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Capital and Surplus-value

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3.1 Process of Valorisation

3.1.1 Riddle of Capital

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Examining the Common Image of Capital Based on the Knowledge Obtained Thus Far

Now that we have familiarised ourselves with the commodity and money, we are in a position to begin analysing capital. We need to first examine the common image of capital based on our understanding of the commodity and money in order to grasp its core concept. Then we will need to be aware of—and solve—a riddle within this concept that cannot be understood on the sole basis of the knowledge gained up to now.

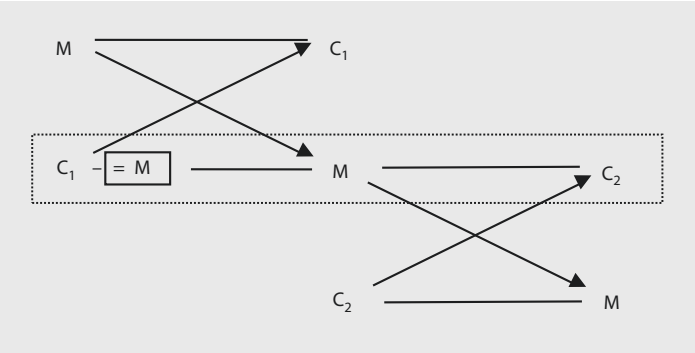
The Form of Circulation of Money *qua* Capital: Augmentation of Value

First of all, capital appears as money, but this is money that moves in a form that contrasts absolutely with that of commodity circulation.

Simple commodity circulation, as we saw, is C–M–C, where the aim of the process is to obtain a specific use value (*see* ◘ Fig. 3.1).

By contrast, capital is money that moves according to the following form (*see* ◘ Fig. 3.2).

Money is both the starting point and the arrival point. Therefore, the money at the starting point is not finally expended in exchange for a commodity, but only advanced[1] with the expectation of a reflux to the point of departure. In addition, this process can only have meaning if M at the arrival point is of greater magnitude than the initial M. The term «capital» is used, in everyday life, to refer to the movement of money that results in a greater quantity at the end



◘ **Fig. 3.1** Simple commodity circulation: C–M–C

1 When a money holder *pays out* his money, *expecting a reflux of the money after a time*, it is said that he *advances* the money. The term **advance** relates overwhelmingly to paying out *money as capital*, but there is also a peculiar case relating to *money as means of circulation*, as we shall see in ► Sect. 14.3.2 in Part II.

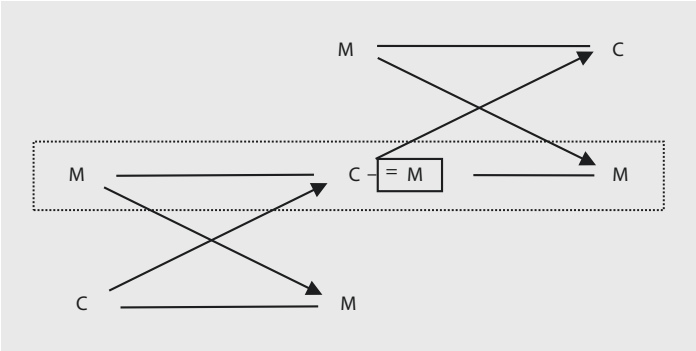


Fig. 3.2 Circulation form of money as capital: M–C–M

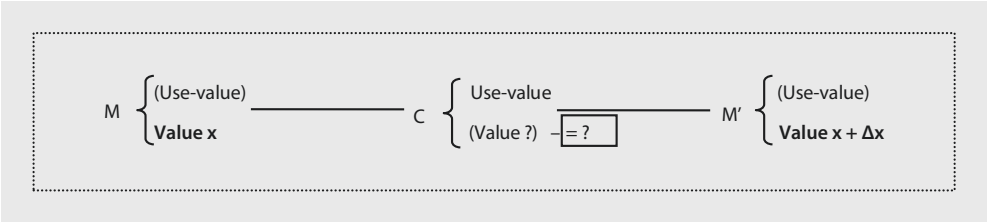


Fig. 3.3 General formula of capital: M–C–M′

than had existed at the outset. This increase in M is precisely the augmentation of value. The aim of the process, simply put, is **valorisation**—i.e. the augmentation of value. **Capital** is thus *self-valorising value by means of such movement*.

If the augmented money is indicated as M′, the circulation-form of capital is M–C–M′. This is the general movement-form of capital and can thus be called the **general formula of capital** (*see* Fig. 3.3).

Riddle of Capital: From Where Does Augmented Value Arise?

If we assume that commodities are bought and sold at their value, it is not possible for value to be augmented in either the purchase (M–C) or the sale (C–M). How, then, does the augmented part or increment of M (ΔM) arise? (*see* Fig. 3.4) This is the riddle that we must solve: the **riddle of capital**.

In actual transactions, price and value are usually not in agreement. But when a transaction is carried out at a price that diverges from value, there is merely a transfer of the difference in value from one side to another side between the seller and purchaser (either in the commodity form or money form); whereas the total amount of value of the sold commodity and the money paid remains completely unchanged after the sale is completed. A gain on one side would be a loss on the other. So no matter how much commodities may diverge from their

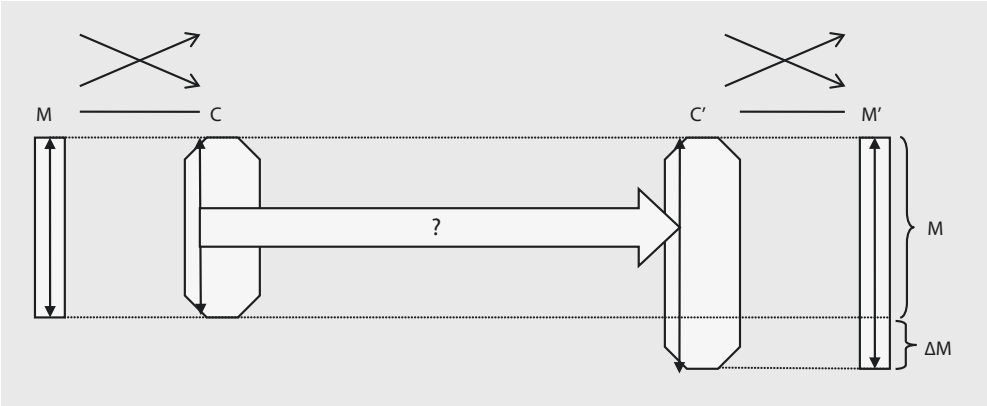


Fig. 3.4 Riddle of capital: From where does augmented value arise?

value when sold, as far as society as a whole is concerned, there is no way for such transactions to augment the total sum of value. Yet, as everyone knows, capital is constantly augmenting in capitalist society, so that the wealth of society in the form of capital is constantly increasing. This capital augmentation must occur, therefore, regardless of whether the prices of commodities diverge from their values. Even if every transaction were carried out in line with value, the augmentation of value would have to take place somewhere, through some process or another. It is sufficient, then, and indeed necessary, *to assume that all commodities are sold at their value* when trying to unravel this riddle of how capital is augmented.

3.1.2 Key to Solving the Riddle: The Use-value and Value of Labour-power as a Commodity

A Commodity Must Exist Whose Use-value Creates Value

It is only possible for a change in the quantity of value to occur in the process of M–C–M if the consumption of C (which is the outcome of M–C) generates value, and if, moreover, the quantity of newly generated value is greater than the value of the commodity consumed. This can only occur, in other words, if a special sort of commodity exists (*see* Fig. 3.5).

For this to be possible, something must exist with a *unique use-value whose consumption generates value*, and it must *be sold as a commodity on the market*.

Under Commodity Production, the Consumption of Labour-power Generates Value

We know that such a thing does indeed exist: **labour-power**.

The consumption of labour-power is its exertion, which is to say, labour itself. And that labour has two aspects: concrete labour and abstract labour (*see* Fig. 2.8).

