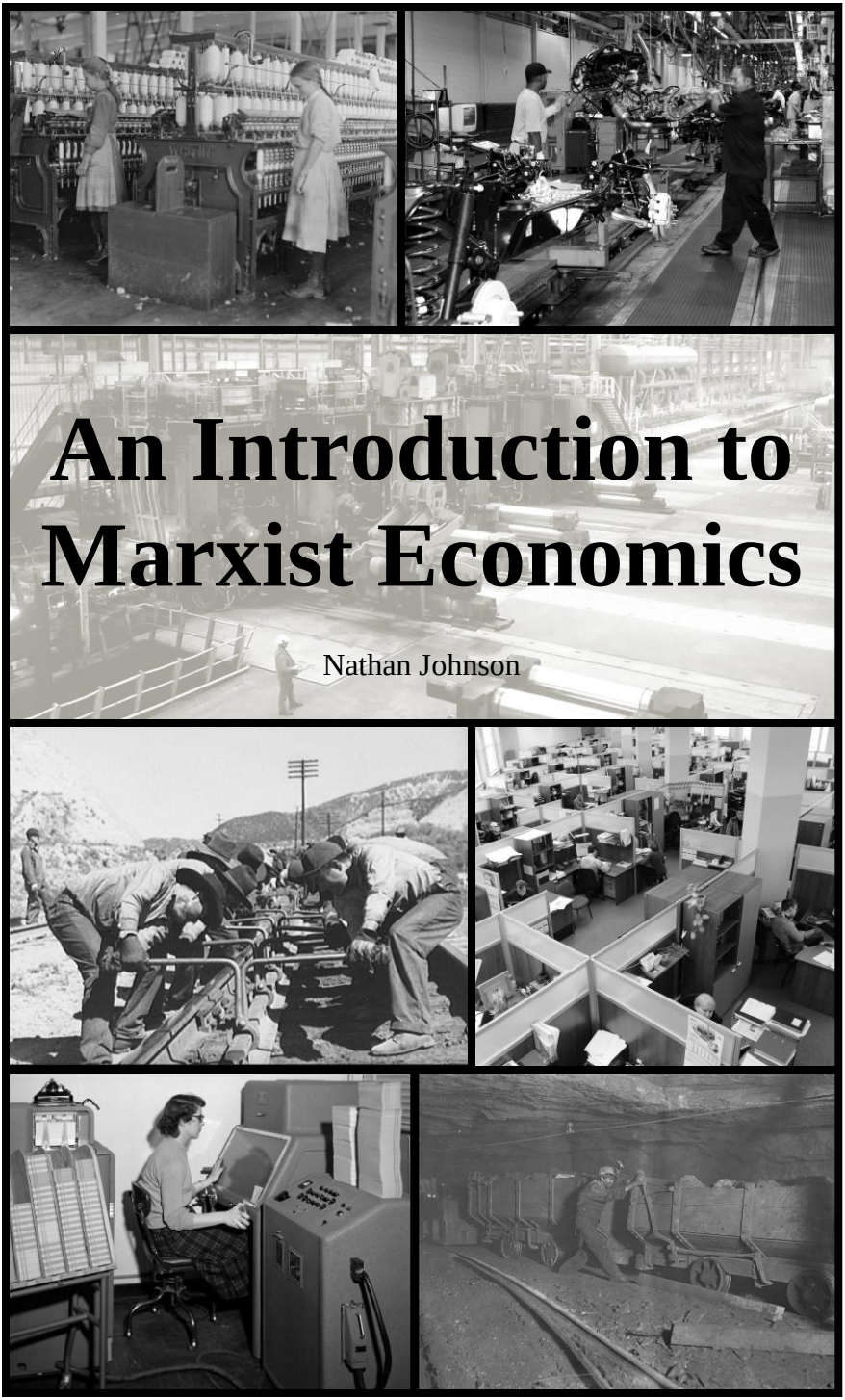

An Introduction to Marxist Economics

Nathan Johnson

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Preface

The main aspect which distinguishes this book from other introductions to Marxist economics is the empirical evaluation of indicators and trends which characterize capitalism over time. The focus is on the US as the most advanced contemporary capitalist economy. References in the endnotes enable interested readers to reassess the series as new data become available.

The first half of this book addresses foundational topics while the second half outlines the historical development of capitalism and concludes with principles of socialist economics. The emergence of capitalism and its earliest stages of development are briefly covered, in the interest of brevity, and subsequent stages of development are examined in greater detail.

This work draws upon the following recommended further reading: *Marxist Economic Theory* and *Late Capitalism* by Ernest Mandel and *Capitalism: Competition, Conflict, Crises* by Anwar Shaikh.

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Table of Contents

1. Class and Social Relations

A. The Relevance of Marxist Economics

In the words of one of Shakespeare's rebellious characters: "thought's the slave of life, and life time's fool; and time, that takes survey of all the world, must have a stop."[1] Thought is preoccupied with life's concerns, stamped by the times in which they arise. The way of life which prevails in any given time and place, no matter how ingrained and pervasive, inevitably comes to an end, either changing into something new or going extinct in the course of history. These basic insights ground the materialist approach to Marxist economics, which stresses the dynamics between historical contexts, economic processes, social relations, and mental conceptions.

Constructive economic theory must address matters ranging from the problems of everyday life to pressing international issues, shaped as they are by history, evolving over time. To this day much of human history develops blindly, without the purposeful control of the people who endure its repercussions. Transitioning from a defensive position of reacting to unfavorable socio-economic situations (such as monumental levels of inequality, impacts of global climate change, unrewarding corporate employment, etc.) to taking greater control over our lives and society ultimately requires nothing less than challenging and overcoming class relations. To have any chance of success, socialists must base their strategy on a principled understanding of class. Marxist economics exposes the roots of class and in the process provides a foundation for the political aspirations forming a socialist platform. In the simplest terms, this is the reasoning:

1. Labor is the source of value.
2. Profit is unpaid labor and capital is control over unpaid labor.
3. Workers have an objective interest in ending exploitation and capitalists in perpetuating exploitation.
4. The working class must independently organize economically and politically to effectively fight for its interests, end capitalism, and build a classless society.

Liberal and progressive politics do not strive to end class distinctions- at best they only attempt to make certain aspects less antagonistic. Apart from the socialist viewpoint, the centrality of class is generally unrecognized or denied. In mainstream discourse the concept of class is often imprecise and lacks substance (take for example political

rhetoric paying lip service to an ill-defined middle class). On the rare occasions when the division of society into classes is openly acknowledged and considered, class is typically legitimized by conservative and libertarian politics which laud the role of the capitalist (invoking social Darwinism in one form or another, for instance).[2] The insight Marxist economics provides by critiquing class relations enables socialists to set their sights on the difficult but necessary projects required to build a classless society.

B. Economics and Social Relations

Mainstream economics primarily focuses on technical problems (such as deriving supply and demand curves, marginal costs, and interest rates) and building models of how the economy would function if "perfect competition" prevailed, taking capitalist social relations for granted. In contrast, Marxist economics emphasizes the importance and mutability of social relations. To give one example, on the surface level money takes the form of coins, paper bills, and bank account balances. On a deeper level, money involves social relations leading people to accept and venture after these tokens, which in themselves are typically worthless, insofar as they confer the power to control labor and wealth. Cash would not function as money in the absence of these social relations (for instance in cultures which may only practice barter). On the other hand, social relations in turn are mediated through material dealings (for instance capitalist commerce, which props up social stratification, is unthinkable without the use of money and the exchange of commodities).

Mainstream economics considers capital to be the assets used by businesses and individuals for economic gain, including money, machinery, land, and even workers' experience and skills in the guise of "human capital." Marxist economics counters that the items which serve as money, the inputs of production, and produced goods are not automatically capital- they only function as such in the context of particular social relations. Money is not always used as capital (for instance in pre-capitalist societies) and the physical properties of gold do not make it intrinsically valuable or explain why it functions as a form of money under capitalism. As the experience of post-capitalist economies has already shown, it is possible for the means of production and distribution to be used according to a different logic instead of being used as capital. Commodities being sold in a store are part of the firm's

capital, but once those same commodities are purchased and become household items they no longer function as capital.

Mainstream economics idealizes competition and depicts perfect competition with these attributes:

- An unlimited number of firms exist, each representing an infinitesimally small fraction of the market.
- Firms passively conform to prices set by the market.
- Businesses are always profitable.
- Markets are automatically responsive to changes in supply and demand, such that production and distribution take place instantaneously.
- Consumers are only interested in maximizing their personal utility, have complete knowledge of the market, and are perfectly rational.
- Everyone in society harmoniously benefits from individuals pursuing their private interests. The market perfectly allocates resources and provides full employment to everyone looking for work.

When mainstream economics recognizes that the real world does not conform to the tenets of perfect competition, deviations from theory are blamed on imperfect competition. However, it is not because the world is imperfect that the theory of perfect competition fails to perform- rather the theory itself is imperfect. Instead of starting from the false premises of perfect competition, Marxist economics takes reality as its starting point:

- There are a limited number of firms, some of which constitute a significant portion of the market.
- Firms actively set prices calculated to maximize profit and ruin competitors, within a range determined through trial and error to be viable on the market (prices outside the range are punished on the market through weak sales or low profitability).
- There is no guarantee firms will obtain a profit- they may lose money and go out of business.
- Supply and demand are never perfectly balanced, routinely leading to buyer's markets and seller's markets. Imbalances may persist for lengthy periods since production and distribution take time to adjust (for instance during construction of additional capacity).
- Consumers are not isolated selfish individuals, but social people with community connections, family ties, traditions, and cultural norms.

They are influenced by the propaganda of marketing, have partial knowledge at best about markets, and make semi-rational economic decisions.

- While businesses manage their own affairs more or less efficiently to obtain the largest profit possible, in the process they exploit the working class and wreak havoc on the environment such that overall capitalism does not optimally allocate resources to meet society's needs. Persistent unemployment is the result of labor-power being reduced to an expense to be economized.

Mainstream economics frequently portrays capitalists as small business entrepreneurs who succeed by the sweat of their brow, making breakthrough inventions and innovations for the good of humanity. This is essentially a myth. Being an entrepreneur, small business owner, and contributing to technological progress are not essential qualities of being a capitalist. The fundamental characteristic of the ruling class is ownership of capital to an extent that frees capitalists from needing to work.

C. The Class Structure of Capitalism

The billionaires, a few thousand people, own more wealth than billions of people making up more than half of the global population.[3] How is it possible for capitalists to live without working and, on top of that, own far more wealth than those who do work? It is only possible for capitalists to live a life of leisure and abundance because they live off the labor of other people. Workers labor above and beyond what is required for their subsistence and capitalists acquire the fruits of this surplus labor. Capitalists live off the income of their property and use money to make more money, for instance putting money in the bank and collecting interest as the money grows. However, outside the context of expedient social relations money is only an inanimate object, incapable of spontaneously generating more money, any more than wealth springs into existence out of nothing. Tracing it back to its origins, unearned income always taps into the output of labor.

The capitalist class is maintained by the working class and in a sense these are the two fundamental classes of capitalism, without which it could not exist. In reality, there are additional social classes forming a hierarchy, as well as layers of stratification within each class which are often appreciable. For instance, workers earning minimum wage and skilled laborers earning considerably higher wages have very different

standards of living, yet as members of the working class they have certain common interests. Economic disparities between classes are typically far more consequential than those which exist within classes.

An embedded class structure entails structural exploitation- the particular classes which predominate reflect the distinctive forms of exploitation which characterize a given mode of production. Class is not simply about who is relatively rich and poor (since this does not explain the emergence and disappearance of assorted classes throughout history as modes of production rise and fall). Instead, class is more meaningfully understood as mediating access to and ownership of the means of production and distribution, which determines who has to work for whom else, and who has control over working conditions. With this perspective, the principal classes found in capitalist society are:

- The lumpenproletariat: the chronically unemployed and impoverished.
- The proletariat: the working class, compelled to sell its labor-power for wages in order to survive, lacking ownership of the means of production; maintains the ruling class through the surplus it generates in the labor process.
- The petty bourgeoisie: skilled professionals and small business owners, whose income is a combination of wages and profit.
- The bourgeoisie: the ruling class of large business owners and wealthy elites free from needing to work; lives off the labor of the working class by appropriating the profit which ownership of capital confers.

Pre-capitalist social classes (such as the aristocracy and peasantry) may persist for a shorter or longer period before dissolving into the classes which characterize capitalism, as prior modes of production cannot sustainably compete against capitalism. Over time the remaining tribal people living in classless cultures are also drawn into contact with capitalist society and have few alternatives to joining the ranks of the proletariat and lumpenproletariat. The convergence of people into capitalist social classes, which are reproduced time and again, mirrors the consolidation of exploitation along specifically capitalist lines.

Capitalism affords relatively greater social mobility than prior class societies (for instance, under feudalism belonging to the ruling class was typically a matter of being born into the aristocracy). However, sociology proves over and over again what is painfully obvious: there are glaring

social inequalities from childhood onward which largely determine any individual's prospects of educational attainment, social advancement, life expectancy, and quality of life.[4] Members of the bourgeoisie attend the best schools, have access to all the resources and experts money can buy, and have ample leisure time for pursuing their interests. On the other hand members of the proletariat and lumpenproletariat often receive substandard education, face obstacles imposed by poverty or limited means,[5] and spend most of their time working and recuperating from work, or trying to find work.

It is not surprising then that most individuals remain for life in the class they were born into.[6] This is especially true for historically disadvantaged groups including women and people of color.[7] Indeed, the vast majority of people must belong to the working class under capitalism since millions of workers are needed to support the elite few.[8] Even if everyone had the same opportunities (with no extra-economic obstacles regarding social mobility), capitalism would still maintain a capitalist class separate from the working class. Individuals may move between the social classes but the classes which characterize capitalism remain nonetheless.

2. Component Elements of Capitalism

Although aspects of capitalism change over time and considerable variations exist within and across countries, certain structural features have emerged which are reproduced throughout capitalism's history. These elements are interdependent in many ways, so that each is fully meaningful only in the context of their mutual interaction.

A. Commodities

The enormous wealth capitalism generates takes the form of mass-produced commodities, products of human labor intended for exchange. There are two sides to commodities: they satisfy some physical or psychological need (they have a qualitative *use value*) and are meant to be sold (they have a quantitative *exchange value*). Not everything that is produced is a commodity and this applies even to items with utility and intended for sale. For instance, one of a kind original works of art are not commodities, unlike mass-produced printed copies. Routine labor working with machinery produces replicates of commodities which are uniform and interchangeable (often indistinguishable) with numerous other instances of the same type of commodity.

Commodities must have some utility if they are to be sold, as nobody knowingly buys useless products. However commodities are not produced for the sake of satisfying human needs but for the purpose of being sold at a profit. Businesses may directly consume some of their own output (for instance a car company may use some of the cars it produces for its own business purposes) and some social strata practice subsistence (typically small farmers) but by and large production is intended for sale on the market. Money, itself commodified, is instrumental in mediating all manner of market transactions.

B. Markets

The mass production of a given commodity relies upon the mass production of all the raw materials and commodities which serve as inputs in its production, as well as mass consumption of the final product. Access to the inputs of production and consumers takes place through markets, where buyers and sellers exchange money and commodities. As capitalism develops, more and more resources and people interact through market exchange. Gross domestic product, a measure of the goods and services produced for the market, is fast approaching a hundred trillion US dollars globally.

As production develops and becomes more specialized, trading on the market multiplies. People producing the same commodities have no need for exchange- they only trade when they are producing different use values. Markets facilitate commodity exchange, but have taken on a life of their own, commodifying anything that can be bought and sold. This includes resources which are not products of human labor (such as land and natural resources) as well as intangible assets (such as brand recognition) and financial assets (such as stocks). Even human labor-power is commodified in the labor market.

C. Wage Labor

Wage labor is labor-power sold to an employer at a certain rate (typically paid by the hour) for a given duration (typically a number of hours per day and week). Since every hour of wage labor is paid, it has the appearance of being fully compensated. In reality, wage labor is exploited- workers must create more value than they receive in compensation (in other words, generate profit) otherwise businesses would have no use in hiring them. Workers can choose where to sell their labor-power (though their options are limited), receiving a higher or lower wage, but some degree of exploitation is standard.

Wage labor is employed in a highly developed division of labor. The *technical division of labor* refers to how all the physical and intellectual tasks required in a production process are broken up into discrete tasks which individuals perform. Instead of individually producing a commodity from start to finish, each worker carries out a limited number of tasks repetitively while numerous other workers perform different sets of tasks, which collectively produce a given commodity. Workers produce far more collectively than they could individually. Economies of scale are realized through the use of technology implemented by large teams of workers arranged in a developed technical division of labor.

The socialization of production relations (large numbers of workers working together cooperatively) is just as important as the mechanization of the labor process. A highly developed technical division of labor is only feasible when there are a variety of technologies engaged in production, requiring individual workers to fill distinct roles in the overall production process. The mechanization which accompanies the penetration of technology into the production process tends to deskill manual labor while on the other hand creating a need for specialized and intellectual skilled labor in the management of the overall process.

D. Private Property

In distinction to the technical division of labor, the *social division of labor* refers to who gets to make the decisions regarding what is produced, how it is produced, by whom, and to what purpose. Those who possess capital are empowered to decide which commodities to produce, with which combinations of technology and wage labor, in which settings, for the maximization of profit above all else. Under capitalism the technical division of labor and social division of labor closely align, with those at the bottom of the hierarchy, working for wages or unemployed, having practically no say in how production is directed.

The asymmetry in power relations between the capitalist class and the working class has a lot to do with the private ownership of the means of production and distribution. Workers are compelled to sell their labor-power for a wage because they do not have access to means of production (land, machinery, buildings, etc.) which would allow them to independently work for themselves. Workers need to continually earn wages to survive, whereas capitalists can live off of immense wealth accumulated through their private ownership of property.

Private ownership of the means of production also confers ownership of the commodities produced thereby. Workers do not own the product of their own labor; instead, they must spend their wages in order to acquire some of the commodities they produced. The mass of commodities produced is not of immediate use to the capitalist, but instead must be sold on the market for a profit. There is no guarantee the commodities will find buyers, as production is not directed by any societal plan and competitors on the market are trying to win over the same consumers. It is the prerogative of the owners of the means of production to determine how much to produce, which may be too much or too little, overshooting or falling short of satisfying society's needs and causing prices to fall or rise depending on supply and demand.

E. Capital

Capital exists as many separate capitals, the private property of different owners in competition with one another over market share and profit. Assets only function as capital when used in the context of supporting social relations, which allow the owners of capital to reap profit they never earned. Capital is value which insatiably strives to increase in monetary value. To this end, the various domains of capital (such as production, distribution, and finance) serve distinct roles in the

economy, with the goal of maximizing profit. Capital is classified according to its various forms and functions, including:

- Money capital: the most fluid form of capital, facilitating the movement of capital between its different forms, particular applications, and various locations. It is used to buy in order to produce and sell (rather than buying to directly satisfy needs).
- Commodity capital: capital in the form of inventories of commodities.
- Productive capital: capital which brings labor-power and means of production together in the process of production.
- Variable capital: capital which procures labor-power, the only commodity which can create value (the amount of value created varies depending on the length and intensity of the working day).
- Constant capital: capital which procures raw materials and plant and equipment. The value of constant capital is passed on to the commodities produced (for example, the value of a set of tires entirely transfers into the value of a car in which they are installed). The value of constant capital is conserved by being put to use by labor-power; idle constant capital depreciates and devalues without transferring value into the production of commodities and physically deteriorates in a state of disuse.
- Fixed capital: constant capital in the form of buildings, machinery, and other durable assets which facilitate production and distribution. The value of fixed capital is transferred to commodities gradually over time through depreciation costs, without fixed capital being a physical component of commodities (that is, pieces of buildings and machinery are not transferred into the commodities they are used to produce).
- Circulating capital: variable capital and the portion of constant capital, including raw materials and energy, which transfers value into commodities as it is materially consumed in production.

