 6.4 shows the pattern of depreciation produced by the "declining balance" method. Let: C = the initial cost, N = the expected life, S = the expected scrap value, d = the depreciation rate. We require C(1 - d)N = S and, therefore, d = $1 - n \sqrt[n]{S/C}$. From the above example, d = $1 - \sqrt[n]{50/£1,250} = 0.658$. Thus, depreciation in year $1 = 0.658 \times £1,250 =$

£822, and in year $2 = 0.658 \text{ x} [\text{\pounds}1,250 - \text{\pounds}822] = \text{\pounds}282$, etc.

Year	0	1	2	3	Total
Initial cost	1,250				1,250
Repairs		100	100	100	300
Residual value					-50
Total cost					1,500
					====
Cost per period					500
		10000	100200	100000	
Thus, depreciation per period		400	400	400	1,200
					====

Table 6.3 Straight-Line Depreciation

Source: Created by the author based on Baxter's example (see Baxter 1971, 74).

Table 6.4 Accelerated Depreciation

Year	0	1	2	3	Total
Initial cost	1,250				1,250
Repairs		100	640	826	1,566
Residual value					-50
Total cost					2.726
Control Control of Con					=====
Cost per period					922
Thus, depreciation per period		822	282	96	1,200
					====

Source: Created by the author based on Baxter's example (see Baxter 1971, 76-77).

As Ernst & Young said in its manual on UK GAAP, "It is . . . frequently argued in favour of this method that the depreciation charge complements the costs of maintaining and running the asset. In the early years these are low and the depreciation charge is high, while in later years this is reversed" (1999, 762). In short, if as is usual for machines the operating costs increase over the asset's useful life, an accelerated method is appropriate.⁶

MARX ON FIXED CAPITAL AND DEPRECIATION

Like accountants, Marx defined "fixed capital" as that "part of constant capital, the actual instruments of labour (e.g., machines), [which] serve continuously throughout a greater or smaller number of repetitions of the same production process, and for this reason give up their value to the product only bit by bit" (1978, 133). Therefore, like accountants, "An ox, as a draft animal, is fixed capital," whereas "If it is eaten . . . it no longer functions either as a means of labour, or as fixed capital" (Marx 1978, 239). Fixed capital had two "peculiarities," Marx argued, one that only its value circulated, not its use value, which distinguished it from most forms

of "circulating" or "fluid" capital, such as raw materials and parts, and the other that it transferred its value bit by bit, which distinguished it from all other forms of capital:

In the first place, it does not circulate in its use form. It is rather its value that circulates, and [in the second place] this does so gradually, bit by bit, in the degree to which it is transferred to the product that circulates as a commodity. A part of its value always remains fixed in it as long as it continues to function, and remains distinct from the commodities that it helps to produce. This peculiarity is what gives this part of the constant capital the form of fixed capital. All other material components of the capital advanced in the production process, on the other hand, form, by contrast to it, circulating or fluid capital. (Marx 1978, 238)

Fixed capital was the same as ancillary materials, "such as coal for the steam engine . . . [that] also do not enter the product in their material form . . . [because] [i]t is only their value that constitutes part of the value of the product" (Marx 1978, 238). Like other elements of fluid capital, ancillary materials "are completely consumed in every labour process that they enter into, and therefore . . . they must be replaced by new items of the same kind" (Marx 1978, 238). The fundamental peculiarity was that, by contrast, production consumed fixed capital "bit-by-bit," that is, over more than one circuit of capital, more than one of the accountants' "operating cycles," and often required future expenditures.

Marx outlined his general conclusion in Volume 1 of *Capital* that, like the accountant who required the capitalist to apportion the cost (value) of fixed assets to the products it helps to produce, as production consumed their use values this transferred their exchange value to the product:

If we . . . consider the case of any instrument of labour during the whole period of its service, from the day of its entry into the workshop, till the day of its banishment into the lumber room, we find that during this period its use-value has been completely consumed, and therefore its exchange-value completely transferred to the product. For instance, if a spinning machine lasts for 10 years, it is plain that during that working period its total value is gradually transferred to the product of the 10 years. (Marx 1996, 213–14)

The physical characteristics of fixed capital and the conditions of its use and care set the limit of its useful life, when the capitalist must replace it because "completely used up"; "its use-value has been completely consumed, and therefore its exchange-value completely transferred to the product" (Marx 1978, 248; 1996, 213). However, like accountants, Marx "also recognizes that the *economic* lifetime may be different. The capitalist discards a machine not because it is worn out physically, but because a higher profit can be had by replacing it" (Harvey 2006, 212). As Marx put it, the amount of value transferred by fixed capital "is determined by an average *calculation*; it is measured by the average duration of its function, from the time that it enters the production process . . . to the time it is completely used up, is dead" (1978, 237, emphasis added). By "average duration," Marx meant here as elsewhere the socially necessary average. The asset was therefore "dead" when it came to the end of its useful functioning for the capitalist, the *calculated* duration of the "period of its service," that is, it only remained functioning as fixed capital "As long as a means of labour [it] still remains effective" for the capitalist (Marx 1978, 237). Harvey (2013, 135) criticizes Marx for not giving a "full explication of that tantalizing caveat of fixed capital 'still being effective.' Unfortunately Marx does not enlighten us very much." However, as Harvey (2006, 212) had emphasized, by the "effectiveness" or use value of fixed capital to the capitalist, Marx meant the economic lifetime, the calculated ability to use it to earn the required rate of profit.

Accountants allocate the initial cost to achieve a "fair allocation" to each product, which meant, according to Marx's theory of value, as the capital transfers its value to the product, bit by bit, and therefore the longer the life of fixed capital, the more use values it provides, the lower the cost or value transferred to each product:

The productiveness of machinery is . . . inversely proportional to the value transferred by it to the product. The longer the life of the machine, the greater is the mass of the products over which the value transmitted by the machine is spread, and the less is the portion of that value added to each single commodity. (Marx 1996, 407)

Marx recognized that capitalists are therefore reluctant to replace fixed capital before the end of its physical life, and so, facing the threat of obsolescence, etc., they calculate that the quicker they consume it and recover the cost the better, which brings long working days (Marx 1996, 407). He also recognized that physical destruction through catastrophe may force early replacement decisions, or that competition or falling prices in a crisis may prompt calculations that "compel" them:

The means of labour are for the most part constantly revolutionized by the progress of industry. Hence they are not replaced in their original form, but in the revolutionized form. On the one hand, the volume of fixed capital that is invested in a particular natural form, and has to last out for a definite average lifespan within this, is a reason why new machines, etc. are introduced only gradually, and hence forms an obstacle to the rapid general introduction of improved means of labour. On the other hand, competition forces the replacement of old means of labour by new ones before their natural demise, particularly when decisive revolutions have taken place. Catastrophes, crises, etc. are the principal causes that compel such premature renewals of equipment on a broad social scale. (Marx 1978, 250)

Catastrophe, crises, etc. "compel" renewal of equipment only if the capitalist calculates that it is profitable to do so. Competition may prompt calculations leading to early replacement, and its absence to calculations to postpone them. Marx "realised that, in an economy where large firms can blunt the force of competition, some firms will be able to treat obsolete capital values as if the forces of devalorisation had never existed" (Perelman 1999, 726).

For Marx, like accountants, the primary cause of "depreciation," the transfer of value to the product, was the consumption of its use values over its lifetime from "wear and tear" through use. As he put it, "Wear and tear is occasioned in the first place by actual use," but there was "A further item . . . caused by natural forces. Sleepers, for example, do not just deteriorate as a result of actual use, but also suffer from rot" (Marx 1978, 249). Accountants see businesses consuming fixed assets by use ("wear") and by their decay ("tear"), whether from use or non-use, and so did Marx. He concluded in Volume 1 of Capital, "The material wear and tear of a machine is of two kinds. The one arises from use, as coins wear away by circulating, the other from non-use, as a sword rusts when left in its scabbard. The latter kind is due to the elements. The former is more or less directly proportional, the latter to a certain extent inversely proportional, to the use of the machine" (Marx 1996, 407). In Volume 2, he emphasized, "Fixed capital entails special maintenance costs. A part of this maintenance is provided by the labour-process itself; fixed capital spoils, if it is not employed in the labour-process" (Marx 1978, 252).

Calculating depreciation from wear and tear meant allocating the initial cost or value to the use values of the fixed capital, and charging this allocation to the product when it consumed the use value. Marx argued in Volume 1, "in the labour process the means of production transfer their value to the product only so far as along with their use value they also lose their exchange value" (1996, 213). As Harvey says, "This implies some relation . . . between the value transferred to the product and the changing usefulness of, say, a machine," which he and many Marxists think "turns out to be rather problematic," as we will see, because there are "both physical and social reasons why such changes might occur" (2013, 116). For accountants and Marx, it is, in fact, no problem.

First, Marx pointed out that when he said the labor process transfers the "value" of the means of production to the product, he meant it transfers the value of their use value consumed, the "original value" or cost at which

they entered it, but one determined "independently":

The means of production transfer value to the new product, so far only as during the labour process they lose value in the shape of their old use value. The maximum loss of value that they can suffer in the process, is plainly limited by the amount of the original value with which they came into the process, or in other words, by the labour time necessary for their production. Therefore the means of production can never add more value to the product than they themselves possess independently of the process they assist. (Marx 1996, 215–16)

By "possess independently," we saw in chapter 4, Marx meant revaluation to replacement cost at the time the use values entered production.

Second, to answer the question of how the capitalist allocates this value of fixed capital to the product as the labor process consumes its use values, like accountants, Marx worked out that the method should reflect the pattern of use values, the pattern of other costs, and technological and economic obsolescence. He argued, in effect, that the capitalist should choose a method of depreciation such that, taking together a portion of the asset's initial cost (value) and its operating expenses each period, it produces the same total cost (value) for each of the asset's use values over its useful life. As we will see, Marx eventually made this principle explicit in his calculation of depreciation in conjunction with repairs in *Capital*.

In the *Economic Manuscripts of 1861–63*, Marx returned to the questions on fixed capital he had asked Engels in December 1862, noted in chapter 3. There, he concluded, "Repairs and so on, which are necessary to maintain the fixed capital, are reckoned as part of its original labour costs" (Marx 1989b, 104), and implied that the labor of getting machines (and horses) to "run more smoothly in the second year" are as well:

Marx recognized that repairs "are reckoned," accounted for, as part of the "production costs," but did not pursue it. In the final chapter of the *Economic Manuscripts*, he ran into the question again, following his

A part of the constant capital which is calculated to be used up annually and enters as wear and tear into the value of the product, is in fact *not* used up. Take, for example, a machine which lasts twelve years and costs £12,000; its average wear and tear, which has to be charged each year, amounts to £1,000. Thus, since £1,000 is incorporated into the product each year, the value of £12,000 will have been reproduced at the end of the twelve years and a new machine of the same kind can be bought for this price. The repairs and patching up which are required during the twelve years are reckoned as part of the production costs of the machine. . . . In fact, however, reality differs from this calculation of averages. The machine may perhaps run more smoothly in the second year than in the first. And yet after twelve years it is no longer usable. It is the same as with an animal whose average life is ten years, but this does not mean that it dies by one tenth each year, although at the end of ten years it must be replaced by a new individual. (Marx 1989b, 111–12)

conclusion, from analyzing the impact of fixed capital on value formation, that "The production of different magnitudes of value . . . does not preclude the production of the same amount of surplus value" (Marx 1991, 311). This appeared to mean that the rate of profit from employing fixed capital would increase over its life as its value fell through wear and tear.⁷ Not happy with this, Marx speculated that increasing amounts of circulating capital advanced for maintenance and other operating costs could offset the fall in value of fixed capital, which could explain why the rate of profit did not automatically increase:

There can be no doubt that in the case of all capitals employing a great deal of fixed capital —provided the scale of production remains unchanged—the rate of profit must *rise* in proportion as the value of the machinery, the fixed capital, declines annually, because wear and tear has already been taken into account. Or one would have to assume that the maintenance work, etc., stands in direct proportion to the depreciation, so that the total sum advanced annually under the heading of fixed capital remains the same. (Marx 1991, 311)

Marx gave as an example a coal producer that begins with fixed capital of 50 depreciated straight line over 10 years, advances 50 every year for variable capital, and gets 50 surplus value, giving a rate of profit of profit of 50% [50/[50 + 50] and a selling price in year 1 of 105 [5 + 50 + 50]. "In the 2nd year, the fixed capital \ldots would = 45, variable capital = 50 and surplus value = 50, that is, the capital advanced would = 95. The rate of profit would have *risen*, because the value of the fixed capital would have declined by 1/10 as a result of wear and tear in the first year," assuming the producer "sells his coal at the same price throughout the 10 years" (Marx 1991, 311). By immediately suggesting the alternative solution Marx indicated that he did not think this was right, but he did not pursue it, perhaps because he knew that the alternative was also not right. Assuming an additional advance of circulating capital of 5 in year 2 for maintenance to offset the fall in the fixed capital, so that the total capital advanced remains 100 [45 + 5 + 50], and surplus value (SV) stays at 50, implies the selling price increases to 110 [5 + 5 + 50 + 50]. Next year the advance of circulating capital would have to increase to 10 and the selling price to 115, etc (see Table 6.5).

Marx's unfinished thought experiment, combining straight-line depreciation with increasing maintenance costs, begs a solution that determined the depreciation charge by the pattern of maintenance costs so that their sum remained constant, which for his example required steeply accelerated depreciation and maintenance provisions, rather than keeping constant the sum of fixed and circulating capital. To do this requires, as we will see Marx made clear in *Capital*, the "average calculation" shown in Table 6.6.

The total cost of the fixed capital over its life is 275, 50 for the original cost and 225 for circulating capital (CC), or 27.5 a year. In year 1, the producer charges 27.5 for depreciation (Dep) and the selling price is 127.5 [50 + 50 + 27.5]. In year 2, the producer charges 5 for circulating capital and 22.5 for depreciation, completely writing off the original cost, and again the selling price is 127.5 [50 + 50 + 22.5 + 5]. From years 3 to 6, the producer charges the actual expenditures of circulating capital (CC) and makes a provision to charge the average of 27.5 each year. For example, in year 3, the producer charges 10 for circulating capital and 17.5 as the annual maintenance provision, charging 27.5 in total, and the selling price remains 127.5. From years 7 to 10, the producer charges 27.5 each year by progressively reversing the accumulated provision against the actual expenditure so that at the end of the asset's life the accumulated provision is zero. If variable capital (VC) and surplus value (SV) remain constant, and the producer is a capitalist business that maintains its capital, its rate of profit (r) is constant.⁸

Table 6.5 Depreciation	and the Ra	te of Profit (1)
------------------------	------------	------------------

Year	Fixed capital	Circulating capital	Variable capital	Surplus value	Rate of profit	Selling price
1	50	-	50	50	50/100	105
2	45	5	50	50	50/100	110
3	40	10	50	50	50/100	115
Etc						

Source: Created by the author based on Marx's example (see Marx 1991, 311).

Marx did not pursue this solution in the *Economic Manuscripts of 1861–63*, but he made it explicit in *Capital*. In Volume 1, he spelled out why repairs are additions to the initial capital outlay for additional labor that added new value to the mass of commodities produced, allocated "according to an average annual calculation":

What is involved here is not the replacement of the labour contained in the machine, but additional labour that is constantly necessary for it to be used. This is not a matter of labour performed by the machine, but of labour performed on the machine; here it is not an agent of production, but rather raw material. The capital spent on this labour is part of the fluid capital, even though it does not properly enter the actual labour process to which the product owes its origin. The labour must be constantly performed in the course of production, and so its value must also be constantly replaced by the value of the product. The capital spent on it belongs to that part of fluid capital that has to cover the *general overheads*, and is distributed over the value of the product according to an average annual calculation. (Marx 1978, 253, emphasis added)

	Table 6.6	Depreciation	and the	Rate of	Profit	(2)
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Year	Fixed capital	Dep	сс	Annual provision	Accumulated provision	VC	sv	r	Selling price
1	50.0	27.5	-		-	50	50	50/100	127.5
2	22.5	22.5	5	-	-	50	50	50/100	127.5
3	-	-	10	+17.5	17.5	50	50	50/100	127.5
4		-	15	+12.5	30.0	50	50	50/100	127.5
5	-	-	20	+7.5	37.5	50	50	50/100	127.5
6		-	25	+2.5	40.0	50	50	50/100	127.5
7	-	-	30	-2.5	37.5	50	50	50/100	127.5
8	-	-	35	-7.5	30.0	50	50	50/100	127.5
9	-	-	40	-12.5	17.5	50	50	50/100	127.5
10	-	-	45	-17.5	-	50	50	50/100	127.5
Totals		50	225						

Source: Created by the author based on Marx's example (see Marx 1991, 311).

Chapter 7 explains that by adding value, repairs are for Marx "productive" labor, part of "general overheads" by which he meant what accountants call "production overheads," accounted for separately from depreciation. Clearly, "If the value of the fixed capital is £10,000, and its overall life is ten years, then this £10,000, when after ten years it is completely transformed into money, replaces only the value of the original capital investment, and does not replace the capital or labour newly added in between times for repairs" (Marx 1978, 254). As IAS 16 says, "an entity does not recognise in the carrying amount of an item of property, plant and equipment the costs of day-to-day servicing of the item. Rather, these costs are recognised in profit and loss as incurred . . . for the 'repairs and maintenance' of the item" (IASB 2000a, para. 12). IAS 2 Inventories requires entities to charge repairs to the profit and loss account as part of the normal "costs of conversion" of inventories, which include "a systematic allocation of . . . production overheads" (IASB 1993, para. 12). For Marx, like accountants,

two kinds of repair works can be singled out here, both having a more or less firm character and falling in different periods of the fixed capital's lifetime: childhood infirmities, and the far more numerous ailments of the years beyond middle age. No matter how perfectly constructed a machine may be when it enters the production process, faults become evident with actual use, and they have to be corrected by subsequent work. (Marx 1978, 254)

The costs of correcting "childhood infirmities," what accountants call "running-in" or "testing" costs, add value to the fixed capital. Accountants apply the principle that, in addition to the purchase price, the cost of an item of fixed capital includes, as IAS 16 puts it, "any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management" (IASB 2000a, para. 16 (b)).⁹ These include "costs of testing whether an

asset is functioning properly, after deducting the net proceeds from selling any items produced while bringing the asset to that location and condition" (IASB 2000a, para. 17 (e)).

From their middle age, in Volume 2 of *Capital* Marx observed that repair costs for machines tended to increase:

Moreover, the more it passes beyond its middle years, and thus the more that normal wear and tear mounts up, and the material it is made of becomes worn out and weak with age, the more frequent and serious becomes the repair work needed to keep the machine going until the end of its average life; just as an old man has more medical expenses than a man in the prime of life, if he is not to die before his time. Despite its accidental character, therefore, the work of repair is distributed unevenly over the various periods of the fixed capital's life. (Marx 1978, 254)

Now, like accountants, Marx explicitly recognized that the cost of repairs "is calculated over its average period of life" and charged at the average amount, not "in step with the actual expenditure itself," and that their pattern would co-determine the life of the asset and the transfer of its value through depreciation, with an "aliquot part" of repair costs:

Firstly... the extent of the repairs needed is differentially distributed over the various periods of the fixed capital's life. It is however assumed in assessing the average life of the fixed capital that it is constantly maintained in working condition, partly by cleaning (which includes keeping clean its site), partly by repairs, as often as these are required. The transfer of value through the wear and tear of the fixed capital is calculated over its average period of life, but this average period is itself calculated on the assumption that the additional capital required to keep it in working order is continuously advanced. Secondly, it is equally clear that the value added by this additional expenditure of capital and labour cannot go into the price of the commodities in step with the actual expenditure itself. A cotton spinner, for instance, cannot sell his yarn dearer this week than last week because he had a wheel broken or a belt snapped. The general costs of spinning are in no way affected by this accident in an individual factory. Experience shows the average life of a fixed capital invested in a certain line of business. This average expenditure is distributed over its average life and added in corresponding aliquot parts to the price of the product, and this is how it is replaced by the product's sale. (Marx 1978, 254–55)

For support, he cited "Captain Fitzmaurice, 'Committee of Inquiry on Caledonian Railway,' published in *Money Market Review*, 1867," who repeated the consensus of experts on railway accounts (see Bryer 1991): "The only sound way is to charge each year's revenue with the depreciation necessarily suffered to earn the revenue, whether the amount is actually spent or not" (Marx 1978, 258). "Depreciation" here meant charging the fall in value from wear and tear, rather than only actual replacements, and making provisions for repairs. Marx cited "customary" bookkeeping practice to support his conclusion that the average expenditure on repairs would determine the transfer of value of the fixed

capital, and gave an example:

It is important to note that in many lines of business it is customary to calculate the repair costs in conjunction with the actual wear and tear of the fixed capital, in the following way: If the fixed capital advanced is £10,000, its life fifteen years, then the annual depreciation is £666²/₃. If the depreciation is now calculated over ten years only, then instead of £666²/₃, £1,000 is added annually to the price of the goods produced to compensate for the wearing-out of the fixed capital; i.e. £333¹/₃ is reserved for repairs, etc. (The figures ten and fifteen are taken only for the sake of example.) This, then, is the amount spent on repairs, on an average, so that the fixed capital may last for fifteen years. (Marx 1978, 255–56)

In short, for the fixed capital to have a life of 15 years required spending an additional \pounds 5,000 [15 x \pounds 333¹/₃] over the 15 years, and therefore, calculating the repair costs "in conjunction with the actual wear and tear," the charge for consuming the initial advance, gave the straight-line depreciation method (see Table 6.7).

The general principle was,

In so far as repairs are necessary, and these do not exceed the average amount, they are simply capital invested at a later date. We can consider the matter as if he had allowed for all the repair costs when he assessed the value of his invested capital, in so far as this enters into the annual commodity product, so that these are included in the . . . amortization. (Marx 1978, 198)

Straight-line depreciation was therefore appropriate if repair costs are constant, but in general repair costs should be included as part of the calculation of the value of fixed capital transferred over its useful life, which the capitalist should allocate or "amortize," as accountants say (e.g., Kohler 1970, 26), equally to products.

Marx (1978, 248, 257–58) also dealt with partial replacements and renewals, as accountants do (see IASB 2000a, IAS 16, para. 13).¹⁰ Writing when professional accountancy was in its infancy, he recognized that on the railways

	-	-		-	
Year	0	1	2	15	Total
Initial cost	10,000				10,000
Repairs		333%	+ 333 1/3	+333½ =	5,000
Total cost					15,000
					=====
Cost per period					1,000
Thus, depreciation per period		666%	+ 666%	+666⅔ =	10,000

Table 6.7 Marx's Accounting for Depreciation and Repairs

Source: Created by the author based on Marx's example (see Marx 1978, 255-56).

The line between repairs proper and replacement, between costs of maintenance and costs of renewal, is rather flexible. Hence the eternal dispute, for instance in railroading, whether certain

expenses are for repairs or for replacement, whether they must be defrayed from current expenditures or from the original stock. A transfer of expenses for repairs to capital account instead of revenue account is the familiar method by which railway boards of directors artificially inflate their dividends. (Marx 1997, 181)

Capitalists and accounting authorities like Dionysius Lardner (see Bryer 1991) were getting wise to these methods:

However, experience has already furnished the most important clues for this. According to Lardner, the subsequent labour required during the early life of a railway for example ought not to be denominated repairs, but should be considered as an essential part of the construction of the railway, and in the financial accounts should be debited to capital, and not to revenue, not being expenses due to wear and tear, or to the legitimate operation of the traffic, but to the original and inevitable incompleteness of the construction of the line. (Marx 1997, 181)

According to Marx's theory of value, and accountants, whether expenditure is an advance of fixed or fluid capital is a question of fact, whether it provided use values for more than one circuit of capital, for which shareholders should hold managers accountable. Whether shareholders and accountants actually hold management accountable for the facts is a separate question.¹¹

In summary, Marx treated average maintenance, repairs for accidental damage, and aging, the same as wear and tear, as transfers of the socially average amount of value to products (Kliman 2011a, 221), which explains the accountants' principles of fixed asset accounting. Against this background, it is clear that economists' criticisms of Marx's treatment of fixed capital are misplaced.

CRITICISMS OF MARX

Marxist economists often criticize Marx for assuming only straight-line or "linear value depreciation" (Steedman 1977, 138). According to Harvey (2006, 211, 212), "Marx was well aware that a model of 'straight-line value transfer' was an over-simplification," but stuck to it even though "It is . . . deeply inconsistent with the overall tenor of Marx's argument in *Capital* since it gives an autonomous and seemingly determinant role to the physical and material mode of being of fixed capital. . . . If we take the model of straight-line value transfer as sacrosanct, we quickly run into a variety of difficulties." The first was that it presupposed the static state: "straight-line value transfer calculated with respect to an original purchase price (assumed to be equivalent to value) will equal replacement investment only under special and quite unrealistic conditions—no technological innovation, no variations in the cost of machinery, etc"

(Harvey 2006, 212). However, we saw in chapter 4 that Marx accounted for changes in the replacement cost of constant capital and, will see below, for technological innovation. Second, Harvey argues, allowing "economic lifetime" means that the "use value" of fixed capital becomes earning the capitalist surplus value, which depends on uncertain future events, which makes its valuation "a quagmire of uncertainty" (2006, 212).

According to Harvey, "Initially, he appeals to a purely *physical* concept —a machine is built with a certain physical capacity and durability and wears out within a certain time period. But he also recognizes that the *economic* lifetime may be different" (2006, 212), that capitalists replace machines before the end of their physical lives if this gives them higher profits. It follows, "The economic lifetime of a machine cannot, therefore, be known in advance" (Harvey 2006, 212) with certainty because what the capitalist decides depends on many aspects of an uncertain future. As Harvey says, "it depends upon changes in the design and cost of machinery, the general rate and form of technological change, the conditions affecting the rate of exploitation of labour power . . . , profit rate differentials under different technologies within a given line of production, and so on" (2006, 212). This, Harvey concludes, undermines any claim that Marx's theory of value gives us a quantifiable measure: "What began by seeming a solid material foundation for the analysis of value transfer is transformed by social processes into a quagmire of uncertainty" (Harvey 2013, 14; 2006, 212). Perelman agrees: "According to [Marx's] simple value theory, capital goods unrealistically depreciate according to predetermined patterns, just as they do in neoclassical production theory," but uncertainty means the "impossibility of correctly measuring . . . the transfer of value from constant capital to the final products" (Perelman 1999, 721, 719). Therefore, "We cannot calculate the values of goods produced today, because knowing the appropriate values of the constant capital being transferred today is impossible without advanced knowledge of future reproduction values" (Perelman 1999, 723).

However, first, according to Marx, the TSSI, and accountants, current prices determine the value transferred at any point, and there is no question of retrospective revaluation of earlier transfers using future replacement prices. Second, while it is true that usage, prices, technology, and "Reproduction costs shift in unpredictable patterns" (Perelman 1999, 723), according to Marx and accountants, capitalists hold management accountable for their plans and changes in them using current replacement prices. Perelman accepts, "Alternatively, we could calculate the values of goods based on capitalists estimates of future depreciation patterns," but concludes, "Once we embark on the path of taking subjective estimates of future depreciation into consideration, we open a new can of worms. To begin with, we have no way of knowing the capitalists' subjective opinions" (1999, 723). He does not think of looking at the accounts and their use. If he had, he would have seen that accountants leave it to management to decide the economic life of a fixed asset, based on its inevitably subjective forecast of the asset's "optimal" economic life. From this decision, and data on the size and pattern of operating costs, accountants calculate the appropriate method of depreciation to hold management accountable for the results. It is true that the "transfer of value from capital goods to finished commodities is . . . unobservable" (Perelman 1999, 721), but we can, as Marx said of the transformation from value to prices, "glimpse" it in the capitalist's calculations of depreciation and repairs, etc.