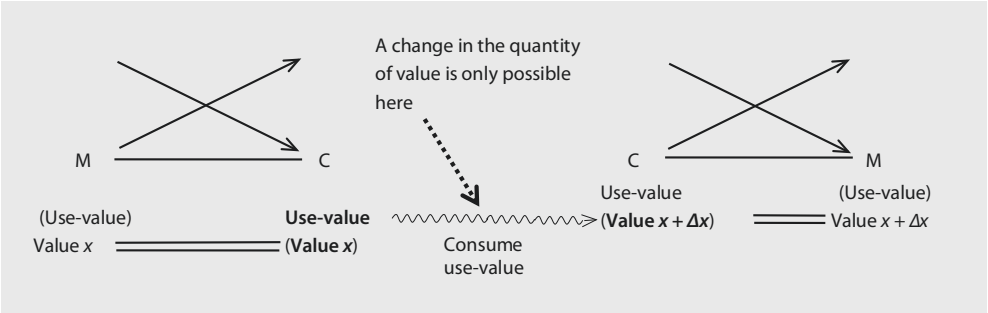


Fig. 3.5 Exclusive possibility for a change to arise in the quantity of value

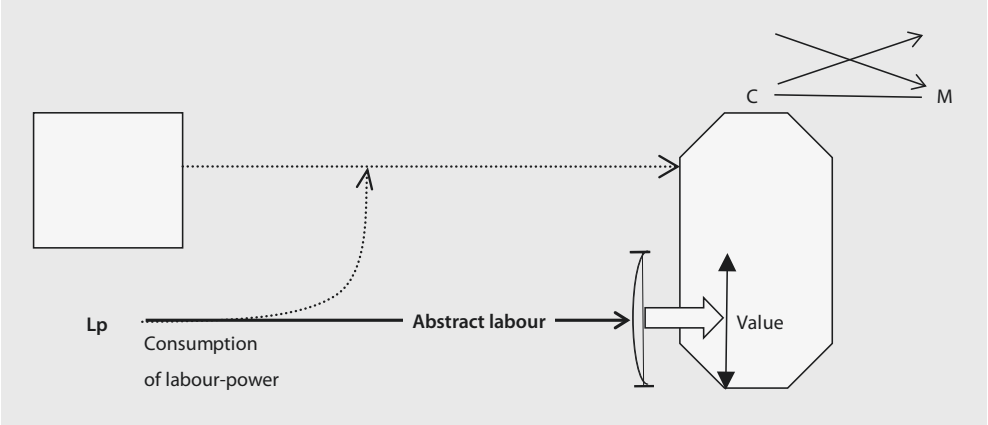


Fig. 3.6 Labour-power creates value through its consumption

Concrete labour transfers the value of the means of production to a product, so there is no change in value at all (*see* Fig. 2.17). Abstract labour, in contrast, forms the new value that is objectified within a product. So when a product becomes a commodity, abstract labour creates the new value (*see* Fig. 2.18).

Under commodity production, therefore, labour-power has the *quality of generating new value through the aspect that labour (consumption of labour-power) has as abstract labour*. Labour-power thus has the unique use-value of creating value when consumed (*see* Fig. 3.6).

Labour-power is in fact bought and sold as a commodity in the «**labour market**» (*see* Fig. 3.7).

Labour-power Is Bought and Sold as a Commodity in Capitalist Society

Unlike the case of slaves, labour-power is not sold in a bodily form, in its entirety, to *another person*. Rather, it is a transaction in which a wageworker (seller) sells *his own* labour-power *for a definite period of time* to a capitalist (purchaser).

Two Conditions for Labour-power To Be Sold

Two conditions must be met for labour-power to be sold. First, the owners of labour-power must be *personally free*

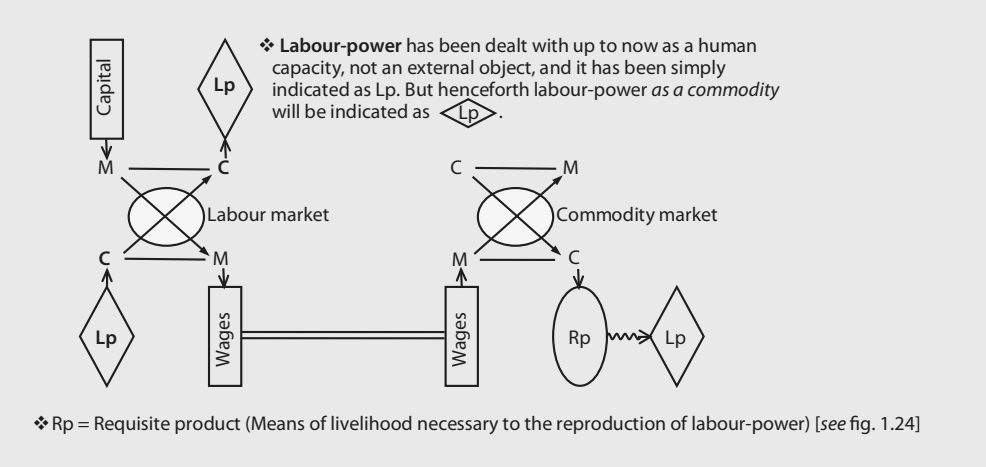


Fig. 3.7 Labour-power is sold and bought as a commodity on the labour market in capitalist society

and not bound personally as slaves or serfs to any other person. Second, the owner of labour-power must not possess the conditions of labour, and therefore not possess the requisite means of livelihood either; nor can the person possess the money to purchase those means. The person must thus be *separated* (or «*free*»[2]) *from the means of production*. For labour-power to be sold as a commodity, **labouring individuals who are free in this double sense** must exist.

3.1.3 Sale and Purchase of Labour-power

Labour-power Is Sold Temporarily

The relation between the buyer and seller of labour-power is a relation between two persons on an equal legal footing, namely: the possessor (holder) of labour-power and the holder of money. For the possessor of labour-power[3] to be able to sell labour-power as his own possession, his labour-power must be sold only *temporarily for a definite period of time*, rather than in its entirety.[4]

2 The word «**free**» in this case signifies «removed or forced out from a position».

3 At the starting point of the analysis of capital the adult male workers must be posited as the possessors of labour-power. This is certainly not meant to suggest gender discrimination, but rather is historically as well as theoretically necessarily. Later (in ► Sect. 5.4.3), we shall see how capitalist production massively incorporates women and children into the labour market.

4 Marx (1865) first clearly stated the crux of this issue in his report in English at the meetings of the Working Men's International

Temporary Sales and Purchases Are Common

In fact, **sales and purchases according to time (hour, day, month etc.)** are common.[5] The typical form of this sort of transaction is a «**lease**».[6] The characteristic of such transactions is that they are a special form of *sale and purchase. The seller hands over his commodity to the purchaser and allows the latter to freely dispose of it for a certain period of time; but the seller does not hand over the right of ownership of the commodity itself, and therefore after the time has elapsed, it is returned from the purchaser to seller*. This transaction form is also common to «rent» and «charter».

For sales on a temporary basis,[7] the purchase price is for the time during which a person is entrusted with the commodity. But how is this price, known as **rent**, determined?

Association held on 20 and 27 June, 1865: «What the working man sells is not directly his *labour*, but his *Labouring Power*, the temporary disposal of which he makes over to the capitalist» (Marx 1985, p. 128; Marx's emphasis). He writes in *Capital* (Marx 1872): «He [proprietor of labour-power] must constantly treat his labour-power as his own property, his own commodity, and he can do this only by placing it at the disposal of the buyer, i.e. handing it over to the buyer for him to consume, *at all times only temporarily, for a definite period of time*» (Marx 1976, p. 271; my emphasis and brackets).

5 Marx (1872) writes: «Suppose that a *capitalist pays for a day's worth of labour-power;* then the *right to use that power for a day* belongs to him, *just as much as the right to use any other commodity, such as a horse he had hired for the day*» (Marx 1976, p. 292; my emphasis).

6 The transaction-form of «**lease**» is commonly considered as a sort of lending and borrowing of money. In terms of industry classification, leasing enterprises also often belong to financial institutions. Lending and borrowing of money are almost the same insofar as their *legal forms* are concerned, but, as we shall see later (► Sect. 19.1.1 in Part III), they have thoroughly different characteristics from leasing. Lending and borrowing takes the *form of selling and buying a commodity* (the peculiar commodity of money as capital). *In capitalist society, every possible transaction between economic partners necessarily takes the form of commodity sale and purchase.* Thus, we should clearly distinguish between the *rent* paid for leasing and the *interest* paid for lending (*see* the following footnote 7).