F. Profit

Commodities satisfy human needs whether or not they are sold for a profit, but capital has a need to make a profit whether or not any genuine human needs are satisfied. The aim of capital is fundamentally the production of profit mediated through the production and distribution of commodities. Capitalism does not generally produce commodities unless

it can do so profitably. The profit embodied in commodities is the difference between the value workers create and the compensation workers receive.

Profit is the essential measure of the success of capitalist enterprise, with each firm striving to exceed the average rate of profit. While there is a limit to the satisfaction of human needs (at some optimal level of consumption), there is no limit to the pursuit of greater profits as measured in terms of money. Multi-millionaires strive to become billionaires, who in turn are unsatisfied with their billions of dollars and strive to become trillionaires. No matter how much profit is produced, it is never enough for capitalism. The production and appropriation of profit is a fundamental cause of contention between the capitalist class and the working class and the distribution of profit among firms and capitalists is decided through a continual competitive struggle.

G. Competition

Mass production leads firms to obtain resources on the market, which standardizes the costs of commodities. Selling on the market brings firms into competition with other firms, leading to a range of feasible prices for any given commodity. Deviations in price levels influence the allocation of new investment. Investment flows faster into sectors where demand exceeds supply (in which prices are above-average); investment is withdrawn or grows at a slower rate in sectors where supply exceeds demand (in which prices are below-average). Competition has a leveling effect on prices and the rate of profit on new investment. On the other hand competition pushes firms to try to break the mold and outdo the typical market performance, or create altogether new markets, in order to achieve the greatest mass of profit and the highest rate of profit possible.

Certain tried and tested tactics of competition are favored by businesses. Investing in newer and more efficient technologies increases the scale of production through mechanization, reduces the labor required per unit of output, and shortens the time it takes to produce commodities. Economies of scale allow costs to be cut and prices to be lowered. In this way increasing productivity leads to expanding market share, driving competitors to either follow suit or go out of business. Besides applying technology, organizational innovations are also pivotal (such as transitioning from a sole proprietorship to a limited liability corporation).

Competition is not a peaceful process- it is chaotic and disruptive, threatening people with unemployment and the prospect of falling to a lower social class if they fail to compete. In a sense everyone is competing against everyone else under capitalism. Workers compete with each other for jobs and with capitalists over terms of employment. Capitalists compete with each other for employees and consumers and with workers over compensation and working conditions. On another level individuals have shared interests with the rest of their class, such as benefiting or suffering from changes to the length of the working day.

H. Accumulation

Competition pressures businesses to produce faster, cheaper, and on a larger scale, leading to the concentration and centralization of capital. *Concentration of capital* is the tendency of capital to grow larger over time. *Centralization of capital* is the tendency of small units of capital to fuse together into larger units, for instance through mergers and acquisitions. These tendencies go hand in hand. Centralizing facilitates capital concentration and concentrating expedites capital centralization. Though large businesses tend to outcompete small businesses in established industries, technological growth periodically creates new industries which start out relatively small and undeveloped but may grow to rival the most dominant. From the start, these new industries are subjected to the same trends of concentration and centralization.

Accumulation entails reinvesting profit to form new capital. That is, profit is capitalized and the overall mass of capital grows. Capitalists use their privately owned capital to employ wage labor to produce commodities for sale on the market in order to obtain profit, then competition pressures capitalists to reinvest profit, thereby forming additional capital to start the process all over again. Endless accumulation for the sake of endless accumulation is the illogical logic of capitalism. Capitalists who take advantage of the structural characteristics of capitalism and successfully accumulate capital remain capitalists; capitalists who are outcompeted lose their capital, along with their social status. In this way selective pressures perpetuate the social relations underlying capitalism- generous capitalists would not remain capitalists for very long as generosity is maladaptive for their survival. However, capital accumulation cannot continue indefinitely. Sooner or later a growing mass of capital runs up against environmental limits and social resistance.

3. The Labor Theory of Value

A. Social Labor and Value

All goods and services needed for society's maintenance and growth are produced with labor. People do not work in isolation, but in an ever-expanding network drawing people together from around the world. Social labor is the active element in production which, with the help of technology, transforms raw materials into additional means of production and consumer goods. Every commodity that is materially produced likewise has an immaterial value which translates into a price on the market. The qualitative attribute of social labor being the active element in production underlies the quantitative aspects of commodity exchange.

Explaining what determines prices is a fundamental problem of economics. Mainstream economics simply considers price to depend upon the outcome of supply and demand. While supply and demand play a role in price formation, a deeper explanation is required to explain prices when supply and demand are balanced. In a situation in which there is neither a shortage nor an excess of commodities, why do certain commodities (such as cars and computers) cost several times more than other commodities (such as clothes and groceries)? Differences in use value cannot explain differences in exchange value- luxuries are less useful than necessities but are typically more expensive.[9]

Commodities are more valuable the more labor time it takes to produce them, since this raises the costs which go into their production. As productivity increases, less labor is required and costs may diminish. For instance, aluminum used to be a precious metal until technological breakthroughs greatly reduced the amount of labor involved, so that it became a common household item. The price drastically dropped not because supply began astronomically exceeding demand, but because the underlying labor process became far more efficient.

At first approximation prices reflect costs and costs reflect labor time, as shown in Figure 1 and Figure 2.[10] There are, of course, additional factors which also influence prices and costs, such as the generation and distribution of profit across industries, differences in supply and demand, government regulation, impacts of foreign trade, etc. While prices and costs are typically measured in units of currency (such as dollars), they may also be expressed in hours of labor. Wage labor, paid by the hour, implies that value is created in relation to time spent working. Fundamentally, the value of commodities is governed by the amount of labor it takes to produce them.

Figure 1: Prices Reflect Costs

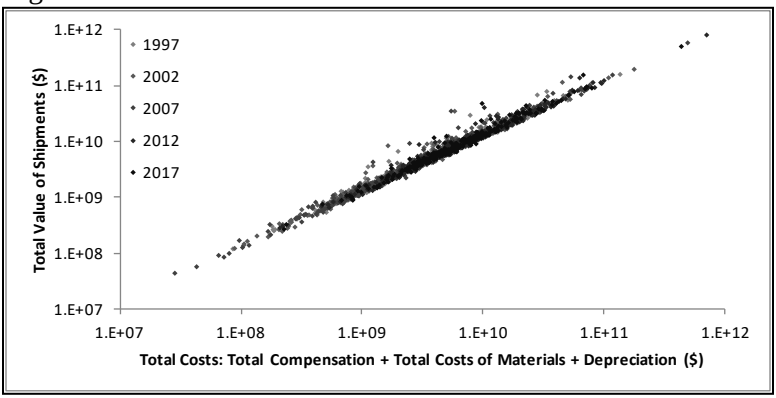
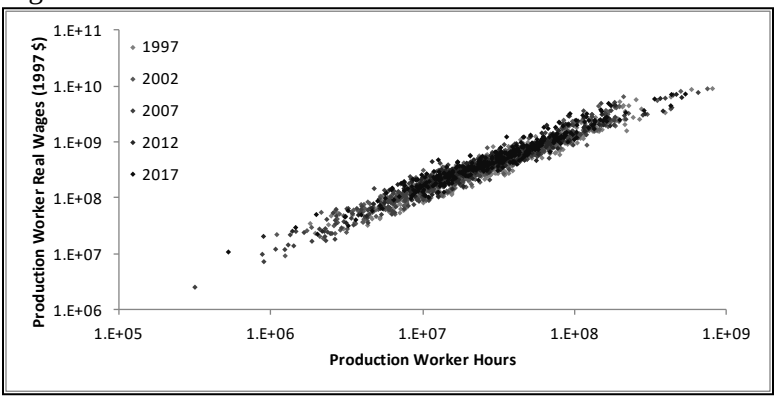


Figure 2: Costs Reflect Labor Time



The price of any given commodity can be broken down into the costs that went into its production (depreciation, raw materials, and wages) and profit. Since profit is contingent, in the simplest case (supposing there is no depreciation) price reflects raw materials and wages. The cost of the raw materials can in turn be broken down into the costs of wages and raw materials that went into their production. The costs of the raw materials that went into producing the raw materials can also be broken down into wages and raw materials. Repeating this operation indefinitely reduces the costs of raw materials to costs of wages. In this case, the overall cost of a commodity is accordingly the sum of wages over the entire production process, as shown in Figure 3. Factoring in depreciation costs follows the same logic- constant capital is reducible to the wages

involved in the cumulative production process. Finally, profit is equivalent to a certain amount of labor time not fully compensated in wages. Workers are paid to work, say, eight hours rather than the value created in that time, with the difference being appropriated as profit.

Figure 3: Analysis of Commodity Cost

Wages
+
Raw materials → Wages
+
Raw materials → … Wages
+
Raw materials → Wages

What if all of production was fully automated so that no labor was required and no wages were paid- what would goods cost? Pricing would be irrelevant in the absence of wages with which to purchase the goods. The goods would lack a price, that is, they would be free. In this way, by advancing productivity and automation (thereby eliminating the need for labor and eroding the very basis of prices), capitalism paves the way for socialism. These lines of argument demonstrate that social labor is the active element in production, which makes labor-power unique as the only commodity which generates value. The capitalist class hires wage labor precisely for the purpose of creating new value (termed *value added*), a portion of which is appropriated as profit.

B. Concrete Labor and Abstract Labor

The labor-power businesses employ is always engaged in specific tasks, producing particular commodities or providing particular services. *Concrete labor* generates distinct use values, such as bricks or books. The use values satisfy different needs and have different material properties. As different as they are they can still be exchanged, yet there is no way to tell how many bricks a book is worth by physically comparing them. Instead, the ratio in which they exchange is governed by an intangible trait they both have in common, which is being a product of labor.

Abstract labor refers to wage labor as such, which could be applied to any industry or sector, no matter what type of commodities are produced or services provided. The mobility and equivalence of abstract

labor is supported by the tendency of labor to become deskilled as capitalism develops the technical division of labor. By splitting up the overall work process into separate work tasks reduced to the most basic activities possible, each task may be assigned to workers with the minimum level of skill required to perform the job (with the corresponding wages accordingly held to a minimum). Taken to an extreme, unskilled labor requires little to no training and can rapidly switch between different occupations and tasks seamlessly. In other words, the more labor is deskilled, the greater the variety of use values it could produce and the more flexible and mobile it becomes (whereas skilled labor tends to be more specialized). Unskilled labor becomes general labor or labor in the abstract.

Concrete labor and abstract labor are intertwined in wage labor, which parallels use value and exchange value forming the dual aspects of commodities. Concrete labor is specific, particular, and qualitative just like use value, while abstract labor is general, interchangeable, and quantitative just like exchange value. The sum total of society's available abstract labor time, which could theoretically be applied across sectors in a multitude of different ways, is allocated into concrete applications in accordance with capital's pursuit of profit.

C. Productive Labor and Unproductive Labor

Abstract labor underlies exchange value but only the labor engaged in commodity production and bringing commodities to market (as well as modifying commodities at the point of sale, such as food preparation at restaurants) is productive labor in the sense of creating value for capital. This includes labor directly involved in materially procuring and transforming raw materials and intermediate products (such as mining and factory labor) as well as services which perform requisite technical and supportive functions (such as quality control testing and engineering). Under capitalism productive labor is indispensable, from a technical standpoint, for creating wealth in the form of commodities and generating value.

Many varieties of useful labor in the private sector, public sector, and private life are unproductive in the economic sense insofar as they use up or redistribute commodities instead of producing them. Governments administer numerous beneficial services, medical care improves health, live performances provide entertainment, and housework is indispensable for reproducing labor-power; however none of these are directly

involved in commodity production and so are unproductive in the economic sense. The contrast between productive and unproductive labor is an economic distinction, which in no way denigrates all the vital work which is classified as unproductive labor. Of course unproductive labor may also be engaged in wasteful and harmful applications (for example, servants working in rich households, military service, etc.), just as instances of productive labor may also be detrimental (such as the production of low quality goods which quickly become obsolete and end up in landfills).

The labor typically performed by upper management (such as allocating investments, developing business strategies, and addressing legal issues) is supervisory and unproductive since it is not directly essential for commodity production. Business functions performed by working class employees may also be unproductive (in such areas as marketing, trade, and finance) though useful to companies. Workers performing unproductive labor are still exploited since they provide surplus labor which enables capitalists to appropriate a share of profit.

There are many nuances to the distinction between productive and unproductive labor. For example, transporting commodities is productive insofar as distribution does not begin until commodities reach the marketplace, while transporting people is a service which does not generate value. Personal labor which creates tangible wealth (for instance producing hand-made crafts as a hobby for personal use) is productive, but not productive for capital given the goods are not meant for the market and lack exchange value.

In any case, the important thing is to consider how employment and the creation and distribution of wealth are shaped by social relations that fundamentally determine the extent to which work is creative, satisfying, and meaningful or bureaucratic, unfulfilling, and meaningless. Labor is employed in production and distribution (the economic base), as well as all the institutions which maintain the social order (the socio-political superstructure). As capitalism develops, the productivity of labor increases such that a growing portion of the total labor time is available for unproductive labor, particularly in the service sector. The relative growth of unproductive labor is partly progressive, to the extent that real human needs are better served, and partly wasteful, to the extent that the labor is squandered on pointless activities (marketing, endlessly redesigning products, etc.), excesses of consumerism, and catering to the rich.

D. Socially Necessary Labor

Productive labor creates exchange value to the extent that it is socially necessary labor, equivalent to labor performed with average productivity. Labor performed with below-average productivity is partly wasted labor from the point of view of the market. If it takes a certain number of labor hours on average to produce a given commodity, firms which spend twice as long will not be able to charge extra because consumers will take their business elsewhere rather than pay more than they need to. Competition compels the less productive firms to sell at a price close to the price of firms with average productivity, as consumers tend to buy the most affordable commodities instead of costlier alternatives. On the other hand, firms with above-average productivity are rewarded by the market for saving labor, since they typically have lower costs but can sell at the price established by firms operating under conditions of average productivity.

Labor spent producing commodities which are never sold, for instance due to insufficient demand, is not socially necessary- it is wasted labor. Due to the unplanned nature of capitalist production, it is never known with certainty which commodities are going to sell until they are put on the market. The array of saleable commodities changes over time as technological growth causes certain lines of industry to displace others (such as when digital cameras drastically diminished photographic film sales). Part of the labor spent in dying industries is never validated on the market, while the in-demand industries can rule the market for a time until competition reins them in.

Socially necessary labor time regulates the exchange value of commodities[11] but does not apply to items which are irreproducible (such as architectural masterpieces) or which are not products of labor (completely undeveloped land may be exchanged based on supply and demand, whereas the exchange of developed land will be influenced by the amount of labor time which was spent clearing the land, installing utilities, and so on). While capitalism specializes in commodity production it constantly has to accommodate and incorporate factors which defy commoditization. Cultural works of art are created by artists, who are not wage laborers, yet art becomes commercialized (for instance in the music industry). Companies heavily rely on technological innovation, but epoch-making scientific breakthroughs such as relativity theory and quantum theory cannot be produced at will by private industry (the public sector plays a key role in fostering higher education

and conducting fundamental research, which facilitate technological advancement).

People are not commodities, however capitalism requires commodified labor-power which only people can provide. While wage labor is the dominant form of commodified labor, salaried labor accommodates skilled labor which is generally less amenable to commodification the more skilled it is. Relatively low salaries are essentially equivalent to wages, skilled professionals earn higher salaries characteristic of the petty bourgeoisie, and the highest salaries (comprising a portion of profit) go to bourgeois executives.

E. Wages

If workers possessed the means of producing a livelihood independently they would not be inclined to labor producing a profit for others to idly live on. Therefore a prerequisite for the production of profit is the separation of the working class from land and ownership of the means of production and distribution, which the ruling class consolidates as its private property. Workers have a relatively low level of savings (typically designated for durable consumer commodities, unexpected expenses, and retirement), such that they must continually sell their labor-power to make a living. On the other hand, capitalists have immense savings to fall back on, such that they are not compelled to hire wage labor uninterruptedly- they can pick the timing of opening and closing businesses based on the situation in the market.

This structural power imbalance between the working class and the capitalist class compels the working class to sell labor-power for a wage which will be low enough to yield a profit to capitalist employers. From the perspective of the capitalist class, there would be no point in hiring workers if they were paid the full value of the commodities produced, since there would be no profit left over to collect. The mass of profit is inversely related to the level of compensation the working class receives in wages.

At a minimum, to be sustainable, wages must be sufficient for the working class to reproduce itself (to recuperate from the effort of labor and to raise the next generation of workers). Additionally, wages accommodate cultural needs which typically grow over time. For instance, automobiles were initially available as luxury goods, but as their costs relatively cheapened over time they became commodities which workers customarily purchase and use in daily life. The level of

wages also depends on historical gains of the labor movement (including the extent of unionization) and the outcome of class struggle over terms of employment.

Skilled labor is typically compensated with higher wages than unskilled labor. This is explained by the fact that skilled labor takes time to develop, often requiring years of higher education or apprenticeship. The higher compensation of skilled labor offsets the costs of obtaining the skills and provides an incentive to cultivate skilled labor. The price of skilled labor-power reflects the costs of its production, and those costs reflect the labor which went into socially necessary education and training. This is another instance of the labor theory of value, in which the wages of skilled labor can be thought of as a multiple of the wages of unskilled labor.

When labor-power is relatively expensive, profitability is constrained, which curtails investment and accumulation. Businesses make a greater effort to economize labor through mechanization, which displaces labor. Exporting capital to regions where labor is relatively cheaper and expanding the available labor force through immigration also increases job competition and raises the domestic unemployment rate. As the pool of unemployed workers grows, competition over jobs lowers the cost of wage labor, increasing profitability and making it more affordable for businesses to continue hiring to expand production. As unemployment diminishes, demand for labor-power begins to exceed the supply, driving wages up once again.

Some level of involuntary unemployment is unavoidable since profitability, investment, output, employment, and wages are interrelated, experiencing the ups and downs of the business cycle. Apart from cyclical unemployment, at all times there is a certain amount of structural unemployment given that the labor market is beset by competition and the capitalist class profits from substituting mechanized labor for living labor and hiring as few workers as possible. Among class societies capitalism is unique in that not all laborers are always given work. All slaves and serfs were put to work, but proletarians face unemployment if they cannot sell their labor-power. The pool of workers suffering unemployment, termed the *reserve army of labor*, has grown in absolute terms throughout the history of capitalism, with nearly half a billion people experiencing unemployment or underemployment around the world in 2020.[12]

4. Surplus Value and the Law of Value

A. The Social Surplus Product

In the earliest cultures, when the productivity of labor was undeveloped, everyone in tribal communities needed to participate in hunting and gathering or rudimentary agriculture to survive. Classes could only arise when productivity developed to a point which enabled a section of the population to be freed from the obligation of labor. All class societies in history feature a ruling class maintained by laborers. The ruling class needs workers to supply its wealth, while the workers do not need the burden of supporting a ruling class.