According to Harvey, Marx also fails to analyze the implications for value transfer of a competitive market where, he claims, the value of fixed capital is "simultaneously" determined by its initial price, the "value" of future surplus value, and replacement cost (2006, 210).¹² Harvey concludes that there is, therefore, no "true value," and asks, "If we do not know the true value, then how on earth are we even to discuss the circulation of fixed capital as value?" (2006, 210). While he thinks there are no "easy answers," his answer is that three (or more) values "implies that the value of machinery is in a perpetual state of flux—a conclusion that is incompatible with a conception of value as 'embodied labour time' but which is surely consistent with Marx's conception of value as a social relation" (Harvey 2006, 210). Marx, he complains, ignores his own conception, myopically sticking with historical cost and depreciation determined by use values:

Marx avoids these difficulties by focusing narrowly on what happens within the realm of production when the value of fixed capital—as measured by its initial purchase price—is recouped through productive consumption. He proposes the following rule for the circulation of fixed capital: "its circulation as value corresponds to its consumption in the production process as use value." (Harvey 2006, 210)

Harvey's quote is from *Grundrisse* where Marx argued, "Fixed capital can enter into circulation as value . . . only to the extent that it passes away as use-value in the production process. . . . In being used, it is used up, but

in such a way that its value is carried over from its form into the form of the product" (1973, 681). If the consumption of use values determined the transfer from fixed capital to the product, it was a simple matter because "A machine of a value of £1,000 which lasts 5 years . . . is used up, say, by 1/5 per year . . . Its entry into circulation is thus purely determined by the time of its wearing out" (Marx 1973, 682). However, we saw in chapter 3 that, in December 1862, Marx queried the idea that capitalists depreciation depended simply upon the consumption of fixed capital's use values, or what Harvey calls its "efficiency," which could mean varying use values from constant applications of labor (discussed below). As Harvey (2006, 210) says, "This efficiency can remain constant, improve, decline or exhibit a variety of ups and downs during the lifetime of the machine. While here, as elsewhere, it is the average that is important, Marx's rule implies value should circulate in a way which reflects the changing average efficiency of machines over their lifetimes."

This followed from Marx's rule in Grundrisse. However, in the *Economic Manuscripts of 1861–63*, Marx relaxed the grip of use values, which now, rather than "determining" the transfer of value, merely "conditioned" it. "The machinery functions in its entirety as means of labour, but it only adds value to the product in the proportion to which the labour process diminishes its value, a devaluation which is *conditioned by* the degree of reduction of its use value through wear and tear during the labour process" (Marx 1988, 326, emphasis added). Further on he says, "the value of the fixed capital . . . reappears . . . *in proportion* to wear and tear" (Marx 1991, 136, emphasis added), but he does not say a constant proportion. In Volume 2 of *Capital*, he makes clear that the "proportion" refers to the "exchange value," which is not necessarily constant for every use value: the "means of labour . . . gives up value to the product in proportion to the exchange value that it loses together with its use-value" (Marx 1978, 235, latter emphases added). His final word: "Depreciation . . . is *that portion of value* that the fixed capital gradually gives up to the product as it is used, according to the average degree of its loss of usevalue" (Marx 1978, 250, emphasis added). We have seen that, assuming constant efficiency, Marx had answered the question of what "portion" of its exchange value transferred according to the loss of its use values and we will see below that his theory of value also provides a logical answer when efficiency is not constant.

Harvey confuses the method of depreciation with the valuation basis. He

says Marx gave us "three ways to . . . value fixed capital," the first "by appealing to straight-line depreciation," that is, to historical cost, and the "second . . . by way of replacement cost," implying, incorrectly, that "depreciation" is the change in the replacement cost of the "residual value" (Harvey 2013, 138).¹³ Harvey's third method, also not a method of depreciation, but an element in its computation, is that the "value of a machine is dependent on the social average lifetime and the general level of effectiveness of fixed capital deployed by competing capitalists" (2013, 138), which determines "moral depreciation," discussed in the following section, which he thinks is much more interesting. He judges "The Volume II presentation is rather less stimulating than it is elsewhere" (Harvey 2013, 109). He complains, "Why Marx did not incorporate [the] brilliant if somewhat purple prose . . . from the *Grundrisse* . . . into Volume II . . . is a mystery" (Harvey 2013, 112). He surmises that this was "due to his desire to be seen as rigorously scientific and factual," and because "the real object of his inquiry is the turnover time of capital" (Harvey 2013, 112). Alternatively, we could see Marx's "plunge into the minutiae of, for example, the distinctions between repair and replacement" (Harvey 2013, 112), as evidence that he actually was scientific and factual in pursuit, not of the impact of fixed capital on turnover time, which was already clear, but of detailed accounting evidence of how his theory of value "asserts itself."

Marxist economists, however, see a fatal flaw in Marx's treatment of fixed capital, which they argue cannot cope with varying levels of "efficiency," varying levels of output for the same labor input. As Armstrong, Glyn, and Harrison (1994, 106) say, Marx "usually assumed that machines retain equal efficiency throughout their lives so that the same number of use-values is produced in each period of their operation. In this situation, a constant proportion of a machine's value is transferred both to each use value and in each period." They accept, "If the efficiency of machines varies with age . . . so that different amounts of use-values are produced by their operations in different periods . . . the obvious approach . . . is to maintain linearity with respect to use-value production" (Armstrong, Glyn, and Harrison 1994, 106), that is, to charge depreciation per unit of output. Steedman (1977, 138), however, claimed this caused a fatal problem for Marx's "embodied labour-time values of commodities." Following Steedman's claimed "demonstration that correct, coherent value determinations *must* be based on the relevant, disaggregated physical data"

(1977, 138), Armstrong, Glyn, and Harrison accept that, when output fluctuates, unitizing depreciation is normally fine,

But a problem remains. If the operation of a machine by a constant amount of direct labour creates fewer use-values in some periods than in others, it is not possible to maintain both the notion of linear value transference (with respect to use-values) and that of direct labour being socially necessary (and hence creating equal amounts of value). For if the same amount of value were transferred to each *use-value* and the same amount of value in each *period*, the total value of each unit of the commodity produced on some machines would exceed that of each unit produced on others. This would be at odds with the fundamental idea that all units of a commodity have equal values. (Armstrong, Glyn, and Harrison, 1994, 106)

Consider the following "extreme" example, which allocates depreciation equally to each output, which produces very different costs per unit: An asset costing £1,250 lasts three years and has a residual value of £50. Direct labor is constant at £100 a year and the asset provides 120 units of output, 119 in year 1, 0 in year 2, and 1 in year 3 (see Table 6.8).

Dropping Marx's supposed assumption that the same amount of value is transferred from fixed capital to each unit of output, Steedman (1977, chapter 10) "finds peculiar things can happen. If the difference in productivity of labour operating machines of different ages is sufficiently large, both value transferred in certain periods and even the value of certain partly worn-out machines may be negative" (Armstrong, Glyn, and Harrison 1994, 106–107)! Steedman's method produces the "strange" results shown in Table 6.9.¹⁴

From assuming "Marx's additive value magnitudes . . . are mere derivatives of the physical data" (Steedman 1977, 149), Steedman's method allocates the total cost per unit of 12.5 according to the level of production, and deducts the labor cost each year, which produces a "negative asset" of 187.5 [1,387.5–1,200] in year 1, and therefore "negative depreciation" in years 2 and 3! Armstrong, Glyn, and Harrison (1994, 107) conclude that Steedman's results are nevertheless "not very . . . damning," because his example is "extreme," and "First, the values of all newly produced commodities is determinate and positive. It is not obvious that the values of partly worn-out machines are of any interest" (Armstrong, Glyn, and Harrison 1994, 107) to economists, but they are of great interest to Marx and accountants, and the negative depreciation charges are meaningless.¹⁵

Second, they think, to the contrary, that "Steedman's negative values do express something real, even if in a somewhat counter-intuitive way" (Armstrong, Glyn, and Harrison 1994, 107). This is because they think the

equivalent positive values attributed to machines that increase output after running-in makes it "intuitively reasonable that the machine should have a higher value in year 2," because "some labour operating the machine in year 1 adds value to it" (Armstrong, Glyn and Harrison 1994, 107). As we have seen, Marx agreed that expenditure for "testing" added new value to fixed capital. However, reversing the order of Steedman's "negative depreciation," starting (say) with year 3's output followed by year 2, and then year 1, still produces an arbitrary measure of value transfer. Steedman's results are therefore not at all damning, but the point is they are irrelevant to Marx's and the accountants' theory of fixed capital.

Year	0	1	2	3	Total
Initial cost	1,250				1,250
Direct labor		100	100	100	300
Residual value					-50
Total cost					1,500
					====
Number of units produced		119	0	1	120
Depreciation [1,200 x output/120		1,190	0	10	1,200
Labor costs		100	100	100	300
Total cost		1,290	100	110	1,500
					====
Cost per unit [Total cost/output]		10.84	00	110	

Table 6.8Allocating	Depreciation to	Output: An	Extreme	Example
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Source: Created by the author.

Table 6.9 Steedman's Method

Year	0	1	2	3	Total
Initial cost	1,250	10100100			1,250
Direct labor		100	100	100	300
Residual value					-50
Total cost					1,500
					====
Number of units produced		119	0	1	120
Cost per unit					1,500/120
					= 12.5
Total cost of production [12.5 x output]		1,487.5	0	12.5	1,500
Less: Labor costs		100	100	100	300
Depreciation		1,387.5	-100	-87.5	1,200
		=====	====	====	====
Depreciation per unit of output		11.66	-00	-87.5	

Source: Created by the author.

Steedman's absurdity arises from his physicalist-induced neglect of Marx and accountants' fundamental principles, that we must first allocate the labor costs *to the units of output*, and then tailor *the depreciation charge* (which here is equal per unit of output) to ensure that each unit of output has the same unit cost (see Table 6.10).

Armstrong, Glyn, and Harrison accept that "it is possible to devise [*sic*] an alternative approach which avoids negative values," that is, the method used to construct Table 6.10, but they agree with the "objection . . . to this approach . . . that all direct labour should be considered to be socially necessary and hence should be regarded as creating equal amounts of value" (1994, 108). They prefer the first method that treats "labour operating old machines . . . as creating less value than that operating new machines . . . [because] it permits a straightforward and intuitive treatment of fixed assets" (Armstrong, Glyn and Harrison 1994, 108)! Accountants, however, agree with Marx's method that the "direct labor" in years 2 and 3 in the example, necessary according to the capitalist's calculations, is as "socially necessary" as the labor in year 1 in producing all of the asset's outputs.¹⁶ Treating it as such, each commodity has the same value, consistent with Marx's theory of value. Accountants would therefore choose Marx's method because it accurately measures the transfer of value from fixed capital and the addition of value by labor to the outputs.

Year	0	1	2	3	Total
Initial cost	1,250				1,250
Direct labor		100	100	100	300
Residual value					-50
Total cost					1,500
					====
Number of units produced		119	0	1	120
Cost per unit					1,500/120
					= 12.5
Depreciation [1,200 x output/120]		1,190.0	0	10	1,200
Labor costs [(300/120) x output]		297.5	0	2.5	300
Total cost		1,487.5	0	12.5	1,500
		======	=	===	====

Table	6.10	Allocating	Labor	Costs	to	Output
LUDIC	0.10	¹ mocum _g		00313	ω	Output

Source: Created by the author.

MORAL DEPRECIATION

In addition to wear and tear, Marx recognized what he called "moral depreciation" from technological and market obsolescence, as accountants do. In contrast to wear and tear and repairs, obsolescence "cause[s] the prior *average* expenditure on means of production to exceed the *average*

expenditure that is now 'normal and inevitable'" (Kliman 2011a, 221). While technical progress was beneficial to some individual capitalists, Marx's accounting for moral depreciation showed him that it held "dangers" for others, for capitalists collectively, and for society.

Moral depreciation was of two types. First, unexpected obsolescence prematurely shortened the useful lives of existing assets, which caused "losses," that is, asset write-downs. In Volume 2 of *Capital*, he noted that whereas technical improvements increased the technical life of fixed assets, "it is shortened on the other by the continuous revolution in the means of production, which . . . involves . . . the necessity of their constant replacement, on account of moral depreciation, long before they expire physically" (Marx 1997, 187). He elaborated why this was "of a general importance to the question of depreciation" in Volume 3:

The continual improvements which lower the use-value, and therefore the value, of existing machinery, factory buildings, etc. This process has a particularly dire effect during the first period of newly introduced machinery, before it attains a certain stage of maturity, when *it continually becomes antiquated before it has time to reproduce its own value*. This is one of the reasons for the flagrant prolongation of the working-time usual in such periods, for alternating day and night-shifts, so that the value of the machinery may be reproduced in a shorter time without having to place the figures for wear and tear too high. If, on the other hand, the short period in which the machinery is effective (its short life vis-à-vis the anticipated improvements) is not compensated in this manner, it gives up so much of its value to the product through moral depreciation that it cannot compete even with hand-labour. (Marx 1998, 115, emphasis added)

This form of moral depreciation produces losses.

For example, assume that a company buys a fixed asset costing £1,200. The original estimate of its useful life is 10 years. Due to technical progress, at the beginning of the fourth year it reestimates the remaining life as 3 years, reducing the total life of the asset from 10 to 6 years. It charges depreciation straight line (see Table 6.11).

The company makes an "extraordinary" loss of £240 [(\pounds 200 – \pounds 120) x 3 years] in year 4, unrelated to its normal operating cycle, the accumulated backlog of depreciation it should with hindsight have charged, and charges higher depreciation in years 4–6, which, as Marx said, could make it uncompetitive with other, more labor intensive, means of production.

The second meaning of "moral depreciation," as Marx put it in Volume 1 of *Capital*, was "devaluations" arising from falling input prices:

But in addition to the material wear and tear, a machine also undergoes what we might call a moral depreciation. It loses exchange-value, either because machines of the same sort are being produced more cheaply than it was, or because better machines are entering into competition with it. In both cases, however young and full of life the machine may be, its value is no longer

determined by the necessary labour-time actually objectified in it, but by the labour-time necessary to reproduce either it or the better machine. *It has therefore been devalued to a greater or lesser extent*.¹⁷ The shorter the period taken to reproduce its total value, the less is the danger of moral depreciation; and the longer the working day, the shorter that period in fact is. When machinery is first introduced into a particular branch of production, new methods of reproducing it more cheaply follow blow upon blow, and so do improvements which relate not only to individual parts and details of the machine, but also to its whole construction. (Marx 1981, 528, emphasis added)

rubic off change	is Leone		.0			
Year	1	2	3	4	5	6
Depreciation charge	120	120	120	200	200	200
Extraordinary loss	-	-	-	240		

Table 6.11 Changing Economic	Lives
------------------------------	-------

Source: Created by the author.

In Volume 2 Marx gave the example of the railways: "as everywhere else in modern industry, the moral depreciation plays a role. After the lapse of ten years, one can generally buy the same number of cars and locomotives for £30,000 that would previously have cost £40,000. Depreciation in the rolling stock must be set at 25 per cent of the market price even when there is no depreciation whatever in its use-values" (1997, 173). The "danger" from this form of moral depreciation, from "devaluation," which was often accompanied by the shortening of asset lives, was that capitalists had less opportunity to employ their capital profitably, as we will see below.

By "moral" Marx probably meant "social" or "human," to distinguish it from "depreciation" caused by physical wear and tear. David Fernbach, the translator of the Penguin edition of Volume 3, notes, "The reason for this rather awkward term . . . (*moralischer Verschleiss*) . . . is that *Verschleiss* as such means depreciation in the sense of wear and tear, which is what Marx is discussing in Volume 2. In the present volume, however, he generally describes this phenomenon as a form of devaluation (Entwertung)" (Marx 1981, 209). This suggestion is potentially misleading because in Volume 3 Marx also used "moral depreciation" to mean increased depreciation from shortening asset lives, and in Volume 2 he distinguished depreciation meaning physical "wear and tear" from "moral depreciation." "By wear and tear (*moral depreciation excepted*) is meant that part of value which the fixed capital, which being used, gradually transmits to the product" (Marx 1997, 173, emphasis added, 1978, 250).

Marxists often overlook or conflate the two meanings of "moral depreciation." Freeman argues it is "normal accounting practice" if I have a stock of iron of 500 tons which was "worth" £1,000 and "the price of

iron halves. My remaining stock of 500 tons is now worth only £500. I have lost £500 through price changes. This is a deduction from profit . . . [and is] moral depreciation (£500)" (1996, 258). Saying that "Marx . . . considered it a component of the value of production" (Freeman 1996, 258), however, implies it is expected obsolescence. Perelman also argues, "The profit resulting from a purchase of fixed capital depends upon the sum of current profits from basic business activities plus any appreciation or depreciation that occurs as a result of that investment" (1999, 726). In other words, all "depreciation" in value is a loss.¹⁸ Laibman (2001, 80) sees "the view that the capital stock is subject to 'moral depreciation'—fall in value as a result of falling replacement cost—as a result of technical change . . . clearly present in Marx," but nothing else. Potts argues, "if commodities acting as fixed constant capital become cheaper to produce in this period, they will be cheaper as inputs in the next period; but this period profitability is depressed by capitalists having to write off from their profits the price/moral depreciation of all existing units of fixed capital of this kind" (2011a, 461).

Kliman recognizes only that "Marx treated the decline in fixed assets' values caused by obsolescence differently from the decline in their values caused by wear and tear" (2011a, 139). He argues, whereas capitalists recover the cost of wear and tear,

If a fixed asset undergoes moral depreciation, some of the labor expended in its production is no longer needed to reproduce new fixed assets of the same kind, and this reduces the values of the commodities produced by means of it. Thus, some of the money that was spent to acquire the fixed asset will not be recovered if (as is true in the aggregate, according to Marx's theory) these commodities are sold at their values. (Kliman 2011a, 139)

Kliman therefore concludes, "when a fixed asset undergoes moral depreciation, its owners realize a loss" (2011a, 140), and gives an example:

For instance, consider a machine purchased for \$10,000. If the only depreciation it undergoes is depreciation due to wear and tear, the whole \$10,000 will be recovered, *ceteris paribus*. In Marx s terminology, the using-up of this machine 'transfers' a value of \$10,000 to the products produced by means of it. If, on the other hand, the price of such machines falls to \$7,000 because of a technological improvement, even before this particular machine can be used in production, 30 percent of the labor that was expended to produce it is no longer needed to produce machines of this kind, and so 30 percent of its original cost, \$3,000, will not be recovered if the products produced by means of it are sold at their value. The using-up of this machine therefore 'transfers' a value of only \$7,000 rather than \$10,000 to the products. . . . *In short, when a fixed asset undergoes moral depreciation, its owners realize a loss*. Thus Marx speaks of 'the danger of moral depreciation,' and he argues that because capitalists try to avoid this danger by using up their machines quickly, before they become obsolete. (Kliman 2011a,

139–40, emphasis added)

Marx did not argue that all moral depreciation caused a "loss." First, capitalists include the expected costs of obsolescence in their present value calculations, which shortens the economic life and reduces the residual value, both of which increase the depreciation charge, the cost (value) of the use values transferred. Second, we saw in chapter 4, Marx accounted for moral depreciation from cheaper equivalent assets as CMAs. The fall in replacement cost from \$10,000 to \$7,000 would be an immediate loss therefore only if the new machine was in general use, so \$7,000 had become the socially necessary cost, so that the capitalist could recover only the current market price of \$7,000, but paid \$10,000. However, if not, the capitalist makes a CMA of \$3,000.

Suppose in Kliman's example the general rate of profit is 10%, so that before the input price change the capitalist expected the fixed capital (ignore other costs) to produce sales of £11,500 over two years, the life of the asset. That is, sales of \$6,000 in year 1 year, and \$5,500 in year 2, which with a straight-line depreciation charge of \$5,000 per year gives a profit of \$1,000 in year 1, and \$500 in year 2, and therefore a rate of profit of 10% each year (see Table 6.12).

If after the input price change the capitalist can, for whatever reason (e.g., monopoly power), still sell at the initially expected prices and charges depreciation at the new replacement prices of \$3,500 per year [\$7,000/2] the "surplus" would be \$2,500 in year 1, and \$2,000 in year 2. However, \$1,500 of this each year would be CMAs that together release capital of \$3,000 (see Table 6.13).

Whether a CMA is a release of capital depends on selling prices, but either way it is not a loss. If input and selling prices fell immediately after purchase the capitalist would not get back the \$3,000, but this would not be a "loss" because \$3,000 less capital is needed to replace the asset and continue the circuit of capital. To produce a 10% rate of profit on \$7,000 and \$3,500 capitals in years 1 and 2 respectively, the capitalist can now only realize sales of \$4,200 in year 1, and \$3,850 in year 2 (see Table 6.14).

Only if the capitalist had bought the old asset for \$10,000, when a new asset was available for \$7,000 that was in general use and therefore expected revenues had already fallen, would the capitalist have made an "extraordinary loss" of \$3,000 on purchase because the target cost was \$7,000. For Marx, therefore, the "danger" to capitalists from "moral

depreciation" was from losses arising from the unexpected shortening of asset's lives, but also from the fact that if input and selling prices fell they earned smaller profits from smaller capitals, not that they would not recover their capital. Even if selling prices "release" the capital, capitalists must find another productive use for it to make up for the lost profit.

5,500
5,000
500
=====
5,000
500/5,000
10%

 Table 6.12 Accounting for Moral Depreciation (1)

Source: Created by the author.

Table 6.13 Accounting for Moral Depreciation (2)

	Year 1	Year 2
Sales	6,000	5,500
Depreciation	3,500	3,500
Surplus	2,500	2,000
CMA	(1,500)	(1,500)
		· ·
Profit	1,000	500
	====	=====
Capital	7,000	3,500
Rate of profit	1,000/70,000	500/3,500
	14.3%	14.3%

Source: Created by the author.

Finally, Harvey sees the distinction between shortening life and reducing value, but thinks they are both simply "accelerated depreciation," that is, as they "result in crisis," he thinks of them as losses:

Revolutions in production either cheapen fixed capital over time or lead to the production of better machines to replace existing ones before the lifetime of the latter is out. The result is to accelerate the depreciation, or what amounts to the same thing, reduce the effectiveness—the utility—of the old machines. . . . Accelerated depreciation entails devaluation of the existing fixed capital whose value has not yet been fully recovered through the production and sale of commodities. If this occurs on a widespread enough scale, then it can obviously result in crises. (Harvey 2013, 135, 136)

Table 6.14 Accounting for Moral Depreciation (3)

Year 1	Year 2
4,200	3,850
3,500	3,500
700	350
====	====
7,000	3,500
700/7,000	350/3,500
10%	10%
	Year 1 4,200 3,500 700 ==== 7,000 700/7,000 10%

Source: Created by the author.

The fact that Marx did not argue that all moral depreciation generated losses could explain why, unlike in the *Grundrisse*, in Volume 2 of *Capital* he did not stress the significance of the "devaluation" of fixed capital for crises, an omission that Harvey criticizes. He complains,

the general significance of the devaluation of large quantities of fixed capital due to 'moral depreciation' or to other social forces (such locational shifts that leave fixed capital in place high and dry) is not emphasized at all in Volume II. It is picked up in the *Grundrisse*, both theoretically and historically. So we are left on our own to figure out some of the implications. (Harvey 2013, 136)

Marx does not use the phrase "moral depreciation" in the *Grundrisse*. There he stressed the link between the "fixedness" of fixed capital and crisis: "The trouble with fixed capital is precisely . . . that it is fixed, when capital is all about capital in motion" (Harvey 2013, 111). Therefore, in *Grundrisse*, Marx concluded, "as regards capital's external relations, it is *circulating capital* which appears as the adequate form of capital, and not fixed capital" (1973, 694). In *Capital*, by contrast, his concern was the circulation of fixed capital as an element in the total circuit, which confirmed his theory of value, and found its place in his explanation of crises. It is certainly true that:

When commodity values plunge because of rising productivity (due to the availability of cheaper and more effective fixed-capital equipment), then individual capitalists cannot claim back the whole value of their fixed capital when they go to market. No purchaser is likely to listen when I say, 'Please pay me more for this commodity because I have not yet amortized my older and clunkier forms of fixed capital' (Harvey 2013, 139)

Harvey's (2013, 139) conclusion, "But Marx leaves this determinant largely uninvestigated," however, is clearly wrong.

CONCLUDING COMMENTS

Like many Marxist economists, Harvey believes that the "difficulties" with Marx's treatment of fixed capital "can most easily be resolved by treating
fixed capital circulation as a case of joint production" (2006, 213), that is, as a production process that simultaneously produces more than one use value from the same inputs, just as rearing sheep produces meat and wool. If we think of fixed capital this way, the capitalist advances fixed and circulating capital at the beginning of each period, and at the end has a commodity and "a residual quantity of fixed capital value embodied in a machine which can be used again, replaced or even sold to somebody else. The residual value . . . is treated as one of the outputs of the production process" (Harvey 2006, 213).

Harvey (2006, 213, 214) believes, "This way of handling the problem has been used to great effect by writers such as von Neumann, Sraffa, Steedman and Morishima," whose conclusions "pose serious dilemmas for Marxian value theory." However, these writers' misunderstanding of Marx's problematic was not that "each writer sees value simply as an accounting concept" (Fine and Harris 1979, 45). Kliman (2007, 50, 137; 2013) shows that the "dilemmas" stem from their simultaneist-physicalist interpretation, not Marx's theory of value. According to the accounting interpretation, the fatal weakness of the "joint production" approach for accountability is that it treats the residual fixed capital as though it was "circulating as a commodity," a "marketable commodity" as Sraffa put it (Swanson 1986, 50). "Depreciation" therefore means the subjective change in the PV or the expected selling price of the remaining asset (Levine 1978, 302), whereas for Marx it was an objectively calculable socially necessary cost of production.

It is true that valuing fixed capital "is a horror story in bourgeois economics, and is also viewed by many as deeply problematic in Marx . . . [and] is sometimes presented as the Achilles' heel in Marx's conception of the labour theory of value" (Harvey 2013, 139). Harvey agrees, "There is no question that its 'peculiarities' do challenge certain conceptions of that theory," those in which "value is interpreted as that socially necessary embodied labor input that fixes the 'true' value of a commodity for all time [*sic*] and underpins the . . . observed prices in the market" (2013, 139; 2006, 214). He claims, "It has certainly been shown conclusively [*sic*] that the circulation of fixed capital cannot be reconciled with a theory of value that rests solely on past and present embodied labor time as fixed [*sic*] magnitudes" (Harvey 2013, 139). Harvey (2013, 139) attributes this theory to Ricardo, not Marx, but if by "fixed magnitudes" we mean objectively calculable, we have seen that Marx and accountants share precisely such a

theory, that by adopting the TSSI we can reconcile the circulation of fixed capital with Marx's value theory. In short, the valuation of fixed capital is a "horror story" for bourgeois economists and many Marxists because they adopt the physicalist-simultaneist interpretation.

Harvey (2013, 140) seeks to absolve Marx by portraying him as really arguing, "value is not a fixed metric to be used to describe a changing world, but a social relation which embodies contradiction and uncertainty at its very center." Value was a social relation for Marx, but one that was objectively quantifiable, and one that he theorized not merely to describe a changing world, but to explain how capitalists control it, an aim that neither Harvey nor other Marxists recognize.

Doing so, the final chapter argues, is also necessary to understand Marx's categories of "productive" and "unproductive" labor, which many critics conclude are ambiguous and inconsistent.