7 In capitalist society, the practical transaction of leasing is related to the lending of money. This is because what is paid as rent involves the interest for the time period involved, in addition to the price of temporarily using the commodity. (It should go without saying that such an addition would never arise in the case of the sale of labour-power.) But to grasp the lease transaction in a pure form we must abstract from this side of lending—and therefore from interest. Once we have severed the link to lending, we can clearly see what kind of transaction leasing is. For example, however low the interest rate may fall, the leasing industry still must recover the value of leased commodities via rent, and as far as being able to do so this industry can continue to exist regardless of interest.

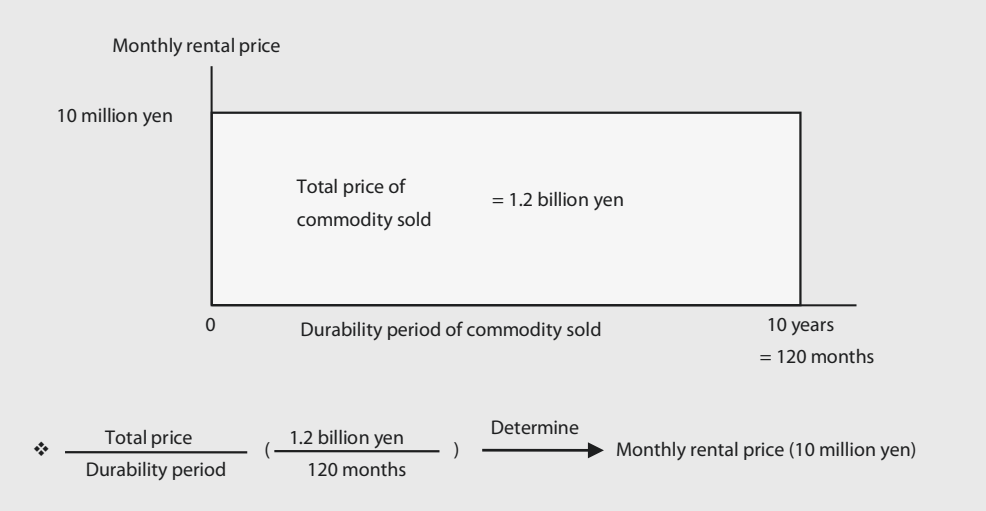


Fig. 3.8 How is the price per time-unit determined for a commodity sold on a temporary basis?

Let's consider the case of a machine leased by the month. A one-month rental of the machine would be based on the following calculation.

Assume that the total price of the machine is 1.2 billion yen and the machine lasts for 10 years (120 months), which is also the period during which it can be leased. The one-month rental fee for the machine in this case would have to be such that 120 months would equal to 1.2 billion yen (*see* Fig. 3.8). Here the «price» of the rented commodity is an expression of its value.

Crucially important to this calculation is the total price of the machine that expresses its *total value* and its *period of durability* (sales period), which are both givens to begin with. This is the basis upon which the rent for a time-unit (rental price) can be calculated. The rent is certainly not determined by the degree to which the machine is useful to the leaser (buyer) during a one-month period or the manner in which the leaser uses the machine; which is to say, rent is absolutely not determined by the machine's «utility» or its use-value.[8]

Also in the case of the labour-power commodity, we first must grasp the *total value* of this commodity and its *period of durability* (sales period), and then determine the rent for a unit-period on that basis. What corresponds here to rent is the daily, monthly, or weekly wages, or annual salary and the like.

8 The simple example of house rent highlights this point. Whether a tenant actually uses the rented house or not, he must unconditionally pay the rent. The monthly rent is paid for the right to use it for a month, not for the «utility» that it brings to the tenant.

The Primary Time Unit for the Sale of Labour-power Is a Single Day

Labouring individuals, as living creatures, require rest and sleep *every day*. Thus, the sale of labour-power for a definite time period, in normal cases, takes the form in which the purchaser (capitalist) uses labour-power for a limited period of time *every day*. One might think, therefore, that the hour would be adoptable as the unit of time for the sale of labour-power, but that unit is above all the *single day*.

The day as such a unit for the sale and purchase of labour-power for a definite period of time came to be known in England as the «**working day**». Although hereafter this word is also used to express the labour-time of 1 day performed by wageworkers, i.e. the working hours in a day, it still remains crucially important to grasp that the *fundamental unit of sale and purchase of labour-power is, above all, the working day*. Even when the unit of a contract is the week or month, it is still the day that is the basis for calculation.[9]

Value of Labour-power Is Determined by the Social Reproduction Cost of Labour-power

What determines the **value of labour-power** as a commodity? Like other commodities, its value is determined by the socially necessary labour-time to produce it. However, since labour-power is produced and reproduced within the process of an individual's consumption of the requisite means of livelihood, the *socially necessary labour-time for the production of labour-power* resolves itself into the *socially labour-time for the production of the requisite means of livelihood*, which are *the means of livelihood indispensable to the reproduction of labour-power*.

Included in the requisite means of livelihood are (1) «**living costs**» – which are the means of livelihood indispensable to the maintaining of the labouring individual in a normal state of existence, and (2) «**familial costs**» – which are the means of livelihood needed to replenish the labour-power that disappears from the market by being worn out or due to deaths (i.e. the cost of raising the children of workers). In addition to those two expenses, the production of labour-power requires, to a greater or lesser extent, (3) «**education or training costs**»—which are the costs and items needed to foster the particular developed labour-power in a specific department of labour through the acquisition of skills and expertise. The value of labour-power is thus determined by the socially necessary labour to produce those three factors. This is the reproduction cost of labour-power.

9 In practice, wages are paid by the hour. We shall elucidate the reason and the manner of this form of payment in ► Chap. 7. Here it is only necessary to understand that, whatever their hourly wages may be, wageworkers must be able to live a day on their daily wages.

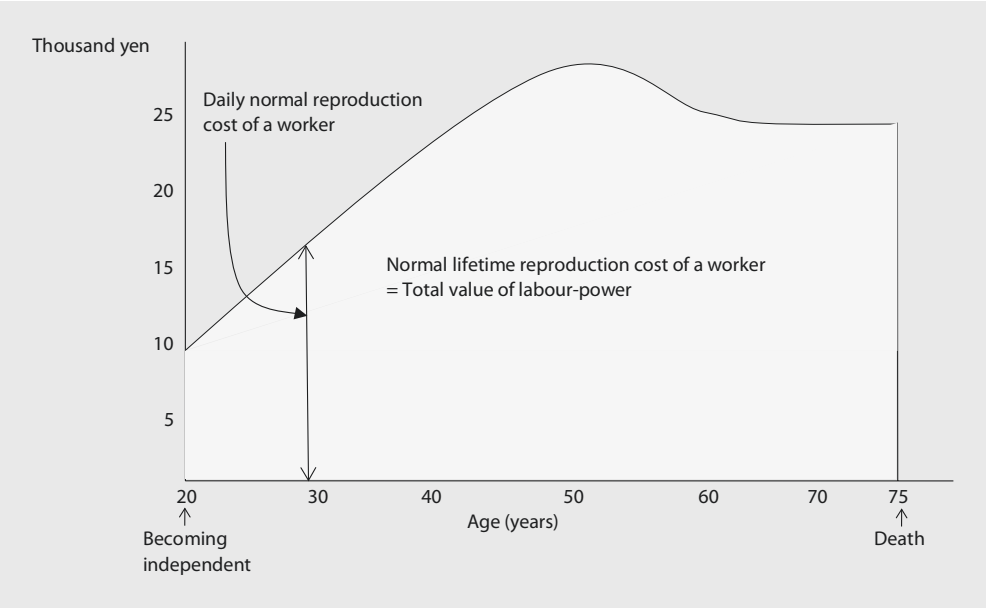


Fig. 3.9 Total value of labour-power

Total Value of Labour-power is the Reproduction Cost for the Entire Life of the Worker

What would be the total value of labour-power? This is akin to a machine's total value, which was the basis for calculating rent in our earlier example. In short, the value of labour-power is the *cost from the time the worker begins independently selling his own labour-power until the time of his death*. In other words, *the total sum of the reproduction cost necessary to keep the worker in a normal condition as a working individual throughout his life—from the time he leaves his parent's household until his death*. Here we have the **total value of labour-power** (*see* Fig. 3.9).