The amount of labor time available in any society is limited and divided between providing the needs of the workers (necessary labor) and maintaining the ruling class (surplus labor). Surplus labor generates the wealth which forms the social surplus product, including disposable wealth above and beyond what is needed for subsistence. The social surplus supports the administration of government and intellectual labor outside of production, besides the investments and leisure activities of the elite. Control over the social surplus product consolidates political power and control over the state, with a disproportionate number of wealthy individuals serving in the highest government positions (besides supporting other politicians to fill these positions, analogous to capitalists appointing managers to run their businesses for them). In this way the ruling class minority governs, instead of workers who are the majority.

The social surplus product takes different forms in different societies. In pre-capitalist societies it generally takes the form of agricultural produce and tax in kind, such as slaves provided slave-owners and serfs provided aristocrats. In capitalist society, the social surplus product takes the form of commodities produced during the hours in the working day spent above and beyond reproducing the workers' subsistence and the money these commodities fetch on the market, termed *surplus value*.

B. Absolute Surplus Value and Relative Surplus Value

It is possible for some capitalists to make a profit through trade, by buying low and selling high. If one capitalist profits in this way at the expense of other capitalists, overall no profit is created, it is only redistributed (what one capitalist gains in profit the others lose). The situation is different if the capitalist class is able to buy low and sell high with respect to the working class. In this case some of the working class'

wealth is transferred to the capitalist class, which will reap a greater profit as a result. As important as redistributing wealth may be as a source of profit, it is limited to the wealth which already exists. In practice, most profit in a growing economy is generated by creating surplus value in production which is then realized in distribution (through the act of being sold on the market).

Absolute surplus value is generated by extending the working day beyond the length of time needed to reproduce the workers' subsistence at a given level of productivity. This form of surplus value was prevalent during the rise of capitalism, and persists in contemporary sweatshop labor, with the working day commonly lasting twelve hours or longer amid dismal working conditions. However, physical limits and social resistance bar extending the working day beyond a certain point. As capitalism develops, it increasingly relies on perpetual technological progress to increase surplus value by enhancing labor productivity.

Relative surplus value is generated when the length of the working day is held constant and the time it takes to reproduce the workers' subsistence is reduced. Raising the productivity of producing consumer goods through technological progress, increasing the intensity of labor, and de-skilling labor all reduce the time needed to reproduce the workers' subsistence (in other words, reduce the value of labor-power), thereby increasing the relative surplus value available to the capitalist class. Increasing productivity expands the mass of commodities produced in a given amount of time. These commodities are the private property of capitalists, who are under no compulsion to share the benefits of the increased output unless workers successfully fight for higher wages. In the absence of waging an organized struggle, the typical effect of raising productivity is to augment surplus value rather than increase wages or shorten the length of the working week.[13]

C. The Rate of Surplus Value, Rate of Profit, and Composition of Capital

The total value of commodities is a sum of constant capital, variable capital, and surplus value:

$$c + v + s$$

As its name implies, constant capital does not create value but its own value is conserved as it gets used up in commodity production (the value is passed on to the commodities produced). Variable capital and

surplus value represent newly created value. The division of this value between workers and capitalists is described by the ratio of surplus value to variable capital, known as the *rate of surplus value*, or the rate of exploitation:[14]

$$s' = \frac{s}{v}$$

For example, if the length of the working day is eight hours and it takes four hours to produce the commodities which form the workers' subsistence purchased with wages, then four hours remain for surplus labor. The rate of surplus value is 4/4 = 100%. The wage form of compensation obscures the exploitation which takes place. For instance, workers would be much more aware of their exploitation if they worked the first four hours (which correspond to necessary labor) for $30 an hour (for a total of $120) and then had to work the next four hours (which correspond to surplus labor) without being paid. However, workers will instead be paid $15 an hour for all eight hours (for a total of $120), giving the appearance that all the labor was paid labor. The end result is the same: four hours of labor comprise surplus labor which maintains the ruling class.

If the working day was increased to ten hours while wages remained constant, absolute surplus value would increase by two hours and the rate of surplus value becomes 6/4 = 150%. If instead the working day remained eight hours while productivity increased, reducing necessary labor by two hours, relative surplus value would increase by the same amount and the rate of surplus value becomes 6/2 = 300%. The necessary labor fell from four hours to two hours and yet the wages could purchase the same commodities as before. This is because the value of commodities is inversely related to the productivity of labor. If twice as many commodities are produced in an eight hour workday as before, the labor cost per commodity falls by half (everything else being equal).

The value of the commodity labor-power depends on the value of means of subsistence. As the means of subsistence become cheaper (as a result of becoming less labor intensive), the cost of labor-power falls such that the value of labor-power is also inversely related to the productivity of labor. Productivity growth creates the possibility for real wages to rise while surplus value rises even faster. In this case wages are able to purchase a larger array of cheaper commodities, but constitute a smaller fraction of overall income. In other words, productivity growth makes it possible for the working class' standard of living to rise at the

same time as the level of exploitation rises. In this way relative surplus value is somewhat less confrontational than absolute surplus value.

The rate of surplus value in the US is estimated in Figure 4. For comparison, employee compensation as a percentage of national income is also provided. After the turbulence of the Great Depression, the rate of surplus value spiked during World War II and then steadily rose throughout the post-war period, reaching new heights in the neoliberal era. It is possible for the rate of surplus value and the wage share of national income to both rise, for instance during a stretch of the post-World War II boom, when employment grows in unproductive sectors (government, finance, trade, etc.). Under neoliberalism unproductive sectors continued to grow, employee compensation stagnated, and profits were bolstered, driving the rate of surplus value higher and higher. After rising for decades, the rate of surplus value faced setbacks following the Great Recession.

Figure 4: US Rate of Surplus Value and Wage Share of Income[15]

As important as the rate of surplus value is (signifying the ratio of unpaid labor to paid labor), the rate of profit is even more central to regulating capitalist production and investment. It is defined as the ratio of surplus value to the total capital (the sum of variable capital and constant capital):

$$p' = \frac{s}{c+v} = \frac{\frac{s}{v}}{\frac{c}{v}+1}$$

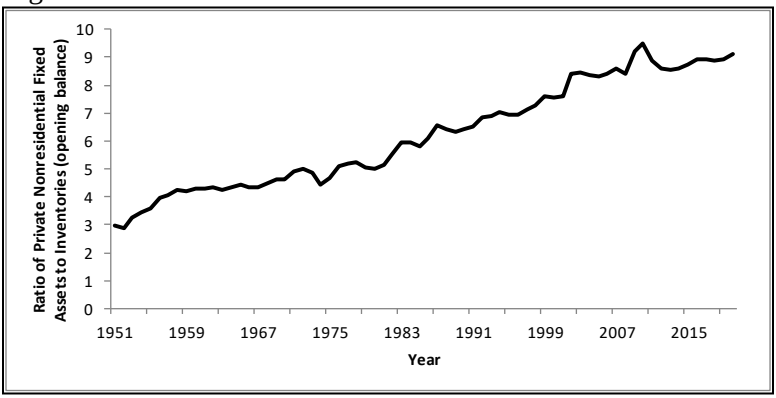
The rate of profit is positively related to the rate of surplus value and inversely related to the ratio of constant capital to variable capital, known as the *organic composition of capital*:

$$\frac{c}{v}$$

As capitalism develops, living labor tends to be replaced by mechanized labor and workers process a growing mass of raw materials with a growing mass of plant and equipment. This is reflected in a growing organic composition of labor- over time production takes place with relatively less and less human labor and in a sense occurs more and more organically or automatically.

While organizational innovations may optimize the output possible with a given stock of capital, businesses preferentially invest in fixed capital (machinery, computers, automation systems, etc.) in order to increase productivity, expand the scale of production, speed up production, and lower costs per commodity. As a consequence, the ratio of fixed capital to circulating capital tends to increase over time, as shown in Figure 5:

Figure 5: Private Sector Ratio of Fixed Assets to Inventories[16]



Since fixed capital is considerably less fluid than circulating capital and concrete typifies the built environment of capitalism, the ratio of fixed capital to circulating capital may suitably be termed the *concrete composition of capital*:

$$\frac{c_{fixed}}{c_{circulating} + v}$$

The concrete composition of capital is the counterpart of the organic composition of capital- the tendency for fixed capital to grow faster than circulating capital underlies the tendency for constant capital to grow faster than variable capital. As fixed capital forms a growing proportion of the total capital, the organic composition of capital increases considering fixed capital is at the same time constant capital. Moreover, the efficiencies brought about by utilizing fixed capital enable circulating constant capital to grow faster than variable capital.

If the rate of profit remains constant over time, while the organic composition of capital rises, the rate of surplus must also increase. For example, a business may start with these conditions:

$$p' = \frac{200}{700 + 100} = \frac{\frac{200}{100}}{\frac{700}{100} + 1} = 25\%$$

In this case the rate of surplus value in the numerator is 200/100 = 200% and the organic composition of capital in the denominator is 700/100 = 700%. Then as a result of competition, the adoption of new technologies may result in these conditions:

$$p' = \frac{250}{900 + 100} = \frac{\frac{250}{100}}{\frac{900}{100} + 1} = 25\%$$

In this case the rate of profit has remained the same, however the rate of surplus value increased to 250/100 = 250% while the organic composition of capital grew to 900/100 = 900%. The rate of surplus value is always significantly greater than the rate of profit and in the long run must increase in order to maintain a positive rate of profit, to counter a growing organic composition of capital. In this way rising inequality and social polarization are inherent tendencies of capitalist development.

D. Profit Rate Equalization

Competition compels firms to sell similar commodities for similar prices, so that with comparable outlays of constant capital and variable capital firms will have similar profit rates. However, it is normal for there to be differences in the mixtures of technologies used by firms within and across industries, with recent investments in newer technologies typically being more efficient than older investments in dated technologies. This leads to differences in the organic composition

of capital across firms, as newer technologies generally use constant capital more intensively while older technologies are more labor intensive. With a constant rate of surplus value, the differences in organic composition of capital would lead to differences in profit rates if the firms producing a given commodity were isolated from competition with one another, as shown in Table 1.

Table 1: Rates of Profit Vary with Organic Composition of Capital

Firm	Constant Capital	Variable Capital	Surplus Value	Product Value	Rate of Surplus Value	Rate of Profit
1	70	30	30	130	100%	30%
2	80	20	20	120	100%	20%
3	90	10	10	110	100%	10%
Total	240	60	60	360	100%	20%

Bringing the firms into competition with one another has the effect of equalizing the rate of profit, as shown in Table 2. The first firm, with the lowest organic composition of capital, will not be able to sell for $130 since the other firms are able to sell at lower prices. The third firm, with the highest organic composition of capital, will not sell for $110 since it is possible to sell at a higher price (as the other firms are selling above that price). The prices settle at the average, represented by the second firm. Overall, as shown by the total, the amount of surplus value remains the same. However, the distribution of surplus value has altered, with value transferring away from the firm with the lowest organic composition of capital towards the firm with the highest organic composition of capital. The result is each firm has the same rate of profit.

Table 2: Equalized Profit Rates with Varying Organic Composition of Capital

Firm	Constant Capital	Variable Capital	Surplus Value	Price of Production	Effective Rate of Surplus Value	Rate of Profit
1	70	30	20	120	67%	20%
2	80	20	20	120	100%	20%
3	90	10	20	120	200%	20%
Total	240	60	60	360	100%	20%

Profit rate equalization operates within industries and across different industries as well (since capital will migrate away from industries with below-average profit rates, reducing supply relative to demand, towards industries with above-average profit rates, increasing supply relative to demand). Exchange values (representing the socially necessary labor required to produce commodities) are transformed through profit rate equalization into *prices of production* (equaling costs plus the amount of surplus value which yields the average rate of profit).

In practice, market prices deviate somewhat from prices of production due to imbalances in supply and demand. Furthermore, firms with a higher organic composition of capital tend to operate on a greater scale than firms with a lower organic composition of capital and their lower per-unit costs permit them to pursue a strategy of lowering prices in order to gain market share. As a result of lowering prices, large firms tend to have somewhat lower profit rates than small firms but offset this with a larger volume of sales, which yields a larger mass of profit. Large firms also face less risk of going out of business by warding off competition with relatively lower prices.

While the most productive firms tend to establish the prices which predominate in industrial commodity production, the situation is different in other sectors such as agriculture and mining. With industrial production, it is possible to expand production by launching new firms with the most productive technologies such that new firms will have the lowest per-unit costs. However, in agriculture and mining new firms tend to become less and less productive since the best farmland and the best mining locations are typically already in use. As a result, less productive farms and mines are opened in order to expand production and the new firms may have higher per-unit costs. The more productive firms in agriculture and mining are able to raise their prices to the level set by the less productive firms, at least until demand drops to a point which pushes the less productive firms out of business.

E. The Law of Value

The *law of value*, more commonly known as the "invisible hand," regulates key aspects of the capitalist economy involving the production and transfer of value:

- The exchange value of commodities, on the basis of the socially necessary labor time required for their reproduction.

- The distribution of capital across sectors and between different forms (fixed and circulating, constant and variable), in response to supply and demand and the tendency towards profit rate equalization.
- The magnitude and course of growth through the allocation of investment, intended to maximize profit.

The "invisible hand" determines the ratios in which commodities trade with one another, based on exchange value. When demand is greater than supply or supply is greater than demand, prices rise or fall as a short-term response to market imbalances. Persistent imbalances influence the allocation of new investment, with relatively more investment going into industries with above-average profit rates (in which demand is greater than supply) and relatively less investment going into industries with below-average profit rates (in which supply is greater than demand). Investment procures additional variable capital, circulating constant capital, and fixed capital as firms adopt the technology needed to remain competitive and profitable. Investment is weighted towards technologies which economize labor, since labor productivity is rewarded on the market; wasting labor yields high costs, low sales, weak profits, and the risk of bankruptcy.

Though every capitalist pursues a maximum rate of profit, competition ensures that significant divergences from the average rate of profit are met with investment flows which tend towards equalizing the rate of profit by adjusting the level of output to suit supply and demand. Meanwhile, counteracting factors prevent the equalization of the profit rate. Novel technologies, new industries, and emerging geographic markets provide opportunities for exceptional profit rates while shifting consumer habits, failure to innovate, and supply chain disruptions drive other areas into decline. While profit rates tend to equalize across new investments in the latest technologies, significant differences in profit rates persist across different industries considering the total capital in each industry contains an assortment of technologies of various ages and efficiencies (in other words, the total capital is slower to adjust than new investment).

Competition ensures that market prices gravitate around exchange values, through the tendencies for supply and demand to balance and the rate of profit to equalize. In this way competition provides a semblance of order and regularity to economic transactions. At the same time competition contributes to the anarchy of capitalist development. Commodities are produced for profit (rather than the direct satisfaction

of human needs) and sold on the market (not in accordance with any social plan); it is only retrospectively determined which applications of labor were socially necessary and which applications of labor were wasted. The resulting economic turbulence generates fluctuations in the market prices and rate of profit across different sectors of the economy. These imbalances guide new investment, which regulates the distribution of future labor-power throughout the economy. The law of value ultimately governs the distribution of society's total available working hours, shaping how people spend their lives working and consuming.

5. Accumulation and the Circulation of Capital

A. Capital Accumulation

In pre-capitalist modes of production technologies changed incrementally over time and economic growth was similarly constrained. In contrast, the capitalist economy revolutionizes production through systematic investment in new technologies and continually expands output (though growth is regularly interrupted by crises). The transition to capitalism was a protracted process, taking centuries to develop the social relations and accumulate the capital which made the industrial revolution possible. The initial amassing of wealth (through trade, usury, and conquest) which formed capital is termed *primitive accumulation*. While primitive accumulation continues to take place when savings generate a sum of money which may become used as capital, it is a secondary form of accumulation once capitalism is well-established. Following the industrial revolution, capital accumulation primarily takes place through reinvesting (or capitalizing) surplus value.

Surplus value may either be spent on unproductive consumption (consumer goods and luxuries) or productive consumption (investment in additional labor-power and means of production). The growth rate is investment over the total capital and by implication the maximum sustainable growth rate is equal to the profit rate, in which case all surplus value is reinvested. In practice, the growth rate is considerably lower than the profit rate on average, due to the unproductive consumption and hoarding of the capitalist class.

The reserve army of labor supplies a pool of available labor-power, constantly replenished by labor-saving technologies, which may be supplemented through immigration or by increasing wages to draw broader sections of the population into the workforce. Besides purchasing means of production, investment employs additional labor-power and increasing the sum of wages paid entails increasing the mass of consumer goods available for the additional wages to purchase. Increasing the production of consumer goods requires increasing the means of production allocated to the production of consumer goods. Finally, this requires increasing the means of production producing additional means of production. In this way, investment must flow into different domains in certain proportions in order for the overall economy to continue growing.

The core of the economy consists of production of means of production (termed *department I*) and production of means of

consumption (termed *department II*). Each department supplies some of its own needs through its own production, while exchange between departments is also necessary. Department I supplies department II with means of production while department II supplies department I with consumer commodities. Production in an economy which is stable, neither growing nor contracting, is represented in Figure 6.

Figure 6: Simple Reproduction
Dept. I: $4{,}000_{\text{constant capital}} + 1{,}000_{\text{variable capital}} + 1{,}000_{\text{surplus value}} = 6{,}000$
Dept. II: $2{,}000_{\text{constant capital}} + 500_{\text{variable capital}} + 500_{\text{surplus value}} = 3{,}000$

The product of department I (6,000) is equal to the sum of constant capital needed to begin the cycle anew in both departments. The product of department II (3,000) is equal to the sum of variable capital and surplus value in both departments, so that all means of consumption are consumed. Department I consumes 4,000 of its own product (means of production needed in order to produce means of production); department II consumes 1,000 of its own product (wages and surplus value spent on consumer commodities). Trade must take place in order for workers and capitalists in department I to obtain means of consumption and for capitalists in department II to obtain means of production. This trade is balanced, as department I supplies department II with 2,000 means of production which serve as constant capital, while department II supplies department I with 2,000 means of consumption split between wages and surplus value. Since all surplus value is spent on means of consumption, there is no remaining surplus value available for investment. Lastly, the rate of profit in both departments is equal, so there is no incentive to redistribute capital between departments.

To summarize the key relations under simple reproduction:

- Department I output = constant capital in both departments.
- Department II output = sum of variable capital and surplus value in both departments.
- Department II constant capital = department I sum of variable capital and surplus value.

Simple reproduction is a useful representation of a static economy. Capitalism, however, is typically growing (or contracting) instead of remaining steady. Long-term growth requires surplus value in each department to be reinvested. For the “real economy” to grow, reinvested

surplus value must purchase means of production and labor-power to produce additional commodities (rather than engage in unproductive investment, such as speculating in real estate or opening a casino).

Expanded reproduction is depicted in Figure 7. In this example, half of the surplus value in department I is reinvested while maintaining the same organic composition of capital and profit rate for simplicity. Accordingly, the investment of 500 in department I goes towards 400 additional constant capital and 100 additional variable capital in department I in the second cycle. The total product of department I in the first cycle (6,000) is equal to the constant capital of both departments in the second cycle. Meanwhile, in department II in the first cycle the constant capital (1,500) is equal to the variable capital and surplus value consumed in department I. The investment of 200 in department II goes towards 100 additional constant capital and 100 additional variable capital in department II in the second cycle. The total product of department II in the first cycle (3,000) is equal to the surplus value consumed in both departments in the first cycle, plus the variable capital in both departments in the second cycle. The constant capital in department II in the second cycle (1,600) is equal to the surplus value consumed in department I in the first cycle plus the variable capital in department I in the second cycle. The investments lead to output expanding in both departments in the second cycle.