NOTES

- 1. US GAAP for fixed assets and depreciation are almost identical to IAS 16.
- 2. William Baxter was a professor of accounting at the London School of Economics.
- 3. For example, a warehouse could become too small.
- 4. All cash flows in Table 6.2 are calculated at their present value (PV), for example, £175 =

 $\pounds 200/[1.07]2$. To calculate the annual equivalent cost, let $\pounds X =$ the annual equivalent cost, PVS = the sum of the present value factors for a series of equal payments for the life of the asset, and PV = the present value of the net cash flow (cost) per cycle. Then, $\pounds X \times PVS = PV$. Thus, $\pounds X = PV/PVS$. For example, for the two-year replacement cycle, $\pounds 1,295 = \pounds 2,341/1.808$.

5. IAS 16 requires that the depreciation "method used shall reflect the pattern in which the asset's future economic benefits are expected to be consumed by the entity" (IASB 2000a, para. 60), which introduced subjectivity into the choice of method. However, it retains the traditional view that "The future economic benefits embodied in an asset are consumed by an entity principally through its use," but "other factors, such as technical or commercial obsolescence and wear and tear while an asset remains idle, often result in the diminution of the economic benefits" (IASB 2000a, para. 56).

6. Alternatively, if operating costs decrease over an asset's life a decelerated method, for example, the "annuity method," is appropriate.

7. The rate of profit would increase only if the producer did not maintain capital by withdrawing the money capital recovered through depreciation, as we will see.

8. For Marx, a "capitalist" circulates or maintains capital, which means paying dividends only from profit after depreciation. Assume Marx's producer is a company that starts with equity capital and cash of 100, 50 for fixed capital and 50 for wages. At the end of year 1, equity remains 100 and the assets are 27.5 retained cash + 22.5 fixed capital + 50 cash for wages = 100, and at the end of year 2 assets are also 100, 50 cash retained and 50 for wages. In year 3, assets are 67.5 retained cash + 50 cash for wages – 17.5 provision = 100, etc. The company needs no additional capital to finance the maintenance expenditures because the annual provisions accumulate the necessary cash from sales, leaving a balance of £100 at the end of year 10, £50 to replace the fixed asset and £50 for wages. Expanding capital by investing cash retained from depreciation would not change the rate of profit from employing the fixed capital.

9. Accountants apply the same principle to inventory valuation, which chapter 7 shows Marx agreed with and explained.

10. If the components of an item of fixed capital have different lives, each one becomes a separate element, depreciated separately.

11. Before the development of professional accountancy from the 1880s, the management of British and American railroads was not always accountable for fixed capital during the 1840s (Bryer 1991; 2012, 286–87). *Accounting for History* argues that "modern" financial reporting increasingly fails to hold management accountable because it uses an ideologically distorted theory of accounting.

12. Harvey overlooks that assets also have a selling price.

13. We can use replacement prices to calculate the rate of depreciation from wear and tear, as the change in the proportion of the asset's replacement cost at the beginning and end of the period, but the change in the net replacement cost is the CMA minus replacement cost depreciation. Let CCO = Current replacement cost of *outputs* during the period; CCI = Current replacement cost of *inputs* during the period; OScc = Opening stock (inventories or fixed assets) at current cost; CScc = Closing stock (inventories or fixed assets) at current cost; CScc = Closing stock (inventories or fixed assets) at current cost; CScc = Closing stock (inventories or fixed assets) at current cost; CCDep = Current replacement cost depreciation during the period. CMA = CCO - CCI = CScc + CCDep - OScc, and therefore the net change in replacement cost = CScc - OScc = CMA - CCDep. Alternatively, CCDep = CMA - [CScc - OScc].

14. See Steedman (1997, 142–48). Armstrong, Glyn, and Harrison (1994, 107) give a simple example.

15. "Extreme" does not mean it could not happen in reality. General theories must deal with all possible situations.

16. Chapter 7 shows that accountants agree with Marx that all "direct labor" is "productive."

17. The Moscow edition misleadingly translates "devalues" as "lost": "It has, therefore, *lost* value more or less" (Marx 1996, 407, emphasis added).

18. Seeing "appreciation" as "profit" aligns Perelman with Fisher's neoclassical theory of accounting (see Bryer 2013b).

Chapter 7

Productive and Unproductive Labor

In capitalism, Marx argued, "productive" workers create value, which pays their wages and provides incomes for capitalists, rentiers, landlords, government officials and employees, and other "unproductive" workers, who do not. Marx inherited the problem of classifying labor, and the evaluative terms, from classical political economy, but the chapter supports his claim that "there is no question of moral or other standpoints in the case of either one or the other kind of labour" (Marx 1969a, 171).¹ Marx's aim was not to judge different types of workers, but to categorize and explain different "social relations of production," different ways of extracting surplus labor, historically, but particularly within capitalism, to understand what labor was "productive" or "unproductive" from the perspective of individual capitalists and capitalism as a whole, and the implications for its development and transition to socialism.

Marxists usually agree, "the distinction is a critical one" (Gough 1972, 47), "indeed crucial" (Savran and Tonak 1999, 115), "an integral part of the labour theory of value," that will "stand or fall with that theory" (Mohun 1996, 42). The chapter argues that the distinction is critical to Marx proving his theory of value, which he uses to explain the categories of "productive" and "unproductive" labor in individual capitalist's accounts, and to construct accounts for aggregate social capital, providing a generally unrecognized precursor to modern national income accounts, to explain capitalism as a system of reproduction, accumulation, and control. We must identify the costs of "productive" and "unproductive" labor to measure Marx's rate of profit, and its components, whether in capitalists' accounts or national income accounts (Moseley 1991; Shaikh and Tonak 1994; Dawson and Foster 1994, 316–18; Izquierdo 2006, 37–38). The chapter supports those who argue that Marx measured surplus value before deducting the costs of "unproductive" workers, and "variable capital" refers to the cost of "productive" workers, and that it is therefore necessary to identify them to measure the rate of surplus value, the value composition of capital, and hence the rate of profit.²

However, seen by critics as one of the weakest aspects of Marx's inheritance from classical political economy (e.g., Gough 1972, 47; Laibman 1992, 85–86), the distinction has been "one of the most hotly disputed issues of Marxist economic theory; the exact delimitation between productive and unproductive labour" (Mandel 1978, 40). Every generation of Marxists has debated the question (Laibman 1992, 71). In 1924, Rubin observed, "no section of the literature is so full of disagreement and conceptual confusion as this question" (2008, 259). Contributors regularly accuse Marx of inconsistency and ambiguity. Rubin criticized unidentified "discordant passages, terminological unclarity and individual contradictions" (2008, 273) in *Capital*. Mandel (1978, 40) concluded, "the solution of this problem was made more difficult by Marx himself. There are undeniable differences—if only of nuance—between, on the one hand, the long section of *Theories of Surplus-Value* dealing with the problem of productive and unproductive labour and, on the other, those key passages in *Capital* (especially Volume 2) which treat the same subject." In Hunt's view, Marxists ran into "problems most of which stem from Marx's writings" (1979, 307). Laibman (1992, 71; 1993, 227, 232) complained that Marx provided "no independent rationale for treating the wages of certain categories of workers as part of surplus value," that the distinction "appears to be devoid of operational significance," "cannot be verified," "is unsound and should be discarded as a residue of bourgeois economics."³ Defending the "Marxian distinction," Mohun (1996, 30, 31) had "little to say" about Marx's writings because, "The extent to which a consistent approach can be found in Marx is a subject of considerable disagreement." Ambiguity, Houston (1997, 131) concludes, meant that Marx's "question is . . . not subject to a true or false or yes or no answer." Izquierdo (2006, 37–38) agrees, "continuing controversy . . . can be traced back to the heterogeneous treatment of the subject in Marx's work, principally, due to his main writings on productive labour being inconclusive." Harvey (2013, 92) declares the debate a "mass of controversies (at which Marxists have long excelled)," and writes off Marx's distinction as "an accounting nightmare" which "is insoluble." Often seen as "esoteric and pointless" (Savran and Tonak 1999, 114), the chapter argues, to the contrary, that Marx's distinction is "simple to understand" and important (Fine and Harris 1979, 56), if we understand his accounting.

The differences between Marx's discussions in the Theories of Surplus

Value and *Capital* are not of "nuance," the chapter argues, but reflect his growing understanding of accounting. Marx wrote the long section in Part 1 of *Theories of Surplus Value* on "Theories of Productive and Unproductive Labour" in 1861, before he had fully worked out his explanation of capitalist accounting, writing chapters 5 and 6 of Volume 2 of *Capital* dealing with the issue again, this time in detail, sometime between 1867 and 1870 (Mandel 1978, 42). The chapter supports Mandel's view that the chapters in Volume 2, and the comments in Volumes 1 and 3 of *Capital*, "express Marx's definitive views on the question" (Mandel 1978, 42), but not Mandel's interpretation. The differences between Marx's discussions in *Capital* and *Theories of Surplus Value* are (1) the detailed accounting analysis in Volume 2 of *Capital*, which is invisible to his critics and supporters. (2) As Mandel (1978, 42) highlighted, Marx now set his analysis in the context of "capital as a whole," but Marxists typically have not understood its significance.

Marxists' neglect of accounting, the chapter concludes, has created what one critic describes as the literature's "monumental confusion" (Laibman 1999, 64). Showing that Marx's categories explain capitalists' method of calculating profit, its inventory (stock) accounting principles and practices, using IAS 2 Inventories (IASB 1993) as the benchmark, to verify or provide an independent rationale for his categories, shows that they are logical, operational, and verifiable, not an "accounting nightmare." Marx used them to explain the accountants' "cost of production," the accumulated "direct" materials and "direct" labor costs, plus "production overheads," which are "capitalized" in inventory, and charged as "cost of goods sold"; their exclusion of "nonproduction (general) overheads," which are charged directly against profit; and their "accounting entity concept." Marx's theory of value, in short, explains the capitalists' method of calculating the value of inventory, that accountants call "absorption costing," that determines the structure of their profit and loss account, its measures of "output," that they call the "operational" or "functional" format. Marxists also typically overlook the fact that Marx distinguished between productive and unproductive labor from the perspectives of the individual capitalist and aggregate social capital by employing the accountants' entity concept. This is the principle that accountants prepare accounts for identified business entities, their subdivisions, or groups of entities—in Marx's case all capitalist entities as a single entity, aggregate social capital—separate from their owners.

Individual capitalists count labor as "productive," Marx argued, if it produces surplus value. However, he also argued that labor generated surplus value only in the "sphere of production," whereas in the "sphere of circulation" it did not, and was "unproductive." Capital in the sphere of circulation—commercial and money capital—nevertheless earned the general rate of profit, but its source, Marx argued, was surplus value extracted in production. In different ways, Marxists find his conclusion, "that labor involved in the circulation of capital is 'productive' from the standpoint of the individual (commercial or financial) capitals, even though it is 'unproductive' from the point of view of social capital" (Smith 1993, 268), contradictory. Some accept this is an "apparent contradiction in Marx's thinking . . . [that] reflects a contradiction in reality" (Smith 1993, 268), but others deny the contradiction by, in effect, ignoring individual capitalists (e.g., Mohun 1996), or "resolve" it by ignoring society (e.g., Hunt 1979). However, applying the accounting entity concept, there is no contradiction. Productive labor that produces a surplus value for an individual commercial or financial capital would be unproductive labor and appear as a cost for aggregate social capital in a consolidation of all individual entities within a single "group" entity.⁴

This distinction follows from Marx's aim of explaining the circulation of individual capitals and the reproduction and accumulation of capitalist society (Leadbeater 1985, 610). Marx agreed with the classical economists, who not only distinguished between individual production and consumption, but also "between production and non-production labor, and hence between production and social consumption" (Shaikh and Tonak 1994, 229). Marx's explanation of capitalist accounting is invisible to Marxists, and his categories are controversial, but they recognize that his "national income" accounts are inconsistent with certain practices in "orthodox national accounts," based on neoclassical economics, which assumes that all labor is productive (Shaikh and Tonak 1994, 229). An important question, therefore, is whether Marx's categories of productive and unproductive labor provide an objective foundation for *Measuring the* Wealth of Nations (Shaikh and Tonak 1994), for identifying "social consumption," socially unproductive labor, and distinguishing this from "social production." The chapter argues that they do if, as Marx did, we distinguish productive labor for individual capitalists from productive labor for aggregate social capital, which requires, in addition, that labor "directly" produces surplus value by producing the "means of subsistence"

(MOS) or "means of production" (MOP) (see Table 7.1).⁵

The chapter explains the links between Marx's individual and social definitions and capitalist accounting, and uses them to highlight blind spots, misunderstandings, and confusions in the literature. The price of this confusion, it concludes, is the failure to see that Marx elaborated his categories, not simply as a system of accounting, but to develop his theory of history, to understand capitalism's role in history, and its transition to socialism. Capitalism was uniquely "productive," Marx argued, in two senses. First, its pursuit of surplus value had multiplied the forces of production and the quantity of use values produced, generating "an immense accumulation of commodities" (Marx 1996, 45). Second, by constantly striving to subordinate all labor under its control, to maximize surplus value by increasing the productivity of labor, and its limits, capitalism was historically "productive" because it created the necessary conditions for socialism. Capitalism would increase the proportion of workers that produced surplus value for individual capitalists and/or aggregate social capital, he predicted, thereby creating the necessary social relations for accounting control of production by a "vast association of the nation."6

Table 7.1 Marx's Definitions of Productive and U	Unproductive Labor
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	Individual capitalist	Aggregate social capital
Productive labor Unproductive labor	Surplus value No surplus value	Surplus value: MOS or MOP No surplus value, or Surplus value: not MOS or MOP

Source: Created by the author.

Part A first outlines the traditional principles of accounting for inventory to guide us through Marx's early discussions of "circulation costs" in *Grundrisse* and "productive" and "unproductive" labor in *Theories of Surplus Value*, as part of his critique of political economy, particularly Adam Smith's "incorrect" view of capital and value. It then shows that Marx's discussions in *Capital* explain capitalist accounting for inventories. Part B provides an accounting critique of the debate from the 1970s, which shows that Marx's accounting is invisible to participants, who typically overlook or misunderstand his distinction between productive labor for individual capitalists and aggregate social capital. Marx's explanation of accounting for inventories, the chapter concludes, demonstrates his theory of capitalist control of the valorization process by individual capitalists and total social capital, which is an important unrecognized element in his

theory of capitalism's transition to socialism. Appendix C summarizes Marx's categories as a decision tree.

PART A: ACCOUNTING FOR PRODUCTIVE AND UNPRODUCTIVE LABOR

Most large listed companies present their profit and loss accounts using what IAS 1 *Presentation of Financial Statements* (IASB 1997) calls the "Operational or Functional Format," which classifies costs according to their "function" (cost of sales, distribution, and administration) within the entity's operating cycle, otherwise known as "absorption costing." Its primary measure of surplus is "gross profit." Because gross profit equals sales minus the "cost of sales," which equals the cost of opening inventory, plus the costs of purchasing or producing additions, minus the closing inventory, at the heart of calculating gross profit is determining the cost of inventory.

The functional presentation is required in the United States, and normal practice in Australia, Japan, and the United Kingdom (Nobes and Parker 2010, Table 2.10, 50). IAS 1 (IASB 1997) allows the "Type of Expenditure or Total Costs Format," classifying costs according to type (e.g., wages, materials costs, and financial costs), which is used for financial reporting in continental Europe, but its larger international companies use the functional format (Sutton 2004, 258). The expenditure method reports the same "operating profit" (explained below) as the functional method, but it does not report gross profit, and therefore, as IAS 1 says, "the 'function of expense' or 'cost of sales' method . . . can provide more relevant information to users than classification of expenses by nature" (IASB 1997, para. 103).⁷ Regardless of the profit and loss format, IAS 2 *Inventories* (IASB 1993) requires absorption costing for inventories reported in the balance sheet.

ABSORPTION COSTING

For retail companies inventories consist mainly of purchased goods held for sale, but for manufacturing companies they include materials directly or indirectly used in production ("raw materials and consumables"), products being manufactured ("work in progress"), and completed products for sale ("finished goods"). Accountants, we will see, include or "capitalize" in inventories all costs necessary to "bring the inventories to their present state or location." For retailing and wholesale companies this means, in addition to the commodity's purchase price, adding to inventory the cost of shipping into the store or warehouse, and any non-reclaimable taxes (e.g., import duties), and charging all other costs immediately against revenue. For manufacturing companies it means adding the "direct" cost of the raw materials, consumables, and the labor to convert them into a saleable product, and costs indirectly associated with production that are also necessary to bring it to its "current state or location," called "production overheads."

"Overheads" cover a wide range of costs, from those related to production such as plant depreciation, maintenance, power, light, heat, and insurance, to unrelated selling, distribution, and administrative costs.⁸ Accountants distinguish "production" from "non-production" overheads, those that are not necessary to bring a product to its current state or location, for example, salaries of general administrators. Accountants call the distinction "absorption costing" because it allocates production overheads to the cost of inventory, "absorbs" or adds them to the direct costs of production, and charges all other costs against the gross profit for the period, leaving "operating profit." Costs capitalized in inventory are "product costs" and those charged against gross profit are "period costs" (see Figure 7.1).

Absorption costing is the traditional capitalist method. As Sutton puts it, "The practice of capitalising production costs and expensing immediately all non-production costs is of long standing. The justification is that only production costs add value directly to the product" (2004, 245, 246). Marx would have agreed, and with calling this process of adding value "absorption." In the valorization process, he argued, "Raw materials and the object of labour exist only to *absorb* the work of others, and the instruments of labour serves only as a conductor, an agency for this *process of absorption*" (Marx 1976a, 1007). What follows argues that Marx's definitions of productive and unproductive labor in *Capital* explain the accountants' "product" and "period" costs.



Figure 7.1 Absorption Costing. *Source*: Created by the author based on Sutton (see Sutton 2004, Exhibit 9.2, 238).

CRITIQUE OF POLITICAL ECONOMY

In March 1851, Marx asked Engels, "How do merchants, manufacturers, etc., account for the portion of their income which they themselves consume?" (Marx and Engels 1982, 324–25), and reminded him in his following letter. Engel's answer, a short lesson in the accountants' entity concept, the principle that merchants, etc., keep accounts for identified businesses, or parts or groups of them, and distinguish the entity's revenues and expenses from the owners,' informed Marx's later discussions of productive and unproductive labor:

In commerce the merchant as a firm, as a producer of profits, and the same merchant as consumer are two entirely different people who confront one another as antagonists. The merchant as a firm means a capital account and/or profit and loss account. The merchant as guzzler, toper, householder and procreator means a household expense account. Hence the capital account debits the household expense account with every centime that makes its way from the commercial to the private purse and, since the household expense account shows only a debit, but no credit and is thus one of the firm's worst debtors, the total debit standing to the household expense account at the end of the year is pure loss and is written off the profit. In the balance sheet, however, and in calculating the percentage of profit, the sum expended on housekeeping is still at hand, as part of the profit. (Marx and Engels 1982, 327)

The "merchant as a firm" was an accounting entity with a "capital account" of the capital advanced and the accumulated profit, the balancing item in a balance sheet, and a profit and loss account, whereas the "merchant as guzzler" was an external entity. When the merchant drew expenses, the accountant debited the household expense account and credited cash. At the end of the year, the accountant charged the accumulated expenses against the accumulated profit (Dr Accumulated

Profit, Cr Household Expenses). Unconnected with the commercial operations of the firm, the merchant regarded his personal expenses as the distribution and consumption of profit. Therefore, in the balance sheet, to calculate the rate of profit, the accountant added back the distribution of profit and cash for expenses. Marx did not then raise the question of what expenditures of a capitalist firm or society were also a "pure loss," "written off the profit." However, it arose in *Grundrisse* when considering "circulation costs," and again in the *Theories of Surplus Value* with Adam Smith's distinctions between productive and unproductive labor.

In *Grundrisse*, Marx concluded, because "Exchange as the *positing of equivalents* cannot . . . by its nature increase the sum of values, nor the value of the commodities exchanged," the costs of the labor time and constant capital required for the "circulation costs as such," which "belong among the *faux frais de production*" (1973, 632), were deductions from value. "Circulation costs as such . . . are therefore a deduction either from the time employed on production, or from the values posited by production. They can never increase the value" (Marx 1973, 633, see also, 624–25). Marx distinguished "circulation costs as such" from "actual circulation costs," those that did "increase the value of the product but decrease surplus value."⁹ He argued:

Circulation can *create value* only in so far as it requires fresh employment—of *alien labour*—in addition to that directly consumed in the production process. This is then the same as if more *necessary labour* were used in the direct production process. Only the actual *circulation costs* increase the *value* of the product, but decrease the surplus value . . . (bringing the product to market gives it a *new use value*). (Marx 1973, 548)¹⁰

Grundrisse's distinction between circulation costs "as such" and "actual" circulation costs appears in *Capital* Volume 1 as the distinction between the "formal" and "real" functions of commodities, and in Volume 2 between "pure circulation costs" and storage and transport costs, which we will see corresponds to the accountants' distinction between nonproduction and production overheads.

In *Grundrisse*, in addition to circulation costs "as such," Marx (1973, 310, 317, 548, 739, 840) discovered that *faux frais* included the work of the capitalist, excessive fixed capital, losses, and "actual" circulation expenses "posited by production," and he noted without comment Say's view that they included storage and many other costs. Marx quoted Say:

As long as a product remains in the hands of its producer, it is only a commodity, or, if you like, inactive, inert capital. Far from being of benefit for the industrialist who holds it, it is a burden for him, a ceaseless cause of trouble, of *faux frais* and of losses: storage costs, maintenance

costs, protection costs, interest on capital etc., without counting the waste and spoiling which nearly all commodities suffer when they are inactive for long. (Marx 1973, 840)¹¹

Faux frais has two meanings that are consistent with Marx's distinction. It means "false" or "incidental" costs, which we will see correspond to the accountants' distinction between whether costs are "general" or "non-production" overheads, in other words, whether they are "false" because they are unconnected to production, and therefore period costs, or are "production" overheads which are connected, are "incidental," and are therefore capitalized. The editor of *Grundrisse* gives the two meanings, but combines them—"Incidental 'false' expenses of production" (Marx 1973, 310)—whereas the editor of Volume 1 of *Capital* defines *faux frais* as only "incidental costs of production" (Marx 1976a, 1043), and the editor of Volume 2 as "overhead costs" (Marx 1978, 209). Marx used the phrase *faux frais* in both senses in *Grundrisse* in distinguishing between "circulation costs as such" and "actual circulation costs," and in his later discussions in *Capital*, and it will be important to distinguish between them to understand his categories.

Marx developed this distinction and used it to account for the costs of production and circulation through investigating the categories of "productive" and "unproductive" labor in political economy. He merely noted in *Grundrisse*, "A. Smith was *essentially* correct with his *productive* and *unproductive* labour, correct from the standpoint of bourgeois economy," and that his brief discussion of the "horse-piss" of other economists was only a "Digression. But [he promised to] return in more detail to the productive and unproductive [distinction]" (Marx 1973, 273).¹²

In 1861, in Part 1 of *Theories of Surplus Value*, having dealt with Smith's "Two Different Views of Value" (Marx 1969a, 69), Marx turned to the "last controversial point in Adam Smith's writings which we have to consider: *the distinction between productive and unproductive labour*," where he found "the same two-sided approach" (1969a, 152).¹³ Smith's "correct definition" was that "Productive labour, in its meaning for capitalist production, is wage-labour which, exchanged against the variable part of capital (the part of the capital that is spent on wages), reproduces not only this part of the capital (or the value of its own labour-power), but in addition produces surplus-value for the capitalist" (Marx 1969a, 152). Defining productive labor "from the standpoint of capitalist production," Marx (1969a, 157) concluded, "Adam Smith here got to the very heart of

the matter, hit the nail on the head. This is one of his greatest scientific merits . . . that he defines productive labour as labour *which is directly exchanged with capital.*" Smith's definition was "scientific" because, unlike his predecessors, "Productive and unproductive labour is here throughout conceived from *the standpoint of the possessor of money, from the standpoint of the capitalist,* not from that of the *workman*" (Marx 1969a, 158), a standpoint that Marx explained using his theory of value.

Defining productive labor "also establishes absolutely what *unproductive labour* is. It is labour which is not exchanged with capital, but *directly* with revenue, that is, with wages or profit" (Marx 1969a, 157). The difference was the source of the revenue (income). Productive workers paid their own wages by producing a commodity or service that the capitalist sold for more than it cost, and thereby directly provided income (profit, interest and rent) to capitalists, etc. and wages indirectly to unproductive workers. The "labours (or services, whether those of a prostitute or of the Pope) can only be paid for either out of the wages of the productive labourers, or out of the profits of their employers (and the partners in those profits)," who "produce the material basis of the subsistence, and consequently, the existence, of the unproductive labourers" (Marx 1969a, 186).

Rather than a type of labor or its product, Smith's correct definition revealed that productive labor was a particular "social relation of production" (Marx 1969a, 157), one that existed whenever wage labor produced a surplus value for a capitalist. "An actor, for example, or even a clown, according to this definition, is a productive labourer if he works in the service of a capitalist (an entrepreneur) to whom he returns more labour than he receives from him in the form of wages" (Marx 1969a, 157). By contrast, "a jobbing tailor who comes to the capitalist's house and patches his trousers for him, producing a mere use-value for him, is an unproductive labourer. The former's labour is exchanged with capital, the latter's with revenue. The former's labour produces a surplus-value; in the latter's, revenue is consumed" (Marx 1969a, 157). Marx predicted that with the spread of capitalist production "unproductive labourers . . . will for the most part be performing only *personal* services," but stressed that the distinction "has nothing to do either with the particular speciality of the labour or the particular use-value in which the special labour is incorporated" (1969a, 159–60). Depending on who employed it, "The same kind of labour may be productive or unproductive" (Marx 1969a,

401).

Workers not controlled by a capitalist are therefore "not included in the capitalist system and are not considered 'productive' labor" (Rubin 2008, 263). This includes the labor of the self-employed, household servants, civil servants, the police, soldiers and priests, etc., that "are not productive from the point of view of the capitalist economy, even though this labour might be objectively useful and might be objectified in material consumer goods which satisfy human subsistence needs" (Rubin 2008, 263, 264, 260). In the *Theories of Surplus Value*, working at the level of the individual capitalist, it is clear, "For Marx productive labor means: labor which is engaged in the *given social system of production*" (Rubin 2008, 261). However, we will see in following sections that in *Capital*, for society it means more than simply "*labor which is organized in the form of capitalist enterprises* which has the form of wage labor, hired for the purpose of drawing out of it a surplus value" (Rubin 2008, 261).

Smith's "incorrect" definition "treats as productive labour, labour which in general 'produces a value'. . . [that] fixes and realises itself in some vendible commodity that lasts for some time at least after labour is past," whereas services are unproductive because they "generally perish in the very instant of their performance" (Marx 1969a, 156, 161). In short, "the labour of a labourer is called productive in so far as he replaces the consumed value by an equivalent, by adding to any material, through his labour, a quantity of value equal to that which was contained in his wages" (Marx 1969a, 162). This was wrong, first, because "Here the definition by social form, the determination of productive and unproductive labourers by their relation to capitalist production, is abandoned" (Marx 1969a, 162).¹⁴ Second, because it depended on the material properties of the product. Marx usually discussed the production of material "commodities" because when he was writing services were of "microscopic significance when compared to the mass of capitalist production" (1976a, 1044), but he included services in that category (Murray 1998, 65).