The total value of labour-power is the *total value of the means of livelihood that are socially indispensable to a life that can be considered to have a socially normal life cycle*. The term «normal» here means that a person in a given society is able to live as a physically and mentally healthy and stable labouring individual. This would be reflected, for example, in the calculation of «lifetime expenditures» that is often seen in advertising pamphlets for life insurance companies.

Daily Value of Labour-power Is Determined by Its Total Value and the Number of Days It Is Sold

The sales price of labour-power, with a working day as its value-unit, is decided by the *value of a day's labour-power*—or the **daily value of labour-power**, for short.

Labour-power's daily value is the sum of its total value divided by the number of days it is sold. The number of days that labour-power is sold is the socially average number of days that a worker sells his labour-power throughout his life.

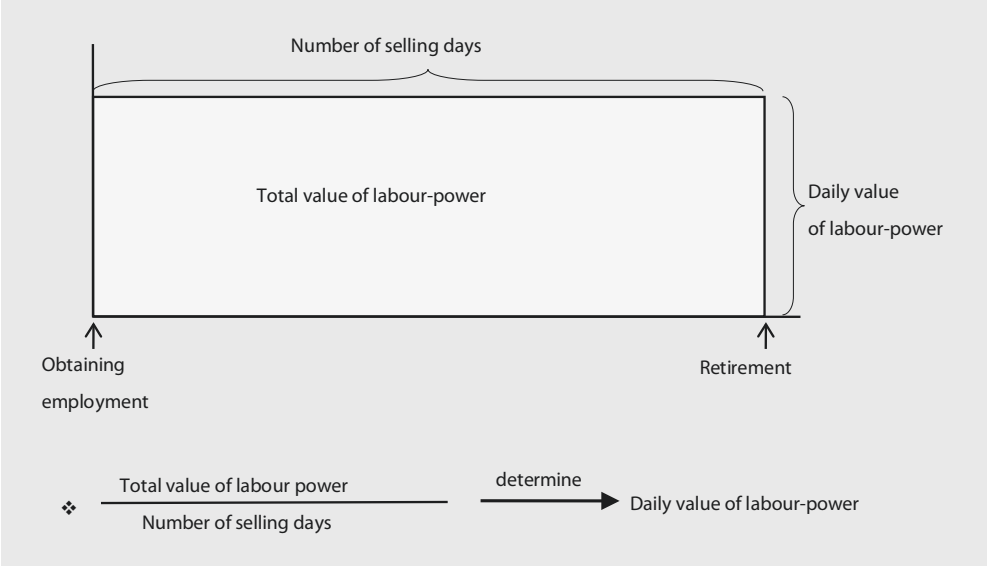


Fig. 3.10 Daily value of labour-power is determined by its total value and the number of selling days

The contract between capitalist and worker involves a worker providing one working day and the capitalist paying the value (in the form of money) for labour power's daily value (*see* Fig. 3.10).

The sum of money that a worker actually obtains throughout his lifetime through the sale of labour-power is called «*lifetime wages*», which forms his «*lifetime revenue*». Naturally, the worker's *lifetime expenditures* are covered by the *lifetime revenue* obtained through *lifetime wages,* as also seen in life-insurance pamphlets. This common calculation vividly expresses the essential fact that the reproduction cost of labour-power is the total value of labour-power, which in turn determines the wages (price of labour-power) sold on a temporary basis. The relation between the total value of labour-power and the daily value of labour-power can be illustrated as follows (*see* Fig. 3.11).

Let us assume, simply, that workers on average begin to sell their labour-power at age 20 and retire at age 60. The costs necessary for a worker increase from the time he is single and begins working to when he gets married and has children who are then educated. These costs peak out at around the time a worker is in his early 50s, and then begin to decrease as his children become independent. Then, after a period of retirement in which he ceases to sell his labour-power, the worker and spouse die. So they would have required living costs until the age of around 75. If we depict this 55-year, *socially standard* «*life cycle*», and calculate the *total socially average costs it*

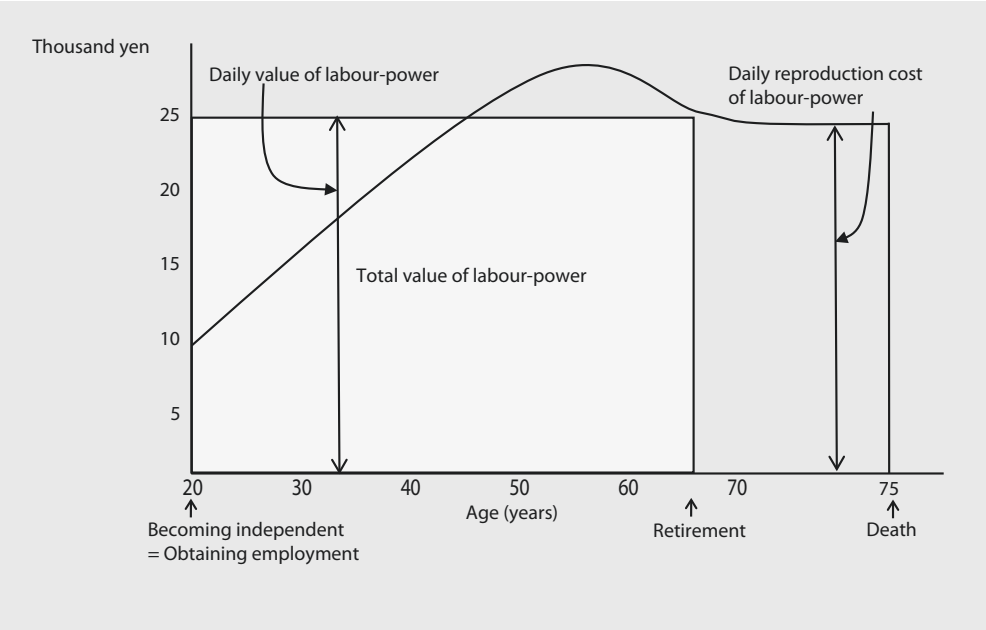


Fig. 3.11 Total value of labour-power and daily value of labour-power

requires (referred to more popularly as «*lifetime expenditures*»), it can serve as an estimate of the total value of labour-power (whereas the costs up to age 20 are included within the familial costs of the worker's parents). The worker must cover this total value through the sum of the value of the labour-power sold every day over a period that (in our example) spans the 40 years from age 20 to 60. This is the worker's «*lifetime wages*» or «*lifetime revenue*». We thus arrive at the daily value of labour-power by dividing the total value by the number of days in which labour-power can be sold during a 40-year span.

Reproduction Cost of Labour-power Is Nothing More than the Requisite Labour-time

As we saw in the Introduction (▶ Sect. 1.3.2), a certain quantity and range of the means of livelihood are indispensable for the reproduction of labour-power, regardless of the form of society. And the (abstract) labour for the production of these requisite means of livelihood (labour fund) is the requisite labour (labour-time) (*see* ◘ Fig. 1.24). Thus, the *reproduction cost of labour-power that determines the value of labour-power is the requisite labour (labour-time) for the reproduction of labour-power, which is common to every society*. The value of labour-power is the requisite labour (labour-time) that indispensable in any society to the reproduction of labour-power. But this only takes on a completely unique material form when the human capacity of labour-power is sold as a commodity (*see* ◘ Fig. 3.12).