Figure 7: Expanded Reproduction

First Cycle

Dept. I: $4{,}000_c + 1{,}000_v + 500_{s,\ consumption} + 500_{s,\ investment} = 6{,}000$

Dept. II: $1{,}500_c + 1{,}000_v + 300_{s,\ consumption} + 200_{s,\ investment} = 3{,}000$

Second Cycle

Dept. I: $4{,}400_c + 1{,}100_v + 550_{s,\ consumption} + 550_{s,\ investment} = 6{,}600$

Dept. II: $1{,}600_c + 1{,}100_v + 324_{s,\ consumption} + 216_{s,\ investment} = 3{,}240$

To summarize the key relations under expanded reproduction:

- Department I output in the first cycle = constant capital in both departments in the second cycle.
- Department II output in the first cycle = the sum of surplus value consumed in the first cycle and the variable capital in the second cycle in both departments.
- Department II constant capital in the second cycle = department I surplus value consumed in the first cycle plus variable capital in

department I in the second cycle (in other words, the constant capital and accumulated constant capital in department II equals the variable capital, accumulated variable capital, and consumed surplus value in department I).

All of this just goes to show that expanded reproduction is far more complicated than simple reproduction. Expanded reproduction requires the growth of commodity production to supply use values in the necessary proportions as well as the sale of commodities to yield a uniform profit rate across departments. The unplanned capitalist economy does not develop evenly by coordinating the growth of both departments (which is further complicated by the fact that in the long run department I must grow faster than department II as the organic composition of capital increases). Instead, the economy grows haphazardly and wastefully, through trial and error, with most new businesses going under in a matter of years. Only the law of value guides capitalism through all obstacles towards further development.

B. The Circulation of Capital

Capital must remain in motion to function as capital. Money which is perpetually hoarded does not function as capital; neither does money used purely for buying and selling (a function which predates capitalism). Money functions as capital when it is used to employ labor-power and procure means of production to create commodities which may be sold on the market for a greater sum of money than the cost of the inputs, thereby yielding a profit. From the capitalist perspective, there is no point in going through the trouble of producing commodities if they are only going to restore the original amount of money capital launched at the start of the process; it would be better to keep hold of the money and avoid taking any unnecessary risks in production and distribution.

Nonprofit production could produce use values which satisfy needs without augmenting the amount of money involved, but this would not serve the purposes of the owners of capital. Capitalists use money capital to produce commodities, not in order to use those commodities for their own needs or satisfy anyone else’s needs, but to sell for a profit and accumulate capital. The circulation process of converting money capital into commodity capital and back into a larger sum of money capital is represented as M-C-M'. With each circuit, money capital continues to grow, so long as department I and II mutually support their needs for further growth.

Wage labor follows a different logic. Workers sell their labor-power (a commodity) for a wage (a sum of money), which purchases consumer goods that workers use to recuperate their strength so labor-power (a commodity) may be sold again. This circuit is represented as C-M-C. Workers are not enriched in this process- at the end of each circuit they are in a position similar to the starting point. Wages are spent on consumer commodities and before long these are used up and workers must sell labor-power once again to survive. The money workers receive in wages does not function as money capital, accumulating over time with compound growth as it does for the capitalist. The portion of wages which is saved, such as retirement savings, is typically deferred consumption which eventually becomes depleted (only exceptionally do workers accumulate enough money to start their own business).

The circuits of capital and labor-power are depicted in Figure 8.[17] They form a chain of recurring patterns which intersect production and distribution and regulate the reproduction of commodities as well as social relations. Each linkage plays a role in sustaining the whole process and expanding the system as the economy grows. Viewing the circuits of capital and labor-power as continual processes in motion, which involve distinctive transformations from one focal point to the next, puts everything in proper perspective. What happens in one part of the web of relations is meaningful only in the context of the whole picture. For instance, increasing wages has very little impact for workers if prices of commodities are raised by a proportional amount during distribution. Hence, capital strives to control all facets of the circulation process. While structural aspects are reproduced, capitalism evolves as changes are incorporated into the circulation process (new technologies entering production, shifts in the balance of power between social classes, etc.).

Throughout the circulation process the original value of capital is maintained (assuming there are no obstructions in the flow of capital, such as occur during a crisis) so that the money capital thrown into circulation is reconstituted after distribution. Additionally, surplus value generated in production is realized in distribution. In order to be sold, commodities must be in demand and additionally income must provide effective demand or purchasing power. Demand which is not backed by money goes ignored, such as when homeless people coexist with vacant properties and impoverished people go hungry amidst tremendous levels of food waste. The wages workers receive and the surplus value capitalists appropriate form the revenue for purchasing commodities.

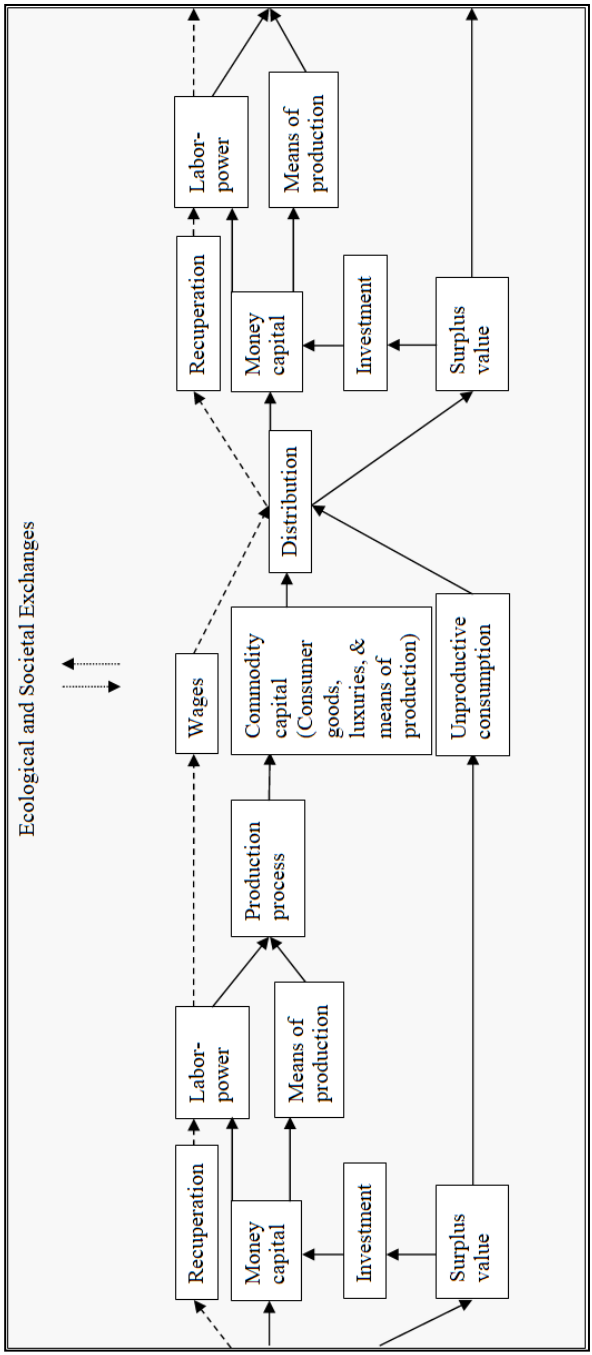


Figure 8: The Circuits of Capital and Labor-power

The surplus value which is unproductively consumed goes towards purchasing consumer goods and luxuries while reinvested surplus value circulates as money capital which purchases additional means of production and labor-power. Surplus value is produced on such a massive scale that it would be unusual for capitalists to consume it all unproductively. On the other hand, wages are generally insufficient for purchasing means of production. Thus, the circulation process reproduces the social relations between worker and capitalist, besides reproducing the means of production and consumption.

Just as industrial capitalists tend to specialize in producing a limited selection of means of production or means of consumption, sections of the capitalist class generally specialize in supplying money capital, supervising production, or managing the distribution of commodities rather than overseeing all these aspects of the circulation process. Money capital is the province of banks and financial institutions, which gather large sums of money from businesses and individuals and lend to industrial and merchant capitalists in return for a share of the profits, paid as interest. Money is also loaned to workers to cover large expenses and paid back with interest out of wages. Industrial capitalists bring together labor-power and means of production in a given technological arrangement to produce commodities. The commodities are typically sold to merchant capitalists engaged in wholesale and retail trade. Merchant capitalists buy commodities from a multitude of industrial capitalists and sell them to consumers. It is far more efficient and convenient to have a wide variety of commodities for sale in a single shop or market rather than task each industrial capitalist with selling directly to final consumers.

The specialization in different domains of capital speeds up the circulation of capital. This raises the overall amount of surplus value generated annually, which is divided between different sections of the capitalist class. Besides industrial profit going to manufacturers, merchant profit accruing to distributors, and interest enriching financiers, there is additionally rent collected by landlords and taxes collected by the state. The activities of trade, finance, real estate, and government do not create surplus value but they receive a cut of the surplus value generated in commodity production for the services they provide.[18]

Production and distribution take place in ecological and societal contexts, which affect the circulation process. The organization and strength of the labor movement influences the compensation and

conditions of wage labor, while changing economic situations test the labor movement. Cultural norms heavily influence which commodities are produced and consumed from region to region, while economic developments alter those norms (for instance as trade proliferates). Government policies influence economic development (for instance regulating commerce, establishing labor laws, and negotiating trade agreements), while the economic situation reacts upon the government (for instance altering the levels of tax revenue or public sentiment on the state of the economy influencing elections). Government programs also impact social developments (for instance modifying the quality of education, transportation, and health care) which interact with the economy in countless ways.

All economic activities are interconnected with ecological processes and cycles which may be relatively stable but nevertheless change over time. All raw materials are ultimately derived from natural resources and the distribution of these resources around the world affects the division of labor, patterns of trade, and the relative prosperity of nations. Consumption patterns have transformed the face of the Earth, evident in suburban sprawl and the way in which transportation systems fragment habitats. Capitalist accumulation has seriously polluted and degraded the environment, exacerbating the contemporary mass extinction as well as global climate change (with all the related issues these involve, such as deforestation and ocean acidification). In turn, ecological limits constrain long-term economic growth.

C. The Turnover Period and Annual Rate of Profit

The time it takes for capital to go through the M-C-M' circuit is the turnover period. It takes varying lengths of time to produce and distribute different commodities. Moreover, the turnover period depends on the form capital takes. Circulating capital is generally reproduced with each cycle of production and distribution, while fixed capital may take decades or centuries to fully depreciate. Consequently, circulating capital tends to have a much shorter turnover period than fixed capital. The material life cycle of capital is intertwined with the circulation of value in the circuit of capital.

The turnover period is equal to the stock of capital divided by the annual flow of capital (the portion of capital value in motion throughout the circuit of capital). For instance, machinery valued at $800,000 (the stock of capital) which depreciates at an average rate of $80,000 per year

(the flow of capital) lasts ten years. Conversely, the annual number of turnovers of capital is equal to the annual flow of capital divided by the stock of capital (annual depreciation of $80,000 divided by a capital stock of $800,000 equals 0.1 turnovers, or one tenth of the turnover period of ten years).

Out of all the forms of capital, only variable capital generates value (by engaging labor-power) and therefore surplus value is only produced with each turnover of variable capital. At a given rate of exploitation, the faster variable capital circulates, the greater the number of turnovers of variable capital, the greater the mass of profit. For example, if the turnover period of variable capital coincided with the time it takes to produce a batch of commodities, producing one batch a year would yield a given amount of surplus value, while increasing productivity to produce two batches a year would yield twice as much surplus value.

The annual rate of surplus value is the product of the rate of surplus value and the annual number of turnovers of variable capital (n):

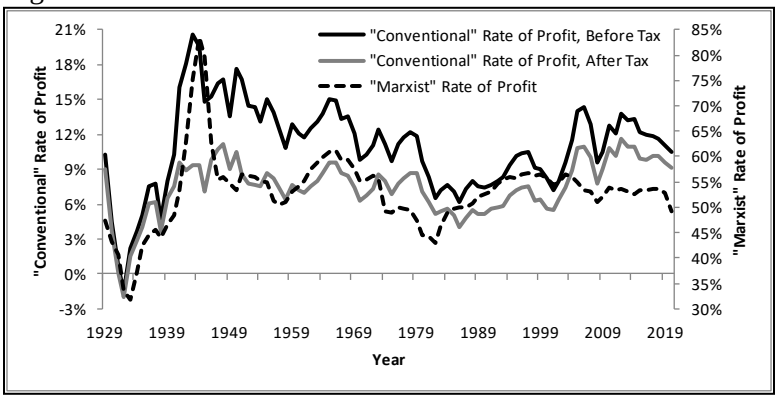
$$S' = s' \times n$$

The annual rate of profit accordingly incorporates this product as well:

$$P' = \frac{s_{annual\ flow}}{c_{stock} + v_{stock}} = \frac{\frac{s_{annual\ flow}}{v_{annual\ flow}} \times \frac{v_{annual\ flow}}{v_{stock}}}{\frac{c_{stock}}{v_{stock}} + 1} = \frac{s' \times n}{\frac{c_{stock}}{v_{stock}} + 1}$$

Rates of profit are estimated in Figure 9. The Marxist rate of profit includes all forms of surplus value (profit, interest, dividends, rent, and taxes) as well as compensation of employees performing unproductive labor (paid out of surplus value) in the numerator. This makes it substantially higher than conventional profit rate measures. World War II pulled the economy out of the Great Depression and raised the profit rate to a new level by increasing the rate of surplus value and reducing the organic composition of capital (full employment increased variable capital faster than constant capital), amongst other factors. The rate of profit fell as the boom played out and would only stabilize and increase again under the onslaught of neoliberalism, thanks to a rapidly rising rate of surplus value and a decreasing turnover period of variable capital (besides the incentive of lower tax rates).

Figure 9: US Rates of Profit[19]



The turnover period plays a key role in profit rate equalization. Competition leads firms to adopt the latest technologies, which tends to equalize the turnover period in a given industry as the technology diffuses and becomes generalized. The average turnover period is considered the socially necessary turnover period. It is normal, however, for the turnover period of variable capital to differ across industries given the broad variation in production processes. With a constant rate of surplus value, the differences in the turnover period would lead to differences in annual profit rates if the firms were isolated from competition with one another, as shown in Table 3.

Table 3: Rates of Profit Vary with Turnover Period

Firm	Stock of Constant Capital	Stock of Variable Capital	Annual Turnovers of Variable Capital	Rate of Surplus Value	Annual Surplus Value	Annual Rate of Profit
1	80	20	1	100%	20	20%
2	80	20	2	100%	40	40%
3	80	20	3	100%	60	60%

However, once the firms are brought into competition with one another the annual rate of profit tends to equalize, as shown in Table 4. The distribution of surplus value has altered, with value transferring away from the firm with the shortest socially necessary turnover period towards the firm with the longest socially necessary turnover period. The end result is each firm has the same rate of profit.

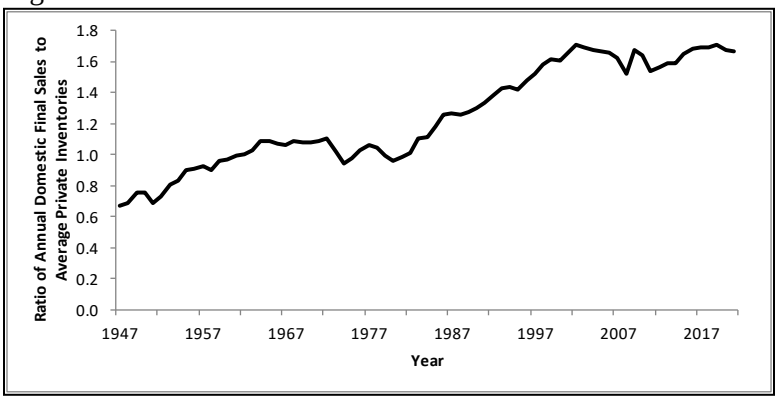
Table 4: Equalized Profit Rates with Varying Turnover Period

Firm	Stock of Constant Capital	Stock of Variable Capital	Annual Turnovers of Variable Capital	Effective Rate of Surplus Value	Annual Surplus Value	Annual Rate of Profit
1	80	20	1	200%	40	40%
2	80	20	2	100%	40	40%
3	80	20	3	67%	40	40%

In practice, firms with a higher concrete composition of capital may lower prices below a level which would yield the average profit rate, in order to gain market share. The up-front costs of fixed capital are offset by producing each commodity more efficiently, reducing socially necessary labor and costs per unit of output. Operating fixed capital around the clock increases the number of commodities produced, reducing the value of fixed capital per commodity. Since less time is required in production, firms with a higher concrete composition of capital will tend to have a shorter turnover period of circulating capital. Increasing fixed capital thereby allows circulating capital to complete a growing annual number of turnovers, as shown in Figure 10. As the turnover period is reduced, the stock of circulating capital becomes relatively smaller. A smaller inventory is needed the faster it can be reproduced (this principle underlies just-in-time manufacturing). Thus, investment in fixed capital performs many functions: it increases productivity, lowers per-unit costs and prices, increases the scale of production, and reduces the turnover period of circulating capital.

Capitalism not only produces larger masses of commodities as it develops, it also produces them faster. This is accomplished through mechanization as well as promoting the division of labor (splitting up tasks reduces the socially necessary labor time each task requires). Additionally, the specialization of capital (in production, distribution, and finance) also speeds up the circulation of capital. For all the advances and innovations in technology, the division of labor, and company organization, capital relentlessly pressures the working class to produce faster, work continuously (second and third shift), and take work home, to reduce the turnover period as much as possible. More generally, the stressful pace of city life, businesses operating on Sundays and holidays, and cultural drift towards instant gratification (“buy now pay later”) all reflect the effort to accelerate the circulation of capital.

Figure 10: US Sales to Inventories Ratio[20]



The long-run tendency is for circulating capital to flow faster and faster, at the expense of a larger proportion of the capital stock becoming locked in fixed capital. As circulating capital approaches a continuous flow, likewise surplus value is produced uninterruptedly. Increasing the scale and speed of production requires consumption to also increase so that production may continue and surplus value may be realized without delay (and then reinvested or consumed), rather than yield a mass of unsellable commodities glutting the market.

D. Money

The circulation of capital and capital accumulation are greatly facilitated by the use of money (along with credit). The market economy, with its endless transactions between businesses and consumers and transformations between various forms of capital, critically relies on the functions of money. These include serving as a universal equivalent and measure of pricing (money is used to provide a common unit all commodities are measured in, such as dollars), means of exchange (money is used for purchases and payments), and store of value (money is used as a relatively safe and stable instrument for hoarding wealth).

Historically, money arises whenever trade develops to any significant extent. All goods trade with each other in certain ratios which form their relative prices. Everything else being equal, the proportions in which commodities trade reflects equivalence in the amount of socially necessary labor time it takes to produce them. For instance, one bushel of wheat may exchange with two reams of paper, fifteen batteries, or a given amount of any other commodity on the market, with all of them

representing the same amount of socially necessary labor time. Rather than keep track of the countless ratios in which commodities are exchanged with each other, it is more convenient to simply compare all commodities against a single commodity which serves as money.