When we speak of the commodity as a materialization of labour—in the sense of its exchangevalue—this itself is only an imaginary, that is to say, a purely social mode of existence of the commodity which has nothing to do with its corporal reality; it is conceived as a definite quantity of social labour or of money. It may be that the concrete labour whose result it is leaves no trace in it. (Marx 1969a, 171)

From Smith's correct definition, it followed, "Included among these productive workers, of course, are those who contribute in one way or

another to the production of the commodity, from the actual operative to the manager or engineer (as distinct from the capitalist)" (Marx 1969a, 156–57). Marx noted, "And so the latest English official report on the factories . . . includes in the category of employed wage-labourers all persons employed in the factories *and in the offices attached to them, with the exception of the manufacturer*" (1969a, 157, emphasis added). However, he did not explain how those employed in the offices contributed to the production of commodities, distinguish in exactly what "way or another" the capitalist's various costs added value to commodities, or the basis for excluding the "manufacturer" (capitalist), until he returned to the question in Volume 2 of *Capital*.

According to Smith's incorrect definition, a productive laborer is any worker whose "labour fixes or realises itself '*in some such vendible commodity* . . . *which can replace the value of their wages and maintenance*'" (quoted by Marx 1969a, 162). It was clear according to his correct definition that simply replacing the value of wages "would not be capitalist production," but what Engels dubbed simple commodity production, "as if the labourer himself owned the means of production" (Marx 1969a, 162). Marx (1969a, 163) had dealt with Smith's claim that "according to him . . . commercial . . . labour is . . . productive" in *Grundrisse*, where he concluded it was an unproductive "circulation cost" (e.g., Marx 1973, 633). However, Smith raised questions that in *Theories of Surplus Value* Marx, in effect, merely noted by asserting "in fact" that the correct definition included "all intellectual labors," from the "overlooker" to the "clerk," as productive workers, that "increase the value," or left to one side by asking whether it applied to "bankers, etc":

Adam Smith naturally includes in the labour which fixes or realises itself in a vendible and exchangeable commodity all intellectual labours which are directly consumed in material production. Not only the labourer working directly with his hands or a machine, but overlooker, engineer, manager, clerk, etc.—in a word, the labour of the whole personnel required in a particular sphere of material production to produce a particular commodity, whose joint labour (cooperation) is required for commodity production. In fact they add their aggregate labour to the constant capital, and increase the value of the product by this amount. (How far is this true of bankers, etc.?) (Marx 1969a, 164)

Marx later observed, again without comment:

Adam Smith treats services, in so far as they directly enter into production, as materialised in the product, both the labour of the manual labourer and that of the manager, clerk, engineer, and even of the scientist in so far as he is an inventor, an indoor or outdoor labourer for the workshop. In dealing with the division of labour, Smith explains how these operations are distributed among different persons; and that the product, the commodity, is the result of their co-operative labour, not of the labour of any individual among them. (Marx 1969a, 295)

It was easy to show that Smith's notion of productive labor "fixing" itself in a vendible commodity was incoherent (Marx 1969a, 164–67). First, many so-called "unproductive" workers produced potentially vendible commodities.

Adam Smith knows quite well, a seamstress whom I get to come to my house to sew shirts, or workmen who repair furniture . . . fix their labour in a thing and in fact increase the value of these things in exactly the same way as the seamstress who sews in a factory, the engineer who repairs the machine These use-values are also, potentially, commodities; the shirts may be sent to the pawnshop, the house resold, the furniture put up to auction, and so on. (Marx 1969a, 164)

Second, labor that did not fix itself in vendible commodities, of "actors, musicians and prostitutes, etc," "whose 'services perish in the very instant of their performance," if sold by a capitalist "themselves renew the fund from which they are paid" (Marx 1969a, 166), and were therefore productive.¹⁵ According to Smith's incorrect definition, because the "theatrical entrepreneur" cannot sell his "actor's labour to the public in the form of commodities but only in the action itself would show that they are unproductive labours" (Marx 1969a, 172), whereas according to his correct definition they are productive.

However, how to apply Smith's correct definition to "the labour of the whole personnel required" for production, and answer the question whether "bankers, etc" were productive workers, Marx in effect recognized was a question of accounting. Searching for the boundary, he reflected that, according to Smith's incorrect definition, because labor power was a "vendible commodity" all expenditures "which train labourpower, maintain or modify it, etc," were productive, which from the capitalists' viewpoint Marx questioned. According to the correct definition schoolmasters who "train labour power," and doctors who "maintain it," for example, both "belong to the *faux frais* of production," were "mere expenses, unproductive expenditure either of living or of materialised labour" (Marx 1969a, 167). However, he concluded, although Smith was right that, pitiful as it was, workers' education "enters into the cost of production" of labor power, the doctor's services "can be counted as the cost of repairs for labour power," which is consistent with the question becoming one of accounting:

As to the purchase of such services as those which train labour-power, maintain or modify it, etc., in a word, give it a specialised form or even only maintain it—thus for example the schoolmaster's service, in so far as it is "industrially necessary" or useful; the doctor's service in

so far as he maintains health and so conserves the source of all values, labour-power itself —these are services which yield in return "a vendible commodity, etc.," namely labour-power itself, into whose costs of production or reproduction these services enter. Adam Smith knew however how little "education" enters into the costs of production of the mass of working men. And in any case the doctor's services belong to the *faux frais* of production. *They can be counted as the cost of repairs for labour-power*. (Marx 1969a, 167, emphasis added)

According to Smith's incorrect definition, "Productive labour would therefore be such labour as produces commodities or directly produces, trains, develops, maintains or reproduces, labour power itself" (Marx 1969a, 172).¹⁶ It was true that if wages and profits fell because of a fall in labor productivity, ceteris paribus workers and capitalists would consume less education and healthcare, which showed that schoolmasters and doctors did "not directly create the fund out of which they were paid" (Marx 1969a, 167-68). Education and health care did not directly create the value they consumed, but Marx agreed, "their labours enter into the production costs of the fund which creates all values whatsoever—namely, the production costs of labour-power" (1969a, 168). According to Marx's theory of value, however, they made different contributions. Whereas education and training expenditures increase the value of labor power, but do not directly increase the value of the commodity, health care expenditures maintained or "repaired" labor power and its value did pass directly into the commodity.

Marx (1969a, 167–68) discussed the worker buying the doctor's services, which are the worker's *faux frais*.¹⁷ The following section argues he would have agreed with accountants that if the capitalist pays for these services they are a cost of labor power, a production overhead. Marx did not explicitly draw the parallel, but there is one, between capitalists' health care costs and factory repairs, which "can enter directly into fixed capital, like the mechanic's labour repairing a machine in a factory. But in this case its value enters into the circulation of the product, the commodity" and was productive, but "the repairers, etc., who do this labour as servants, do not exchange their labour against capital but against revenue" (Marx 1969a, 187), which was unproductive. In Volume 2 of *Capital* Marx dealt with storage costs, which include the normal costs of conserving the use values of a commodity—for example, refrigeration costs for perishable foodstuffs—which are also analogous to health care costs, that he argued increased the value of commodities by reducing social productivity, which accountants also treat as production overheads. As we will see, accountants add the employer's costs of productive worker's health care to

inventory, and charge them as a cost of production in the profit and loss account, treat them as direct labor costs (or production overheads), but forbid the capitalization of training costs, writing them off immediately as nonproduction overheads, as period costs.

Smith's incorrect definition, Marx argued, combined the Mercantilists' focus on money with the Physiocrats' focus on use values: "With Adam Smith, both conditions of the commodity—use-value and exchange value —are combined; and so all labour is productive which manifests itself in any use-value, any useful product" (Marx 1969a, 173–174). Smith argued that expenditures on doctors, parsons, statesmen, lawyers, police and soldiers, etc., should therefore be "cut down to the most indispensable minimum and provided as cheaply as possible" (Marx 1969a, 175). In their defense, "the sycophantic underlings of political economy felt it their duty to glorify and justify every sphere of activity by demonstrating it was 'linked' with the production of material wealth" (Marx 1969a, 176), and Marx spent many pages highlighting their inconsistencies.¹⁸ Then followed the digression into Quesnay's Tableau Economique (Marx 1969a, 308–44), his with capitalist accounting, particularly encounters depreciation accounting, and the beginning of what became *Capital*.

Marx (1969a, 399–416) summarized his conclusions on productive and unproductive labor in an Addendum to Part 1 of the *Theories of Surplus Value*, which closed with his "Draft Plans for Parts I and III of *Capital.*" He admitted at the end of the summary that he had not explained "how far" workers employed by merchant capital were productive or unproductive:

Here we have been dealing only with *productive capital*, that is, capital employed in the *direct process of production*. We come later to capital in the *process of circulation*. And only after that, in considering the special form assumed by capital as *merchant's capital*, can the question be answered as to how far the labourers employed by it are productive or unproductive. (Marx 1969a, 413)

Because to answer this question required setting it in the context of aggregate social capital, Marx returned to deal with it, and the other accounting questions raised by Smith's definitions, in Volumes 2 and 3 of *Capital* where, we will see, the congruence between Marx's definitions and capitalist accounting is clear.

ACCOUNTING FOR PRODUCTIVE AND UNPRODUCTIVE LABOR IN CAPITAL

In Volume 1 Marx initially defined productive labor "in general," "by

treating it in the abstract, apart from historical forms . . . from the point of view of its result, the product," the use value produced, but noted it was "by no means directly applicable to the capitalist process of production" (1996, 187, 509). To distinguish productive labor within capitalism from productive labor "in general" seemed at first sight increasingly unnecessary because as capitalism developed the productive worker increasingly became a "collective labourer," the "extended" norm.

The product ceases to be the direct product of the individual, and becomes a social product, produced in common by a collective labourer, *i.e.*, by a combination of workmen, each of whom takes only a part, greater or less, in the manipulation of the subject of their labour. As the co-operative character of the labour-process becomes more and more marked, so, as a necessary consequence, does our notion of productive labour, and of its agent the productive labourer, become extended. (Marx 1996, 509–10)

Despite this, within capitalist production with its historically specific social relations, "our notion of productive labourer becomes narrowed" because it is "not merely the production of commodities, it is essentially the production of surplus value," the "direct means" of its creation (Marx 1996, 510):

If we may take an example from outside the sphere of production of material objects, a schoolmaster is a productive labourer when, in addition to belabouring the heads of his scholars, he works like a horse to enrich the school proprietor. That the latter has laid out his capital in a teaching factory, instead of in a sausage factory, does not alter the relation. Hence the notion of a productive labourer implies not merely a relation between work and useful effect, between labourer and product of labour, but also a specific, social relation of production, a relation that has sprung up historically and stamps the labourer as the direct means of creating surplus-value. (Marx 1996, 510)

Understood as an accounting problem, Marx was right that focusing on the "direct" production of the surplus value "narrowed" his concept, made the identification of the productive workers of an individual capitalist operational, as we will see. However, to make it operational for aggregate social capital, in *Capital* Marx limited the general definition of the productive worker, who produces a "use value" in general, defining as socially productive only labor generating surplus value from producing the "means of subsistence" or the "means of production."

Individual and Aggregate Social Capital

Mandel is broadly right that in *Theories of Surplus Value*, "We could call 'labour productive from the point of view of the individual capitalist(s).' All wage-labour engaged by capitalist enterprise—as opposed to labour functioning for private households, for consumption needs—falls into that

category. This is the level at which *Theories of Surplus-Value* stops" (1978, 42). In Volume 2 of *Capital*, by contrast, as Mandel (1978, 42) says, Marx analyzed the "capitalist mode of production in its totality," particularly its accumulation of capital, and "now distinguishes labour productive for capital as a whole from labour productive for the individual capitalist." Mandel argues:

For capital as a whole, only that labour is productive which increases the total mass of surplusvalue. All wage-labour which enables an individual capitalist to appropriate a fraction of the total mass of surplus-value, without adding to that mass, may be 'productive' for the commercial, financial or service-sector capitalist whom it allows to participate in the general sharing of the cake. But from the point of view of capital as a whole it is unproductive, because it does not augment the total size of the cake. (Mandel 1978, 42)

However, Mandel does not explain what labor adds to the total "cake." To be productive for an individual capital, labor must produce a surplus value, but for social capital, we will see, labor must produce this from creating, modifying, or preserving, a use value embodied in, or necessary for, a commodity or service sold to a final consumer. Marx noted in Part 1 of *Theories of Surplus Value*:

Only in one section of the spheres of production can the part of the product representing revenue [wages plus profit] enter directly in kind into the revenue, or in its *use-value* be consumed as revenue. All products which are *only* means of production cannot be consumed in kind, in their immediate form, as revenue, but only their *value*. This however must be consumed in the branches of production which produce directly consumable articles. (Marx 1969a, 235)

In other words, we will see, productive labor produces directly consumable articles (and services), the means of subsistence (defined below), and the means of production, the value of which Marx had demonstrated equals the sum of each department's wages, profits, and costs of means of production, by reworking Quesnay's Tableau using DEB and creating his own (see Table 3.3).

Table 7.2 illustrates Marx's accounting for socially unproductive labor by adding a third department to his *Tableau*, called "Department 3—Means of Circulation" (MOC). The function of Department 3 is to sell the means of subsistence (MOS) and means of production (MOP) produced in Departments 1 and 2. Assume Department 3 employs wage labor costing £50 million and makes a profit of £50 million by charging Departments 1 and 2 each £50 million for their services, and requires no means of production. According to Marx, whereas the labor in Department 3 is productive for its capitalists because they divert £50 million profit to themselves, society must deduct the £50 million wages in Department 3

when calculating the aggregate social profit, which reduces it from £466.67 million (see Table 3.3) to £416.67 million (see Table 7.2).

The worker's "means of subsistence must . . . be sufficient to maintain him in his normal state as a labouring individual," but workers' "so-called necessary wants . . . are themselves the product of historical development, and . . . there enters into the determination of the value of labour-power a historical and moral element. Nevertheless, in a given country, at a given period, the average quantity of the means of subsistence necessary for the labourer is practically known" (Marx 1996, 181), that is, the wages capitalists must pay. "Means of subsistence" are all elements of consumption, and we must not let our tastes interfere with our reasoning: "A large part of the annual product which is consumed as revenue and hence does not re-enter production as its means, consists of the most tawdry products (use-values) designed to gratify the most impoverished appetites and fancies. As far as the question of productive labour is concerned, however, the nature of these objects is quite immaterial" (Marx 1976a, 1045).

Dr	£	Cr	£
Department 1			
Wages	100.00	Wages (MOS)	100.00
Means of production	400.00	Wages (MOP)	133.33
Means of circulation	50.00	Wages (MOC)	50.00
		Profit (MOS)	150.00
		Profit (MOP)	216.67
Profit	150.00	Profit (MOC)	50.00
Total production	700.00	Total sales	700.00
Department 2			
Wages	133.33	MOS	400.00
Means of production	533.33	MOP	533.33
Means of circulation	50.00		
Profit	216.67		
Total production	933.33	Total sales	933.33
1			
Department 3			
Wages	50.00	MOS	50.00
Profit	50.00	MOP	50.00
Total production	100.00	Total sales	100.00
0			
Social capital			
Wages	283.33	MOS	700.00
Means of production	933.33	MOP	933.33
Profit	416.67		
Total production	1,633.33	Total sales	1,633.33
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Table 7.2 Accounting for Unproductive Labor	Table 7.2	Accounting	for U	nproductive	Labor
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Source: Created by the author based on Marx's example (see Marx and Engels 1985, 485-87, 490-91).

This was also true for luxuries, "all goods which are not necessaries and

which are not commonly used by the labouring class" (Marx 1972, 43), but "analogous to his discussion of the 'subsistence wage' of labour, the definition of luxury can be treated as having 'a historical and moral element'" (Leadbeater 1985, 594). Luxury was also analogous in being an "absolutely necessary" feature of capitalism, a form of society "which creates wealth for the non-producer" (Marx 1976a, 1046). Only if it meant that "the means of subsistence or production will not be reproduced in the necessary quantities . . . it is possible to condemn the manufacture of luxury goods from the standpoint of capitalist production" (Marx 1976a, 1046), if it meant workers are unable to reproduce their labor power.

Marx made the social-individual distinction explicit only in *Capital*, but it appeared implicitly at the end of Part 2 of *Theories of Surplus Value* where, he concluded, the aim of "capitalist production," that is, as a whole, was surplus value and "surplus-product," a surplus of money and, we will see, a surplus of the means of subsistence and production:

The direct purpose of capitalist production is not the production of commodities, but of surplusvalue or profit (in its developed form), the aim is not the product, but the surplus-product. . . . The mass of productive labour employed is only of interest to capital in so far as through it . . . the mass of surplus values grows. Only to this extent is what we called necessary labour-time necessary. In so far as it does not have this result, is to be suppressed. (Marx 1969b, 547)

"Suppressing" does not mean eliminating, but minimizing, socially unproductive labor: "It is a constant aim of capitalist production to produce a maximum of surplus value with the minimum capital outlay" (Marx 1969b, 547–48), and this applies to all costs.

In an influential discussion based on the *Theories of Surplus Value*, Gough (1972, 50, 55) concluded, Marx had simply defined productive labor as "the production of use-value and surplus-value."¹⁹ However, in *Capital* Marx showed that producing a use value and surplus value were necessary but not sufficient for labor to be productive for social capital, that productive labor for an individual capitalist could be socially unproductive. In the Addendum to Part 1, Marx criticized political economists for their "bourgeois narrow-mindedness" because they "confuse the question of what is *productive labour* from the standpoint of *capital* with the question of what labour is productive in general" (1969a, 393, latter emphasis added).²⁰ In *Resultate*, a chapter initially intended for Volume 1 of *Capital*, written between 1863 and 1866, Marx rephrased this criticism as the failure to understand productive labor "from the standpoint of *capitalism*," giving his first inclusive definition of "productive labor"

from the viewpoints of "capital" *and* the "capitalist."²¹ "The only productive worker is one whose labour—[is] the *productive consumption* of labour power . . . on the part of *capital or the capitalist*" (Marx 1976a, 1038, 1039, latter emphasis added). To count as productive labor the worker must produce surplus value for "capital," that is, for aggregate social capital, or for an individual capitalist, or for both. In Volume 3 of *Capital*, he clarified that from the viewpoint of "industrial capital," for him the "standpoint of . . . the total social capital" (Marx 1998, 273), of society, which "encompasses every branch of production that is pursued on a capitalist basis" (Marx 1978, 133), what is productive labor for an individual commercial capitalist was socially unproductive:

To industrial capital the costs of circulation appear as unproductive expenses, and so they are. To the merchant they appear as a source of his profit. . . . The outlay to be made for these circulation costs is, therefore, a productive investment for mercantile capital. And for this reason, the commercial labour which it buys is likewise immediately productive for it. (Marx 1998, 300)

Labor that produces surplus value is productive for an individual commercial capitalist, but is unproductive for social capital because it does not add to the means of subsistence or production and therefore reduces the general rate of profit (see Table D.1). It was from aggregate social capital's perspective that Marx concluded in Volume 3 of *Capital*, "no value is produced in the process of circulation, and, therefore, no surplus-value. Only changes of form of the same mass of value take place. In fact, nothing occurs there outside the metamorphosis of commodities, and this has nothing to do as such either with the creation or change of values" (1998, 279). The same was true for the costs of the "commercial operations" of an individual industrial capitalist, which increased the capital outlay and reduced the rate of profit:

As the scale of production is extended, commercial operations required constantly for the circulation of industrial capital . . . and to keep account of the whole process, multiply accordingly. Calculation of prices, book-keeping, managing funds, correspondence—all belong under this head This necessitates the employment of commercial wage-workers who make up the actual office staff. The outlay for these, although made in the form of wages, differs from the variable capital laid out in purchasing the productive labour. It increases the outlay of the industrial capitalist . . . without directly increasing surplus value Like every other outlay of this kind, it reduces the rate of profit. (Marx 1998, 297–99)

For society, the same distinction—whether the buyer of the labor makes a surplus value by selling its use value, the product or a service, as a commodity—determines if the labor is productive, but in its specific social

meaning. As Marx said in *Resultate*, "The capitalist labour process does not cancel the general definitions of the labour process. . . . Labour remains productive as long as it objectifies itself in *commodities*, as the unity of exchange value and use-value" (1976a, 1039). However, from the perspective of the capitalist system, only "The *articles* which are the material conditions of labour, i.e. the *means of production*, and the articles which are the precondition for the survival of the worker himself, i.e. the means of subsistence, [that] both become capital only because of the phenomenon of *wage-labour*" (Marx 1976a, 1005), were socially productive. In Volume 2 of Capital, he stressed, it was "from the social point of view [that] a person's labour-power . . . used up . . . in this mere circulation function . . . is not available for anything else, including productive labour" (Marx 1978, 210, emphasis added). It is "society [that] does not count . . . [the commercial worker's] hours of surplus labour, although they are spent by the individual who performs them" (Marx 1978, 210, emphasis added), any more than it counted the necessary labor, because it gets nothing to consume or use, no additional means of subsistence or production. "Society does not appropriate by these means any additional product or value" (Marx 1978, 210). Furthermore, some "costs . . . make commodities dearer without increasing their use-value," like storage costs, that do increase value but not consumable use values, and therefore they "are *faux frais* of production from the social point of view, [whereas] for the individual capitalist they can constitute sources of enrichment" (Marx 1978, 214).

To show that Marx's definitions of productive and unproductive labor are logically consistent and have empirical validity what follows first shows that Marx's theory of value explains the main principles of IAS 2 *Inventories* (IASB 1993).²² It then shows that Marx's analyses of "circulation costs" in Volume 2 of *Capital* explain the relevant accounting rules.

ACCOUNTING FOR INVENTORY

Marx's explanation of the cost price of the commodity in *Capital* as the socially necessary constant and variable capital required to produce it, explains IAS 2's core principle that entities must capitalize only the costs of "bringing the inventories to their present location and condition" (IASB 1993, para. 10).²³ In *Theories of Surplus Value*, he had defined "the purpose of . . . labour" as the "form given to the commodity," "to alter the

form of the thing . . . [or] its position" (Marx 1969a, 171). The costs of altering the form or position of commodities are, according to IAS 2, the costs of purchasing the necessary materials, the cash price of the items coming into inventory, plus all necessary taxes, transport, and handling expenses (IASB 1993, para. 11). To this IAS 2 adds the "conversion costs" of "direct" labor, the wages and other costs associated with production workers, plus direct expenses and sub-contract work, and an allocation of "production overheads" (IASB 1993, para. 12).²⁴

Marx repeatedly stressed that productive labor "directly" produced surplus value. In *Theories of Surplus Value*, he "repeats this fundamental property of productive labour . . . [i]n a dozen or more places" (Gough 1972, 50). In *Resultate*, he concluded, "*labour is only productive*, and an exponent of labour-power is only a *productive worker*, if it or he creates *surplus value* directly, i.e. the only productive labour is that which is directly *consumed* in the course of production for the valorization of capital" (Marx 1976a, 1038). Similarly, the "aggregate worker" was productive because of "its *immediate productive consumption*" (Marx 1976a, 1041). The aggregate worker becomes more complex, but Marx (1976a, 1040) identified productive labor by its function of "creating the product," the "aggregate product," a "quantity of goods," of producing surplus value by its "*immediate productive consumption by capital*":

If we consider the aggregate *worker*, i.e. if we take all the members comprising the workshop together, then we see that their *combined activity* results materially in an *aggregate* product which is at the same time a *quantity of goods*. And here it is quite immaterial whether the job of a particular worker, who is merely a limb of this aggregate worker, is at a greater or smaller distance from the actual manual labour. But then: the activity of this aggregate labour-power is its *immediate productive consumption by capital*, i.e. it is the self-valorization process of capital, and hence, as we shall demonstrate, the immediate production of surplus-value, the *immediate conversion of this latter into capital*. (Marx 1976a, 1040)

The function of productive labor was to "immediately" or "directly" create "capital," the accountants' inventory of commodities, use values that have a cost price capitalists can recover from customers, which according to Marx is the socially necessary cost of production. Marx and accountants, we will see, operationalize the category of the "directly" or "immediately" productive worker in the same way, by their function in the circuit of capital.

IAS 2 requires inventories to "include a systematic allocation of fixed and variable production overheads that are incurred in converting materials into finished goods" (IASB 1993, para. 12). Neither IAS 2 nor national accounting standards give lists of production overheads. They include factory power, supplies, indirect materials and labor; factory buildings, plant and equipment depreciation, maintenance and insurance, rent and property taxes; storage and handling costs for raw materials, components, other supplies, and work in progress; factory management and administration, such as personnel and payroll costs for factory employees (Cairns 2002, 648; Horngren et al. 1999, 45). Variable production overheads are those indirect costs of production that vary with the volume of output, such as indirect materials and plant and equipment maintenance. Fixed production overheads remain constant regardless of the volume of production, such as depreciation of factory buildings.

American companies that finance health care classify "factory-payroll fringe costs, such as employer contributions to Social Security, life insurance, health, pensions and miscellaneous other employee benefits . . . as factory overhead," or as direct labor (Horngren 1977, 33). Accountants do not allocate training costs to inventories, just as they forbid capitalizing them on acquiring a new tangible fixed asset (e.g., Deloitte 2008, 322), which raises the same question.²⁵ IAS 38 *Intangible Assets* likewise forbids capitalizing the value of the workforce as an intangible asset, and forbids expenditure on training because it is, in Marx's terms, an expenditure to increase the value of labor power, which the free wageworker owns, and an entity "usually has insufficient control" for this to be an asset:

An entity may have a team of skilled staff and may be able to identify incremental staff skills leading to future economic benefits from training. The entity may also expect that the staff will continue to make their skills available to the entity. However, an entity usually has insufficient control over the expected future economic benefits arising from a team of skilled staff and from training for these items to meet the definition of an intangible asset. (IASB 2008, para. 15)

IAS 2 requires entities to allocate overheads using "normal capacity" (IASB 1993, para. 13), which for Marx means the level of production required to generate the required (general) rate of profit. As Marx put it, "The part of the latent productive capital that is simply held in readiness as a condition for the production process, such as cotton, coal, etc. in the spinning mill, acts neither to form products nor values. It is idle capital, although its idleness forms a condition for the uninterrupted flow of the production process" (1978, 201–2). Consistent with Marx's "law of one cost," accountants allocate every unit of planned output the same share of fixed overheads. If production is below the planned level the unabsorbed

overhead is a loss, but if production exceeds the planned level, the accountant recalculates the rate so that each unit absorbs less.

IAS 2 forbids capitalizing any "abnormal" costs, highlighting "wastage," of labor time in production and materials, but requires capitalizing the "normal" costs (IASB 1993, para. 16). Marx agreed. In Volume 1 of *Capital*, he noted, "in spinning cotton, the waste . . . [that is] normal and inevitable under average conditions of spinning . . . is just as surely transferred to the value of the yarn" (Marx 1976a, 313). In Volume 2, he repeated, "The value of the apparatus, etc. is carried over to the product . . . and the use of this apparatus is just as much a condition of production as the reduction to dust of a part of the cotton that does not go into the product, but still carries its value over to it" (Marx 1978, 201-2). For Marx, chapter 5 argued, cost price is the accountants' "normal" cost of production, the sum of the standard or target costs of its components. IAS 2 allows standard costs for financial reporting, "if the results approximate cost. Standard costs take into account normal levels of materials and supplies, labour efficiency and capacity utilisation. They are regularly reviewed and, if necessary, revised in the light of current conditions" (IASB 1993, para. 21). Chapter 4 showed that Marx's theory of value requires "standard costs" using current replacement costs, as generally do management accounts.

Marx analyzed the "costs of circulation" in Volume 2 of *Capital* under the headings of "pure circulation costs," costs of storage, and transport costs. What follows argues that his analyses explain why accountants charge general administrative overheads and selling expenses as period costs, and treat costs of storage and transport as production overheads.