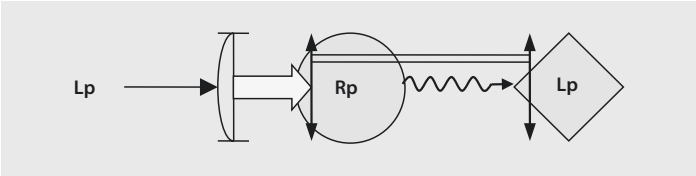


Fig. 3.12 Reproduction cost of labour-power determines the value of labour-power

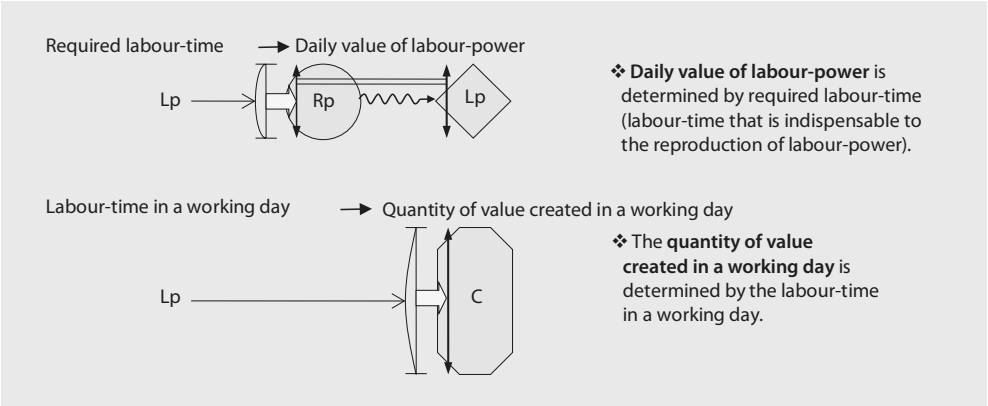


Fig. 3.13 Daily value of labour-power and value created in a working day

3.1.4 Secret of the Valorisation Process

Daily Value of Labour-power and the Quantity of Value Created by Labour-power in a Working Day Are Two Different Things

Surplus-Value: Difference Between the Value Created in a Working Day and the Daily Value of Labour-power

The daily value of labour-power is determined by the requisite labour-time, but the value that labour-power creates in 1 day is determined by the daily labour-time of the worker; there is *absolutely no necessary relation* between the two. The daily cost of maintaining labour-power and the daily expenditure of labour-power are *two completely different quantities* (*see* Fig. 3.13).

As noted in ▶ Sect. 1.4.2, **surplus labour** (labour-time) is the part of labour (labour-time) carried out beyond the requisite labour (labour-time). And the product produced by this surplus-labour is the **surplus product**. In any society, surplus products must be produced, to a greater or lesser extent (*see* Figs. 1.25, 1.29, 1.30, 1.31, 1.32, and 1.33).

Capitalist production not only started off, originally, with productive power clearly exceeding the productive power under the feudal relations of production, but then also developed productive power at a faster tempo than in any other previous epoch. Under capitalist production, given this productive power, the proportion of requisite labour within the daily labour-time of a worker is clearly

much smaller than had been the case under the feudal relations of production.

We could envisage contemporary society in the following way. First, imagine the total product produced in a given year by all the workers in society; then subtract from this the reappearing means of production that compensate for those used up in productive consumption. What remains is the new product of the given year. Out of this new product, the products that are bought back and consumed by the workers who produced them are the requisite products.

In the case of Japanese manufacturing in 2014, if we take the total sum of «value added» in a year as the index of the value produced by workers' labour in that year, and take the total sum of wages that workers receive in a year as the index of compensation for their labour-power, we can compare the «labour share», i.e. the ratio of the former to the latter (*see* ◘ Table 3.1). The data in the table certainly neither directly nor accurately express the value produced by labour or the value of labour-power, but we can still see that the sum of value produced by the labour of workers is much greater than the sum of value paid to them.

A **day** of a worker's labour-time is objectified in the product to become its value, while the requisite labour-time within

◘ **Table 3.1** Value added, wages, labour share (Japan 2014)

Number of personnel (scale of enterprise)	Value added (1 million yen)	Wages (1 million yen)	Labour share (%)
4–9	3,080,909	1,465,055	47.6
10–19	5,005,471	2,264,004	45.2
20–29	4,996,279	2,116,396	42.4
30–49	5,355,902	2,254,124	42.1
50–99	10,097,322	3,898,069	38.6
100–199	12,417,669	4,439,147	35.7
200–299	8,587,525	2,630,952	30.6
300–499	9,916,084	3,232,304	32.6
500–999	11,451,906	3,841,891	33.5
Over 1000	21,379,804	6,544,257	30.6

Ministry of International Trade and Industry, Japan (2016)

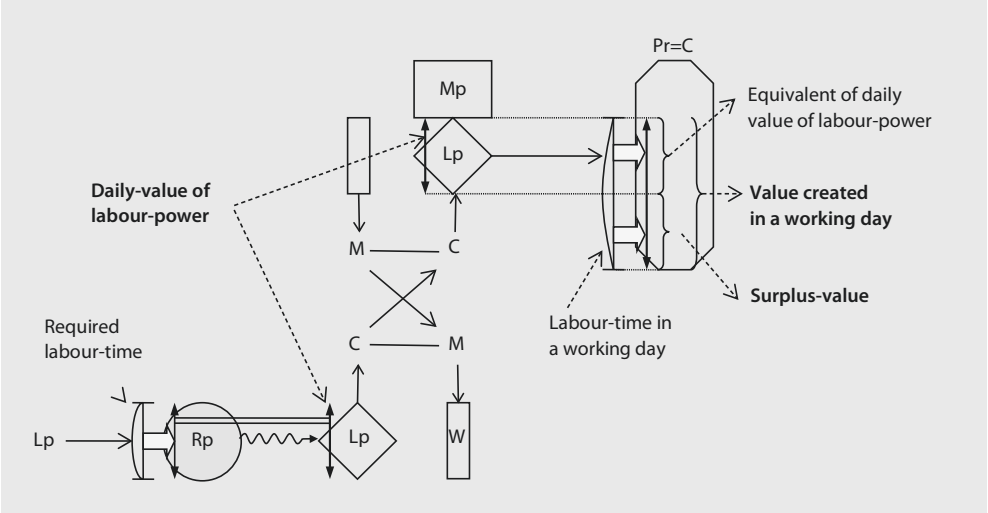


Fig. 3.14 Surplus-value is the difference between the value created in a working day and the daily value of labour-power

that produces an equivalent for the labour-power. **Surplus-value** (*s*) is produced by the surplus labour-time that exceeds this requisite labour-time (*see* Fig. 3.14).

Value of Labour-power Is the Objectified Requisite Labour and Surplus-value Is the Objectified Surplus Labour

Of the labour a worker performs in a day, the part of the labour (labour-time) that reproduces the daily value of labour-power is the requisite labour (labour-time), and the labour that exceeds this is the surplus labour (labour-time). This requisite labour and surplus labour—as mentioned in ► Sect. 1.4.2—*are merely the particular capitalist forms of the requisite labour and surplus-labour that can be seen in any form of society* (*see* Fig. 1.26).

3.1.5 Constant Capital and Variable Capital

Constant Capital

As explained near the end of ► Sect. 2.2.2, in the case where the means of production already include value, the value of those means of production are transferred and thus maintained within the product through concrete labour that transforms and processes them (*see* Figs. 1.57 and 1.58). In the course of the production process, the value included within the means of production is not altered at all quantitatively. Therefore, the part of capital advanced in the means of production remains completely unchanged quantitatively from its initial money-form to its final money-form, and is thus called **constant capital (c)** (*see* Fig. 3.15).

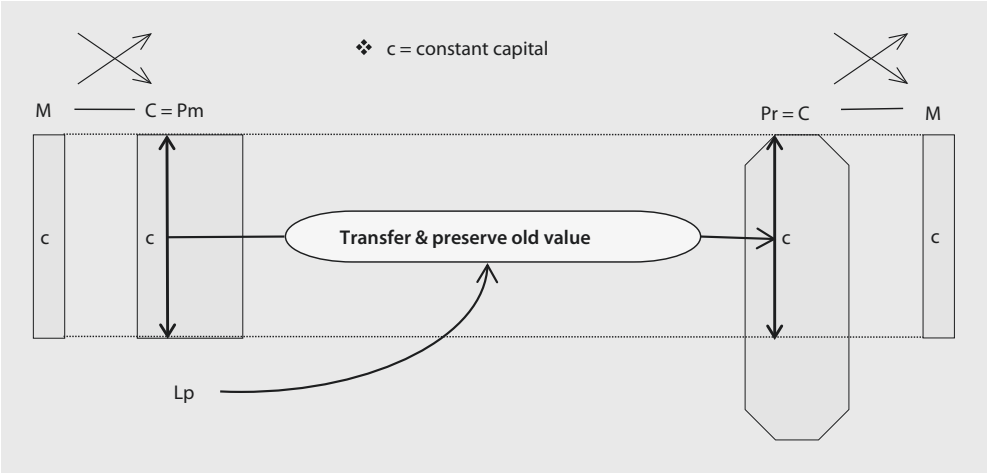


Fig. 3.15 Constant capital

Partial Transfer of the Value of Machinery

In the case of those durable means of production that can be used to produce a large quantity of products until they wear out (e.g., machinery or factory buildings), their total value is transferred through that production to the total products produced. In line with how the means of production wear away little by little, their value is also transferred bit by bit to the product. For example, the following quantity of value would be transferred to, and maintained within, the product of 1 day:

$$\text{Daily transferred value} = \text{Total value of the means of production} \times \frac{\text{Daily quantity of products}}{\text{Total quantity of products produced until means of production wear out}}$$

In this case as well, needless to say, the transfer in value from the means of production to the products does not involve any change in the quantity of value. Since the capital advanced for such means of production is fixed in the production process until they wear out, it is called *fixed capital*. In Part II (► Sect. 13.2), we will look at the distinction between **fixed capital** and the other part of capital (**circulating capital**).