In ancient times, money took the form of certain durable and relatively rare goods such as salt, shells, and pelts. As trade expanded over time, a globally accepted form of money became necessary. Gold emerged as the common currency (to a lesser extent silver, another precious metal, also functioned as common currency). For instance, one gram of gold may exchange with 6 bushels of wheat, 12 reams of paper, or 90 batteries, so that the price of a bushel of wheat is 1/6 gram of gold, a ream of paper is 1/12 gram of gold, and a battery 1/90 gram of gold. Since all prices may be expressed in terms of gold, it is a universal equivalent. Gold may then be used as the means of exchange, for instance when gold is coined and used to purchase commodities. Sellers accept gold as payment, not for its particular applications (such as being used in jewelry), but because they in turn can use the gold as means of payment for their own transactions. Gold can also be saved, representing accumulated wealth, since money makes it possible to sell one commodity without immediately buying another (unlike barter, which exchanges goods at one and the same time).

Adopting token currencies, such as paper money and coins of non-precious metals, increases the efficiency of the monetary system since the tokens are easier to create and use than mining, measuring, and transporting gold. Convertible tokens may be redeemed for gold, so that the tokens represent a claim to a certain amount of gold being held by a bank for instance. After abandoning the gold standard, inconvertible tokens cannot be redeemed for gold at banks; however the tokens may still be exchanged for gold on the market.

E. Credit

Money which does not circulate through the circuit of capital does not yield any profit. Capitalism therefore tries to channel all available money which is idle into the circuit of capital. Banks and other financial institutions centralize the idle money of individuals (personal savings) and businesses (earnings saved to replace depreciating assets, compensate employees at pay periods, etc.). The amassed money is loaned to households (mortgages and consumer credit) and businesses (investment credit), while the income which households and businesses

generate flows back through the banks.[21] Banks derive profit from charging borrowers a rate of interest for credit and paying depositors a lower rate of return for supplying idle money (which is deposited in banks for even relatively low rates of return since the money would not yield any return at all if it continued to sit idle).

The most profitable businesses draw on the available money capital to increase production, while the least profitable prefer to stow money away in banks to earn interest rather than expand production when this is anticipated to be unprofitable. In this way, the total capital of society is reallocated away from relatively unprofitable sectors towards the most profitable sectors. This process facilitates the equalization of the rate of profit across different lines of business.

If the rate of interest was as high as the rate of profit, there would be no incentive for businesses to borrow money since all the profit the borrowed money would yield would be lost in interest payments. Therefore, the rate of interest is typically lower than the average rate of profit in industry. The rate of interest is directly related to the costs of providing finance (banks tend to raise the interest rate when expenses increase in order to maintain profitability) and the rate of profit in industry (businesses are willing to pay a higher rate of interest when they are earning even higher rates of profit).

While the rate of interest gives the appearance that profit automatically accrues to capital (especially money capital) as a function of time, this completely overlooks the labor process generating surplus value in the circuit of capital. Credit can only indirectly increase profitability, to the extent that it speeds up the circulation of capital by circumventing the need to save in advance the total cost of purchases. Instead of saving for decades to amass the money needed to construct a factory or buy a home, through credit the funding can be obtained immediately and paid off incrementally. Debtors generally utilize credit to facilitate paying for large purchases at the expense of paying interest over time on the borrowed funds until the debt is repaid. Credit extends the purchasing power available to consumers and businesses in the present, at the expense of deductions from income in the future to pay off debt with interest. Credit therefore does not fundamentally alter capitalist social relations- it only widens the scope of circulation. Credit recruits all available money to circulate as capital, thereby expanding the scale of production and consumption, yet indebtedness exacerbates the severity of crises when the circulation of capital is interrupted.

6. Crises

A. The Business Cycle

Profit-driven accumulation gives the capitalist economy a built-in tendency to expand and tremendous growth has taken place since the industrial revolution. In the US, GDP in 1900 was fifty-two times the level of 1800 and GDP in 2000 was thirty times that of 1900.[22] Manufacturing output in 1929 was twenty-three times the level of 1865 and by 2020 output was twelve times that of 1929.[23] However, growth has not been steady and trouble-free. From the end of the Civil War to the end of 2021 there have been thirty-two recessions in the US, with the economy contracting or stagnating during 29% of this time span.[24]

While pre-capitalist economies suffered crises resulting from natural disasters, famines, and scarcity which accompanied low levels of productivity, the business cycle only developed with the spread of capitalism and (despite state intervention) has persisted throughout contemporary advanced capitalism. Recurring cyclical crises are not accidental- instead they are the necessary outcome of the fundamental laws of motion governing capitalist development:

- The growing division of labor and increasingly social networks of production and distribution, constrained in private property relations.
- The systematic use of technology and organizational innovations to economize labor, raise the scale of production, and reduce the turnover period of circulating capital.
- The competitive drive of capital accumulation to expand the market extensively (geographically) and intensively (creating new industries, infiltrating all sectors of the economy, and expanding into all facets of life).
- The concentration and centralization of capital promoting monopolization.
- The tendency for the organic composition of capital to rise, which places downward pressure on the rate of profit by increasing the mass of capital which surplus value is measured against.
- The intensifying social stratification as the rate of surplus value is raised to buoy the rate of profit, widening the gap between the proletarian workforce and the capitalist elite.

Taken together, these laws of motion regulate profitability, which ultimately determines the tempo of growth in a capitalist economy and propels the business cycle and long-term growth trends. A crisis for

capitalism is always a crisis of profit-making. Production contracts because commodities cannot be sold at a profit- not due to technical limitations, but rather due to problematic social relations. Even during the most robust periods of growth in capitalism's history widespread poverty, hunger, and other social ills have remained; these social crises coexist alongside capitalist prosperity and do not shake the economy. A recession breaks out not when people suffer adversity, but when capital faces hardship. Of course, economic crises exacerbate social crises, adding stress and placing needless obstacles in the way of human potential, with negative well-being and mental health ramifications (increased prevalence of depression, substance abuse, and so on).[25]

In the course of the business cycle periods of prosperity are inevitably followed by overheating, leading up to a crisis which signals the start of recession which may devolve into depression. The crisis sets the stage for recovery and a new period of growth, by devaluing assets and cheapening the cost of labor-power. Crises frequently are triggered by specific failures (such as a bursting economic bubble, bank failure, or other cause of panic), but propagate through chain-reactions that reveal structural infirmities. The historical context of each crisis is unique, yet recurring themes link crises which periodically crop up over time. There is not a single cause underlying the crises which erupt in the business cycle. Instead, all the limitations of capitalism play a part. Capitalism can never be rid of crises which result from its own shortcomings as a social system- it can only temporarily quell a crisis in one area by setting the stage for the next crisis in another area down the line.

Any interruption in the circulation of capital which prevents the production and realization of surplus value may cause a crisis if it becomes severe and disrupts the rest of the economy. This may include a shortage of money capital relative to the rising sums needed for expanded reproduction, failure to obtain labor-power at sufficiently low wages, lack of cost-effective means of production, technological stagnation, difficulties selling commodities when supply exceeds demand, etc. Bottlenecks which slow down the circulation of capital reduce the annual rate of profit and thereby increase the likelihood of a crisis.

Considering that capitalism is based on private production, with each firm attempting to appropriate the greatest amount of profit possible with disregard for the effects on the economy as a whole, the growth of competing capitals is inevitably disproportionate and chaotic.

Disproportionality is plain to see when a bubble develops in a market (for instance, the stock market or housing market), driving asset prices up to unsustainable levels, only to inevitably burst, causing prices to come crashing down amid a wave of bankruptcies. More generally, disproportionality ensures growth is always suboptimal, since the particular conditions for balanced growth between the means of production and means of consumption are never consistently met, as individual businesses pursue interests which often diverge from the overall social requirements for continued expanded reproduction.

With each firm only looking after itself, what is rational for the individual firm becomes irrational for the overall economy. Firms compete by replacing human labor with mechanized labor and scaling up production. As workers are displaced by machinery, unemployment begins to rise and firms have greater difficulty selling their larger masses of commodities since the unemployed are not earning wages and unemployment puts downward pressure on the wages in the labor market. A crisis of *overproduction* results from production expanding too quickly for the market to adjust to the higher level of output; scaled up production generates more commodities than can be readily sold on the market, impeding further growth. With wages stagnating, consumer commodities which cannot be sold at the prevailing price level begin to glut the market. Firms in department II begin to restrict production, which reduces demand for means of production, and production becomes constricted in department I as well. Since industries are highly interconnected, scaling back production becomes a vicious cycle.

With overproduction, too much value has been produced relative to what can be realized. From another perspective, this is a crisis of *overaccumulation* of capital- too much capital is thrown into circulation and profitable outlets have been exhausted for the time being. Some value must be destroyed for circulation to gain traction, through devaluing commodities and means of production (lowering their prices so they become more affordable) and/or devaluing money through inflation (for instance throwing more money into circulation to generate effective demand to mop up excess supply). In any event, some individual capitals suffer losses and bankruptcy in order that capital as a whole may continue to circulate.

Overproduction and overaccumulation are excesses relative to the needs of capital, not human needs. The commodities which glut the market cannot simply be gifted to people in need, as this would not

generate any profit for the capitalist class. Instead, an overabundance of commodities goes to waste as impoverished people suffer deprivation around the world. Capitalist development reduces scarcity by expanding output, only to subject the proletariat and lumpenproletariat to the scarcity which results from inequitable distributions of income and wealth besides periodic crises which put the fruits of their labor out of reach.

Underconsumption tends to aggravate crises when sales fail to keep up with production due to the effective demand of the working class being restricted, particularly when wages fall behind productivity gains. Each firm tries to cut the wages it pays, but firms face lower sales when all firms cut wages, since this reduces the purchasing power of the vast majority of the population. A robust rate of profit relies on intensifying exploitation and expanding markets. However, these factors are often at odds since there is typically a tension between surplus value generation and surplus value realization. Lowering wages tends to raise exploitation in production while making it more difficult to sell commodities; raising wages tends to reduce exploitation in production while making it easier to sell commodities.

Wages cannot buy back all the commodities produced, since surplus commodities are produced during the portion of the workday which generates surplus value (workers generally do not purchase high-end luxuries or means of production). A certain mass of commodities will tend to remain unsold on the market, unless capitalists invest their income, procuring additional labor-power and means of production, thereby boosting consumption. However, investment is not automatic- it is only undertaken when the economic outlook suggests new capital will obtain a suitable rate of profit. When markets are saturated, novel products to promote are not forthcoming, or new technologies are only marginally more efficient than the existing technologies already in use, capitalists will not reinvest their surplus value. Investment is generally more volatile than the overall economy such that plunging investment drags down the economy while feverish investment pulls the economy out of recessions.

During a recession, the production of luxuries and means of production contracts more than the production of consumption goods, as consumers focus spending on necessities and delay replacing durable commodities (such as cars and major appliances). The circulation of capital is maintained at a basic level in the most essential firms (grocery

stores, power plants, etc.). Firms reduce prices to stay in business and as the profit rate falls the least competitive firms go out of business. Idle capital becomes devalued (the exchange value of durable commodities drops though use value remains intact) or destroyed (perishable commodities which are not consumed in time lose their use value and with it their exchange value). A growing reserve army of labor drives down the cost of labor-power. These trends begin to counteract a falling rate of profit. Crises, through their waste and destruction, restore the conditions for further growth.

As months and years go by, the industries engaged in producing means of consumption must replace plant and equipment, which revives production of means of production. New technologies which were developed throughout the recession, as firms struggle to innovate in order to stay in business, are now deployed. Relatively cheap labor-power is employed and the wages raise consumer spending. Sentiment shifts as recovery seems underway and businesses undertake additional investments to expand production. A cycle of self-reinforcing feedback spreads across the economy as production and investment grow and the profit rate recovers. New technologies diffuse and saturate industries, raising the organic composition of capital. The labor market becomes tighter and wages rise. Expanding production bids up the prices of raw materials and means of production. The rate of profit begins to stagnate, investment is curtailed, and the prospect of a new recession unfolds.

B. The Tendency for the Rate of Profit to Fall

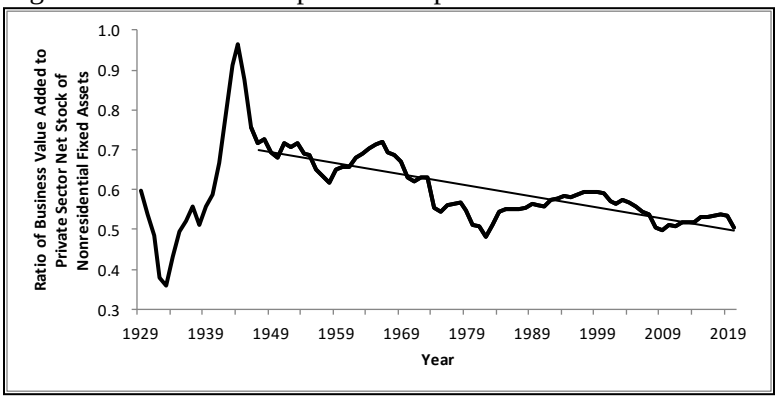
The rate of profit, which gauges the health of the capitalist economy, is positively related to the rate of surplus value. As capitalism develops, however, productivity gains have a diminishing effect on raising the rate of surplus value. For example, if necessary labor is four hours and surplus labor is four hours the rate of surplus value is 100%. If productivity gains cut necessary labor in half, necessary labor is two hours and surplus labor is six hours. The surplus labor has increased 50%. If productivity gains cut necessary labor in half again, necessary labor is one hour and surplus labor is seven hours. This time surplus labor has only increased by 17%.

Meanwhile, in order to raise productivity it is typically necessary to mechanize production by adopting the latest capital-intensive technologies, which raises the organic composition of capital. Individual firms profit from having an above-average organic composition of

capital, as profit rate equalization enables them to appropriate surplus value produced by firms with a lower organic composition of capital. However, once the new technologies become generalized the organic composition of capital increases for the total capital, which tends to depress the rate of profit.

As living labor becomes displaced by mechanized labor, relatively less value is produced per unit of capital, as shown in Figure 11. Surplus value is a fraction of the total value produced and likewise less surplus value tends to be produced per unit of capital. From another perspective, the greater the mass of plant and equipment engaged in production, the more labor time must be spent replacing the wear and tear on constant capital and maintaining the capital stock and so less of the total labor time is available to generate surplus value. It is important to keep in mind that the mass of surplus value may continue to grow as production increases and markets expand, though at a slower rate relative to the growing mass of capital.

Figure 11: Value Added per Unit Capital[26]



Counteracting tendencies may halt or reverse a falling rate of profit. Mechanization tends to reduce the costs of commodities, including those which form constant capital. Besides cheapening means of production, productivity gains may reduce the value of labor-power as means of consumption become more affordable. Mechanization not only improves the productivity of existing industries, it also generates new capabilities which foster new industries that start off in an undeveloped state with a relatively low organic composition of capital. The rate of exploitation

tends to rise with productivity gains (as relative surplus value grows), though this is subject to class struggle.

These countertendencies may check the falling rate of profit for a time, but in the long run the tendency for the rate of profit to fall remains a structural feature of capitalist development. It becomes progressively more difficult to increase the rate of surplus value to adequately raise the profit rate, since necessary labor cannot be completely eliminated. On the other hand, the growth of the organic composition of capital has far more leeway as technological innovation advances. The rate of profit cycles along with the business cycle, but the average rate drifts downward over the course of decades so that even long periods of growth (such as the post-World War II boom) come to an end once the rate of profit falls beyond a certain point. In this way the tendency for the rate of profit to fall periodically leads to extended periods of malaise (representing secular crises in distinction to the more frequent crises of the business cycle), which are typically only overcome by epoch-making upheavals including vast market expansions (such as occurred in western Europe after the revolutions of 1848, colonialism under classical imperialism, and capitalist restoration in the Soviet bloc countries and China in the neoliberal era), technological revolutions, and war.

In addition to disproportionality, overproduction, overaccumulation, and underconsumption, the tendency for the rate of profit to fall signifies that capitalism will never be crisis-free. The fact that crises are inevitable and systemic shows that capitalist social relations are inherently antagonistic and conflictual. Crises cannot be avoided through rational measures such as broadening consumption, reducing the length of the workweek, and social planning. Instead, every so often a crisis breaks out which is only painfully and temporarily resolved by throwing millions of people out of work, wiping out vast amounts of wealth, and precipitating a general struggle amongst businesses to deflect the losses onto others in a war of all against all (the businesses which remain afloat even take advantage of the crisis situation to continue profiteering amid the general misfortune, buying up the clearance-priced assets of fallen competitors). The frustrating recklessness of crises exposes the most irrational features of capitalism which operate at all times, during all phases of the business cycle and throughout its entire history.

7. Contradictions of Capitalism and Alienation

The following describes general contradictions of capitalism which play a role in the innumerable particular contradictions which develop historically (such as the outbreak and underlying causes of specific economic, political, and social crises) and point to the need for transitioning to a more rational, just, and humane mode of production.[27]

A. Social Production and Private Appropriation

In pre-capitalist societies the vast majority of labor was engaged in hunting and gathering or agriculture, with most of the produce consumed locally instead of being intended for trade. The growth of productivity brought about by the division of labor enabled towns and cities to flourish, with industry developing apart from rural agriculture. Over time commodity production intended for exchange overtook and almost completely eliminated subsistence economies.

As capitalism develops, the division of labor becomes more extensive and intensive. Markets spread throughout the entire globe and infiltrate more and more domains of everyday life (for instance personalized online advertisements, robotic vacuum cleaners, and grocery delivery services). Relatively unskilled labor becomes fragmented in myriad repetitive tasks and relatively skilled labor becomes specialized in occupations which typically require several years of higher education and job experience.

Commodities are produced by an extended network of workers focusing on particular tasks rather than solitary workers individually producing commodities from start to finish. In advanced capitalism large companies employ thousands or even millions of workers and supply chains extend production networks even broader internationally.[28] When any commodity is produced, it is the product of a collective effort of all the workers involved, from those directly working in manufacturing to all the supporting sectors of the economy (construction, transportation, communications, agriculture, trade, etc).

Subsistence producers consume the products of their own labor. As labor becomes increasingly social, however, such situations are vanishingly rare. The production of wealth is less and less the result of individual industriousness and more and more the collective product of countless workers staffing a division of labor required to set in motion the advanced productive forces built up over generations. It becomes

impossible to assess the contribution of any individual worker outside the context of the entire network of social labor.

While the enormous production of wealth is only possible through the team effort of social labor (which greatly exceeds the sum of wealth the same number of workers could produce individually), the output of commodities is privately owned by the capitalist class. No individual can earn billions of dollars through selling their labor-power; it is only possible to become a billionaire by privately appropriating the social wealth produced by the working class. The myth of the "self-made man" is more out of touch with reality the more labor becomes increasingly social through the division of labor. Labor has become globally interconnected, yet its immense potential is restricted by the narrow private interest of profit maximization, both in terms of what is produced and who consumes the wealth. The objective socialization of labor conflicts more and more with the private appropriation of the social surplus product, so that transitioning to socialism is the only realistic way to put an end to class conflict stemming from economic exploitation.

B. Use Value and Exchange Value

The production of use values in pre-capitalist times yielded a relatively small social surplus, which was more or less immediately consumed. Under capitalism, however, production of exchange values yields a relatively large social surplus and much of it is reinvested rather than consumed unproductively. The production of exchange value is not moderated by the satisfaction of current consumption needs. Instead, new and artificial needs are created in order to increase the production of exchange value and provide outlets for investment. Exchange value, instead of serving as a means for the production of use value, has become the end; developing use value has become a means for the production of exchange value.