PURE CIRCULATION COSTS

Pure circulation costs include the time needed for buying and selling, when the capitalist "prowls around the market," and other costs necessary to convert money into commodities, or to convert commodities into money, M-C or C-M. "This labour, increased by evil intent on either side, no more creates value than the labour that takes place in legal proceedings increases the value of the object in dispute" (Marx 1978, 208). Similarly, the labor of "the rent collector of a landlord or the porter at a bank . . . does not add one iota to the magnitude of the value of the rent, nor to the gold pieces carried to another bank by the sack full" (Marx 1978, 208). Marx emphasized that this labor is socially unproductive: "from the *social point* *of view* [such] a person's labour-power is used up . . . in this mere circulation function. It is not available for anything else, including productive labour" (1978, 210, emphasis added). It makes no difference whether capitalists seek to minimize buying and selling costs by transferring these functions to specialist capitals working on a larger scale, or use and exploit specialist wageworkers. From the social viewpoint, "In all circumstances, the time taken here is a cost of circulation, which does not add anything to the values converted" (Marx 1978, 210), adds neither means of subsistence or production.

Marx's rationale, remembering Engel's lesson on the entity concept, was that "their use-values are not consumed productively . . . [and therefore] cannot become *factors of capital*, any more than the *commodities* he buys for his personal consumption" (1976a, 1041). In his only reference to bookkeeping in Volume 1 of *Capital*, Marx used the capitalist's mentality of continuous accumulation to explain the accounting entity concept, using the double entry for personal expenses, but the same was true of pure circulation costs. "So far . . . as his actions are a mere function of capital . . . his own private consumption is a robbery perpetrated on accumulation, just as in bookkeeping by double entry, the private expenditure of the capitalist is placed on the debtor side of his account against his capital" (Marx 1996, 588). IAS 2's definition of "purchase costs" likewise does not include the cost of the purchasing department, and it excludes all selling costs from inventory, which must be immediately charged against revenue as non-productive overheads (IASB 1993, para. 16 (d)), Marx's "pure" faux frais, unproductive labor.

Capitalists aim for a rate of profit after these expenses, and they set their prices accordingly. However, in their accounts they recognize the social reality that, as Marx put it, "It is the same as if a part of the product was transformed into a machine that bought and sold the remaining part of the product. This machine means a deduction from the product. It is not involved in the production process, although it can reduce the labour-power, etc. spent on circulation. It simply forms a part of the circulation costs" (1978, 211). In *Theories of Surplus Value*, Marx criticized Garnier (Smith's French translator), who "imagines that the profit is paid by the consumer. The consumer pays the 'value' of the commodity . . . [which] contains a profit for the capitalist" (Marx 1969a, 200), that is, after the deduction of the costs of circulation, and accountants agree. The capitalist's customers did not pay for the profit, or for the costs of

circulation, any more than they paid for the capitalist's clothes, which the accountant deducted from surplus value:

If as a capitalist tailor I lay out £100 in wages, this £100 produces for me say £120. It produces for me a revenue of £20, with which I can then, if I want to, also enjoy tailoring labour in the form of a 'frockcoat.' If on the other hand I buy clothes for £20 in order to wear them, it is obvious that these clothes have not created the £20 with which I buy them. (Marx 1969a, 199–200)

If the capitalist had instead spent £20 on selling costs, Marx and accountants would report a surplus value (gross profit) of £20 and an operating profit of zero.

Because consumers also did not pay for the services of the capitalist's accountant, Marx classified the costs of bookkeeping for general administration, for control of valorization, the fact that "by way of bookkeeping, which also includes the determination or reckoning of commodity prices (price calculation), the movement of capital is registered and controlled" (1978, 211), as *faux frais*. These costs were socially unproductive: "a capitalist . . . must constantly transform a part of the commodity product, by way of money, into a book-keeper, clerks, and so on. This part of the capital is withdrawn from the production process and belongs to the costs of circulation, as a deduction from the total yield" (Marx 1978, 212). It made no difference if bookkeeping became "the independent function of special agents who are exclusively entrusted with it" (Marx 1978, 212), who make a surplus value. We will see below that accountants classify some "bookkeeping" costs as productive, but that this is consistent with other comments by Marx on "bookkeeping," and with his treatment of storage costs.

The social costs of creating money (coin or paper) and the capitalist's costs in handling it, are likewise for Marx pure circulation costs, that is, socially unproductive overheads, which in his theory are all "pure losses" (Murray 1998, 63). This is again because "The commodities that function as money go neither into individual nor productive consumption. They represent social labour fixed in a form in which it serves merely as a machine for circulation" and, therefore, "are *faux frais* of commodity production in general" (Marx 1978, 213, 214).

Allocating Overheads to Functions

Harvey sees "a problem of defining exactly where the collective laborer begins and ends," whether "designers, managers, engineers, maintenance

workers, cleaners and traders operating from within the factory . . . produce the value" (2013, 92). He asks, "What happens when various functions that were once a part of collective laboring within the factory (such as cleaning and graphic advertising design) are subcontracted out? Do they suddenly shift from being a part of the collective productive labor to the category of unproductive labor?" (Harvey 2013, 92). He claims, "it is very hard to tell (as Marx himself concedes . . .) when these activities need to be classified as productive of value or unproductive" (Harvey 2013, 92). Harvey does not say where Marx "concedes" that he has a problem with outsourcing. In Volume 2 of *Capital*, he observed, although the scale of capitalist production encouraged specialized commercial capitals, this changed nothing:

Just as little can such a miracle of transubstantiation proceed by a transposition, i.e. if the industrial capitalists, instead of themselves performing the "work of combustion," make this into the exclusive business of third parties paid by them. These third parties will certainly not put their labour-power at the disposal of the capitalists for the sake of their blue eyes. (Marx 1978, 208)

Deciding the boundary of the collective laborer and dealing with outsourcing is Harvey's "accounting nightmare" (2013, 92). He is "not inclined to go into this controversy in detail" for fear of being "lost in some accounting quagmire" (Harvey 2013, 91, 94).

Marx and accountants, however, agree that capitalists allocate costs according to their "function" (purpose), which determines the boundary of the collective worker by distinguishing between productive and unproductive labor. In Volume 2, Marx stressed that "Industrial capital is the only mode of existence of capital in which not only the appropriation of surplus-value or surplus product, but also its creation, is a *function* of capital" (1978, 135–36, emphasis added). "Money capital and commodity capital," insofar as they were specialized branches, "are now only modes of existence of the various *functional forms* that industrial capital constantly assumes and discards within the circulation sphere" (Marx 1978, 136, emphasis added). He emphasized, "both of the phases that it goes through in the circulation sphere, M-C and C-M, possess a functionally specific character as phases of the movement of capital" (Marx 1978, 136, emphasis added). As for production, "The circuit of productive capital has the general formula: P . . . C'-M'-C . . . P. It signifies the periodically repeated *function* of the productive capital, i.e. reproduction" Marx 1978, 144, emphasis added). Labor has productive and

"unproductive *functions* . . . because the reproduction process itself includes unproductive *functions*" (Marx 1978, 209, emphases added).²⁶

Accountants agree. Taking the costs of accounting as its example, the British standard on inventory, Statement of Standard Accounting Practice 9, *Stocks and Long-Term Contracts* explained that

allocating the costs of central service departments . . . should depend on the function or functions that the department is serving. For example, the accounts department will normally support the following functions:

- (a) production—by paying direct and indirect production wages and salaries, by controlling purchases and by preparing periodic financial statements for the production units;
- (b) marketing and distribution—by analysing sales and by controlling the sales ledger;
- (c) general administration—by preparing management accounts and annual financial statements and budgets, by controlling cash resources and by planning investments.

Only those costs of the accounts department that can reasonably be allocated to the production function fall to be included in the cost of conversion. (Accounting Standards Committee 1988, Appendix, para. 7)

Paying production workers is productive labor because it provides a use value, labor-power, which is necessary to bring a commodity to its current state or location. Preparing periodic financial statements for the production units—accounting for production—is also productive labor because planning and co-ordination are necessary for production. Controlling (supervising) purchases is likewise productive labor because purchases of materials, etc. are a necessary condition for production. Similarly, the mental labor of supervising production is productive, including the mental labor of constructing and controlling it according to a financial budget, and so is the necessary personnel management of direct labor, the cost of the works canteen, the works toilet cleaner, etc. By contrast, bookkeeping for selling, and the management and annual financial accounts for "general administration," like these functions themselves, are not necessary to bring a commodity to its current state and location, and for accountants they are nonproductive overheads.

Marx did not discuss bookkeeping for production, but he categorized the analogous costs of hiring labor, the initial "formal" phase in the "direct" exchange between capital and labor, as productive labor in *Theories of Surplus Value*, in effect, explaining why it is a production overhead:

In the exchange between capital and labour . . . two essentially different though interdependent phases have to be distinguished. . . . The first exchange between capital and labour is a formal process, in which capital figures as money and labour power as commodity. From a conceptual or legal standpoint the sale of labour power takes place in this first process, although the labour is paid for only after it has been performed—at the end of the day, of the week, etc. . . . Secondly: . . . labour is directly *materialised*, is transformed *directly* into capital, after it has been *formally* incorporated in capital through the first transaction. . . . The statement that *productive labour* is labour which is *directly* exchanged with *capital* embraces all these phases. (Marx 1969a, 397–99)

Marx explicitly categorized the administrative "bookkeeping" function of controlling the valorization of capital as socially unproductive. Some Marxists claimed, "Marx denied the productive character of the labor in all cases," which Rubin (2008, 272) argued was "erroneous," but accepted that Marx's "views on "bookkeeping" . . . are distinguished by extreme obscurity and may be interpreted" that way. He thought, nevertheless, it would be consistent with Marx's distinction that, "If bookkeeping is necessary for the performance of real functions of production . . . then bookkeeping is related to the process of production" (Rubin 2008, 272), and is productive labor. While Marx did not specifically address the question, according to the accounting interpretation his discussion is not "obscure."

Because in Marx's theory value is the unity of exchange value and use value, using "bookkeeping" to control valorization meant it was also relevant for planning and controlling the use values, the "things" themselves. In bookkeeping, "The movement of production, and particularly of valorization—in which commodities appear only as bearers of value, as the names of *things* whose ideal value-existence is set down in money of account—thus receives symbolic reflection in the imagination" (Marx 1978, 211, emphases added). Consistent with this, he noted, "production and book-keeping remain as separate as the cargo of a ship and a bill of lading" in primitive Indian communities where bookkeeping was the function of a communal official (Marx 1978, 212) who had no role in production. Thus, also, the independent commodity producer who keeps accounts "outside his production time" expends unproductive labor "which, although necessary, constitutes a deduction both from the time that he can spend productively, and from the instruments of labour that function in the actual production process and enter into the formation of products and value" (Marx 1978, 211). Although "the same applies *mutatis mutandis*, to the capitalist's book-keeper" (Marx 1978, 212) when engaged in controlling the valorization of capital, Marx (1978, 212) also implicitly recognized a production-planning function for bookkeeping when he observed that its necessity increased as the social scale and complexity of production, of the collective worker, increased.

Customers do not pay for the profits of capitalists or the services of senior management, lawyers, bankers and tax accountants, etc. who control, strategize, organize mergers, raise capital, cut costs, close plants, and avoid tax, etc., and for Marx these labors are socially unproductive. IAS 2 agrees, requiring exclusion of administrative overheads that do not contribute to bringing inventories to their present location and condition (IASB 1993, para. 16 (c)). In addition to taxes, which clearly "belong to the *faux frais de production* and as far as the capitalist is concerned they are utterly *adventitious*," in *Resultate* Marx gave as examples,

legal proceedings, contractual agreements, etc. All matters of this sort are concerned with stipulations between commodity owners as buyers and sellers of goods, and have nothing to do with the relations between capital and labour. Those engaged on them may become the wage-labourers of capital; but this does not make productive workers out of them. (1976a, 1043)

Customers do not pay for lawyers who are unproductive workers unless they organize themselves capitalistically, and then only for themselves as capitalists, nor for salespeople, workers in the purchasing department, researchers, or credit controllers.

Production managers, engineers and factory worker payroll clerks, factory toilet cleaners, and so forth, by contrast, are productive workers because they are limbs of the "aggregate worker" producing an aggregate output, because, as we saw, "it is quite immaterial whether the job of a particular worker . . . is at a greater or smaller distance from the actual manual labour" (Marx 1976a, 1040). Marx therefore agreed with accountants that only the labor of managing production—organizing to produce—is productive labor, a production overhead:

As representative of *productive capital* engaged in the process of self-expansion, the capitalist performs a *productive* function. It consists in the direction and exploitation of productive labour. In contrast to his fellow-consumers of *surplus value* who stand in no immediate and active relationship to their production, his class is the *productive* class par excellence. (As the director of the labour process the capitalist performs *productive labour* in the sense that his labour is involved in the total process that is realized in the product.) We are concerned here only with capital within the immediate process of production. (Marx 1976a, 1048)

Only as a "representative of productive capital" does a capitalist perform a "productive function," but Marx, we will see, meant compared to the unproductive class of rentiers or paupers, not that capitalists should add all management costs to the cost of production; the capitalist as such was not a productive laborer. "Direction and exploitation" is "a productive function," but only the cost of "direction" in the "immediate process of production," the costs of planning and supervising production, was productive. As Marx said in Volume 3 of *Capital*:

The labour of supervision and management is naturally required wherever the direct process of production assumes the form of a combined social process . . . [A]ll labour in which many individuals co-operate necessarily requires a commanding will to coordinate and unify the process . . . This is a productive job, which must be performed in every combined mode of production. (Marx 1998, 381–82)

Accountants capitalize the supervision of direct labor, but treat all other supervision and general management as unproductive period costs. In *Theories of Surplus Value*, Marx concluded, "the labour . . . necessary only because of the contradiction between capital and labour . . . enters into the cost of his overseers . . . and is already included in the category of wages in the same way as costs caused by the slave overseer and his whip are included in the production costs of the slave-owner" (1972, 355). In Marx's slave mode of production, where the aim was production of use values, *Accounting for History* shows, all the slave overseer's costs were deductions from production, and similarly, "These costs, like the greater part of the trading expenses, belong to the incidental expenses of capitalist production" (Marx 1972, 355–56).

Marx split the costs of capitalist "overseers," therefore, between those arising from the "exploitative function" (1972, 506), the conflict between capital and labor arising from the pursuit of profit, and those that did not. Both costs were "incidental expenses," but supervision costs were production overheads, and exploitation costs were nonproduction overheads. "One part of the labour of superintendence merely arises from the antagonistic contradiction between capital and labour, from the antagonistic character of capitalist production, and belongs to the incidental expenses of production in the same way as nine-tenths of the 'labour' occasioned by the circulation process" (Marx 1972, 505, emphases added). Moseley (1994, 86) concludes, "Marx recognized that a small fraction of supervisory labour in capitalism is a general requirement of production to perform the functions of planning and co-ordination," but Marx says only that a "part" "belongs" to incidental expenses just like 90% of circulation costs. It is misleading to suggest Marx "argued that the vast bulk of supervisory labor [e.g., 90%] is devoted to the antagonistic function of controlling the labor of production workers and making sure

that they work at an appropriate intensity of labor" (Moseley 1994, 86). It does not follow that "most of their labor is devoted . . . to the unproductive function of controlling the labor of production workers" (Moseley 1991, 36). Moseley mixes together under "supervisory labor . . . such functions as the transmission of orders, the supervision of supervisors, etc., up to top management, the creation and processing of production payrolls for individuals and groups of individuals" (1994, 85). Controlling direct labor is not the function of transmitting orders, supervising supervisors, or general management.

Marx recognized that exploitation and management direction were inevitably interrelated because production occurs only within the framework of exploitation, but this does not mean capitalists cannot identify the functions and assign them to individuals. "The labour of supervision and management, arising as it does out of . . . the supremacy of capital over labour . . . is directly and inseparably connected . . . with productive functions," but it was also true that "all combined social labour assigns [these functions] to individuals as their special tasks" (Marx 1998, 384). Capitalists assign production supervisors control of direct labor and account for their costs as production overheads, but assign general management control of the circulation of capital and account for its expenses as non-production overheads. General management is part of Marx's faux frais de production, "false" expenses, because they do not produce means of subsistence or production, but provide services to capitalism, and accountants charge them as period costs, just like any such worker. They do, according to Marx's theory of value, because "Whenever labour is purchased to be consumed as a *use-value*, as a *service* and not to replace the value of variable capital with its own vitality and be incorporated into the capitalist process of production . . . the labour is not productive and the wage-labourer is no productive worker" (1976a, 1041).

STORAGE AND TRANSPORTATION COSTS

Pure circulation costs were, for Marx, costs of the "formal metamorphosis" of capital, whereas storage and transport costs were those of the "real function" (1998, 266, 267), both of which did add value to commodities, were productive for individual capitalists, but storage was socially unproductive. Some costs seemingly for "storage" are really costs of production, "can arise from production processes that are simply continued in the circulation sphere, and whose productive character is thus merely
hidden by the circulation form" (Marx 1978, 214), for example wine maturation. Otherwise, "They may also be nothing but costs from the social point of view, unproductive expenditure of labour, either living or objectified, but precisely because of this they still have a value-forming effect for the individual capitalist, and form an addition to the selling price of his commodities" (Marx 1978, 214). These real storage costs arose from the need for "stock formation," carrying and maintaining inventories at many points in the production and distribution system, which "requires buildings, stores, containers, warehouses, i.e. an outlay of constant capital; it equally requires that payment is made for the labour-power employed in placing the commodities in their containers" (Marx 1978, 217, 215–16).²⁷ Marx's storage costs comprise "(1) a quantitative reduction in the mass of the product (e.g. with stocks of flour); (2) a deterioration in quality; (3) the objectified and living labour required to conserve the stock" (1978, 225). They are accountants' production overheads, necessary to keep the inventory in its current state or location, but from society's viewpoint, for Marx, they are "simply *expenses*," unproductive labor:

Under all circumstances, capital and labour-power which serve to maintain and store the commodity stock are withdrawn from the direct production process. On the other hand, the capital employed here, including labour-power as a component of the capital, must be replaced out of the social product. Hence this outlay has the same effect as a reduction in the productivity of labour, so that a greater quantity of capital and labour is required to obtain a specific useful effect. These are simply *expenses*. (Marx 1978, 216)

The difference was that pure circulation costs "do not operate on the usevalue in which the commodity exists. They are concerned only with its form," whereas with storage costs "their actual object is not the formal transformation of values, but the conservation of the value that exists in the commodity as a product, a use-value, and hence can be conserved only by conserving the product, the use-value itself" (Marx 1978, 216–17). Like pure circulation costs, by incurring storage costs "The value that is advanced and exists in a commodity is also not increased here. But new labour, both objectified and living is added to it" (Marx 1978, 217), and so, for individual capitalists, Marx and accountants capitalize normal storage cost to the point of sale.

The accountants' "traditional historical cost model" requires "that costs should be added to inventory valuations to the point where the merchandise is in the proper location for sale or transfer to customers. In addition to specific manufacturing costs, this would include necessary costs of shipping, storage, and handling to bring it to the store, display room, or warehouse" (Hendriksen 1977, 306, 333). IAS 2 restricts capitalizing storage costs to those "necessary in the production process before a further production stage" (IASB 1993, para. 16 (b)). This "appears to prohibit including the costs of the warehouse and the overheads of a retail outlet" (Ernst & Young 2015, 1537), but "any indirect factory-related cost, including the warehouse costs of storing completed goods, will be included in inventory" (Elliot and Elliot 2009, 505). For retail companies, the "particular circumstance of the business are that 'present location and condition' may be interpreted to mean positioned on the store's shelves and ready for sale—i.e. point of sale," and IAS 2 requires them to capitalize their "production" (transport and logistics) costs (Ernst & Young 1999, 982; 2015, 1538). Marx agreed, noting in *Grundrisse*:

In so far as trade brings a product to market, it gives it a new form. True, all it does is change the location. But . . . [i]t gives the product a new use value (and this holds right down to and including the retail grocer, who weighs, measures, wraps the product and thus gives it a form for consumption), and this new use value costs labour time, is therefore at the same time exchange value. Bringing to market is part of the production process itself. The product is a commodity, is in circulation only when it is on the market. (Marx 1973, 635; see also, 533–35)

When the commodity is "on the market," at the point of sale, the costs of storage are pure circulation costs, of distribution and selling. For retailers the costs of sales "includes costs of transfer to the point of sale [that] . . . will often include a portion of normal warehouse costs," but "distribution costs," which "include holding costs at the point of sale and costs of transfers to customers" (PwC 2000, 17003), are selling costs. Accountants therefore agree with Marx when they say, "a company should not include external distribution costs such as those relating to the transfer of goods from a sales depot to an external customer" (PwC 2000, 17003) in their cost of sales.

Also consistent with IAS 2, that forbids capitalizing "abnormal" costs (IASB 1993, para. 16 (a)), Marx argued that a capitalist could not charge his customers with abnormal storage costs, which were a "loss":

If the capitalist has . . . commodities ready for sale, and these remain in the store unsold . . . [t]he expenditures that the conservation of this stock requires in buildings, additional labour, etc. form a positive loss. The eventual purchaser would laugh at the capitalist if he said: 'I could not sell my commodity for these six months, and it not only cost me so and so much in x.' 'So much the worse for you,' the buyer will say, 'for next to you there is another seller whose commodity was finished only yesterday. . . .' The expenses it cost him to maintain . . . [his money] in commodity form pertains to his own individual experience, and does not interest the buyer of the commodity. The latter does not pay him for the circulation time of his commodity. (Marx

1978, 222)

Harvey says this means, "Costs of storage are a positive loss for the individual capitalist. The purchaser will not pay for them since they are not part of socially necessary labour time" (2013, 105). Marx, however, plainly said that a customer will pay for only socially necessary storage costs, not abnormal costs arising "from the necessity of transforming the commodities into money, and the difficulties of this metamorphosis . . . [that] do not enter into the value of the commodities, but form a deduction, a loss of value in the realization of value" (1978, 225).

IAS 2 requires capitalizing all costs necessary to get a commodity or service to its "current state and location," and therefore requires the capitalization of all necessary transport costs to the point of sale. In Volume 2, Marx agreed, repeating his conclusion in *Grundrisse*:

Harvey objects that storage and transport costs are "expenses attributable to production, because the commodity is not truly finished until it is on the market in saleable form. Some value can therefore be created in what appears to be circulation" (2013, 103). He complains, "This porosity makes the accounting nightmare even worse: placing a commodity in a container adds to its value while time taken sitting in the warehouse entails deductions from value" (Harvey 2013, 103–4). He argues that Marx made the nightmare worse by also distinguishing "voluntary" from "involuntary" stock formation, between speculation or overproduction, for example, and "the fact that a certain stock is socially necessary, and so, Marx argues, it can be considered as constituting part of the value of commodities" (Harvey 2013, 105).

Harvey gives up: "The distinction between productive and unproductive . . . labor, is thus even harder to distinguish in practice. . . . [T]his makes for an accounting nightmare in which a night watchman in a warehouse is unproductive while a worker packing a container is judged productive" (2013, 105–6). However, first, Harvey overlooks Marx and accountants' distinction between the "abnormal" costs associated with speculative or unplanned stock and the "normal" socially necessary costs of production derived from target costs. Second, according to Marx's theory and

The quantity of products is not increased by their transport. . . . But the use-value of things is realized only in their consumption, and their consumption may make a change of location necessary, and thus also the additional production process of the transport industry. . . . The product is ready for consumption only when it has completed this movement. (Marx 1978, 226–27)

accountants, container packers who change the state of a commodity, and warehouse night watchmen employed before the point of sale, are productive workers.

Services

IAS 2 also applies to the costs of inventories of "service providers," mainly any work in progress, for example, a partially completed advertising campaign:

To the extent that service providers have inventories, they measure them at the costs of their production. These costs consist primarily of the labour and other costs of personnel directly engaged in providing the service, including supervisory personnel, and attributable overheads. Labour and other costs relating to sales and general administrative personnel are not included but are recognised as expenses in the period in which they are incurred. The cost of inventories of a service provider does not include profit margins or non-attributable overheads that are often factored into prices charged by service providers. (IASB 1993, para. 19)

Marx repeated in *Capital* that productive labor could provide services. "In general, we may say that *service* is merely an expression for the particular use-value of labour where the latter is useful not as an article, but as an activity" (Marx 1976a, 1047). For example, the services of a prostitute working for a capitalist would be productive labor for the capitalist and for such a society, whereas the labor of the creative and production departments of an advertising company would be productive only for the advertising company. Capitalist brothels would sell sex, but companies that sell commodities or services do not sell advertising to their customers. They use it to influence buying behavior. Advertising may make customers more likely to buy, and it may allow the seller to charge a premium price because of the brand image the advertisements create. Even so, the customer pays the premium price for the image of the product, not for the advertisements themselves.

PART B: AN ACCOUNTING CRITIQUE OF THE LITERATURE

There is a large literature debating Marx's discussions of productive and unproductive labor. This Part analyzes a selection of contributions, focusing on the debate that began in the 1970s, but starting from Rubin's (2008) influential interpretation published in 1924. Contributors, it argues, variously misunderstand Marx's distinctions between production and circulation, the link between general productivity and capitalist productivity, the boundaries of the collective worker, and the status of services. They typically overlook Marx's distinction between productive labor for an individual capitalist and for aggregate social capital, and they therefore confuse his categories and misunderstand his social accounting for capitalism's reproduction and accumulation. The price of confusion is a general failure to appreciate that Marx used his categories to elaborate a theory of capitalist control of an ever more inclusive valorization process, by individual capitalists and total social capital, which for him was a necessary condition for socialism.

Focusing on Marx's discussion in *Theories of Surplus Value*, Rubin concluded, "every labor which a capitalist buys with his variable capital in order to draw from it a surplus value, is productive labor" (2008, 260). This was so "whether or not this labor is objectified in material objects, and whether or not this labor is objectively necessary or useful for the process of social production (for example the labor of a clown employed by a circus manager)" (Rubin 2008, 260). Marx classified labor, "not from the standpoint of its *content*, namely in terms of the character of the concrete working activity, but from the standpoint of the *social form of its organization*" (Rubin 2008, 261–62). It made no difference whether the labor satisfied "*material*... [or] so-called *spiritual* needs," and Marx "did not attach any decisive significance to the difference between *physical and intellectual* labor" (Rubin 2008, 265).

In short, according to Rubin (2008, 265), Marx's definition of productive labor "completely abstracted from its *content*, from the concrete, useful character and result of the labor." This "complete abstraction," however, apparently contradicted Marx's view in *Capital* that commercial labor was unproductive because "it does not bring about changes in material things" (Rubin 2008, 267). If he did not argue this, critics asked, "Why does Marx not consider the labour of salesmen and store clerks, organized in a capitalistic commercial enterprise, productive" (Rubin 2008, 267)? Rubin (2008, 267) denied the apparently "glaring contradiction," that the "conception of productive labor that Marx develops in *Theories of Surplus Value* diverges from Marx's view of the labor of workers and clerks employed in trade and credit" in *Capital*, by explicitly denying, but implicitly affirming, the social definition.

Rubin (2008, 268) defended Marx by highlighting his comment at the end of the Addenda in Part 1 of *Theories of Surplus Value* that he had dealt only with productive capital. This was, we saw, because without having first investigated the circulation of social capital, Marx deferred answering

"how far" commercial capital was "productive." Rubin, however, argued that according to Marx the "labor of salesmen is not productive, not because it does not produce changes in material goods, but only because it is hired by capital in the phase of circulation"; that "The movement of the phases of capital determines the characteristics of the labor they hire" (2008, 267, 269). This is true, but only from the social viewpoint. Rubin however concluded, "the labor of a cashier at a circus, who sells tickets for the clown's performance, is unproductive because he is hired by capital in the phase of circulation" (2008, 269), overlooking the possibility that the cashier's work could be outsourced from a capitalist and, according to his definition, become productive for that capitalist.