Variable Capital

Capital is able to appropriate surplus-value because labour-power can create a greater magnitude of value in a day than its own daily value. Thus, the part of capital advanced in labour-power increases in magnitude by the sum of the surplus-value. Since this part of capital that brings about valorisation is able to change in the production process, it is

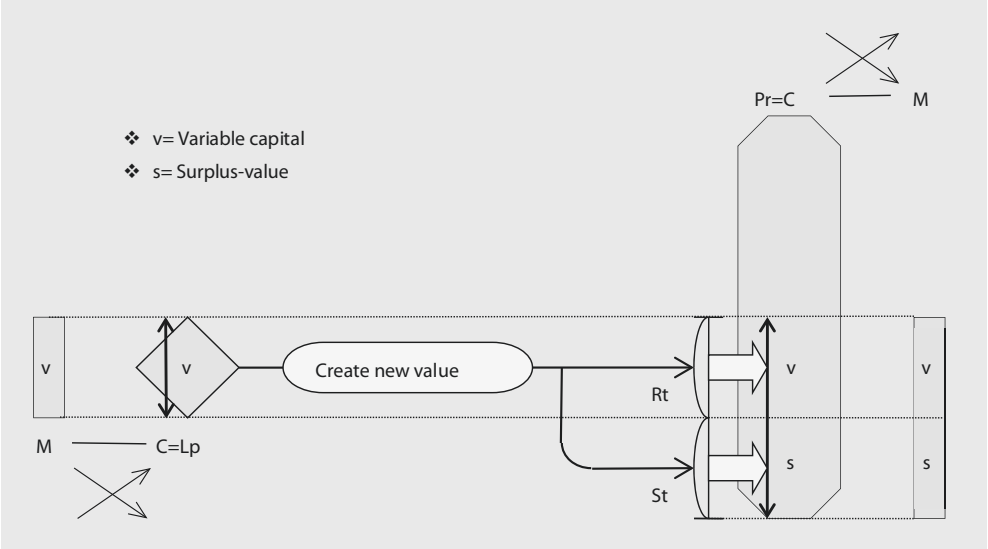


Fig. 3.16 Variable capital

called *variable capital* (*v*). In the production process, *variable capital (v)* augments to the magnitude of **variable capital (v)** *plus surplus-value* (*s*) (*see* Fig. 3.16).

Valorisation Process: Production of Surplus-value Based on Sale and Purchase of Labour-power

As noted already, under capitalist production, capital purchases the labour-power commodity on a temporary basis, and by consuming it obtains more value than that contained in the labour-power itself. This value exceeding the variable capital advanced is **surplus-value**. *The secret of valorisation is capital's appropriation of surplus-value based on the commodification of labour-power* (*see* Fig. 3.17).

Figure 3.17 is worth consulting later any number of times because it deals with the *essential core of capitalist production*. So, here let's examine each part of I-VI of the diagram in detail.

(I) Determination of the Value of Labour-power

I. The value of labour-power is determined by the value of the requisite means of livelihood (means of livelihood necessary for the reproduction of labour-power), and therefore by the labour-time necessary to their production.

(II) Purchase of Labour-power (Capital Is Advanced in Labour-power)

II. Capitalists purchase labour-power on the labour-market from workers on a temporary basis and pay wages in return (but only after the labour has been completed).

(III) Purchase of the Means of Production (Capital Is Advanced in the Means of Production)

III. Capitalists purchase the means of production on the commodity-market from other capitalists.

(IV) Consumption of Labour-power

IV. Capitalists consume the labour-power within the contracted period of time, making the workers labour under their direction and superintendence. This consumption process of labour-power is the labour process, on the one hand, and the valorisation process, on the other.

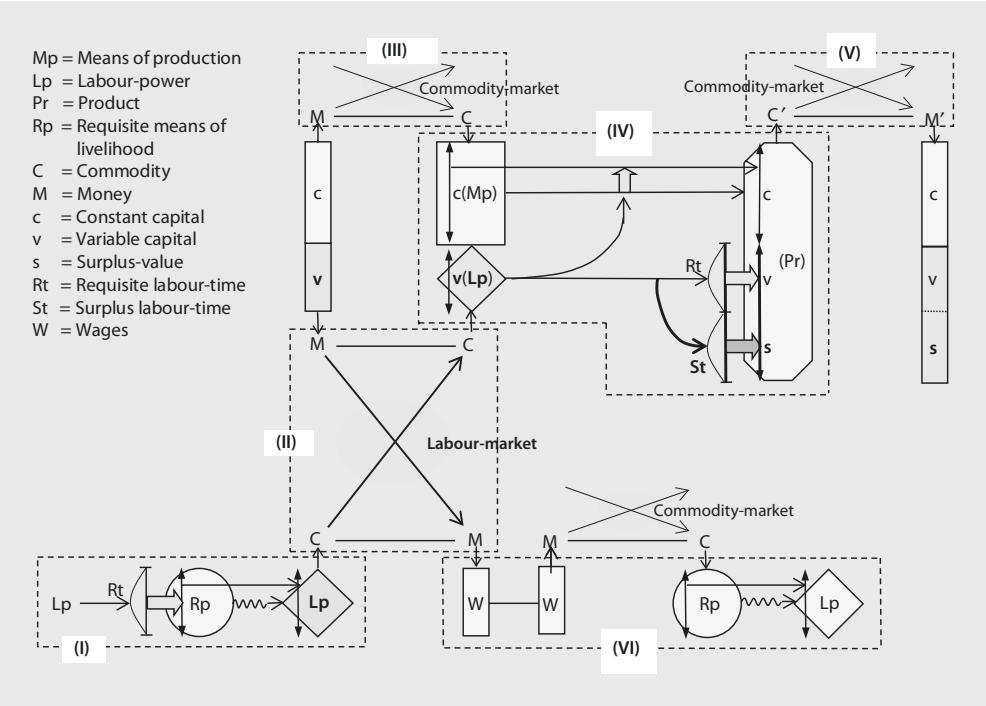


Fig. 3.17 Valorisation process (production of surplus-value)

(IV–1) Labour Process

Concrete labour, which is one aspect of workers' labour, produces the product by transforming (processing or using up) the means of production.

(IV–2) Valorisation Process

Concrete labour transfers the value of the means of production (old value) to the product. Therefore, the value-amount of the capital component advanced in the means of production (constant capital) is solely preserved through this process, with its magnitude remaining unchanged.

(IV–2–a) Transfer of the Value of the Means of Production

(IV–2–b) Reproduction of the Equivalent of the Value of Labour-power and the New Production of Surplus-value

Abstract labour, which is the other aspect of workers' labour, becomes the new value that is objectified within commodities. That is, *first* the value of the labour-power is reproduced (requisite labour-time), and *then* the surplus-value exceeding that value is newly produced (surplus labour-time). Therefore, the value-amount of the capital component advanced in labour-power (variable capital) is not only changed but also augments in this process.

(V) Realisation of Surplus-value Through the Realisation of the Value of Commodities

V. Capitalists sell their commodities on the commodity-market, thereby realising the value of those commodities (conversion into money). By means of this, they realise the surplus-value that is contained within that value (conversion into money) at the same time.