Commodities are only produced for the purpose of realizing their exchange value, which includes surplus value, to yield a profit. Yet commodities must also fulfill some use to induce consumers to purchase them. In competition with each other, companies face a tradeoff between investing to improve the use value of their products (for instance through research and development) and distributing their profits as unearned income. Failing to innovate may lead to being outcompeted and losing business. On the other hand, investment impinges on the unproductive consumption of the capitalist class and hastens the obsolescence of the

current stock of capital (when new and improved technologies enter the market, rendering older technologies obsolete).

New products expand the market by creating new cultural needs. Starting from a relatively undeveloped state, the growth of many new industries is limited at first to relatively affluent consumers before becoming attainable for the working class (for instance personal computers, cell phones, etc.). Companies reinvest profits to improve the efficiency of production, bringing commodities into the price range of a broader array of consumers. Increasing the quantity of commodities produced often sacrifices their quality and durability, while niche markets supply costlier high-quality commodities.

While production tends to expand under capitalism, at any given level of development production is less than it could be, due to callous profit considerations. Production is set at the level anticipated to yield the maximum profit- additional production is possible but raising supply relative to demand would begin to lower the rate of profit. Profit considerations put certain commodities beyond the reach of working class incomes. Depending on the scenario, this may be temporary (for instance, housing becoming unaffordable during a housing market bubble) or structural (only the capitalist class can ever afford the best housing, the best health care, etc.).

Ability to pay, rather than satisfaction of the greatest need, determines the allocation of consumption, which has ramifications for production. This is most evident in a recession, when disruptions in the circulation of capital contract production to the point that basic needs go unfulfilled at the same time as means of production wastefully lie idle. Even during periods of prosperity the goods and services which are most useful generally are not produced in sufficient quantities or equitably distributed, at the same time as other output caters to the vain and frivolous desires of the ruling class (such as private country clubs, mansions, etc.).

C. Impossibility of Endless Accumulation

Capital is inherently expansive, ruthlessly and resiliently overcoming obstacles in the way of developing the global market. Having spread throughout the world, capital continues to develop intensively, launching new industries and scaling up production through continual technological advances. While capital tries to expand without limit, accumulation is limited by the very logic of capitalist development, leading to periodic

economic crises which entail the destruction of capital as a precondition for further growth. Intrinsic limitations constrain the growth rate (which turns negative during recessions and depressions) but nevertheless growth characterizes long-term development.

Physical limitations make endless accumulation impossible. Compound growth sooner or later becomes unsustainable in a finite world with limited resources. To begin with, the total amount of available labor is limited by the size of the labor force and the length and intensity of the working day. Historically, lack of cheap labor has not been the limiting factor to growth since a massive reserve army of labor has persisted through the present day, with hundreds of millions of unemployed and underemployed people around the world. As economies develop, however, population growth tends to slow down and even become negative, such that the global population may start to decline by the end of the twenty-first century. Compound growth would eventually become limited by a shortage of labor-power once the population declines or reaches its maximum sustainable level, though mechanization is a counteracting force reconstituting the reserve army of labor.

Besides labor-power, accumulation relies on the availability of additional means of production. Procuring additional means of production depends on the abundance of natural resources, which are already significantly depleted. Resources on a global level have been consumed unsustainably for decades, such that an estimated 1.7 Earths would be required to maintain contemporary usage (5.0 Earths if everyone in the world had an American lifestyle).[29] Despite constant warnings from environmental groups and the scientific community regarding the dangers and impacts of climate change and related issues, capitalist accumulation remains apathetic so long as there is profit to be made. Continual compound growth seems poised to intensify resource depletion and place ecosystems under greater strain, setting the stage for ecological disasters and economic disruptions in the long-term.

D. Economy and Waste

Mechanizing production and developing the division of labor have raised efficiency far beyond the capabilities of handicraft production. Consequently industrialization, by improving the productivity of labor, has freed the vast majority of the population from agricultural work to greatly expand the production of goods and services in urban and suburban settings. The division of labor develops in tandem with

technology as companies economize labor-power and means of production in an effort to maximize profit. While each company individually has an incentive to use its inputs efficiently, overall a tremendous amount of waste results from the dynamics governing the capitalist economy as a whole. Rationality at the micro level[30] is offset by irrationality at the macro level. Businesses plan their operations, but there is anarchy at large in the unplanned economy. In total, capitalism may waste approximately half of all economic resources.[31] The economy continues to grow under capitalism, despite many varieties of waste, but the growth is suboptimal and does not live up to the full potential which is only conceivable with more supportive social relations.

In an unplanned economy, companies prioritize short-term profits over long-term sustainability. Natural resources are depleted with disregard for future generations, restricting growth potential in the following decades and centuries.[32] After the pollution and waste of extraction and production, a significant portion of commodities are never sold, due to lack of effective demand or failing to meet consumer needs. Lagging sales lead more than half of new firms to go out of business within the first decade of operation.[33] Unsuccessful businesses close and vacant properties dot the landscape. Competition leads to duplication of effort, with each company developing its own slightly different version of a given product. Information is privatized as copyrighted intellectual property, impeding the dissemination of ideas and knowledge. Collaboration is limited by the self-interest of being first to market and the risk of turning into illegal collusion.

The profit motive drives companies to promote consumption, through marketing and sales departments, beyond moderation. Perceived and planned obsolescence reduce the lifespan of commodities, designed to be disposable, to ensure their regular replacement with new purchases. Unhealthy or useless products are developed to further expand consumption beyond rational requirements. Reserve capacity is produced, especially in capital-intensive industries, to accommodate fluctuations in the business cycle and wastefully lies idle when the economy is not in a boom period.[34] Having saturated industry, investment is diverted into unproductive channels (primarily finance). Financialization inflates asset bubbles that later burst, dragging down the real economy.

Persistent unemployment also constrains economic growth. Unemployment is reduced in an often wasteful manner, through

government spending (such as military expenditures) and the growth of unproductive sectors. As wage labor costs increase, there is greater incentive to mechanize production. Conversely, the prevalence of low wages in many regions of the world (and the constant downward pressure capital exerts on wages) holds back the progress of mechanization.

E. Uneven and Combined Development

Capital is divided into competing capitals owned by different capitalists, aligned in different countries and power blocs. Competition over market share and profit takes place within industries and across industries, within countries and across national boundaries. There are advanced firms and relatively undeveloped firms in each industry as well as advanced industries and relatively undeveloped industries in each economy. There are advanced regions and relatively undeveloped regions within countries as well as advanced countries and relatively undeveloped countries.

Tendencies towards equalizing the rate of profit siphon surplus value from the less developed (lower organic composition of capital) to the more developed (higher organic composition of capital) firms, industries, regions, and countries. This outcome reduces the amount of surplus value available for future investment in the less developed units and expands the investment fund available in the advanced units. The more developed units also leverage their lower costs and shorter turnover periods to lower prices and outmaneuver their competition. The units which have a head start tend to maintain an advantage since reinvestment drives the concentration and centralization of capital, accentuating inequalities.

However, the less developed units at times derive a competitive advantage from being less developed. Latecomers sometimes manage to copy the most recent organizational arrangements and adopt technologies (for instance using reverse engineering) developed at greater expense and risk by leading units taking the initiative in research and development. Capital diffuses towards low wage areas, leading companies to relocate production from the advanced countries to the less developed. New technologies are introduced into the less developed areas, resulting in leapfrogging development rather than repeating the same historical line of development as the advanced countries. For instance, instead of building coal and natural gas power plants, isolated areas may go from lacking electricity directly to solar energy. Meanwhile, the advanced

countries may face deindustrialization as their entrenched infrastructure becomes outdated. Previous centers of growth become left behind (for instance the Rust Belt) as new centers fitfully emerge.

The combination of new and old technologies and new and old social relations creates tensions in a class society. The advanced units strive to maintain their leading position while benefiting from access to the markets and resources of the less developed units (whether through overtly coercive imperialist relations or free trade on the market). The less developed units try to develop while being drawn into competition with advanced units, which may be as one-sided as a lightweight facing a heavyweight in boxing. Countries with undeveloped economies and weak governments are more often than not overpowered by the dominant capitalist countries. History has shown that strong state protection of domestic industry is a precondition of growth- industries are able to compete on the world market only after an extended period of active government support which allows them time to develop and catch up to the advanced countries in terms of productivity.

The globalization of capital raises other contradictions. Each state plays a vital role in its national economy, protecting private property, overseeing the money supply, collecting taxes, and regulating business. However there is no global government or global currency. Instead, a superpower (the UK followed by the US) tends to set the agenda in its sphere of influence and its currency is used as an unofficial global currency (used to settle accounts in international trade, for instance), while competing regional powers remain relatively independent in their own domains. Through international treaties and global institutions capitalism continues its uneven and combined development, which is periodically paralyzed when crises spread through worldwide networks of production, trade, and finance. Crises in the early days of capitalism were isolated to regions and countries but later developed the potential to shake the entire global capitalist system, which lacks a unified central government capable of mounting a concerted response.

F. Alienation[35]

Alienation under capitalism stems from the upside down relation between people and the economy. Economic systems, a product of human labor and civilization, escape human control and confront society as an alien power. Capital seems endowed with a will of its own, observed for instance in the continual long-run growth of the stock

market which appears unstoppable and independent of human intervention. Personal relations are commodified (for instance consigning children to childcare facilities and the elderly to retirement homes, pre-packaged processed foods replacing communal cooking and dining, etc.) while commodity relations are personified (for instance bestowing corporations with the same legal rights as people, developing humanoid robots, etc.). Instead of capital serving the needs of people, people serve the needs of capital. This is abundantly clear during economic crises, which sweep over society with the force of a natural disaster.

Generally speaking, everyone pursues what seems to be in their own particular interest (switching jobs to get a higher wage, investing in the stocks anticipated to be most profitable, etc.) without consciously recognizing they are all participating in a vast social network outfitting society's needs. The outcome of innumerable individual decisions coalescing into social reproduction is only brought about unwittingly through the "invisible hand" of the market. Social relations are thereby mediated and obscured (so that many or even most of the exploited are unaware of the nature of their own exploitation) by the market.

Social relations are internalized so that they appear natural and frequently escape notice. For instance, when a millionaire is said to be "worth a million dollars," it is taken for granted that someone's value is equated with how much money they possess, rather than being related to nobler qualities like honor, intellect, or artistry. The aphorism "time is money" conveys that life is wasted when it is not spent pursuing profit and that the value of life is measurable in terms of money.

Each class in the social hierarchy feels the dehumanizing effects of alienation in different ways. The lumpenproletariat is treated as expendable and lives in poor conditions, marginalized from the rest of society. The proletariat lives as an appendage of capital, an economic input which sells its labor-power by the hour. The petty-bourgeoisie is in a precarious situation midway between the proletariat and bourgeoisie, and must eat or be eaten. Finally, the bourgeoisie is out of touch with reality insofar as it lives a privileged life of luxury and cannot appreciate the effort which goes into labor or sympathize with the exploited.

Alienation is a direct consequence of capitalist economic conditions. Workers are separated from access to land and means of production, which would allow them to earn a living independently, so that their very survival ordinarily depends on conforming to the logic of capitalism.[36] In selling their labor-power, workers give up control over their purposeful

activity for the duration of the workday, which is often monotonous, bureaucratic, and deadening. The division of labor and relentless economy of labor in the pursuit of profit have all but eliminated the artisanship and ingenuity which craftspeople take pride in.

The workers' lack of ownership and control extends to the commodities they produce, which they have no say over. The very landscape of commercial property (including skyscrapers, factories, and shopping centers) which workers produced demonstrates their dispossession, as it forms the private property of the capitalist class. Since the commodities being produced and the way in which they are produced and distributed are dictated from above, there is little opportunity for creative endeavor. Workers view work as a chore undertaken simply for pay rather than a fulfilling expression of their potential- life is divided between time sacrificed to working and a distinctly separate life outside of work.[37] Other than perhaps chasing after a promotion, workers are typically unmotivated by an increasingly corporate workplace culture.

Alienation permeates the sphere of distribution as well. Wealth and income inequality split society into the haves and the have-nots. Rampant consumption with inequitable distribution leads to excesses at the same time as scarcity, for instance with obesity and hunger coexisting as social ills. For a long time increasing consumption was progressive for humanity, suffering from impoverished conditions, as this enabled a greater satisfaction of needs and developed human potential. Beyond a certain point in the twentieth century, however, consumerism (preoccupied with increasing sales rather than wellbeing) became increasingly decadent in the advanced economies. Pervasive consumerism demolished the norms of thrift which of necessity characterized the early days of capitalism, with each company's sales force employing any number of gimmicks to push consumption as high as possible regardless of actual need.

Capitalism instills demand by exposing people to a barrage of advertisements,[38] marketing commodities as the solution to their problems, yet the endless line of new commodities demonstrates that the satisfaction they provide is ephemeral. "Retail therapy" is a term used in psychology and marketing to describe shopping in order to improve one's mood as a sort of coping mechanism. However, money cannot buy happiness or substitute for meaningful social relations. Loneliness has become an epidemic.[39] Escapism takes many forms (much of the tourist

industry, excessive consumption of television programming and films, etc.) and quickly becomes maladaptive, turning people into passive spectators instead of active participants engaging in their communities.[40]

In the nineteenth century capital subjected workers to the alienation of capitalist production in the factory system. In the twentieth century capital subjected people to the alienation of the consumer society. In the twenty-first century capital is increasingly infiltrating everyone's private life (for instance virtual assistant technology and the internet of things, online dating services, and countless apps which collect and monitor personal information). This threatens privacy rights and raises the possibility of Orwellian abuses of corporate and state power, such as those developing in China's surveillance state, aimed at social control.

Using a divide and conquer strategy (with tactics including wage differentials and the lure of consumerism), capitalism coaxes people into attempting to improve their standard of living individually, rather than through collective action in solidarity with the exploited internationally. People relate to each other and to nature as means for acquiring their needs and wants, rather than as ends in themselves. Buying low and selling high is the rule in commerce, with each economic agent trying to get the most out of each transaction at the expense of everyone else. Nature is valued only insofar as it can be privatized and converted into raw material for commodity production.[41] Tragedies of the commons abound, with free-for-all mentalities mirroring the anarchy of capitalist production.

The waste of human potential extends to the educational system, which is preoccupied with fostering job skills (following a schedule, rote learning, etc.) rather than cultivating the all-around development of students (inquiry-based experimentation, critical thinking, etc.).[42] Impoverished regions receive abysmal education but quality is typically lacking even in relatively more advanced school systems.[43] Broad sections of society are living in the twenty-first century with a nineteenth-century or older understanding of some aspects of science (in what might be considered uneven and combined mental development).

The dearth of historical, critical, imaginative, and scientific thinking helps maintain capitalist class relations- public opinion is all the more easily shaped and distracted by ideologies disseminated through the mass media. Rather than challenging class relations, intellectual labor is corralled into white-collar employment in the service of capital. Regrettably, the freeing potential of science and rational thought is

largely confined to optimizing profit for corporations while postmodernism spreads skepticism regarding whether objective reality and cause and effect even exist. Widespread belief in creationism, denial of anthropogenic global climate change, vaccine hesitancy, and the prevalence of conspiracy theories all attest to the deficiencies of the educational system, a product and prop of capitalism.

It is not surprising then that poor social conditions give rise to impoverished social thought, which in turn perpetuates poor social conditions.[44] In every class society in history, down to the present, motivated reasoning rationalizes and justifies the existing system, in the form of ideology (and when that fails to maintain the status quo, the state resorts to the use of force). The exploited are frequently intimidated into remaining apathetic or deceived into fighting against their own interests (whether ideologically defending capitalism, voting for bourgeois politicians, or enlisting in an imperialist army).

However, the facts of everyday life and work experience ultimately undermine the meritless ideologies which reinforce class society. People sooner or later see through the absurdities presented as truths (for instance nobody today believes in the ideology of the divine right of kings). However, theoretical clarity is insufficient for ending alienation-it is necessary to transform social relations. In the famous words of Frederick Douglas: "If there is no struggle there is no progress. Those who profess to favor freedom and yet deprecate agitation, are men who want crops without plowing up the ground, they want rain without thunder and lightning. They want the ocean without the awful roar of its many waters. This struggle may be a moral one, or it may be a physical one, and it may be both moral and physical, but it must be a struggle. Power concedes nothing without a demand. It never did and it never will. Find out just what any people will quietly submit to and you have found out the exact measure of injustice and wrong which will be imposed upon them, and these will continue till they are resisted with either words or blows, or with both."[45]

G. Class Struggle

All class societies are wracked with class struggle as the exploited attempt to end their indignity, culminating in slave revolts, peasant uprisings, and socialist revolutions. Pre-capitalist social formations were relatively stable, with slow and incremental rates of technological progress. Under capitalism social status is always in flux due to

competition and constant technological change, with new job opportunities and wealth to be had in rising sectors and unemployment and bankruptcy facing those in outmoded sectors. Throughout its confrontational history capitalism is marked by class struggle, in the resistance it encounters tearing down pre-capitalist modes of production and in the fundamental opposition between the proletariat and bourgeoisie. As billionaire Warren Buffet admitted: "There's class warfare, all right, but it's my class, the rich class, that's making war, and we're winning."[46] To have any chance of success in their struggles, proletarians must take collective action in unions and working class political parties.

Social polarization is a growing problem, intensified by monopolization. The inequalities and injustices of stark class distinctions are maintained through ruling class hegemony over the state[47] and ideological production (for instance by owning the mass media, funding colleges and think tanks, etc.), yet class struggle continues nevertheless. There has hardly been a year since the October Revolution of 1917 without a revolution breaking out somewhere in the world. The bourgeoisie cannot live without the proletariat, while the proletariat can do without surplus labor and extreme inequality. Whenever a strike breaks out and the circulation of capital grinds to a halt these facts are made plain.

On the one hand, capitalism turns the majority of the population into proletarians, whose objective interest lies in ending divisive exploitation in all of its forms, including the extra exploitation endured by women, racial and ethnic minorities, the neocolonial population, and marginalized communities. On the other hand, capitalism also develops the productive forces, technology, wealth, economic planning (within firms and governments), and education to a degree that, under social control, can meet humanity's basic needs, provide a suitable standard of living for all, and develop human potential. In short, the material preconditions for socialism have been created under capitalism. With adequate leadership, organization, and confidence the working class has the potential to make socialism a reality. Broad sections of the working class are disenchanted with the life capitalism has to offer and sense the alienation it engenders. By offering theoretical clarity and practical guidance (informed by the history of class struggle), socialists have an important role to play in turning popular discontent and instinctual defiance into disciplined resistance and conscious revolutionary action.

8. The Evolution of Capitalism

Capitalism has developed over time, passing through distinct stages in its centuries-long history. New qualities emerge while the fundamental characteristics operate throughout. The timing of the rise and fall of various features of capitalist development depend on historical factors and national distinctions, particularly evident in differences between the advanced economies and developing economies. As a result there is some overlap between the stages of development, with new features taking time to spread and become dominant. These considerations apply all the way back to the origins of capitalism as well.

A. Capital before Capitalism

Capital existed for centuries prior to the industrial revolution, before capitalism became a consolidated and expanding mode of production. Capital developed at the margins of society before transforming society in its own image. The incremental growth of handicraft production and trade gradually extended the role of money in the economy, which in turn advanced commerce. Money capital and commercial capital would undermine time-honored social relations and traditional ways of life.

In pre-capitalist class societies the social surplus primarily took the form of agricultural produce. Agrarian economies gradually developed craft production, which stimulated trade and money relations. To acquire craft goods and articles of trade, the upper strata of society traded a portion of surplus agricultural produce. To facilitate exchange, the social surplus would become appropriated directly in the form of money (for instance through taxes), especially after gold from the New World flooded into Western Europe. Durable wealth, previously amassed as luxury trade items and estates, was more and more accumulated as money. The consumption of affluent classes channeled money into the hands of usurers and merchants.