Rubin (2008, 261) appeared not to see Marx's social definition because he was preoccupied with demolishing the prevailing interpretation that Marx defined productive labor "from the standpoint of its objective necessity for social production in general, or for the production of material goods," which Rubin argued Marx had rejected in the *Theories of Surplus* Value. Marx argued, according to Rubin (2008, 260), that labor was productive for an individual capitalist if it made a surplus value regardless of "whether or not this labor is objectively necessary or useful for the process of social production (for example the labor of a clown employed by a circus manager)," whether the labor was socially "useless." However, this is true only in the sense that Marx made no explicit mention of *any* social criteria in his discussion in Theories of Surplus Value. Marx never suggested "objective necessity" for the "process of social reproduction" in *Capital* either, but Rubin overlooked Marx's argument that socially productive labor must produce a surplus value and means of subsistence, including entertainment by clowns, or means of production. Rubin's stress on the social relations of production and neglect of Marx's social definition, we will see, left his defense open to counterattack from the individual capitalist's viewpoint.

Fine and Harris (1979, 56) find Marx's distinction "simple to understand," but they also overlook its individual and social dimensions. Only from the social perspective is it true, for Marx, that

If labour directly produces surplus value it is productive; if not, it is unproductive. This criterion has the corollary that only labour which is performed under the control of a capitalist (on the basis of sale of labour-power from workers to capitalists), and in the sphere of production, is productive. The strength of this distinction is that it is the only one that can be drawn from the labour theory of value with its vision that the production of value and surplus value is the basis for all economic and other processes in capitalist society. (Fine and Harris 1979, 56)

If by "directly produces surplus value" in the "sphere of production" we mean labor that produces means of subsistence or means of production, Marx argued that commercial labor is socially unproductive and, therefore, gave us the vision of productive labor as the basis of society. Without this qualification, "directly produces surplus value," even in the "sphere of production," could include the commercial labor of an individual capitalist. By also overlooking the individual-social definitions, critics (Gough 1972; Harrison 1973; Gough and Harrison 1975; Hunt 1979; 1992) have as confidently found Marx's Laibman distinction contradictory. Classifying commercial labor as unproductive, they argue, contradicts Marx's claim that the distinction depends only on the social relations of production. Capitalists exploit commercial workers who produce use values with exchange value just like productive workers, critics argue, so treating commercial workers as unproductive is "inconsistent with the definition that it is not what workers produce that matters, but rather the social relations under which they work" (Mohun 1996, 42).

Comparing *Theories of Surplus Value* with Volume 3 of *Capital*, Gough for example, discovers that "commercial workers are unproductive labourers, despite the characteristics they have in common with workers in the process of production—above all the fact that they are similarly exploited through having to supply unpaid labour" (1972, 56). In *Capital*, Gough argues, the definition in *Theories of Surplus Value* "has been narrowed, from all labour exchanged with capital to all labour exchanged with *productive* capital; whereas the definition of unproductive labour has been expanded to include labour employed in the process of circulation" (1972, 56). In *Capital*, he concludes, Marx therefore defined productive labor as

labour exchanged with capital to produce surplus-value. As a necessary condition it must be useful labour, must produce or modify a use-value . . . ; that is, it must be employed in the process of production. Labour in the process of pure circulation does not produce use-values therefore cannot add to value or surplus-value . . . because it arises specifically with commodity production out of the problems of realizing the value of commodities. (Gough 1972, 60)

Gough's interpretation overlooks Marx's individual and social definitions in Volume 3 of *Capital* in which commercial workers are unproductive from aggregate social capital's perspective. Marx did not "narrow" his definition of productive labor in *Theories of Surplus Value*, where labor was productive from the individual capitalist's perspective by exchanging with capital, nor did he "expand" unproductive labor to include circulation labor *per se* in *Capital*. Rather, as we saw, he overlaid the social definition on the individual definition; saw socially productive labor as a subset of individually productive labor. Exchanging labor with "capital" to produce surplus value is consistent with Marx's individual definition, as is producing or modifying a "use value" in "production," which encompasses commercial workers. On the other hand, from the social perspective productive labor does not produce abstract "use values," but means of subsistence or production. In effect, Gough accuses Marx of a naïve inconsistency. Having defined productive labor in general as the production of use values, Marx blithely says that pure circulation workers are unproductive because they are "Labour *not* producing use-values" (Gough 1972, 60, emphasis added)! Gough (1972, 59) quotes Marx, "He performs a necessary function, because the process of reproduction itself includes unproductive functions. He works as well as the next man, but intrinsically his labour creates neither value nor product," but overlooks that Marx immediately made clear, that is, "looking at it from the standpoint of society," "from the social point of view" (1978, 210; 1997, 136), from the perspective of aggregate social capital.

Gough (1972, 56) asks, "what precisely is the distinction between production and circulation or realization," and concludes that for Marx "the critical distinction is between *those activities necessary to production* in general, and those activities peculiar to commodity production. That labour is unproductive which is historically specific to the commodity form, including capitalist production." Marx did argue that "commercial capital and money-dealing capital," that developed from merchant capital and money capital, "are due to the specific form of the capitalist mode of production, which above all presupposes the circulation of commodities and money" (1998, 321). However, he categorized them as socially unproductive, that is, for industrial capital, whereas they were productive for individual merchants and money capitalists before the capitalist mode of production, and their labor remains productive for them as specialist functionaries within it. Gough (1972, 57) suggested, "This criterion is chiefly developed in Marx's analysis of the costs of storage," but claimed, "at times the text is so unclear that the interpretation of certain passages will always be open to doubt," but he does not identify these passages. He deduced that Marx would categorize "those who operate the cash registers and are otherwise employed solely because the products assume a

commodity form . . . [as] unproductive labourers" (Gough 1972, 58), whereas according to the accounting interpretation they are socially unproductive because they contribute neither to the means of subsistence nor production.

"The principal ambiguity," Gough concludes, was that Marx insisted that the use value produced by a productive worker "may be of the most futile kind," whereas he used "a historical perspective to distinguish the labour necessary to produce a given use-value, whilst rigorously denying the use of such a perspective to determine the 'necessity' of the final 'use-value' itself. The productiveness of labour depends on the former, but not the latter, according to Marx" (Gough 1972, 62). However, if Marx did not use a "historical perspective" to determine whether labor is productive by the use values it produces for capitalism, but whether it generates a surplus value and contributes to the means of subsistence, no matter how "futile," or contributes to the means of production, the supposed ambiguity disappears. Gough saw the same approach in Marx's discussion of productive and unproductive supervision, concluding that he saw capitalist exploitation as unproductive, but it is not the fact that the labor of exploitation is capitalist that makes it unproductive, but the fact that it produces neither means of consumption or production. As we saw, Marx denied this supposed "historical dimension" in exploitation costs, and Gough therefore contradicts himself when he recognizes, "but here the criterion of unproductive labour is extended to include labour specific to all societies based on exploitation" (1972, 58).

Mandel (1978, 42–43) highlights Marx's social definition in *Capital*, but concludes that socially productive labor must "appropriate and transform . . . material objects." Mandel (1978) sees a discrepancy between *Theories of Surplus Value* and Volume 2 of *Capital*. Marx, he argues, wavered between defining productive labor in *Theories of Surplus Value* as "all labor exchanged against capital and not against revenue" that produced a surplus value, whereas in Volume 2 he defined it as "Commodity producing labor, combining concrete and abstract labor (i.e. combining creation of use-values and production of exchange values)" (Mandel 1978, 41–42, 43). Mandel argues that the second definition "logically excludes 'non-material goods' from the sphere of value production" (1978, 43), that is, services, but "there is no actual 'non-concrete' labor, no labor that fails to involve the 'appropriation and transformation of material objects'" (Murray 1998, 59–60). Clearly, "Here Mandel reverts to a position held by

Adam Smith" (Murray 1998, 65), the incorrect definition that Marx criticized in *Theories of Surplus Value*, highlighting the absurdity of the notion of "immaterial" labor. Mandel misunderstands Marx's criticisms of Smith's incorrect definition when he claims a "contradiction" between pages 157 and 172 (Mandel 1978, 40). On page 157, Marx writes, "An actor . . . or even a clown, according to this definition, is a productive labourer if he works in the service of a capitalist." On page 172, "the fact that . . . the theatrical entrepreneur . . . cannot sell . . . the actor's labour . . . to the public in the form of commodities . . . would show that they are unproductive." The comment on page 157 refers to Smith's first definition, whereas the comment on page 172 is Marx's criticism of Smith's incorrect definition.

According to Mandel, another "striking illustration" of contradiction "is the analysis of commercial agents and travellers. They are classified as productive workers in the Theories of Surplus Value, and as unproductive workers in Capital" (1978, 40). However, in Part 2 of Theories of Surplus Value Marx put "commercial middlemen" into the "productive class," meaning as active capitalists, not workers, distinct from the unproductive class of "respectable paupers," the "owners of profit and rent," and those who "help . . . consume the revenue" (1969b, 218), who are outside the capitalist relation. Therefore, "A pauper, like a capitalist (*rentier*), lives on the revenue of the country. He does not enter into the production costs of the product. . . . Ditto, for a criminal who is fed in prison. A large part of the 'unproductive labourers,' holders of State sinecures, etc., are simply respectable paupers" (Marx 1969b, 218). Adding neither use value nor value to commodities or services, neither means of subsistence nor production, paupers, capitalist rentiers, criminals, and holders of state sinecures, etc were individually and socially unproductive.

Finally, Marx contradicted himself in *Capital*, Mandel claims, by arguing that transporting material goods and people was productive, whereas according to Marx's definition transporting people was unproductive because this "is not an indispensable condition of the realization of use-values and adds no new value to any commodity" (Mandel 1978, 44). Mandel again focuses on the material "characteristics of productive labour" (1978, 45), ignores Marx's socially relative distinction, and succumbs to a "false naturalization of the concept of productive labor" (Murray 1998, 59). Mandel (1978, 44) only surprises himself when he finds, in "striking contrast" to his interpretation, that although for Marx

(1978, 134–135) transporting people does not produce "a thing which functions as an article of commerce and circulates as a commodity only after its production," it is productive, for the capitalist, and for society as a means of subsistence.

Whether Marxists defined productive labor as the production of commodities deemed useful under socialism, or the production of commodities embodying surplus value, Hunt concludes, they ran into "problems most of which stem from Marx's writings on the topic" (1979, 307). Hunt highlights "(1) . . . the appropriate categorization of the costs of 'circulation' (marketing, sales expenses, advertising, etc.); (2) . . . whether the peculiar physical characteristics (or use values) of commodities are of any consequence in defining productive labor; and (3) . . . whether the distinction between material commodities and non-material services is of significance in distinguishing productive from unproductive labor" (1979, 307). Hunt's problems arise from focusing on the individual capitalist, which follows from his rejection of any link between Marx's concepts of productive labor in general and productive labor for capitalism, that is, any idea that Marx defined labor as socially productive if it produced a "social surplus" of commodities.

Hunt (1979, 310) sees as a distorted caricature the popular picture of Marx's theory of history "in which the general 'social surplus' is appropriated by the ruling classes of the various modes of production." In this picture, "The social surplus is . . . the excess of all of the products created in a mode of production . . . beyond those . . . used as productive inputs . . . (including replacement of the means of production used up . . . and the means of consumption necessary to insure the continued productive activity of the producers, slaves, serfs or wage workers, etc.)" (Hunt 1979, 310). Hunt (1979, 311) accepts, "For Marx the accumulation of capital is the most important social process in a capitalist mode of production," and "recognizes this . . . historical productive foundation of all class-divided societies," but argues, "he does not consider it important to focus upon this foundation in order to understand surplus value in a capitalist system."

Marx did highlight that capitalism was historically distinctive because its "social surplus" was not simply of commodities, but of value. However, Hunt overlooks that society's surplus value measures the capitalists' ownership of the surplus means of subsistence and production *and* their money value, giving capitalists the ability to convert these commodities

back into capital on an increased scale or consume them. Hunt cites *Resultate* (Marx 1976a, 996–1006), where Marx certainly stressed, "Without a *class dependent on wages* . . . there can be no production of surplus value; without the production of surplus-value there can be no capitalist production, and hence no capital and no capitalist!" (1976a, 1005). However, Marx also said that workers must sell their labor power because capitalists own the means of subsistence and production, which is why capitalists realize value and surplus value in money, which is why wage labor is the "absolute foundation" of the capitalist system, the foundation of reproduction and capital accumulation. As he put it:

Material wealth transforms itself into capital simply and solely because the worker sells his labour-power in order to live. The *articles* which are the material conditions of labour, i.e. the *means of production*, and the articles which are the precondition for the survival of the worker himself, i.e. the *means of subsistence*, both become *capital* only because of the phenomenon of *wage-labour*. (Marx 1976a, 1005)

Hunt is right that Marx does not make a Sraffian "basic goods"/"luxury goods" distinction. For Marx (1979, 311, 320) capitalist luxury consumption is a "necessity," the workers who produce luxuries produce surplus value and are productive, and the workers also consume "tawdry products," but Hunt considers this a weakness. In his view, "while the distinction between 'basics' and 'nonbasics' is definitely important for understanding the potential for accumulation, such a distinction cannot be derived from Marx's definitions of productive and unproductive labor . . . that . . . are not particularly helpful in isolating the most important determinants and limitations of capitalist accumulation" (Hunt 1979, 320–21).²⁸

Hunt overlooks Marx's definition of socially productive labor as the producer of the means of subsistence (including luxuries) and production, commodities bearing surplus value that capitalists realize as money, which precisely defines the conditions necessary for reinvestment, expansion, or consumption, for using a "social surplus" of commodities and money to accumulate capital. Hunt (1979, 311) however concludes, although "accumulation is possible only because a social surplus exists, clearly Marx is not as interested in the universal productive foundation of the surplus as in the way in which in a capitalist economy a part of that surplus is produced as surplus value and appropriated by capitalists. Aggregate surplus value represents the limit of capitalist accumulation." In fact, Marx was as interested in the "universal productive foundation," in

commodities' as means of subsistence and production, as in their existence as surplus value. Capitalists do not only appropriate surplus value as money, but as commodities, and aggregate surplus value is not just the "limit" of capitalist accumulation, but the possibility, money available for the purchase of more labor power, more means of production, or luxuries. Hunt's claim that Sraffa's categories are "superior in treating capitalist accumulation" is therefore both "unnecessary and misleading" (Leadbeater 1985, 616).

Focusing on the appropriation of surplus value by individual capitalists Hunt has predictable "difficulties": "(1) . . . whether the division between productive and unproductive labor can be made on normative criteria; (2). . . whether productive workers must produce corporeal, material commodities; and (3) . . . whether workers in the 'sphere of circulation' can be productive" (1979, 312). In *Theories of Surplus Value*, Hunt argues, Marx sometimes adopted a "normative" notion of "social value" to categorize labor as productive, but Hunt confuses this with Marx's implicit references to the social perspective. Marx's focus was the individual capitalist, and he made the social perspective explicit only in *Capital*, but we saw two passages in Theories of Surplus Value in which this perspective is implicit (we will see another below). Hunt (1979, 313) finds a passage where "Marx appears to argue for the social value of productive labor and the social uselessness of unproductive laborers. In another passage he uses the ratio of productive to unproductive labors as an index of a society's material well-being and seems to suggest . . . that the consumption of productive laborers is more justifiable morally than that of unproductive laborers." However, rather than "normative," these passages are consistent with Marx implicitly defining "social value" as the production of means of subsistence or production: a society focused on these had a higher "material well-being," and was more "moral" because accumulation was, as Marx saw it, historical destiny. To Hunt, however, they "contradict his basic definition of productive labor in which the defining feature is merely the social relationship between the laborer and the capitalist who buys his labor-power and in which the 'use-value of the commodity in which the labour of a productive worker is embodied may be of the most futile kind" (1979, 313). Marx made clear in Capital that he did not classify particular workers as unproductive because their occupations arose from "social evils" (Leadbeater 1985, 605), but because they are *faux frais* from the social viewpoint, distinct from means of subsistence however "futile," expenses to be avoided (e.g., on doctors and lawyers).

Failure to recognize Marx's individual-social distinction also underlies what Hunt (1979, 314) finds "very confusing" about whether, despite his denial, Marx did categorize "services" as unproductive, which Hunt says is revealed in two passages from Resultate. In the first, "we are told that some of the wage-labor for which the capitalist lays out capital, and whose costs are included in the price of the commodity, is unproductive" (Hunt 1979, 314). In the second, "we are told that some productive labor does not affect (either directly or indirectly, as with supervisory labor) the physical, material characteristics (or use values) of commodities" (Hunt 1979, 314). Hunt (1979, 314) concludes, "in Marx's theory producers of services who are employed for profit by capitalists are productive even though Marx treats them as unproductive," but overlooks that they are productive for an individual capitalist but unproductive for aggregate social capital. His conclusion, that because "some laborers . . . whose wages are included in the price of a physical commodity are not productive [,] while some workers who do not . . . physically affect a commodity are productive [,] . . . the issue of whether productive workers create a physical commodity is treated in a very confusing, if not contradictory, manner by Marx" (Hunt 1979, 314), is therefore misplaced. There is no confusion or contradiction. In the first passage, Marx discussed socially unproductive overheads, such as storage that are productive for the capitalists concerned. In the second passage, he is talking about production overheads, such as production supervision, which are individually and socially productive.

Hunt however continues, "The confusions involved in both of the two issues . . . are related to the confusion that . . . abounds in the third issue, i.e., that of whether workers in the sphere of circulation are productive" (1979, 314). He accepts, "one of Marx's most fundamentally important insights was his recognition that all surplus value originates in the sphere of production and can only be redistributed but never created in the sphere of circulation," but concludes "the precise boundary between these two spheres seems anything but clear" (Hunt 1979, 315).²⁹ However, whereas only in Volumes 2 (and 3) of *Capital* did Marx make explicit the social definition, for Hunt this development reveals "the nub of the inconsistency" between Volume 2 of *Capital* (he neglects Volume 3) and "all of the writings in which productive and unproductive labor are defined" (1979, 316). Everywhere "except for Volume II of Capital, Marx

consistently asserts that it is the exchange of labor-power for variable capital for the purpose of extracting surplus labor that renders labor productive, regardless of the specific activities of the laborer involved" (Hunt 1979, 319). In Volume 2, according to Hunt, "he abandons this and explicitly says that some labor power is exchanged for variable capital in a situation in which surplus labor is extracted and the labor creates no value and is unproductive" (1979, 316), explicitly defining this, we saw, from the social perspective.

Hunt's (1979, 319) neglect of Marx's social definition also undermines his criticism of "Marx's basic definition [that] focuses on the quantity of labor-power that is purchased by variable capital for the purpose of creating surplus value." Evidently, "capitalists make profit from . . . advertising firms, public relations firms and other firms," but for Marx, "the workers in these firms are unproductive" (Hunt 1979, 319). Hunt complains, "But Marx himself states that the nature of the commodity produced by productive workers is irrelevant" (1979, 319). Why, he asks,

should workers producing a commodity (e.g., advertising copy, promotional ads, etc.) which reduces capitalists' toil, trouble and uncertainty in the sphere of circulation have a status different from workers who produce luxury goods that satisfy capitalists' whims, caprices or desire for invidious distinction (such workers are productive in Marx's scheme)? There seems to be no reasonable answer to this question. (Hunt 1979, 319)

Marx's answer was his individual-social distinction, whereas Hunt worked only at the level of the individual capitalist. This is why to him Marx's "basic definition" "seems . . . to be totally unrelated to his classification of wage laborers working in the sphere of circulation as unproductive. . . . A capitalist who owns an advertising firm and a capitalist who owns a manufacturing firm each puts his capital through an identical metamorphosis in order to create surplus value and realize . . . profit" (Hunt 1979, 321). For Hunt (1979, 321–22), as the only difference is "the nature of the use values," Marx is "in violation of his own basic definition."

Leadbeater responded, "workers in advertising perform a different economic function with respect to the process of reproduction than the workers in luxury production" (1985, 609; see also Moseley 1991, 45), the social function of circulating value, whereas the function of productive labor was reproduction and accumulation. Only for an individual capitalist, according to the accounting interpretation, is Leadbeater right, "the use value of the 'output' does not determine whether the labour inputs are productive or unproductive" (1985, 594). However, he is unequivocally right, and that "this point deserves emphasis, *the particular use value of the products produced is important in considering reproduction*" (Leadbeater 1985, 594, emphasis added), that is, for aggregate social capital. Leadbeater references Part 3 of *Theories of Surplus Value*, where Marx again implicitly made the individual-social distinction that became explicit in *Capital*:

In considering surplus-value as such, the original form of the product, hence of the surplus product, is of no consequence. It becomes important when considering the actual process of reproduction, partly in order to understand its forms, and partly in order to grasp the influence of luxury production, etc., on reproduction. Here is another example of how *use-value* as such acquires economic significance. (Marx 1972, 251–52)

The significance for Hunt's criticism is that, while advertising is a use value for the capitalist, "unlike labour in luxury production, this labour does not add use value or value to the actual commodity that is sold for consumption" (Leadbeater 1985, 610). Therefore, as Leadbeater concludes, "the advertising copy and promotional ads of labour in circulation are not part of the total product as such and *exist neither as means of production nor as articles of consumption*" (1985, 610, emphasis added).

Foley argued "from a social point of view" that buying and selling, record keeping, and acquisition of market information "do not add to the total output of use-values" (1986, 118), but he did not define which "use values." Foley (1986, 119) recognized that Marx "goes beyond Smith's first definition by insisting on a social test for the production of surplus value." For example, "advertising labor . . . certainly produces a surplus value for its particular capitalist, but equally clearly it consumes rather than adds to the social surplus value, and thus it should be viewed as unproductive" (Foley 1986, 119–20). For support, however, unlike Marx for whom socially unproductive labor did not produce means of subsistence or production, Foley argued, "labor engaged in commodity advertising may be completely socially unproductive if the advertising efforts of two competitors have equivalent but opposite effects, thereby cancelling each other" (1986, 119). In short, advertising would be "socially productive" if one of the entities' sales increased! It is true that "Smith made an important distinction between the private and social points of view, arguing that productive labour increased social wealth, whereas unproductive labour consumed it," but this created "the trouble . . . that labour may . . . yield a surplus value to a particular capitalist, even though from a social point of view it is unproductive" (Foley 1986, 119). According to Foley, Marx dealt with Smith's problem by restricting attention to "labor which adds to the social surplus value" (1986, 119), but overlooks that Marx reformulated Smith's private consumption/social production distinction—between the King of England who was an unproductive consumer, and the worker who increased social wealth by producing vendible commodities—into the individual-social capital distinction.

Laibman (1992, 76) also highlighted the contradiction between those who "insist . . . that Marx's major thrust must begin with the concept that productive labor is that which creates surplus value, irrespective of the social usefulness of the labor," and those who "insist on applying the unproductive label to some of the labor organized under the control of capitalists." The first is Marx's individual definition; the second is consistent with his social definition. Laibman labeled the first, from *Theories of Surplus Value*, the "socioeconomic" definition, and the second, from *Capital*, Marx's "analytic" definition. "The problem," he concluded, "is finding an *operational* criterion that will identify workers who do not create value and surplus value" (Laibman 1992, 76). The critical question was whether "the separation of the total process of economic reproduction into distinct spheres of production and circulation is theoretically valid" (Laibman 1992, 77).

Laibman (1992, 77) says it is not because "Marx's generating insight is that surplus value arises only in production that is also a moment of circulation, that is, both within and without the process of circulation," because both are necessary use values for "the total process of economic reproduction." We therefore cannot "identify an aspect of buying, selling, insuring, legal, accounting labor . . . that is not reducible on further analysis to some aspect of the transforming and processing of use-values" (Laibman 1992, 77). Because we cannot say when "does the production of use-value stop," Laibman sees no "justification for excluding . . . sales labor . . . from the realm of use-value and therefore of value creation, given their obvious social necessity" (1992, 78). He complains, "the labor of workers in the spheres of circulation or finance is thought to be unproductive, simply because it transfers title of ownership without 'producing anything.' But the word 'anything' here must refer to usevalues; does an object to which you do not have title have the same usevalue as one to which you do?" (Laibman 1999, 62). Marx agreed that the labor of transferring titles of ownership is productive for that capitalist, but is unproductive for social capital. Moving gold from one bank to another provides use value to a bank's customer and surplus value for the bank, but it does not produce means of consumption or production and, for aggregate social capital, according to Marx, is unproductive.

Laibman sees an accounting "allocation problem": "How are we to account for the determination of the components of the value of output that represent the unproductive activity? What kind of component of the value product is the cost of unproductive labor" (1992, 79). As a "flow element," the cost of unproductive labor must "be assimilated to one of the three flow elements in the value of the commodity product" (Laibman 1992, 79). In short, should we add it to constant or variable capital, or deduct it from surplus value?³⁰ Most Marxist economists "have followed Marx himself in treating unproductive labor as a deduction from surplus value" (Dawson and Foster 1994, 317), but Laibman finds him "vacillating between variable capital and surplus value" in Volume 2 of *Capital* (1992, 79). However, Laibman takes no account of the fact that for Marx the cost of commercial labor is variable capital to an individual commercial capital, but a deduction from surplus value for an industrial capital and aggregate social capital.

According to Laibman, "a surplus-value allocation approach implies that capitalists would seek to discharge armies of unproductive labour, for reasons above and beyond their general motivation to adopt labour-saving technological change" (1992, 82). However, according to Marx, capitalists seek to minimize all costs, but it was true that their "attitude" toward productive and unproductive labor, their method of control, was different. In Volume 3 of *Capital*, he argued, "The industrial capitalist endeavours . . . to cut . . . expenses of circulation down to a minimum, just as his expenses for constant capital," but "industrial capital does not maintain the same attitude to its commercial wage-labourers as it does to its productive wage-labourers" (Marx 1998, 298). The difference was that the "more wage-labourers productive it employs under otherwise equal circumstances, the greater the output, and the greater the surplus-value, or profit. Conversely, however, the larger the scale of production, the greater the quantity of value and surplus-value to be realised, the greater the produced commodity-capital, the greater are the absolute, if not relative, office costs" (Marx 1998, 298).

This distinction is not consistent with the view that Marx inaccurately predicted that the proportion of circulation workers would necessarily fall as capitalist accumulation proceeded (e.g., Marginson 1998, 582). With expanded production, he said, "the absolute" costs, "if not relative," "even if not proportionately greater," of buying and selling, "Calculation of prices, book-keeping, managing funds, correspondence—all belong under this head," would "multiply accordingly" (Marx 1998, 297–98). "The more developed the scale of production, the greater, even if not proportionately greater, the commercial operations of the industrial capital, and consequently the labour and other costs of circulation involved in realising value and surplus-value" (Marx 1998, 297–98). There are several reasons consistent with Marx's theory why the proportion of commercial workers has increased, including the relative lack of technological progress in commercial operations, vastly increased volumes of commodities to sell, increased concentration of capital, and oligopolistic competition (Moseley 1994, 88–90; Wolff 1994, 207; cf. Laibman 1992, 82).³¹

Mohun defends "the Marxian distinction" against the criticism that "'Production' and 'circulation' are abstractions which cannot be identified as separate 'places' . . . [because] all activities prior to the consumption of a use-value are reducible to some aspect of the transformation and processing of that use-value" (1996, 43). Mohun agreed with critics that focusing "on the social relations alone cannot distinguish unproductive from productive labor," but argued, "What is at issue is . . . location with respect to valorization," "location in the circuit of capital," because this "determines what people do" (1996, 30, 36, 42, 44). Rather than "location," which presumes the social definition, for Marx the issue was the *function* of the labor for individual capitalists and society, whereas for Mohun "The issue is . . . what concrete labor is *required* by this or that moment in the valorisation of value" (1996, 43, emphasis added). Ignoring the individual capitalist, Mohun's analysis of "the circuit of capital" is inconsistent with Marx's accounting.