VI. Workers obtain wages in payment for their labour-power, which are used to purchase the requisite means of livelihood

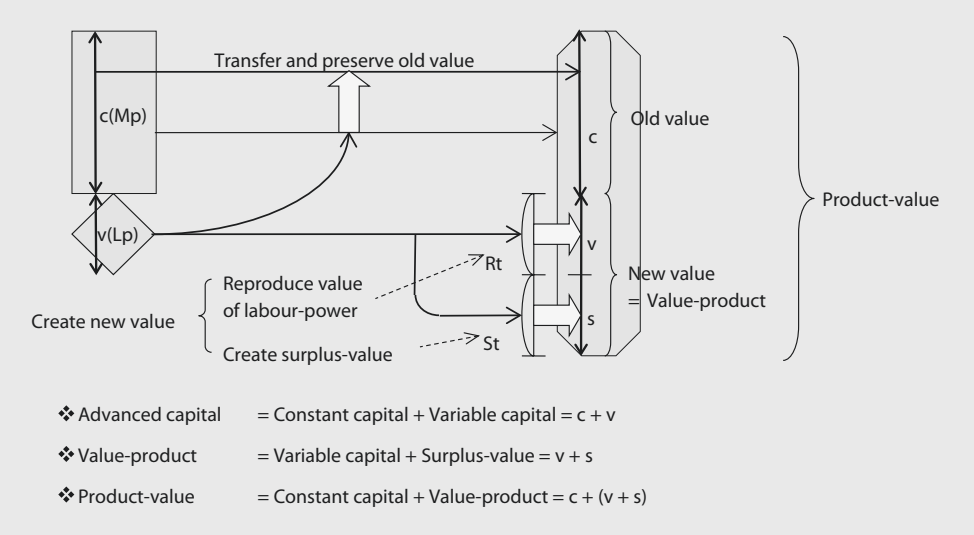


Fig. 3.18 Product-value and value-product

from capitalists on the commodity-market. And through the consumption of those means the workers reproduce their labour-power.

(VI) Reproduction of Labour-power

The value of the product of labour of a day is the sum of the **old value** (constant capital) transferred that day from the means of production to the product, and the **new value** (variable capital + surplus-value) created that day. This is the **product-value**, of which the new value produced in the process (variable capital + surplus-value) is called the **value-product**. *Product-value* and *value-product* are *two different concepts* that need to be clearly distinguished (*see* Fig. 3.18).

Product-value and Value-product

In the production process of capital, there is the value of the means of production that forms the old value transferred to and maintained within the product via concrete labour, and at the same time the abstract labour that is objectified to become new value, including both the **equivalent of the value of labour-power** and the **surplus-value** that exceeds it.

3.2 Rate of Surplus-value

3.2.1 Rate of Surplus-value = Rate of Exploitation of Labour-power

Two Rates That Express Degree of Valorisation: Rate of Profit and Rate of Surplus-value

The degree to which advanced capital is augmented is expressed by the ratio between advanced capital and its increment, i.e. surplus-value. The advanced capital is composed of

constant capital and variable capital. The ratio of surplus-value to the *total capital advanced* is called the **rate of profit** (p'), while the ratio of surplus-value to *variable capital* is called the **rate of surplus-value** (s').

- Rate of surplus-value: $s' = \frac{s}{v}$
- Rate of profit: $p' = \frac{s}{c+v}$

Rate of Surplus-value Accurately Expresses the Degree of Exploitation

Under the system of slavery or feudalism, non-workers who do not labour appropriate the direct producers' surplus-labour or the surplus-product that is the outcome of this labour. They appropriate the surplus-labour or surplus-product *regardless of the will of the direct producers* (*see* ◘ Figs. 1.30, 1.31, and 1.32). This appropriation is called **exploitation**. The term *exploitation* is used to refer to *any case where a non-labouring individual makes the direct producers labour in excess of the requisite labour-time, through some type of personal or material (economic) compulsion, in order to appropriate this surplus-labour*.

Capitalist relations of production are covered by the relations of commodity production, wherein material relations between people are manifested as spontaneous, free and equal mutual relations between *homo oeconomicus* pursuing their respective self-interest. Yet the capitalist appropriates surplus-value, and therefore surplus-labour, from the wageworkers *regardless of their will*. Capital seeks to appropriate as much surplus-labour from labour-power as possible. Moreover, there is no way for the labouring individuals to live unless they perform surplus-labour of this nature for another person. Objectively speaking, this surplus-labour is coerced from the labouring individuals, so that exploitation is clearly being carried out.

The degree of exploitation can best be expressed by the ratio between the magnitude of requisite labour and the magnitude of surplus-labour that must be carried out in excess of the requisite labour; i.e. surplus-labour divided by requisite labour.

Under capitalist production, «surplus-labour divided by requisite labour» takes the form of «surplus-value divided by the value of labour-power»—i.e. «surplus-value divided by variable capital». The ratio of the absolute quantity of surplus-value (s) to the value of labour-power or variable capital (v) is called the **rate of surplus-value** (s'). The rate of surplus-value most precisely expresses the degree of the exploitation of workers by capital, i.e. the **rate of exploitation**.

Workers receive as an equivalent for their labour-power the value that is equal to the value that their requisite labour creates. But all the surplus-value created by their surplus-labour comes into the capitalist's possession. So *nothing at all is paid to the workers from surplus-labour*. *From this perspective*, requisite labour can be called «**paid labour**», while surplus-labour can be referred to as «**unpaid labour**». This means that the rate of surplus-value also expresses the ratio of *unpaid labour* to *paid labour*.

$$\text{Rate of surplus-value}(s') = \frac{\text{surplus-value}(s)}{\text{variable capital}(v)} = \frac{\text{surplus-value}}{\text{value of labor-power}}$$
$$= \frac{\text{surplus-labor}}{\text{requisite labor}} = \frac{\text{unpaid labor}}{\text{paid labor}}$$

In contrast, the rate of profit ($p' = \frac{s}{c+v}$) indicates how much was augmented vis-à-vis the total capital advanced by the capitalist. This is an important ratio that has direct interest for capitalists. Yet this ratio does not accurately express the degree of exploitation. In fact, the ratio conceals the true degree of exploitation or makes it appear smaller than it actually is. We will investigate in detail the rate of profit (p') in ► Chap. 15 in Part III.

3.2.2 Various Ways to Represent Product-value

Value-constituents of the Total Product Can Be Represented in Various Ways

The value-constituents of the total product of 1 day—which are constant capital (c), variable capital (v), and surplus-value (s)—can be represented in various ways.

Let's take a given capital for the production of bread (*see* ◘ Fig. 3.19).

How Is the Value of the Total Product of a Day Formed?

To begin, let's assume that 1 hour of abstract labour (1 hour of labour-time) forms 10 yen of value. We will also assume that the daily value of labour-power is 30 yen, and the working day is 6 hours. Given this, the worker reproduces the 30-yen daily value of labour-power in 3 hours, so the 30 yen of surplus-value is produced in the remaining 3 hours.

We assume that the machinery utilised transfers 5 yen of its value to each loaf of bread through its wear and tear, whereas we can here take no account of the magnitude of its total value. Let us say that the capital produces 6 loaves of