Usurers loaned money at exorbitant interest rates while money was relatively scarce. Merchants developed trade networks initially centered on fairly expensive goods, given the considerable time and costs of making journeys across land and by sea. While merchant capital was the predominant form of capital, trade was limited to the output of *simple commodity production* (or petty commodity production). Independent artisans possessed their own means of production (basic tools and the like) as well as the commodities they produced with their own labor (perhaps engaging a limited number of apprentices and assistants).

Commodity production (intended for sale rather than consumption by the producers) developed on a small scale but was not yet generalized.

Petty commodity producers engaged in a cycle of selling commodities for money in order to buy other commodities for subsistence (C-M-C). In contrast, usurer capital lent money in exchange for greater sums of money at a later date (M-M') and merchant capital bought commodities in order to resell them at a higher price (M-C-M'). Usurer capital reaped profit through collecting interest on debt payments, merchant capital through buying low and selling high. Profit on capital was thus primarily obtained via wealth transfers, including outright theft and pillage in wars and conquests.

This began to change as capital transformed the production of goods. Craft producers became increasingly divorced from control over their products and dependent on merchants- selling products to them, buying raw materials from them, and eventually laboring in workshops owned by them. By employing professional traders, merchant capital developed the division of labor between production and distribution, freeing up time for producers to continue production (rather than halting production to sell their output). A growing population of laborers became available for hire as commons were enclosed and agricultural productivity rose, driving people off the land and into towns and manufactories. Capital tapped into the productivity of social labor and catalyzed economic growth by transforming simple commodity production into the generalized mass production of commodities on an industrial basis.

B. Free Competition (1789-1893)

i. Historical Context

Capitalism became the dominant mode of production only when the rising bourgeois class was strong enough to gain control over the state in order to secure its private property and enforce corresponding social relations. This was accomplished through a series of upheavals and revolutions in Western Europe and the New World (including the Revolution in the Low Countries during 1566-1648, the English Revolution of 1640-1660, the American Revolution, and the French Revolution). Progress was not linear, given numerous counterrevolutions and setbacks, yet the trend was clearly towards transforming absolute monarchies into constitutional monarchies (limiting the arbitrary power of monarchs and their ability to levy taxes) or overthrowing them altogether. In the process, the privileges of the nobility and church were

circumscribed (eliminating serfdom and tithing, as well as stripping away landed property) and bourgeois democracy was instituted. Nationalism and liberalism spread in waves, impelled by the Napoleonic Wars and later the revolutions of 1848 and their aftermath, consolidating modern states. Meanwhile the US forcibly expanded westward, committing genocide against Native Americans and waging war on Mexico, but also abolishing slavery in the course of the Civil War. Economically and politically the capitalist class displayed a mixture of brutal and progressive tendencies, drawing on whichever furthered its interests. Before the free competition phase of capitalism even came to an end, class conflict boiled over with the working class attempting to seize state power in the Paris Commune of 1871, which was militarily suppressed.

Besides its bid for state power, capital had to contend along many fronts of social change to foster the material conditions suitable for accumulation. Nature had to be subjugated (land cleared, transportation networks installed, etc.) at a time when entire populations were still at the mercy of crop failures and helpless against diseases. Technology had to be continually developed and applied, instead of remaining stagnant in handicraft production and traditional agriculture. Mental conceptions had to assimilate the advances of natural and social science (the endowment of the Renaissance and Enlightenment), overcoming a heritage of illiteracy and superstition. Economics had to become a subject of study in its own right, with Adam Smith's magnum opus providing a foundation for classical political economy. Everyday life had to accommodate the fast pace and continual change of urban settings, in contrast to the inertia and isolation of customary rural ways of life. Social relations had to be breached by market exchange (which increasingly supplied needs and wants), at the expense of dissolving family ties and established mores. All of these requisite factors paved the way for the industrial revolution and continued to co-evolve with subsequent phases of capitalist development.

ii. The Industrial Revolution

All of the component elements of capitalism were present, whether in embryonic form or relatively more developed, in parts of Western Europe by the 1700s: commodities, markets, wage labor, private property, capital, profit, competition, and accumulation. However, it was not until capital entered the sphere of production that the industrial

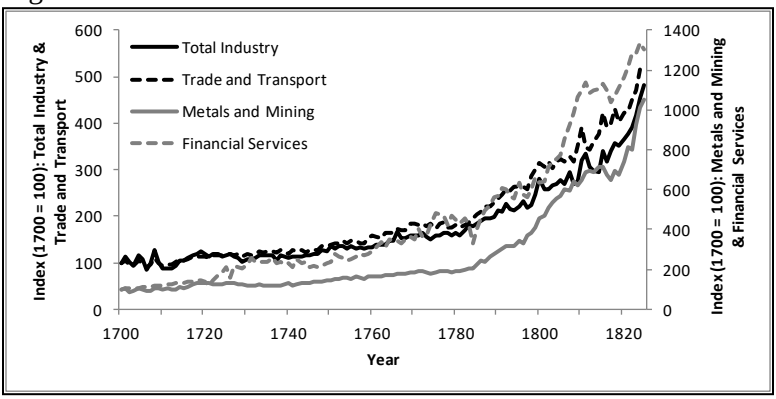
revolution took off. Industrial capitalism started in Western Europe, particularly in Britain,[48] for several material reasons.

Capitalism requires a plenitude of natural resources and a suitable climate, favoring temperate regions with access to a variety of raw materials through domestic production and trade. Agriculture had to be sufficiently productive to feed an urban population and wheat is more calorie-rich than labor-intensive rice and other staple foods. A growing money supply was made available through the plunder of gold from the New World and, more generally, colonial conquests around the globe concentrated wealth in Europe, leading to the primitive accumulation of capital. In terms of markets, London was the largest European city at the start of the industrial revolution and trade networks were already well-established with ample river and sea transportation (in Britain the furthest point from the sea is merely 70 miles). Social factors were equally essential, with the state providing relative stability and mundane but important measures to aid commerce (such as a unified system of weights and measures, patent protection, etc.). Financial innovations including marine insurance and joint-stock companies were also instrumental, reducing the risks of entrepreneurship.

A number of important inventions and process innovations generated momentum in mining and metallurgy (Newcomen and Watt steam engines, coke smelting, puddling) as well as textiles (the spinning jenny and cotton mule). Iron and cotton textile production led the way for the overall growth of industry, demonstrating the productivity to be gained from mechanization and the factory system. It took approximately 50,000 hours to process a hundred pounds of cotton by hand with pre-industrial techniques, 2,000 hours using the technology of 1780, and only 135 hours by 1825.[49] Cotton textile exports surged and became the single most important commodity traded throughout the 1800s. The spread of machinery is indicated by the quantity of power looms in England, which totaled 2,400 in 1813 and 224,000 by 1850.[50] To power the expanding mass of machinery, factories were built on sites which provided water power. Cast iron water wheels displaced wooden precursors and provided more power at a fraction of the cost. Iron would become the principal input for an array of applications, including machinery and tools, weapons, construction of bridges and ships, and rails. By 1810 industry and construction in Britain had surpassed agriculture in terms of employment and output. By the start of the 1830s cotton textiles, iron, and construction accounted for approximately half of all value added.[51]

Productivity growth in the leading iron and cotton textile industries, along with an extensive and efficient canal network for hauling cargo, reduced the costs of business and prices of consumer commodities, galvanizing a number of other industries. Mass production in one industry demanded the mass production of the whole supply chain, so that industrialization and elevated rates of growth propagated throughout the entire economy, as shown in Figure 12. In distinction to former modes of production, technological development was systemically rewarded with profitability, further propelling the economy. To avoid crises of overproduction, consumption had to keep up with production and to a certain extent industrialization created its own market, with wages and surplus value forming purchasing power. Decades into the industrial revolution, per capita income (which historically remained static around poverty levels) grew in tandem with production (and stimulated production in turn), though it was inequitably distributed and subject to all the pitfalls of the business cycle.

Figure 12: The Industrial Revolution[52]



Production reached unprecedented levels but life was precarious for the working class, subjected to long hours of manual labor (prolonged under gas lighting) in abysmal factory conditions with few safety measures or legal protections (take for instance the prevalence of child labor). Whereas workers could fall back on subsistence production while market relations were still marginal, under generalized commodity production employment and livelihood were at the mercy of the market. The first business cycle recession broke out in 1825 (triggered by a stock market crash and bank failures), followed by other severe crises in the

1830s and 1840s which exacerbated unemployment and led to protests, riots, and armed uprisings. Vagrancy and pauperism were criminalized in the Poor Law of 1834 which consigned the unemployed to brutal workhouses (such as provided the setting for Oliver Twist) considered "prisons of the poor." The Luddites reacted by destroying machinery which (in the context of capitalist social relations) displaced jobs, but it was clear there was no going back to pre-industrial norms and labor struggles would have to adapt. Unions formed and went on strike as they fought for better working conditions and adequate compensation.

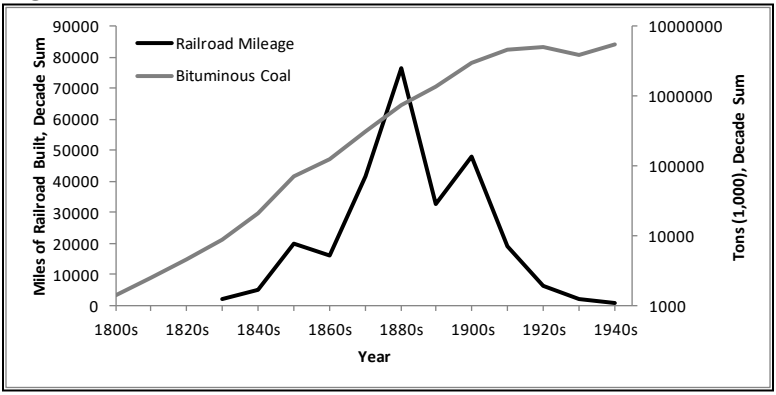
By raising the scale of production and the mass of capital needed to successfully run a business, the factory system ruined simple commodity producers and accelerated the formation of disparate bourgeois and proletarian classes. Social polarization escalated on the world stage. Europe and the US accounted for 29% of global manufacturing output in 1800 (pre-capitalist craft production was still significant in absolute terms while industrialization was in its infancy) and 86% in 1900.[53] With its head start the UK would continue to outdistance the rest of the world in per capita production for generations following the industrial revolution but a selection of competitors would start to catch up as capitalism continued to spread internationally, particularly in the wake of the revolutions of 1848 and a new upsurge of technological development.

iii. The First Technological Revolution

The industrial revolution transformed the economy and launched capitalism, marking a decisive turning point in relation to feudalism and simple commodity production. Technological development continually advances under capitalism, sometimes incrementally and at other times making major breakthroughs. New technologies are only applied when a profitable return on investment is expected, while technology in turn influences the rate of profit (besides a host of other social factors). Occasionally, when promising technologies are ready for commercialization (typically after a lengthy period of discovery and invention) and the economic outlook is favorable, the market for epoch-making technologies rapidly expands and transforms the entire economy in the process. These occasions are termed technological revolutions, in distinction to the original industrial revolution. The first technological revolution builds on the achievements of the industrial revolution and the cumulative advances prepare the ground for subsequent technological revolutions.

The co-development of railways, steam power, and machine production of machinery characterizes the first technological revolution. Railways and steamships revolutionized transportation, for freight and passengers, in an age that relied on horses, canals, and sailing ships. Between 1831 and 1876 railways and steamships both grew by orders of magnitude, with over 300 kilometers of railways rising to over 300,000 and over 30,000 tons of steamships rising to over 3 million.[54] World steam power increased from 4 million horsepower in 1850 to 18.5 million in 1870.[55] The related development of railways and coal which fueled steam power (and later became a primary source of electricity) is shown in Figure 13. In the UK the railway network was largely established in the 1830s and 1840s (comprising roughly half of total investment towards the end of this period),[56] while progress in competing economies would follow in subsequent decades (construction in the US continued with westward expansion).

Figure 13: US Railroad and Coal Production[57]



Railways were a leading consumer of iron, which in turn consumed a substantial portion of coal output (for coke smelting and other processes). Iron and coal became affordable and accessible with the extension of railways, enabling industry to flourish beyond the areas endowed with water power. Though steam engines were available since the 1700s, more powerful and robust high-pressure steam engines were developed to meet the needs of the railway industry. Steam engines, rendered cost-effective by trains transporting coal, proliferated throughout the rest of industry and powered a growing array of machine tools. While the industrial revolution relied on craft production utilizing

hand tools, the railways fostered the development of machine tools with adequate precision to produce locomotives and steam engines.

As railways and steamships multiplied, transportation costs were greatly reduced, the time needed to distribute commodities was abbreviated (routes which formerly took weeks were covered in a matter of days), and markets expanded geographically (local and regional markets became integrated into national and even international markets). Communications were improved with the spread of telegraphs accompanying the railways. Financial provision grew to fund railway infrastructure and immense fixed capital outlays. The engineering skills and organizational principles demanded by the railway industry (management techniques of long-term planning, national coordination of projects, adherence to timetables, and routine maintenance) were broadly applied across other industries. All of these aspects stimulated trade and industry, enabling the scale of establishments to grow from typically employing fewer than a hundred workers to several thousand.

The increasing scale of production also depended on the widespread availability of machinery, set in motion by increasingly social labor and powered by steam. Using machines to produce machines was a milestone in industrial development, which significantly raised productivity, reduced costs, and allowed mechanization to become ubiquitous. This trend was particularly pronounced in the US, since the availability of land for white settlers limited the supply of wage labor, driving up the costs of variable capital and making machinery comparatively more competitive. Individual machines became integrated into more intricate and elaborate systems of machinery operated by teams of workers. Craft labor became displaced by relatively less skilled factory labor while department I grew more specialized and distinct from department II. The quantitative growth of machinery and the scale of production led to a qualitative transition into the next phase of capitalism.

C. Classical Imperialism (1894-1939)

i. Historical Context

The Long Depression from the mid-1870s to mid-1890s marked the protracted end of free competition capitalism. Capital adapted throughout the course of the extended crisis, accentuating and extending certain traits into new and prominent features. Some monopolies and colonies existed under free competition capitalism, but monopolization and colonialism took on altogether new dimensions. Banking capital gave

rise to finance capital and exports grew to include capital goods besides consumer commodities. The small-scale steel industry became colossal after a series of technological advances reduced costs. With businesses operating on a fundamentally larger scale, ownership of capital and management of enterprise became more and more separated. A professional layer of managers, increasingly educated at universities and applying scientific practices designed to improve efficiency, had control of day to day business operations while a remote capitalist class collected unearned income on investments and had the final say over the most important business decisions. Stock markets typified this arrangement-owning stock yielded dividends and capital gains without any entrepreneurial responsibilities. Profit accrued to passive owners of capital (rentiers) who contributed nothing to society.

Facing social polarization in the Gilded Age, the labor movement and socialist movement made strides in unions as well as political parties. Successful struggles to raise wages, improve working conditions, and shorten the workweek boosted standards of living and life expectancy. To continue its exponential growth and exploit unorganized labor, capital overflowed the boundaries of Europe and North America and subjugated the rest of the world to its markets; only Japan managed to build its own empire instead of falling victim to colonialism. The UK established "the empire on which the sun never sets," while the US and Germany caught up with and surpassed the UK in terms of industrialization by 1914. Imperialist rivalry, becoming more combative once the entire world had been divided into spheres of influence, ignited the senseless and barbaric calamity of World War I. Precipitated by the war, the October Revolution marked the first successful socialist revolution, which devolved into Stalinism after civil war and subsequent international isolation (with the failure of the German and Spanish revolutions). The aftermath of World War I (reparations, territorial disputes, etc.) only escalated imperialist tensions. The economy ran aground in the Great Depression, demonstrating capitalism once again could not carry on without making sweeping changes. The immediate responses were fascism and the welfare state, which collided in World War II, punctuating the bloody end of classical imperialism.

ii. Monopolization

The capitalist class has a monopoly over the means of production and distribution and monopolization continues to intensify within the

capitalist class. As a direct result of competition, mechanization spread throughout industry to economize labor and take advantage of economies of scale. This increased the mass of capital necessary to open a viable business which could compete with the leading firms in any given industry, especially after the advances of the first technological revolution. The firms which survived gained the resources to buy out competitors. Facing the concentration and centralization of capital, it became increasingly difficult for ordinary workers to become entrepreneurs or continue in an independent self-employed capacity. These tendencies led to the formation of monopolies (in which a single firm dominates the market) or, more frequently, oligopolies (in which a handful of firms cover the market). The concentration and centralization of capital takes many forms, including cartels (constituents remain formally independent but coordinate activity), trusts (constituents hand over control to a common organization), holding companies (which buy a controlling stake in several firms), and massive corporations which aggressively engage in mergers and acquisitions.

In the US, by the start of the twentieth century approximately a third of manufacturing value added was due to industries in which over half of sales were generated by the top four firms.[58] The result is similar over a century later: in 2012 approximately 30% of manufacturing value of shipments was attributable to industries with over half of the value generated by the top four firms (and overall 44% of the value of shipments was due to the top four firms in all industries).[59] A selection of the most monopolized industries over time is shown in Table 5.