Mohun argues that, starting from a stock of "productive capital" and "commodity capital," "the firm"—he means capital in general—advances "means of production (non-labor inputs) and labor-power over some specified period: the flow of costs during the period is the 'capital advanced.' The flow of output over that period to sales plus additions to inventories is 'production'" (1996, 35). Mohun does not define "costs," but argues, "nothing is lost analytically" in the "following simplification":

Suppose a firm begins with a stock of money capital and nothing else. This is then entirely used up . . . [as] productive capital. Production occurs and results in a flow of produced output, or commodity capital, which is then entirely liquidated in sales, leaving the firm with a larger stock of money-capital than it began with, and nothing else. . . . The labor theory of value then asserts that new value is added only in the process of production. (Mohun 1996, 35)

This "simplification" reduces surplus value to lifetime net cash flow, and Marx's theory of value to the tautological "assertion" that its origin is "productive labor."

According to Mohun, labor is productive "if and only if it transforms a quantity of productive capital into a greater quantity of commodity capital," and unproductive if "it transforms either commodity capital into money-capital, or money-capital into productive capital" (1996, 36). This defines commercial labor as unproductive even if a capitalist employs it (Mohun 1996, 37). Ignoring the individual capitalist, Mohun argued, "The labor which brings buyers and sellers together produces nothing in addition to what is already in existence; transferring title of ownership generates utility for the buyer and seller and that is all" (1996, 44). He is concerned, "If it is argued that all workers employed by capital are productive, irrespective of their location with respect to the circuit of capital, [because] then there must be slippage in the category 'use-value' to its neoclassical sense as a subjective property, *qua* psychological characteristic, of the purchaser" (Mohun 1996, 44).

There is no need for slippage. Buying and selling provide objective use values for capital and for the counterparty—the transformation of money into commodities or commodities into money-that, if produced by a separate capital, is productive for it. However, ignoring individual-social distinction, Mohun's identification of productive workers by "their location within the circuit of capital" is open to criticism as an "arbitrary assignment of valorization to a particular part of the circuit of capital" (Houston 1997, 132), and to the counter tautology that all labor is productive if it produces a use value that commands a price. From Houston, for example, who finds it "strange indeed" that the highly educated, highly paid and well-equipped "finance sector," "when we consider the role both quantitatively and qualitatively [,] . . . that they do not produce value while workers operating dilapidated sewing machines in warehouse sweatshops do" (1997, 134). However, whereas the costs of the finance directors and their departments, and those of the finance sector whose services they employ, appear as nonproduction overheads in capitalist accounts, the labor of sweatshop workers appears in the inventory.

Restricting himself to the social level, Mohun asks, "Does an activity produce a new use-value or alter an existing one in some way? Does that process of production produce surplus value or does it consume it?" (2002, 205–6). Mohun rules out advertising as productive labor, pointing to the absence of a new "use value." "If the production of value and surplusvalue continues to the point of final consumption, what for example is the new use-value (or alteration in an existing use-value) produced by advertizing activities" (Mohun 2002, 206). We need not slip into subjective utility if we say that advertising produces a new use value for the capitalist, its contribution to sustaining or increasing the propensity of consumers to buy, but the fact that advertising produces a necessary use value does not make the work productive labor for the purchasing capital or for social capital. Only for an individual capitalist is Mohun right that "in the valorisation of value, it does not matter what use-value is produced: instead, what is required is a specification of the moments of that valorisation" (1996, 43). The accounting interpretation agrees with Mohun, "the social usefulness of the labor concerned is irrelevant" (1996, 36), but he does not say what use values are socially relevant. "A focus on concrete labors undermines the coherence of the labor theory of value," because it ignores the individual and social perspectives, and is why if "concrete labors and use-values are treated as primary data, the stage is set for a theoretical slippage" (Mohun 1996, 43), that is, defining all useful labor as productive. However, Marx neither prioritized nor ignored "use values."

Mohun rejects criticisms that "because hierarchy and control are essential to the maintenance of capitalist relations of production . . . such labor should be regarded as part of the collective worker and hence productive," because in his view all "labor which enforces hierarchy and discipline in the process of transforming productive capital into commodity capital" (1996, 36, 42) is unproductive.³² Hierarchy, he argues, "arises out of the need for capital to retain coercive control over class antagonisms inherent in the capitalist relation," and the accounting interpretation agrees, "The labor which performs this *function* merely personifies the coercive power of the latter, and in so doing does not create value" (Mohun 1996, 37, emphasis added). However, this is not management's only function. Mohun suggests, "The labor which enforces coercive capital relations is theoretically distinguishable from the labor which co-ordinates the

specialized division of labor characterizing the collective worker, for the latter is productive," but does not say how, and thought, "in some cases . . . giving empirical content to this distinction might be impossible, then it becomes a matter of judgement" (1996, 37). However, managing production is more than "co-ordination," which too easily sweeps aside the productive contribution of hierarchy and discipline, of "direction" as Marx (1976a, 1040) put it, for whom all those who work in production "with their heads," such as the production manager, engineer, technologist, etc, are productive. Allocating management's time between productive and unproductive labor may be costly, but accountants routinely demonstrate that it is not "impossible." Houston (1997, 136) is right, Mohun's "distinction between 'coordinating' labor and 'supervising' labor becomes hard to maintain," which is why neither Marx nor accountants attempt it, but focus on its function, whether the aim is the coordination or supervision of the capitalist's production workers or circulation labor.

Mohun's agreement with the critics that the social relations are the same for productive and unproductive labor overlooks the significance of Marx's view that capitalists exploit unproductive laborers, not by paying them less value than they create, as they do with productive workers, but by paying them less surplus value than they would otherwise divert to themselves. An unproductive worker "may receive every day the value product of eight hours' labour, and function for ten. The two hours' surplus labour that he performs no more produce value than do his eight hours of necessary labour, although it is by means of the latter that a part of the social product is transferred to him" (Marx 1978, 210). Capitalists exploited them, but their exploitation is "indirect" because their function is not to produce use values for sale (or those necessary for their production) as commodities or services to final consumers. This is the answer to Houston's (1997, 135) criticism that specifying who was unproductive, even in a shop, was "a task that proved difficult for Marx," requiring "an almost Talmudic or Jesuitical sensibility." How, Houston asked, can we "distinguish among the worker who moves the carton of eggs to the cooler (productive perhaps because of the transportation?), the worker who records this move in the inventory account (probably unproductive), the worker who rings up your purchase of a dozen eggs (definitely unproductive), and the worker who sweeps the floor" (1997, 135). Houston quipped, "my guess is unproductive, but I need more training [sic]; I think this worker would be productive if working in a factory" (1997, 135). As we have seen, for Marx and IAS 2 the costs of transport and storage to the point of sale are productive, but the workers from the point of sale are unproductive because their function is not to add to, modify, or preserve, the use value of the commodity, but to sell it.

Savran and Tonak come close to the accounting interpretation by seeking to "clarify the distinction and the relationship between the concept of 'productive labour in general' and 'productive labour for capital'" (1999, 115). However, their interpretation is abstract, which creates ambiguity and questionable classifications. Shaikh and Tonak had defined productive labor in general as "the creation or transformation of objects of social use by means of purposeful human activity," but merely counterposed them to subjective utility: "these useful objective material properties are quite distinct from the satisfaction we may or may not derive from its actual use" (1994, 22, 23). Savran and Tonak add that productive labor produces use values by "transforming nature" to provide "human society with the indispensable material elements of its reproduction," with means of "consumption" and "production," that is, "All labour that is exchanged against capital employed in the sphere of production" (1999, 122, 132). This definition is consistent with Marx's social definition if we limit "consumption" and "production" to the means of subsistence or production. However, Savran and Tonak overlook Marx's individualsocial distinction, and their requirement that the use values result from "transforming nature" introduces ambiguity.

According to their distinction, "the labour expended by . . . [t]he public employee working for the tax administration or for local government, the bank clerk, the employee of an insurance company . . . is of a different nature when compared with that expended by . . . an industrial or agricultural worker" (Savran and Tonak 1999, 122). Industrial and agricultural workers create "use-values (i.e. objects which satisfy a certain need, either in the sphere of consumption as articles for personal consumption or in the sphere of production as inputs for productive consumption) and (s)he does this *through the transformation of nature*" (Savran and Tonak 1999, 122), whereas the public employee, etc does not. Savran and Tonak identify production of means of consumption and production, which is consistent with Marx's social definition, but add ambiguity because arguably a public employee, bank clerk, etc. no less than the agricultural or industrial worker "transforms nature" to "satisfy a certain need." They use their minds and bodies to appropriate the "natural world" of paper, ink, keyboard, and electronic images and transform them into a material use value for the customer—fines issued, bills paid, or cash in the wallet. Marx certainly said, "All production is appropriation of nature on the part of an individual within and through a specific form of society," but added that this "general precondition" of production was "nothing more than . . . [an] abstract moment . . . with which no real historical stage can be grasped" (1973, 87). For Savran and Tonak, however, this abstract moment is the "necessary condition," the selfdefining feature of productive labor, which is "purposeful" only in producing use values from nature: "only labour which produces use values through the purposeful transformation and appropriation of nature, can produce surplus-value" (1999, 124).

For Marx unproductive workers are not different because they "simply execute tasks which flow from a historically determined set of socioeconomic relations among human beings" (Savran and Tonak 1999, 122), but because these use values are neither means of subsistence nor production. From this social perspective, Savran and Tonak are right, "priests and all other religious officials, kings, presidents and politicians, public employees . . . judges, lawyers and all juridical professionals, generals and soldiers, policemen and prison wardens . . . are unproductive labourers in all types of social organizations" (1999, 123). However, priests, kings, politicians, police officers and prison wardens, etc. each "satisfy a certain need" through "transforming nature" that could be met through their employment by a capitalist, and some (e.g., police officers and prison wardens) are so employed. It is not just "services, such as education, health provision, catering, art performance, hairdressing, etc. . . . [that] can . . . be the basis of the extraction of surplus-value and, therefore, of the existence of productive labour" (Savran and Tonak 1999, 135) for an individual capitalist.

Savran and Tonak (1999, 128, 129) rule out commercial workers as productive by asserting what Marx explains, "that it is only during a single phase of this process, that of productive capital, that surplus value is produced," so circulation tasks are unproductive "by definition." These tasks are for them, "by their very nature non-productive in the general sense," even though they do produce use values from "transforming nature" "which satisfies a certain need" (Savran and Tonak 1999, 129, 135), whereas for Marx they are socially unproductive. Savran and Tonak argue, "a society can only increase its wealth through the purposeful transformation of nature" (1999, 143), but advertising executives, for example, transform "nature"—the natural world of color and sound into images—to encourage consumption. Unless we define "wealth" socially, independently of the process of "production," it is circular to argue, "*The* characterization of labour expended in the sphere of circulation as unproductive labour is nothing but a logical extension of the Marxist distinction between the spheres of production and circulation" (Savran and Tonak 1999, 143). This is their answer to the "alleged contradiction . . . that circulation activities result in specific use values . . . but, on Marx's own admission, this difference in nature should not be a basis for excluding this type of labour from the overall set of productive labour" (Savran and Tonak 1999, 144). Marx's social definition resolves this "contradiction" and breaks their circularity by defining "wealth," the "social product," only as "Use-values . . . realized . . . in use or in consumption. They constitute the material content of wealth, whatever its social form may be" (1976a, 126), the means of production or subsistence.

Savran and Tonak (1999, 137) classify "consumer services" as productive because they produce surplus value from meeting a need by "transforming nature." Singers, for example, were productive for Shaikh and Tonak because "a singer who projects a song into the air produces an object of consumption so material that it can be captured on a record and reproduced mechanically" (1994, 23). Marx also identified the presence of the singer and the impact on the ears as the material element, but stressed its purposefulness, the satisfaction of an "aesthetic need" to "enjoy" (1969a, 405), to consume. For business services, by contrast, which for Savran and Tonak "is more complicated, the status of each of these depending on whether the service in question is one relating to a productive function or to a circulation activity" (1999, 137), their definition allows questionable categorizations.

Classification by "function" or purpose, according to Marx and accountants, is simple. For Savran and Tonak, by contrast, having a "productive function" means "transforming nature," which complicates matters, but apparently allows them to claim "Clear examples of . . . human resource and training services (but not temp agencies or head hunters) and some but not all information services," as productive, and "of course marketing, advertising and financial consultancy services" (1999, 135, 137), as unproductive. Applying their definition, they evidently see human resources and training "transforming nature," the worker, and some

information services, whereas marketing etc. does not. Marx and accountants, by contrast, categorize training and all non-production human resources and "information services," by their function, as nonproduction overheads, whereas using "temp agencies" etc. to hire production workers is a production overhead, and classify marketing etc. as socially unproductive functions.

Savran and Tonak highlight "the explosion of financial services" from the 1990s, "the expansion of brokerage and banking activities due to the proliferation of financial instruments, the unprecedented growth of pension, mutual and hedge funds and the international integration of financial markets, the . . . tremendous growth of insurance activities" (1999, 118). Whereas financial services are all straightforwardly socially unproductive according to Marx and accountants,³³ according to Savran and Tonak it is "imperative to understand the nature of the labour employed in financial sectors (as a subset of circulation activities) in order to assess the impact of this explosion on the accumulation of capital" (1999, 118). However, they explicitly categorize only "financial consultancy" as unproductive, leaving open the "nature" of the others, possibly because they could all fit within their abstract definition which merely requires "transforming nature" to meet a "need" to be productive.

By contrast, financial services are unproductive for Marx, first, because they are not means of subsistence, part of workers' "necessary wants," to reproduce their labor power, including a "historical and moral element" (1996, 181). Second, capitalists may "need" financial services, financial instruments, and hedge funds, etc. but they are not luxury consumption. Whereas capitalists enjoy luxuries, consume them, they use financial instruments and hedge funds, etc. to protect and expand their financial capital. The distinction between these expenditures is their function or purpose. Expenditure on expensive theater tickets meets an aesthetic need, is luxury consumption; expenditures on financial services is for investment, the protection and expansion of claims against current and future surplus value. We can therefore agree with Shaikh and Tonak that "although distribution activity does transform the use values it circulates, this transformation relates to their properties as objects of possession and appropriation, not to the properties which define them as objects of social use" (1994, 26), if these "objects of social use" are means of consumption or production.

Financial services are, in short, not necessary for the reproduction of

society's labor power, are not luxury consumption, or a means of production, and are socially unproductive. Evidence supporting this classification is that accountants treat them as nonproduction overheads.³⁴ However, for individual capitalists the costs of insuring commodities or means of production are production overheads, as are the costs of managing the pensions of productive workers.³⁵

Marxists disagree whether Marx classified financial services as unproductive (Marginson 1998, 576; Savran and Tonak 1999, 133). Marginson suggested this was because "Marx's analysis failed to encompass the role of financial services as specific capitals in their own right, with their own circuit of production and their own processes of creation of value—despite the fact that he had already granted that role to services in general" (1998, 579). Marx, he argued, was "unable to explain the variable capital of the merchant," and therefore of financial services, "because for virtually the whole of his analysis he treated the variable capital of the merchant as if merchandising was carried out by the original producer rather than by independent capitalists" (Marginson 1998, 580). He accused Marx of naïve inconsistency: "Marx tried to analyse an independent producer capital using the assumption that it was neither independent, nor a producer!" (Marginson 1998, 580).

However, when Marx argued, "Financial capital . . . is subordinated to industrial capital" (Marginson 1998, 577), he meant its function was unproductive from industrial and aggregate social capital's perspective. In chapter 17 of Volume 3, Marx "kept returning to the problem" and, according to Marginson (1998, 580), "struggled" with "where to locate the variable capital of the merchant . . . that . . . remained unresolved," and only "floated" a "possible way out," which Marginson hypothesized was seeing "commercial capital as a *dual capital*." That is, imagining commercial capital providing unproductive money capital to industrial capital by paying the commodity's price (value), and employing "productive" capital to sell industrial capital commercial services (Marginson 1998, 580–83).

Marx "lost the thread" in chapter 17, Marginson concludes, but he overlooks the final paragraph where Marx (1981, 416) repeated his individual-social distinction, showing that rather than two imaginary transactions and capitals there are two perspectives: "To industrial capital, the costs of circulation appear as expenses, which they are. To the merchant, they appear as the source of his profit . . . [which] is . . . a

productive investment as far as the commercial capital is concerned." Marx had no trouble "locating" the merchant's expenditure on commercial labor power in the accounts where it was variable capital—an element of cost of sales—whereas in the industrialist's accounts, from society's viewpoint, it was a deduction from revenue. From the merchant's viewpoint, Marx argued in Volume 2 of *Capital*, "A certain amount of labour-power and labour-time must be expended in the process of circulation . . . [b]ut this now appears as an additional investment of . . . variable capital" (1997, 136–37). From the social viewpoint, however, "This advance of capital creates neither product nor value" (Marx 1997, 137).

Savran and Tonak reject the criticism that "what are commonly regarded as circulation activities are no different in nature from production activities" (1999, 141), but the weakness of their "transforming nature" definition requires them to backtrack on their assertion that circulation labor is unproductive *per se*. They claim, "Marx said . . . on . . . many occasions . . . that any activity which is a necessary component of the process whereby the consumer gains access to the object of consumption should be considered to be a productive activity" (Savran and Tonak 1999, 141), clearly "transforms nature." And that, "At a conceptual level, those aspects of sales activity which are necessary for the completion of the chain from producer to consumer can quite clearly be distinguished from pure circulation activities" (Savran and Tonak 1999, 141).

This means, however, contrary to Marx and accountants, that "salespeople who carry out tasks such as classification and display of available commodities, provision of knowledge and guidance to the consumer etc" (Savran and Tonak 1999, 141) in a retail store are productive activities. Thus, Savran and Tonak say, only "an overwhelming *part* of the functions of the personnel in any capitalist commercial enterprise relates to pure circulation activities," that "workers . . . *to the extent* that they are engaged in circulation tasks, do not produce surplus value" (1999, 142, first emphasis added), which implies some "commercial personnel" do produce surplus value. For a truly unproductive worker, their "best example would be the function of cashiers. Their whole activity relates to sale and purchase and is by no means a necessary link in the chain" (Savran and Tonak 1999, 141). However, according to their definition, even the cashier is "necessary," transforms nature so that the consumer gains access to use values, and is

productive labor. Marx did not say that "necessary" labor for the consumer to "gain access to" the commodity is productive, but that producing the use values capitalists sell for a surplus value is productive. Advertising, for example, is "necessary" for the consumer to "gain access to a commodity"—informing and/or stimulating purchases—but this does not make it productive except for the capitalist that sells advertisements to its clients. Capitalists can control and sell location, weight or measure, quality, etc., and they account for these expenditures as costs of production, but they cannot control and sell market intelligence, advertising or other marketing activities to their customers, so Marx and accountants treat them as period costs.

Any attempt at defining productive labor as the production of abstract "use values," as Izquierdo pointed out, "implies the existence of labour that does not produce use values," which "severs the link between the execution of concrete labour and the creation of use values-a link I believe to be generally valid" (2006, 41), as anyone would. Criticizing "Shaikh and Tonak's [1994] approach," developed by Savran and Tonak (1999), he persuasively argued, "both distribution and social maintenance labour create objective or material properties in their products on the same grounds as production labour does. For instance, a cashier in a supermarket creates an object of social use (a service sale) characterised by its objective properties (and in fact, this is the only way to obtain goods from a supermarket without the risk of being stopped by the security service)" (Izquierdo 2006, 42). Izquierdo (2006, 40, 56) proposed an "alternative approach, in which relevance is placed on the production of value rather than on the production of use value," concluding, "the classification . . . needs microeconomic foundations, based on the analysis of the valorisation process of every branch of production." The chapter has argued that, by explaining capitalist accounting for inventories, Marx's theory of value already provides these "microeconomic" foundations.

CONCLUSION

The debate over Marx's categories of productive and unproductive labor is confused because participants have not explored their links with capitalist accounting, even those who see them as an "accounting nightmare" (Harvey 2013, 92), and they therefore typically overlook his use of the entity concept to distinguish between productive labor from the perspectives of individual capitalists and aggregate social capital. Marx's explanation of accounting for inventories shows that Marxists should not "give up on the accountancy" (Harvey 2013, 106), but not simply to remove confusion. By neglecting accounting, critics have overlooked the significance of Marx's analysis for his theory of history.

Marx predicted that capitalism would progressively increase the proportion of workers productively employed in generating surplus value for a capitalist and/or for social capital. In *Grundrisse*, he concluded, the "highest development of capital exists when the general conditions of the process of social production are . . . paid . . . out of *capital as capital*" (Marx 1973, 532), a tendency evidenced by the "privatizations" of state functions from the 1980s, increased labor participation rates, welfare cuts, and "austerity" for public services. In *Capital*, he predicted, "In capitalist production the tendency for all products to be commodities and all labour to be *wage-labour*, becomes absolute" (Marx 1976a, 1041).

Because capitalist wage labor is subject to "real subordination," according to the accounting interpretation Marx predicted that capitalism would seek to take accounting control of all labor. *Accounting for History* argues that this prediction is important in understanding his discussions of the transition to socialism, according to which the limits to the growth of social productivity under capitalism, and its dependence on accounting control, make "inevitable" the transition to social control of production by "a vast association of the nation," based on accounting for value.

NOTES

1. Adam Smith criticized the British aristocracy and landed interests for being "unproductive" compared to the emerging industrial bourgeoisie. Some Marxists agree that Marx did not make moral judgments (e.g., Leadbeater 1985, 607–8; Murray 1998, 44), but others disagree (e.g., Hunt 1979; Laibman 1999).

2. Simplifying Marx's rate of profit to $r = s/C = s/v \ge v/C$, where s = surplus value, v = variable capital, and C = constant capital, if the cost of unproductive labor = u, the "conventional rate of profit" = $[s - u]/C = [s/v \ge v/C] - u/C$ (Moseley 1994, 87). Accountants call their equivalent measures of surplus the "gross" profit (s) and "operating" profit (s – u) respectively, a distinction that Marx explained.

3. Laibman (1999, 62) distinguishes four main "definitions of the productive/unproductive distinction . . . : the physicalist, socioeconomic, evaluative, and analytic," classifies Marx's approach in *Capital* as "analytic," but concludes it is "empty."

4. Consolidated accounts eliminate profit from trading between group members, profit not realized outside the group. If a group includes commercial and finance subsidiaries that provide services to other group members for profit, these subsidiaries' accounts report profits, whereas the group accounts report only the costs.

5. The chapter defines "means of subsistence" later, but note they include "luxuries." Appendix D illustrates the consequences when "orthodox" national income accounts deviate from Marx's definition of socially productive labor.

6. *Accounting for History* gives an accounting interpretation of Marx's theory of history and the transition to socialism.

7. Its warning that "allocating costs to functions may require arbitrary allocations and involve considerable judgement" (IASB 1997, para. 103) is not relevant here. Economists criticize cost allocations for decision-making, but they are not arbitrary for accountability, and activity-based costing makes them objective estimates (see Bryer 2006a).

8. The word "overhead" in accounting probably derives from the fact that production is at the bottom of most organisation hierarchies, and "Lower departments ultimately bear all costs, including those coming from over their heads" (Horngren 1977, 28).

9. Marx's main example in *Capital*, we will see, is storage costs that increase the value of commodities by reducing the productivity of labor, which reduces social surplus value. For example, compare years 1 and 3 in Marx's analysis of Ramsay's farmer (representing society) in chapter 4 (see Table 4.18), and assume in the first case that the farmer lost 100 qrs of the output of 200 qrs (produced in year 3) in storage (e.g., a plague of rats). The price of corn would double, and the farmer's profit would fall from £100 (year 3) back to £80 (the profit of year 1), and the rate of profit would fall from 100% [£100/£100] to 66.67% [£80/£120] because the farmer's constant capital increases while the total value of output and labor remains constant. Alternatively, assume output falls because the farmer uses labor to protect the corn.

10. Marx singled out transport costs to the market, which he concluded were productive, as we will see.

11. Marx did not agree that interest was *faux frais* or a loss, but a division of surplus value. Say was unclear which costs he thought were *faux frais* and which were losses, or if there was a difference.

12. Marx noted in *Grundrisse*, "workers in e.g. luxury shops . . . indeed, are productive, as far as they increase the capital of their master," but were "unproductive as to the material result of their labour" (1973, 273), a view he later revised. He added, "What is *productive labour* and what is *not*.

. . has to emerge from the dissection of the various aspects of capital itself. *Productive labour* is only that which produces *capital*" (Marx 1973, 305), but did not pursue it.

13. Smith's two views were that value was (1) socially necessary labor time, and (2) the sum of profit, rent, and wages.

14. Marx (1973, 846) more generously concluded in *Grundrisse*, "A. Smith misses the mark only by somewhat too crudely conceiving the objectification of labour as labour which fixates itself in a tangible . . . object. But this is a secondary thing with him, a clumsiness in expression."

15. Marx noted in *Grundrisse*, "The producer of tobacco is productive, although the consumption of tobacco is unproductive. Production for unproductive consumption is quite as productive as that for productive consumption; always assuming that it produces or reproduces capital" (1973, 306).

16. Marx (1969a, 172) wryly observed, "Adam Smith excludes the latter from his category of productive labour; arbitrarily, but with a certain correct instinct—that if he included it, this would open the flood-gates for false pretensions to the title of productive labour"!

17. Marx (1976a, 1047) noted in Volume 1 of *Capital*, "No one buys medical or legal 'services' as a means of converting the money laid out into capital," but he was talking about "The worker [who], too, purchases 'services' with his money. This is a form of expenditure, but it is no way to turn money into capital."

18. For example, Ricardo, who "accepts the correct statement of Smith's distinction" (Marx 1973, 177), for nevertheless arguing that productive workers got higher wages because the rich had unproductive servants because this increased the demand for labor. "What a convenient arrangement it is that makes a factory girl . . . sweat twelve hours in a factory, so that the factory proprietor, with a part of her unpaid labour, can take into his personal service her sister as maid, her brother as groom and her cousin as soldier or policeman!" (Marx 1969a, 201).

19. Gough's article was the "starting point of the debate" (Fine and Harris 1979, 49).

20. Marx was criticizing the neo-Ricardian interpretation in which "merchant and industrial

capital are reduced to being simply sectors of the economy, one of which produces the use-value of sale . . . while the other produces the actual use-value" (Fine and Harris 1979, 52). Appendix B illustrates the accounting consequences of treating circulation labor as productive.

21. The equivalent phrase in the *Theories of Surplus Value*, from the "standpoint of *capital*," could mean of an individual capitalist or social capital.

22. The focus in what follows is IAS 2's measurement requirements. Some of IAS 2 is redundant from Marx's perspective, for example, requiring "cost-flow assumptions" for historical cost accounting, whereas his theory of value requires replacement cost accounting. Some of IAS 2 is inconsistent with Marx's theory of value, particularly allowing interest as a cost of production, and requiring the "percentage of completion" method for long-term contracts, which recognizes revenue before realization. Explaining deviations from traditional capitalist accounting is a topic for *Accounting for History*.