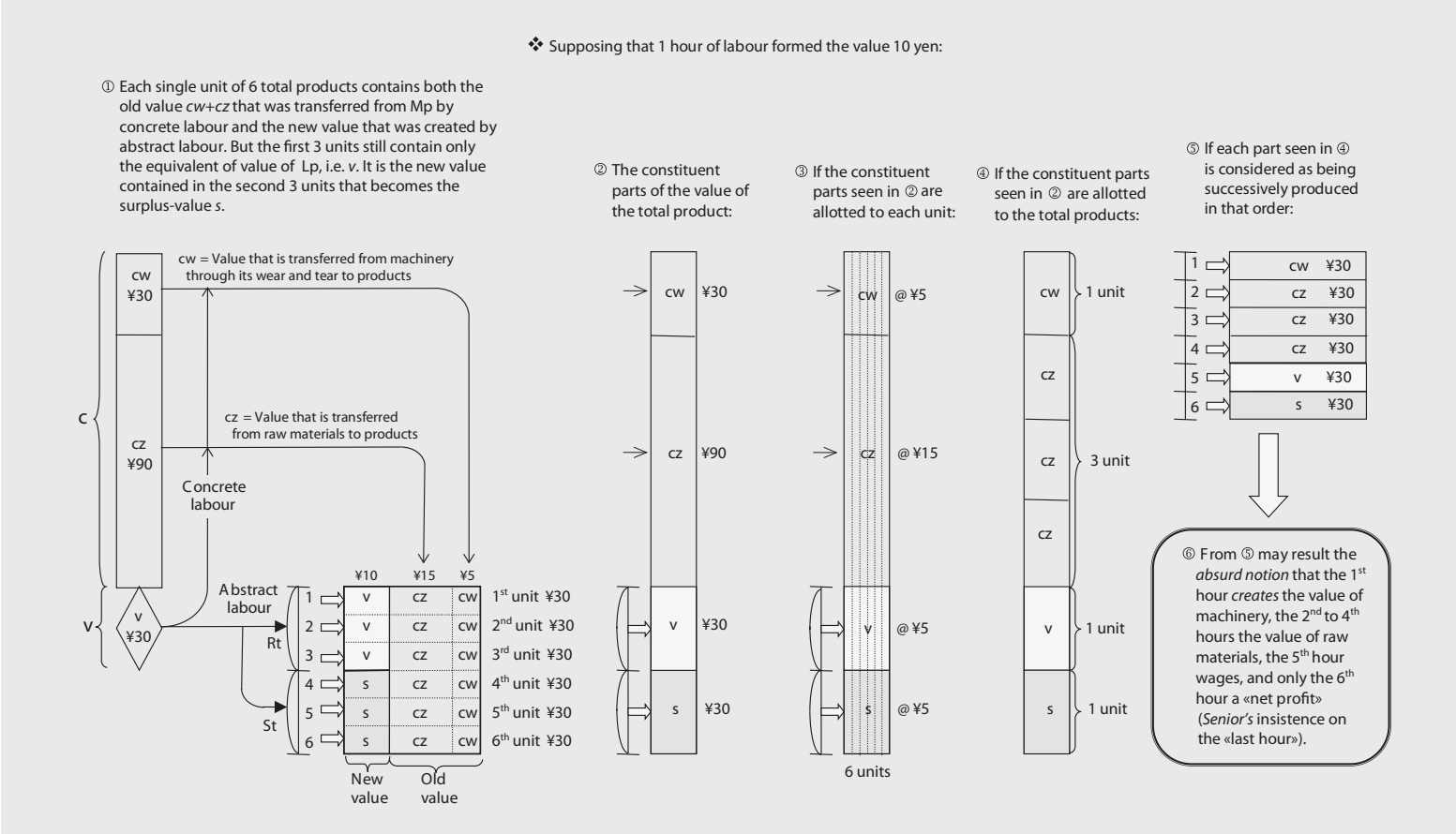


Fig. 3.19 Various ways of representing the value-constituents of the total product of a working day

bread in a day, using 90 yen of flour and other ingredients (raw materials), along with labour-power that has a daily value of 30 yen. This means that 1 hour of labour-time is used to produce 1 loaf of bread.

When capital produces 1 loaf of bread, 1 hour of labour-time is objectified in that loaf, with 10 yen of new value created. Each loaf contains 10 yen of this new value, 5 yen of transferred value from the machinery (*cw*), and 15 yen of transferred value from the ingredients (*cz*), for a total of 20 yen in old value and 30 yen in overall value.

Of the 6 hours in the working day, the worker makes 3 loaves of bread in the first 3 hours. But the 30 yen of new value included in these 3 loaves merely equates to the daily value of labour-power, so through this the capital only collects the variable capital advanced. If the production process were to be halted at this point, the capital would only get back the variable capital advanced and would thus be unable to obtain surplus-value. Conversely, any labour performed after this point is surplus-labour, and the 10 yen of new value produced every hour is all surplus-value. This means that the 10 yen of new value contained in each of the 3 loaves produced in the final 3 hours is surplus-value for the capital. The capital thus comes to obtain a total of 30 yen in surplus-value.

The discussion above, which is the process of valorisation examined up to now, is represented in the diagram as ①.

Examining the Value-constituents of the Overall Product

The total value of the 6 loaves of bread, which are the overall product of 1 working day, is made up of the following four parts: (i) 30 yen of value transferred from the machinery (*cw*); (ii) 90 yen of value transferred from the raw materials (*cz*); (iii) 30 yen of new value equivalent to the daily value of labour-power (*v*); and (iv) 30 yen of surplus-value (*s*) (indicated as ② in the diagram).

Value-constituents Can Be Proportionally Allotted to Each Product

The overall product produced in 1 working day is made up of 6 loaves of bread, with each loaf being exactly the same product. *Each loaf can be seen as one equal part of the totality of 6 loaves*. And if we *equally allot* (proportionally distribute) *the 4 value-constituents included in the 6 loaves*, each loaf would include 5 yen of *cw*, 15 yen of *cz*, 5 yen of *v*, and 5 yen of *s* (indicated as ③ in the diagram).

Value-constituents Can Be Proportionally Allotted to the Total Quantity of Products

Furthermore, if we *proportionally allot the 4 value-constituents included in the 6 loaves of bread, so as to express this in a number of loaves, it would be 1 loaf as* value transferred from the machinery (*cw*), *3 loaves as* value transferred from the raw materials (*cz*), *1 loaf as* daily value of labour-power (*v*), *and 1 loaf as* surplus-value (*s*) (indicated as ④ in the diagram).

The two ways above of representing the value-constituents—insofar as each product unit is dealt with as an aliquot part of the overall product of 1 working day—are both *theoretically correct and practically carried out every day*.

A False Notion Arises of Viewing Proportionally Allotted Parts as Sequentially Produced

In the final method, which is ④ in the diagram, the bread that represents the four value-constituents is premised on the overall product of a 6-hour working day, and a *completely mistaken notion* will be generated if we overlook that this is proportionally allotted to the total quantity of products—imagining instead that the first loaf only including the value of *cw*, the next three loaves produced (loaves 2–4) only contain the value of *cz*, the fifth loaf only includes *v*, and the sixth and final loaf only includes *s*.

From that perspective, for the totality of value included in each loaf (30 yen), it appears that the 1 hour of labour that creates the first loaf would generate the value of *cw*, the 3 hours of labour that produce loaves 2–4 generate the value of *cz*, the 1 hour of labour that produces the fifth loaf generates the value of *v*, and the 1 hour of labour that produces the final loaf generates the value of *s* (indicated as ⑤ in the diagram).

«The Final One Hour Produces Surplus-value»?!

According to this line of thought, only the last hour produces surplus-value. Therefore, if the working day, i.e. the daily labour-time of workers, were reduced by 1 hour (from 6 to 5 hours, in our example), a capitalist would not acquire any surplus-value. The vulgar economist *Nassau William Senior* (1790–1864) utilised this argument in 1836 to oppose the movement seeking a reduction in labour-time (indicated as ⑥ in the diagram).

The *error* in this way of thinking is that it overlooks—or pretends to be unaware of—the fact that *cw* and *cz* are value originally included within the machinery and raw materials, which is then *transferred* to the product. This means that the value of the first four loaves can only be seen as the value of *cw* and *cz* insofar as the old value of *cw* and *cz*, included within each of the 6 loaves forming the overall product, is made to mentally represent loaves 1 through 4, so that the entirety of *cw* and *cz* could be seen as being transferred to these 4 loaves alone. This would mean that one is obliged to consider the 4 hours of labour (abstract labour) as being included, not in these 4 loaves, but only in the remaining 2 loaves.

The portions of product-value can be expressed as proportional parts of the product, and it is necessary to be accustomed to this manner of calculation. But we should not forget that each of the parts can only play this sort of role insofar as they are divided parts of *a given overall quantity of products*.

References

Marx K (1865) Lohn, Preis und Profit. English edition: Marx K (1985) Value, price and profit. Marx-Engels Collected Works. Vol. 20. Progress Publishers et al. New York

Marx K (1872) Das Kapital. Kritik der politischen Oekonomie. Bd. 1. Buch 1: Der Produktionsprocess des Kapitals. 2. verb. Aufl. Hamburg. English edition: Marx K (1976) Capital. A critique of political economy. Vol. 1 (trans: Howkes B). Penguin Books

Ministry of International Trade and Industry, Japan (2016) Census 2014. Census of manufacture. Tokyo