23. See Appendix B for relevant extracts from IAS 2.

24. "Direct" costs are traceable to a "cost object," costs that add use values to a commodity or service, whereas the accountant cannot trace "indirect" costs to their cost object (Drury 2000, 23). Accountants allocate "indirect" costs or "overheads" by estimating the cost object's consumption of the use values the expenditures provide to production, called activity based costing (Bryer 2006a, 571-76).

25. As the United Kingdom's Department of Health PCT Capital Accounting Manual puts it, "As the nature of the investment is in staff rather than fixed assets directly, such expenditure should always be treated as a revenue expense" (Tangible fixed assets—expenditure to be capitalised, para. 2.18).

26. Marx used "function" 592 times in Volume 2 of *Capital* (1978).

27. Gough saw a "problem of distinguishing 'final' from 'intermediate' goods and services," for example, whether "packaging [is] a means to the consumption of the product, or part of the product itself" (1972, 64). For Marx and accountants, focusing on their function, containers are production costs if they are "primary packaging . . . essential if the goods are to be sold, e.g., bottles for beer or tubes for toothpaste," but "the cost of secondary packaging for merchandising purposes, e.g., shrink wrapping for tape cassettes sold in pairs," is a sales expense (Ballwieser 2001, 1306).

28. According to Hunt (1979, 311), Marx blurred this distinction when he argued, "many of the products which are necessary for the subsistence of workers are produced unproductively in the home by workers themselves," "See, e.g., Theories of Surplus Value, Part I, 165-166." Marx (1969a, 166) actually said that the workers must undertake the labor of consumption, "cook meat for itself . . . polish its boots," etc. in addition to earning the money to buy them.

29. Hunt (1979, 317) notes, "in his rationale for asserting that labor-power that is exchanged with variable capital and yields surplus labor is unproductive . . . bookkeeping labor is labeled unproductive, [but] Marx seems to have ambiguous inclinations on the matter." Hunt (1979, 318) claims that Marx saw bookkeeping as productive in "socialism," apparently for central planning, an interpretation which *Accounting for History* refutes.

30. Smith (1993) argued that Marx classified "circulation costs" as "socially necessary unproductive labor, as constant capital, based on his comments in *Grundrisse* that "actual" circulation costs represent "an increase in labor in relation to surplus value," and "Only the actual *circulation costs* increase the *value* of the product, but decrease the surplus value" (Marx 1973, 548). As we saw, Marx (1973, 548) was talking about the "actual" circulation cost of, for example, "bringing the product to market." Not surprisingly, Smith (1993) was "unable to find a single explicit statement" to support his view (Dawson and Foster 1994, 320).

31. Moseley (1991, 1994) and Wolff (1994) found an increasing proportion of commercial workers in the United States from the late 1940s to the late 1980s, and Smith (1993) found the same trend in Canada.

32. As Laibman (1999, 65) commented, "labor involved in enforcing hierarchy and discipline . . . does not fit easily into . . . [Mohun's] circuitry framework. This labor appears in all phases of the circuit."

33. Financial services are part of the institutional infrastructure of total social capital.

34. IAS 39 *Financial Instruments: Recognition and Measurement* requires capitalization of the transactions costs of certain financial instruments, but this merely defers the costs, treating them as increases to effective interest rates, as unproductive interest costs. Under IAS 32 *Financial Instruments: Presentation* (IASB 2000b, para. 37), share issue costs are deductions from equity or period costs, as are the costs of issuing debt. IFRS 3 *Business Combinations* (IASB 2004, para. 53) requires the immediate expensing of the costs of business acquisitions. IFRS 13 *Fair Value Measurement* (IASB 2011, para. 25) requires the exclusion of transaction costs from the fair value of an asset or liability.

35. In Marx's social accounts insurance is a "loss," an unproductive overhead, whereas for individual capitalists insuring inventory and means of production is a real cost of circulation, like storage, "costs that make commodities dearer without increasing their use-value" (Marx 1978, 214). "Insurance companies . . . divide the losses of individual capitalists among the capitalist class. But this does not prevent the losses thus adjusted from being losses . . . from the standpoint of the total social capital" (Marx 1978, 214-15). Pensions are deferred wages, part of the cost of labor, and therefore pension expense like other payroll costs for direct labor are production overheads.

Conclusions

The accounting interpretation confirms the TSSI's rejection of the dual system and simultaneist interpretations of the "transformation problem," its refutation of the charge of inconsistency routinely leveled at Marx's theory of value. Understanding its temporal logic and single system of valuation reveals that Marx used it, the "essence," to explain the "phenomenal forms" of capital, profit, rate of profit, cost price, etc., by explaining the accounting principles and practices capitalists use to measure and report them. These explanations, I have argued, amount to a theory of accounting control of the valorization process by individual capitalists and total social capital that is consistent with observable accounting principles and practices in modern capitalism.

Marx claimed his theory of value was a work of "science," a critique of political economy that would deliver a "theoretical blow" from which the bourgeoisie would "never recover." He failed, critics argue, because his critique depends on "hypothetical entities, or qualities of empirical entities, which are not susceptible to direct observation," such as "Value and abstract labour—not to mention surplus value," and because "we require all the propositions in a scientific explanation to be open to empirical refutation," they conclude, "Marx was no scientist" (Sayer 1979, 136). According to the accounting interpretation, however, he used his theory of value to explain the phenomenal forms by explaining the observable principles and practices capitalists use to calculate and control them, in which, as he said, we can "glimpse" the determination of value by socially necessary labor time, which experience could have refuted.

Chapter 2 argued that Marx's theory of value explains stewardship accounting, which is consistent with the TSSI because accountability for the rate of profit depends on the temporal creation of value. Because "functioning capitalists" control the production of value through the "real subsumption" of labor under capital—hold management and workers accountable for capital—his theory of value explains the "proprietorial" method of DEB, the capitalist method of calculating the rate of profit. Subsequent chapters argued that Marx proved the single system and temporal creation of value in production by explaining capitalists' use of accounts to accumulate the cost price as the advance of constant capital, including fixed capital, for means of production, and variable capital for productive labor, in a system of accountability to total social capital for the rate of profit. We saw that Marx used his theory of value to explain capitalists' RCA, target costing, fixed asset and depreciation accounting, their "functional" method of calculating profit, and their use of "absorption costing" for inventory.

There are no natural laws of accounting and hence many possible ways of keeping accounts. Accounting has no technical "essence" (Miller and Napier 1993). Accounting history shows that no law of nature or logic compelled capitalists to use DEB, to require or use RCA and distinguish CMAs, charge depreciation or use particular methods, calculate profit using the functional method and absorption costing, distinguish production and nonproduction overheads, capitalize internally produced assets, or use target costing, etc. Finding that they do, and showing Marx explaining this accounting using his theory of value, therefore, provides it with empirical support, shows how it "asserts itself," how it produces the phenomenal forms, which confirms the TSSI's production-centered interpretation that his core claim was to have proved that labor creates value and surplus value in production, and verifies it.

If Marx's "law" of value explains accounting, why as he continually stressed do capitalists, their agents, political economists, and workers, fail to understand the "essence"? His answer was that capitalist "ideology" veiled the appearance of the social relations of production, the reality that they were exploitative, by treating capitalist categories as eternal realities, while they were actually the product of a long history of changing forms of exploitation, and penetrating these categories was difficult, requiring the work of "science." Capitalists etc. did not understand the phenomenal forms, their perceptions "diverge drastically" from the "laws of production," he argued, because the forms derive from them in "very complicated" ways, requiring "very extensive" explanation:

If, as the reader will have realised to his great dismay, the analysis of the actual intrinsic relations of the capitalist process of production is a very complicated matter and very extensive; if it is a work of science to resolve the visible, merely external movement into the true intrinsic movement, it is self-evident that conceptions which arise about the laws of production in the minds of agents of capitalist production and circulation will diverge drastically from these real laws and will merely be the conscious expression of the visible movements. (Marx 1998, 311–12)

The social relations of production, Marx argued, were the real foundation, but this remained invisible because they turned "every product," and hence their representation in accounts, into an impenetrable "social hieroglyphic," despite the classical political economists' "scientific discovery" of the labor theory of value, because they could not break free from the "objective character" of capitalism's phenomenal forms:

Value . . . does not stalk about with a label describing what it is. It is value, rather, that converts every product into a social hieroglyphic. Later on, we try to decipher the hieroglyphic, to get behind the secret of our own social products; for to stamp an object of utility as a value, is just as much a social product as language. The recent scientific discovery, that the products of labour, so far as they are values, are but material expressions of the human labour spent in their production, marks, indeed, an epoch in the history of the development of the human race, but, by no means, dissipates the mist through which the social character of labour appears to us to be an objective character of the products themselves. (Marx 1996, 85)

Marx claimed that his critique of classical political economy had dissipated the mist by explaining the capitalists' categories scientifically, which the book has supported by showing that his explanations of accounting give us an empirically verified theory of capitalist control, but he also claimed to have explained them as ideological, as "inversions" of the underlying social reality. Mepham (1972, 19) did not have accounting in mind, but his conclusion that Marx sought "penetration," rather than "discovery," is consistent with Marx, in effect, claiming not only to have provided a scientific theory of capitalist control that explained its logic and empirical basis, but also why it was deceptive. Mepham highlights Marx's claims that "the forms of social relations with which we are apparently directly acquainted in experience (value, wages, money, commodities etc) . . . are deceptive," that "Scientific advance is not so much a matter of discovery as of penetration . . . by theory, which allows us to grasp the hidden coherence of the object" (Mepham 1972, 19). To grasp the hidden coherence of capitalist social relations, Marx explained how they produce the phenomenal forms, but also why capitalists, their agents, political economists, and workers, do not understand the "essence," why these economic categories that control them are ideologically inchoate. The companion volume, "Accounting for History in Marx's Capital-The Missing Link," argues that his theory of history explains why.

Explaining capitalist ideology was the "project of Marx's science," to explain capitalism's phenomenal forms by the social relations of production, and why their appearance is deceptive (Sayer 1979, 9, 10), why they hide exploitation, even from capitalists. Marx sought to explain,
"the opacity of the phenomenal forms . . . in terms of the particular relations held to underly them" (Sayer 1979, 11), why capitalist social relations of production generate misleading phenomenal forms that are nonetheless "practically adequate," factually and socially objective, but many Marxists think that he failed. As Sayer (1979, 11) puts it, Marx's claim "has an inescapable corollary: his derivation of the essential relations, and *a fortiori*, his explanation of ideology must be empirically specific," which opens his theory of ideology to criticism for its economic "determinism," for explaining ideology as the consequence of a given, external economic reality. Marxists often recognize that Marx repeatedly criticized political economists as ideological precisely because they saw capitalist categories as transhistorical, but critics routinely reject his theory of history for, amongst other things, its "determinism."

Accounting for History argues, to the contrary, that Marx explained all economic categories historically, as the product of class conflict in which the victors "determine," that is, decide or choose, the social relations of production best calculated to develop the forces of production to maximize their appropriation of surplus labor as the owners of the means of production. In short, the causality in Marx's theory of ideology runs: class conflict \rightarrow calculative mentality \rightarrow social relations of production \rightarrow phenomenal forms \rightarrow ideology. For Marx, "economic" reality is social and not "given," and is not "external." In the transition to capitalism, class conflict "determined" the calculative mentality and social relations of free capital exploiting free wage labor in production, which produced the phenomenal forms of capital, wages, profit, cost, etc., which is what capitalists and workers see, to control which capitalists keep accounts, which represent their ideology, which is real and rational, but "inverted."

Accounting for History shows that Marx's explanation of ideology was "empirically specific," that throughout the Volumes of *Capital* he elaborated why capitalist ideology was functional even though it hid the essence, by showing how it arose from the phenomenal forms that appeared in accounts. His explanation was not determinist because his theory of history explained these forms as transhistorical idealizations of capitalist relations of production, as "ideological" categories that stem "from the nature of the world rather than the intentions of the ideologues" (Sayer 1979, 33). The phenomenal forms appeared as the transhistorical "nature of the world" because, Marx argued, they were the product of a long, complicated, and little understood history. Ignorance of history cloaked capitalism's specific social relations of production, its distinctive way of extracting surplus value from free wage labor, its distinctive calculative mentality at the core of his concept of "mode of production," which he elaborated through his theory of history.

Critics routinely condemn what Engels called "historical materialism," Marx's "materialist" or economic theory of history, for its "determinism," "functionalism," and "evolutionism." Accounting for History argues, to the contrary, that Marx's theory is a nondeterministic, unashamedly functionalist theory of evolving social control, a history that ends in "socialism," with workers choosing nonexploitative social relations of production, an evolutionary transition from capitalism founded on a revolutionary transformation of its system of social accountability, which we can test using accounting history. Having worked out that he could use his theory of value—which he had deduced from conceptualizing the capitalist mode of production as the extraction of surplus value from free wage labor-to explain capitalist accounts, Marx realized he could likewise conceptualize earlier modes of production as different ways of extracting surplus labor to explain their phenomenal forms. If Marx is right, we should be able to use his theories of the slave and feudal modes of production to explain slave and feudal accounts and their histories.

Accounting for History argues that we can, which means that accounting provides the "missing link" in understanding Marx's theories of history, ideology and socialism, by elucidating his evolutionary theory of society -refuting the criticism that he had not clearly distinguished between slavery, feudalism, and capitalism—and by allowing us to test it. It defends Marx's concept of the "mode of production" by interpreting it as a particular way controlling and accounting for surplus labor, and uses this to explain his theory of the transitions from slavery to feudalism and then to capitalism. It supports his much-criticized concept of the "slave mode of production" with accounting evidence from Mesopotamia, Egypt, Greece, and Rome. The accounting history of western Europe's transition to feudalism following the collapse of the Roman Empire, it argues, supports Marx's claim that the victors of class conflict "determine" (decide) the mentality and social relations of production best calculated to develop the forces of production to maximize their extraction of surplus labor. In short, the accounting interpretation rejects the generally accepted criticism that Marx had not satisfactorily explained how capitalism was a functional evolution from slavery and feudalism.

Accounting for History uses the accounting interpretation of Marx's theories of value, history, and ideology to reexamine his discussions of the transition to socialism. It rejects the common criticism that he left Marxists with a "problem of ideology" by failing to explain "populism," religious beliefs, etc., and the stultifying views that he advocated "equality" and central planning. Rejecting these myths, it interprets his discussions of socialism as a theory of accounting control by a "vast association of the nation" that fulfils the vision in the Communist Manifesto, updated for today's global capital market, based on accounting for value. Rather than a problem of ideology, it argues, Marx left us a "critical accounting theory" and the task of "critical accounting," using his theory of value to explain the causes and consequences of capitalists' accounts. Accounting for History explains the exceptional historical origins of the radical ideological distortion introduced into modern financial reporting in America from the 1970s, which not only disguises the phenomenal forms but changes them, and the opportunities this opens for critical Marxist accountants to change the world.

Appendix A

Accounting for the Circulation of Capital

Foley (1986) models Marx's simple and extended reproduction mathematically. Foley's analysis of simple reproduction is relevant for accountability because *ex-post* it "gives a complete picture of the flows and stocks of value and of the profit rate in a capitalist system" (1986, 73). Foley's simple reproduction model implies that the foundation of accountability of capitalist firms for the rate of profit is the widely used "DuPont formula," which combines the profit markup and the turnover of capital. What follows adapts Foley (1986, 69–73) to make that explicit. It assumes that prices are constant and equal to values.

TURNOVER AND THE RATE OF PROFIT

Marx defined the rate of profit "as s/C = s/[c + v], as distinct from the rate of surplus value s/v" (1998, 46), where:

- s = surplus value
- C = total capital
- c = constant capital
- v = variable capital

For one turnover of capital and assuming no fixed capital, the amount advanced as constant and variable capital equals the amount consumed: C = c + v. With fixed capital and/or more than one turnover of circulating capital, we must distinguish between the rate of profit on sales (sales margin), the markup on the cost of production (cost margin), and the rate of profit on total capital employed, including fixed capital. What follows first considers the effect of turnover on the rate of profit assuming no fixed capital, then includes fixed capital, and deals finally with the impact of profit (s) on measuring the capital (C) in s/C.

The circuit of capital starts with expenditures (F(t)) on constant and variable capital (C(t)) T*p* periods before time t, that reappear in the cost of the finished product (P(t)) at time t:

P(t) = C(t - Tp)

Sales of finished products in time t (S(t)) occur Tr periods after their production as finished stock. The capitalist gets a profit by marking up q% on cost:

S(t) = [1+q]P(t-Tr)

The profit at time t (s(t)) is therefore:

```
\begin{split} s(t) &= [1+q]P(t-Tr) - P(t-Tr) \\ s(t) &= qP(t-Tr) \\ s(t) &= \frac{qS(t)}{1+q} \end{split}
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The stock of productive capital at time t (N(t)), for example, raw materials, work-in-progress) is the capital advanced less the capital withdrawn from production as finished stocks at time t:

N(t) = C(t - Tp) - P(t) + C(t)

The stock of finished goods at time t is the flow of capital arriving from production (P(t)), the finished stock, less the cost of those sold:

$$X(t) = P(t) - \frac{S(t)}{[1+q]}$$

Assuming the circuit is in motion, and that sales are for cash, the stock of money at time t (F(t)) is the difference between the money recovered from sales less any the distributions to the capitalist (p is the proportion reinvested) and the money readvanced to production (C(t)):

F(t)=S(t)-(1-p)s(t)-C(t)

Assuming no external finance, the capital returned from sales in t (P(t – Tf)) plus the proportion of any surplus (s(t)) the capitalist reinvests (p), after a lag of Tf periods, provides the capital advanced to production in time t, C(t):

C(t) = P(t - Tf) + ps(t)

In simple reproduction, p = 0, and C(t) = P(t) = X(t) = S(t) - s(t) = F(t). The total capital (TC(t)) reported in the balance sheet is therefore the sum of the capital in the means of production (N(t)), finished stocks (X(t)), and money (F(t)), each for their turnover time:

$$\begin{split} N(t) &= C(t)Tp\\ X(t) &= P(t)Tr = C(t)Tr\\ F(t) &= S(t) - s(t) = C(t)Tf \end{split}$$

Marx decomposed the rate of profit into the markup on cost (cost margin) and the turnovers of capital measured as cost of production in chapter 4 of Volume 3:

 $r = \frac{qC(t)}{C(t)[If + Ip + Tr]}$ $r = \frac{q}{If + Ip + Tr}$ $If = \frac{F(t)}{C(t)}$ $Tr = \frac{X(t)}{C(t)}$ $Ip = \frac{N(t)}{C(t)}$ $q = \frac{s(t)}{C(t)}$ $r = \frac{s(t)}{C(t)} \times \frac{1}{\frac{F(t)}{C(t)} + \frac{X(t)}{C(t)} + \frac{N(t)}{C(t)}}{r}$

Capitalists usually decompose the rate of profit into the sales margin and the turnover of capital measured as sales, the "Du Pont" formula:

 $r = \frac{\frac{qS(t)}{[1+q]}}{C(t)[Tf + Tp + Tr]}$ $r = \frac{\frac{q}{[1+q]}}{\frac{C(t)Tf}{S(t)} + \frac{C(t)Tp}{S(t)} + \frac{C(t)Tr}{S(t)}}$ As $\frac{q}{[1+q]} = \frac{s(t)}{S(t)}$ $r = \frac{s(t)}{S(t)} \times \frac{S(t)}{TC(t)}$

FIXED CAPITAL

To adjust the formulae for fixed capital (FC), Marx includes depreciation (an additional source of constant capital) in C(t) and in (P(t)) and deducts it from FC to give the net FC(t) in TC(t):



Fixed capital does not affect the rate of profit. In simple reproduction, the balance of stocks remains constant because the capitalist reinvests the capital recovered as wear and tear in the enterprise and therefore s(t) and TC remain constant. As Marx put it, "The actual value of the product depends on how large the fixed part of constant capital is and on how much of it goes into the product as depreciation. But . . . this fact is completely immaterial so far as the rate of profit is concerned" (1981, 254).

CALCULATING TURNOVER

Marx (1986, 560) used the cost of production rather than sales in calculating capital turnover, but if we are consistent in the definition of the margin (on cost or sales) and the capital turned over (cost of production or sales), we arrive at the same return on capital, and proportional margins and turnovers. For example, assume that FC(t) = £10,000; C(t) = £2,500; S(t) = £26,520; s(t) = £4,160; TC(t) = £12,500. Using the cost margin and calculating the turnover on cost of production (£26,520 – £4,160 = £22,360):



Alternatively, using the sales margin and the turnover on sales:

£4,160	£26,520
£26,520	£12,500
r = 0.156862	745x2.1216
r = 33.28%	

The difference does not affect accountability for the rate of profit because, whereas Marx's definition explicitly holds the enterprise accountable for the cost of production, and implicitly for sales via accountability for profit, the usual textbook definition explicitly holds it accountable for sales and implicitly accountable for the cost of production.

CALCULATING THE DENOMINATOR

In simple reproduction, the capitalist withdraws the profit when realized, at the end of the turnover period, and it would therefore be incorrect to calculate the rate of profit including the profit in the capital. The first example in chapter 4 of Volume 3 of *Capital* on the effect of turnover on the rate of profit (written by Engels) rightly excludes the profit (40s) from TC:

Now let us take a capital A composed of 80c+20v = 100C, which makes two turnovers yearly at a rate of surplus value of 100%. The annual product is then: 160c+40v+40s. However, to determine the rate of profit we do not calculate the 40s on the turned-over capital of 100, and obtain a capital value of 200, but on the capital advanced of 100, and obtain p' = 40%. (Marx 1998, 75)

Enterprises usually realize profit throughout the year and may retain some of all of it. Accounting textbooks recommend calculating the rate of profit using the average of the opening capital and the closing capital including the retained profit (e.g., Spiller 1977, 65; Drury 2000, 474), which holds their managers accountable for the expanded capital.

Appendix B

Extracts from IAS 2 Inventories

IAS 2 Inventories (IASB 1993) requires, inter alia:

- 10 The cost of inventories shall comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.
- 11 The costs of purchase of inventories comprise the purchase price, import duties and other taxes (other than those subsequently recoverable by the entity from the taxing authorities), and transport, handling and other costs directly attributable to the acquisition of finished goods, materials and services. Trade discounts, rebates and other similar items are deducted in determining the costs of purchase.
- 12 The costs of conversion of inventories include costs directly related to the units of production, such as direct labour. They also include a systematic allocation of fixed and variable production overheads that are incurred in converting materials into finished goods....
- The allocation of fixed production overheads to the costs of 13 conversion is based on the normal capacity of the production facilities. Normal capacity is the production expected to be achieved on average over a number of periods or seasons under normal circumstances, taking into account the loss of capacity resulting from planned maintenance. The actual level of production may be used if it approximates normal capacity. The amount of fixed overhead allocated to each unit of production is not increased as a consequence of low production or idle plant. Unallocated overheads are recognised as an expense in the period in which they are incurred. In periods of abnormally high production, the amount of fixed overhead allocated to each unit of production is decreased so that inventories are not measured above cost. Variable production overheads are allocated to each unit of production on the basis of the actual use of the production facilities....
- 16 Examples of costs excluded from the cost of inventories and recognised as expenses in the period in which they are incurred are:

- (a) abnormal amounts of wasted materials, labour or other production costs;
- (b) storage costs, unless those costs are necessary in the production process before a further production stage;
- (c) administrative overheads that do not contribute to bringing inventories to their present location and condition; and
- (d) selling costs.

Appendix C

Productive and Unproductive Labor: A Decision Tree

The decision tree shown in Figure C.1 summarizes the accounting interpretation of Marx's categories of "productive" and "unproductive" labor, and gives some examples of different occupations that illustrate different social relations:



Figure C.1 Productive and Unproductive Labor. *Source*: Created by the author. *Notes*: a) The use value sold to a final customer is means of subsistence or production. b) "Government" includes public education, health care, police, etc.

Appendix D

National Income Accounting Deviations

Shaikh and Tonak (1994) show that "orthodox" national income accounts, following neoclassical economics, treat some forms of unproductive labor as productive, which overstates total production and total value (sales) compared to Marx's social accounts. To illustrate the deviations, what follows uses the modified version of Marx's example (see Table 7.2) to show the effects of treating, for example, circulation labor costs (e.g., marketing) as (1) means of production (MOP), or (2) means of subsistence (MOS).

(a) Treating circulation labor as "means of production" purchased by capitalists in Departments 1 and 2, means accounting for the wages, profit and sales of Department 3 as part of Department 2, which increases social output (sales) by £100 million, and total value added (GDP) by 50 = 1,283.33 [1,733.33–450] – 1,233.33 [1,633.33 – 400] = 50.¹

 Table D.1 Circulation Labor as Means of Production

Dr	£	Cr	£
Department 1			
Wages	100.00	Wages (MOS)	100.00
Means of production [400 + 50]1	450.00	Wages (MOP) [133 + 50]	183.33
Means of circulation [50 - 50]	-	Profit (MOS) [150 + 50 - 50]	150.00
Profit	150.00	Profit (MOP) [216.67 + 50]	266.67
	700.00	T . I . I	700.00
Total production	700.00	lotal sales	700.00
Department 2			150.00
Wages [133.33 + 50]	183.33	MOS [400 + 50]	450.00
Means of production [533.33 + 50]	583.33	MOP [533.33 + 50]	583.33
Means of circulation [50 - 50]	-		
Profit [216.67 + 50]	266.67		
Total production	1,033.33	Total sales	1,033.33
	=======		======
Social capital			
Wages	283.33	MOS	700.00
Means of production [933.33 + 100]	1,033.33	MOP [933.33 + 100]	1,033.33
Profit	416.67		
Total production	1,733.33	Total sales	1,733.33
	======		======

Source: Created by the author based on Marx's example (see Marx and Engels 1985, 485–87, 490–91). ¹ The calculations within the square brackets show the changes from Table 7.2.

(b) Treating circulation labor as "means of subsistence" purchased by capitalists in Departments 1 and 2, means accounting for the wages, profit and sales of Department 3 as part of Department 1, which increases social profit, social output, and total value added (GDP), by 100 = 1,333.33 [1,733.33–400] – 1,233.33 [1,633.33 – 400] = 100.

 Table D.2 Circulation Labor as Means of Subsistence

Dr	£	Cr	£
Department 1			
Wages [100 + 50] ¹	150.00	Wages (MOS) [100 + 50]	150.00
Means of production	400.00	Wages (MOP)	133.33
Means of circulation [50 - 50]		Profit (MOS) [150 + 50 + 50]	250.00
Profit [200 + 50 + 50]	250.00	Profit (MOP) [216.67 + 50]	266.67
Total production	800.00	Total sales	800.00
	=====		=====
Department 2			
Wages	133.33	MOS	400.00
Means of production Means of circulation [50 - 50]	533.33	MOP	533.33
Profit [216.67 +50]	266.67		
Devin Solets			
Total production	933.33	Total sales	933.33
	=====		=====
Social capital			
Wages	283.33	MOS [700 + 100]	800.00
Means of production	933.33	MOP	933.33
Profit [416.67 + 50 + 50]	516.67		
Total production	1.733.33	Total sales	1.733.33
rout production	======	and a state of the	=======

Source: Created by the author based on Marx's example (see Marx and Engels 1985, 485–87, 490–91). ¹ The calculations within the square brackets show the changes from Table 7.2.

NOTE

1. Value added = sales—bought-in materials and services.

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About the Author

Rob Bryer is professor emeritus of accounting at Warwick Business School, Warwick University, in the UK. He has a BA in Business with a major in accounting and holds a PhD in operational research from Warwick University. He has taught, researched, and published on accounting for over 40 years. His research interests are accounting theory and accounting history. He has published 25 refereed journal articles, two books, and several book chapters. He is an editorial board member of *Accounting Organizations and Society, Critical Perspectives on Accounting*, and *Accounting History*.