Monopoly capital remained entrenched both in times of prosperity and hardship. In the US, 78-87% of net corporate income went to the largest 5% of corporations while the smallest 75% only received 3-6% during the roaring 1920s and the depression throughout the 1930s.[60] Corporations as a whole are concentrated in relation to proprietorships and partnerships. In 1939 corporations comprised 26% of enterprises but took in 58% of net profit.[61] In 2006 corporations comprised 19% of enterprises but took in 67% of net income.[62] In manufacturing, corporations employed 71% of production workers by 1904 and 95% by 1967.[63] On a scale of 0 to 100 (with 0 indicating all firms are the same size and 100 indicating one firm has a total monopoly), the Gini index value of business revenue increased a few points in recent decades to reach 91.4 in 2017.[64] Gini index values of personal wealth inequality are comparably high, ranging between 80.9 and 86.2 from 2010 to 2021.[65]

Table 5: US Most Monopolized Manufacturing Industries (% of Business by Top Four Firms)[66]

1901	**1935**	**1963**	**1992**	**2017**
Rubber Products 100	Chewing Gum 97	Flat Glass 94	Cellulosic Manmade Fibers 98	Tobacco 91
Pulp, Paper, and Products 71	Cigarettes 89	Manmade Organic Fibers, except Cellulosic 94	Primary Smelting and Refining of Copper 98	Guided Missile and Space Vehicle 91
Transportation Equipment 57	Rubber and Plastics Footwear 81	Steam, Gas, and Hydraulic Turbines, and Turbine Generator Set Units 93	Household Laundry Equipment 94	Newsprint Mills 90
Tobacco 50	Metal Cans 80	Chewing Gum 90	Cigarettes 93	Computer Storage Device 90
Petroleum and Coal Products 47	Wet Corn Milling 79	Primary Batteries, Wet and Dry 89	Malt Beverages 90	Aircraft 90
Primary Metal Products 46	Industrial Gases 79	Linoleum, Asphalted-Felt-Base, and other Hard Surface Floor Coverings 87	Vegetable Oil Mills, except Corn, Cottonseed, and Soybean 89	Wet Corn Milling 89
Machinery, except Electrical 41	Photographic Equipment and Supplies 77	Cereal Breakfast Foods 86	Asbestos Products 88	Glass Container 89
Food and Kindred Products 39	Cereal Breakfast Foods 68	Gypsum Products 84	Tanks and Tank Components 88	Blank Magnetic and Optical Recording Media 86
Leather and Leather Products 26	Beet Sugar 68	Nonferrous Forgings 84	Chewing and Smoking Tobacco and Snuff 87	Dog and Cat Food 86
Chemicals and Products 24	Abrasive Products 67	Carbon and Graphite Products 83	Primary Batteries, Dry and Wet 87	Women's Handbag and Purse 86

It is instructive to consider a specific example of monopolization, to see how this tendency operates in practice. In Milwaukee, some thirty-five breweries opened between 1840 and 1860. These were small-scale and served local neighborhoods. The first batches out of the first commercial brewery (Owens' Brewery) had a capacity of five barrels. Business expanded once railroads connected Milwaukee and Chicago, with operations transitioning from individual buildings to taking up entire city blocks. The division of labor progressed within breweries (malting, fermenting, packaging, and shipping) as well as in supporting industries (production of barrels, glass bottles, ice, etc.). Scientific management introduced innovations such as pasteurization, artificial refrigeration, and mechanized bottling. Only nine breweries remained in 1885, controlled by wealthy "beer barons" who took to living in mansions. Mergers and buy-outs continued, valued at several million dollars. As powerful as the oligopolies were, prohibition disrupted the industry, which re-aligned to produce other beverages and foods. After prohibition was repealed, the major breweries opened locations across the US and three breweries (Pabst, Schlitz, and Miller) joined only two others in the country in producing over 10 million barrels per year on a national scale in the 1970s. Brewing globalized under neoliberalism and Pabst, Schlitz, and Miller were all acquired by larger companies, changing hands several times.[67] Monopolization continues on a national and global scale: in 2020 the top three brewing companies accounted for 71% of sales in the US and the top four brewing companies in the world accounted for half of sales globally.[68]

Monopolization does not eliminate competition so much as it elevates it to larger scales (ultimately reaching a limit on the global market). Regional monopolies come into competition with one another on the national level and national monopolies clash on the global market. This global competition became inevitable when the scale of production exceeded the consumption of national markets. In the age of imperialism, monopolization overran the national level, setting the stage for violent conflicts on the international stage between competing countries, ultimately culminating in two world wars. Subsequently monopolization continued on a global scale with the rise of multinational corporations (for instance in 2015 the top five automotive groups accounted for half of global sales, in 2020 Coca-Cola and Pepsi accounted for 65% of the carbonated soft-drink market, etc.).[69]

Monopolization does not proceed in a linear fashion. There are often setbacks and important counteracting tendencies. Monopolies which abuse their position by jacking up prices to raise profit invite competitors to enter the market. Innovative technologies, new industries, and changing consumer preferences can uproot established businesses. The specialization of capital in different sectors tends to restrain vertical integration of the supply chain, since specialization typically offers the advantage of reducing the turnover period of capital. Corporate spin-offs split away from parent companies to specialize in separate markets. "Diseconomies of scale" can also crop up as businesses grow due to communication and management becoming relatively more difficult, "cannibalization" (new products taking away market share from other products by the same monopoly so there is no net gain), etc. Bureaucratic oligopolies which lose their competitive edge become stagnant and risk going out of business, regardless of their size.

As shown in Table 6, market concentration increases over time for industry taken as a whole, but on average it advances most rapidly for the industries which are initially least concentrated, becomes stagnant at some higher threshold of concentration, and may even decline for the most concentrated industries. This relates to the developmental trajectory of new industries: growth may initially be slow and incremental (since per-unit costs are high to begin with and production capacity is limited), then rapidly advance (thanks to economies of scale and enhancements from research and development), and slow down once the market becomes saturated (as sales are more and more replacing obsolete units instead of supplying first-time buyers). Monopolization advances when profitable technological innovation accelerates the growth of top firms relative to the market.[70]

Table 6: US Manufacturing Change over Time of Concentration Ratios (% of Total Shipments, Top Four Firms)[71]

Values denote average concentration ratio of industries that fall within each range in the initial year (1935 or 1997) and the average concentration ratio of the same industries in the final year (1992 or 2017)	**Year**	**0-33%**	**34-66%**	**67-100%**	**Total**
Standard Industrial Classification	1935	20	50	76	43
	1992	36	55	71	50
North American Industry Classification System	1997	20	47	77	33
	2017	25	47	68	35

The state regulates "natural monopolies" (such as utilities) and antitrust laws, though selectively enforced, discourage some of the more egregious monopoly behaviors (such as collusion, price gouging, excessively restricting supply, etc.). In rare cases, monopolies are broken up into smaller companies. However this is not a lasting solution since monopolization continues all over again. For instance Standard Oil, which dominated 90% of US oil refining by 1880, was broken up into thirty-four smaller companies in a 1911 Supreme Court ruling.[72] Over subsequent decades many of these companies merged into a handful of powerful oligopolies (Chevron, ExxonMobil, BP, and Marathon).

Going through cycles of mergers and breakups does not get to the root of the problem, which is the lack of effective public control over private firms and their reckless pursuit of profit. There is poor transparency over the degree to which monopolization advances, since brand names do not always reflect common ownership, giving consumers the illusion of variety and masking the extent of monopolization. For instance Corona, Rolling Rock, Michelob, Budweiser, and dozens of other beer brands all fall under AB InBev. In the US six corporate giants are responsible for 90% of the media industry, though they operate through numerous channels.[73] Challenging the consolidated power of the largest firms is made difficult by their influence on government through campaign donations, lobbying, revolving door politics, etc. Yet monopolization accentuates class distinctions between workers and elites to a degree that cannot escape notice, highlighting the injustice implicit in capitalist relations.

Monopolization created unprecedented levels of inequality, with business magnates such as Morgan, Carnegie, and Rockefeller becoming household names. John Rockefeller alone accumulated a fortune equal to 1.5% of US GDP, making him comparatively the richest American in history.[74] The top 1% in the US owned approximately 25% of the wealth in 1810 and approximately 45% in 1910 (the value fell to around 30% in the Great Depression and rose a few percentage points under neoliberalism). In Europe the top 1% owned over 50% of the wealth in 1810 and over 60% in 1910 (the value fell to around 20% by 1970 and rose a few percentage points under neoliberalism).[75] The extreme inequality contributed to the severity of the Great Depression and as the working class had little to fall back on it raised demands for a "new deal" and union representation to challenge the asymmetry of power.

iii. Finance Capital

Banks play a critical role in promoting capital accumulation, above all by extending credit to businesses. The deposits of numerous individuals and businesses are pooled into large sums which are loaned and invested. Banks turn idle money into money capital, which industries draw on to augment their productive capital. With a growing organic composition of capital, industries came to rely more and more on banks to provide funding for fixed capital investments (railroad construction, steel plants, etc.) which exceed the means of individual capitalists. Investment banks fostered the formation of joint-stock companies which pool the resources of numerous investors.[76]

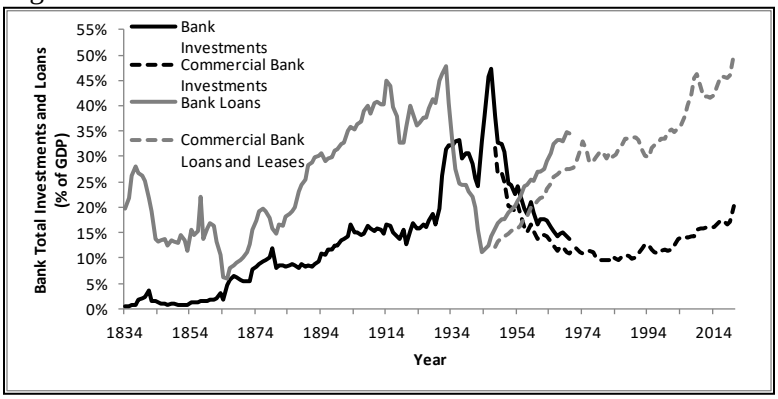
As businesses grew larger, so grew the deposits held by the banks, which had to become more proactive in soliciting profitable outlets for their growing mass of money capital. The relatively greater dependence of industry on banks and the concentration and centralization of banking capital gave rise to finance capital- banking capital which actively oversees production and distribution. In this way a significant portion of industrial capital came to be owned and directed by the financial sector (so that banking capital and industrial capital in a sense merged together). Whereas banking capital played a supporting role for industry's accumulation of capital in earlier times, finance capital started calling the shots.

Finance capital expedited monopolization by financing the massive mergers and acquisitions which consolidated markets. In return for fees and partial ownership it also financed stock launches which raised capital for private businesses selling shares. Securities issued on the New York Stock Exchange annually raised less than $30 million through 1879, grew above $100 million by 1901, and reached nearly $300 million at the start of the 1920s.[77] In the process, large businesses became independent legal entities escaping the purview of individual owners (in distinction to proprietorships, partnerships, and family owned and operated small businesses), objectively reflecting the growing social aspects of production. While corporations and stock markets overcome the limits of individual capitalists concerning their capacity to accumulate capital, the growing socialization of production remains constrained by the social relations of private property. This contradiction is reflected in the term "going public," in which a privately owned business sells shares on the market, resulting in a so-called public business. A community of investors owns the publicly traded shares yet it remains their private

property rather than a truly public affair under the communal ownership of all of society.

Monopolization, which finance capital catalyzed, in turn swept across banking and reduced the number of banks in absolute terms. In the US, the number of commercial banks rose from 11,474 in 1896 to a peak of 30,456 in 1921 before falling below 15,000 in 1938. The number held fairly steady for decades but fell under neoliberalism to 4,578 in 2019. Meanwhile, assets of commercial banks grew from $6.2 billion in 1896 to $62 billion in 1929, $1,508 billion in 1980 (equal to $336 billion in 1929 dollars), and $17,357 billion in 2019 (equal to $1,456 billion in 1929 dollars).[78] The top four commercial banks accounted for 15% of total deposits in 1984 and 44% by 2018.[79] The rise of finance capital under classical imperialism was followed by a wave of financialization decades later under neoliberalism, as shown in Figure 14.

Figure 14: US Trends in Financialization[80]



The initial rise of finance capital is reflected in a growing mass of loans and the takeoff of bank investments but was checked by the stock market crash of 1929 (with financial speculation largely to blame) and the Great Depression. Loans sharply contracted while investments shifted from the private sector to government securities, particularly to fund the war effort. In the post-World War II boom the financial sector recovered but industrial capital held its own amid sustained growth which enabled a greater degree of self-financing. Once the boom ended capital faced a shortage of profitable investment opportunities in the real economy and turned to financialization, which inflated asset prices in the stock market and real estate. Under neoliberalism the hunt for profitable

investment opportunities contributed to globalization (facilitated by financial institutions transferring money capital around the world),[81] with certain parallels to colonialism under classical imperialism (bankrolled by finance capital) regarding the exploitation of the underdeveloped countries by the leading capitalist countries.

iv. Colonialism

Just as monopolies divided up markets, imperialist countries carved up the world, forcibly colonizing entire continents. "Between 1876 and 1915 about one-quarter of the globe's land surface was distributed or redistributed as colonies among a half-dozen states. Britain increased its territories by some 4 million square miles, France by some 3.5 millions, Germany acquired more than 1 million, Belgium and Italy just under 1 million each. The USA acquired some 100,000, mainly from Spain, Japan something like the same amount from China, Russia and Korea. Portugal's ancient African colonies expanded by about 300,000 square miles; Spain, while a net loser (to the USA), still managed to pick up some stony territory in Morocco and the Western Sahara."[82] By 1913 only 3% of the African landmass was under the control of independent states, compared with 70% of Asia (excluding Asiatic Russia), and 93% in Central and South America.[83] However, even formally independent states, such as China after the Opium Wars, were subordinated to imperialist spheres of influence and so may be termed semi-colonial. Especially after the division of the colonial world was more or less accomplished, imperialist struggles to gain additional territory at the expense of rivals became a major source of conflict contributing to both world wars. In the aftermath of World War I the Russian Empire, Austro-Hungarian Empire, Ottoman Empire, and German Empire collapsed and Germany was stripped of its colonies. Following the annexation of Austria and the Sudetenland, the Nazi invasion of Poland to purportedly create "living space" sparked World War II.

The barbarity of world war was preceded and accompanied by barbarity in the treatment of the colonial world, through conquest and plunder as well as the devastating effects of free trade. Imperialist countries at the Berlin Conference of 1884-1885 divided the African continent amongst themselves, without any African representation. Subsequently Belgian imperialism was responsible for killing approximately half of the population of twenty million people in the Congo in the pursuit of natural resources.[84] An estimated thirty-five

million Indians suffered preventable deaths due to famine under the British Empire.[85] Countless other examples of atrocities could be cited. Whether imbued with racism or cloaked in nationalist and religious ideology, the imperialist interest in colonization was purely for material gain and, in the case of controlling territory without much economic significance, the political power of empire-building.

There are several economic functions of colonialism. The imperialist countries sought export markets for consumer commodities and later capital goods, import markets for raw materials, sources of cheap labor (all the more so as labor organized in the imperialist countries), foreign investment opportunities, and the settlement of particularly resource-rich areas (for instance South Africa). It is not surprising then that the economic development in the colonies was tailored to the needs of the imperialist countries, rather than intended to benefit the indigenous people. Instead of fostering their all-around development and industrialization (which would lead to competition with the imperialist economies), economic activity in the colonies was often limited to a small selection of cash crops and natural resources. The lack of diversity was devastating, especially during market downturns, and overexploitation of resources took a heavy toll on the environment.

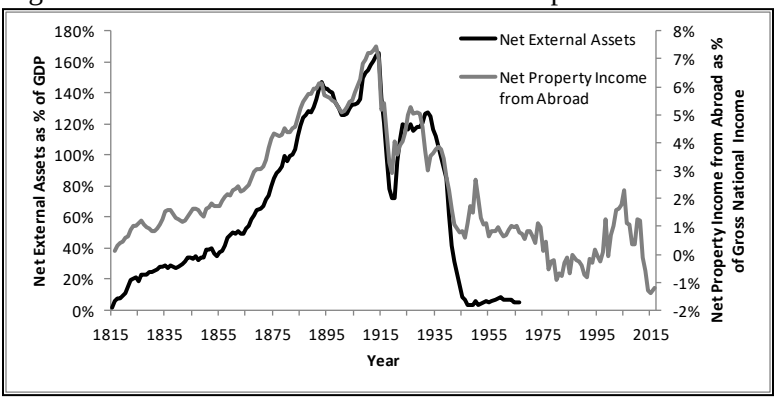
At the same time as colonization drew all parts of the world into the capitalist market (facilitated by developments in transportation including railroads and steamships), combined and uneven development stunted the growth and industrialization of colonies such that pre-capitalist classes coexisted for an extended period side by side with the emerging bourgeoisie and proletariat (for instance peasants working seasonally for wages). Many colonies not only faced anemic growth, but suffered immiseration and declining output in craft production through competition and coercion imposed by imperialist enterprise. Weak and corrupt colonial governments, beholden to imperialist rule, deepened economic difficulties. Rather than challenging imperialist relations, the bourgeoisie that arose in the colonies more often than not sided with the imperialist bourgeoisie for support and invested in unproductive areas (such as land) as safer alternatives to industrialization, hindering growth.

Exorbitant rates of profit could be wrung from the colonies primarily in the form of absolute surplus value. The presence of large reserve armies of labor depressed wages and forestalled any pressure to economize labor by introducing machinery. Labor-intensive colonial economies had a relatively low organic composition of capital, which

contributed to maintaining high profit rates. Differences in the rate of profit between imperialist and colonial economies were persistent due to formidable barriers limiting the mobility of capital and labor-power. Imperialist countries guarded the monopoly of access to colonies they controlled, thereby limiting free trade. Much of the profit generated in the colonies was repatriated to imperialist countries, reducing the social surplus available for domestic accumulation. It must be borne in mind that every percent of profit on the massive stock of imperialist capital represents an enormous sum of profit in relation to the far smaller underdeveloped colonial economies.

The extent of colonial investment and exploitation, which proved unsustainable, is shown in Figure 15. Ultimately colonialism was rent apart by inter-imperialist conflict and colonial uprisings, with added pressure from incremental industrialization in the colonies once capital goods exports from the imperialist countries became a growing business. Weakened by world wars, imperialist countries would have to reorient their strategy as colonial revolutions swept the world. Yet as long as the revolutions only challenged imperialist domination but not capitalism, the injustice, inequality, and underdevelopment which characterized colonialism would continue to plague neocolonialism.

Figure 15: The Rise and Fall of the British Empire[86]

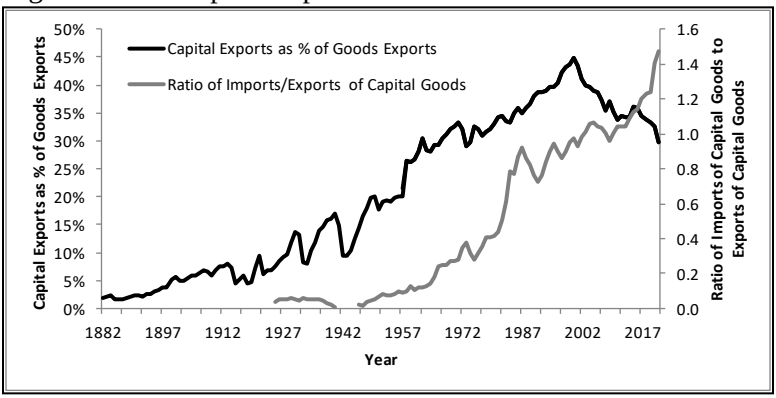


v. Capital Export

Capitalism is impelled by accumulation to expand its geographic reach in order to broaden the market for commodity exchange. In time this grew to include the market for fixed capital as well. Machinery initially was not a significant category of exports, since domestic demand

exceeded supply in the early days of industrialization. Once industrialization began to saturate domestic markets, the export of machinery became increasingly imperative for the advanced economies to continue growing. This trend accelerated under classical imperialism and continued until the neoliberal era, as shown in Figure 16. Capital exports took place between advanced capitalist economies as well as from the advanced capitalist economies to the developing economies, accompanied by foreign investment which put the capital to use.[87]

Figure 16: US Capital Export[88]



During free competition capitalism, the advanced economies primarily exported manufactured consumer commodities and imported raw materials and agricultural goods from pre-capitalist economies. Exporting consumer commodities precedes exporting means of production to parts of the world in transition to capitalism, which have an immediate use for textiles, metalware, and the like but are not socially organized to begin using industrial machinery straight away. The importation of cheap commodities from the advanced economies undermined traditional occupations and ways of life, which could not compete, and began to introduce elements of capitalist relations. The process of being drawn (forcibly, more often than not) into the global market coerced colonial societies into an international division of labor in which they were consigned to supplying a rising mass of raw materials, to serve as inputs for the ever-growing production of the imperialist economies. Accordingly, the export of machinery to the colonial world primarily served to economize the procurement of raw materials and drive down their costs.

Since capital goods are several times more expensive than consumer commodities, and payment is spread over time instead of being one-off, capital export contributed to imperialist countries exerting greater control over colonies to ensure a return on investments. This overbearing influence was often maintained even after colonies gained formal independence. Capital exports to the neocolonial countries continued as they fostered their own domestic industries. A shift occurred when the advanced economies faced deindustrialization under neoliberalism. By this time some developing economies (including Mexico, South Korea, and China) had industrialized in turn and were able to expand their market share in the production of consumer commodities and competitively export machinery at the expense of the advanced economies.

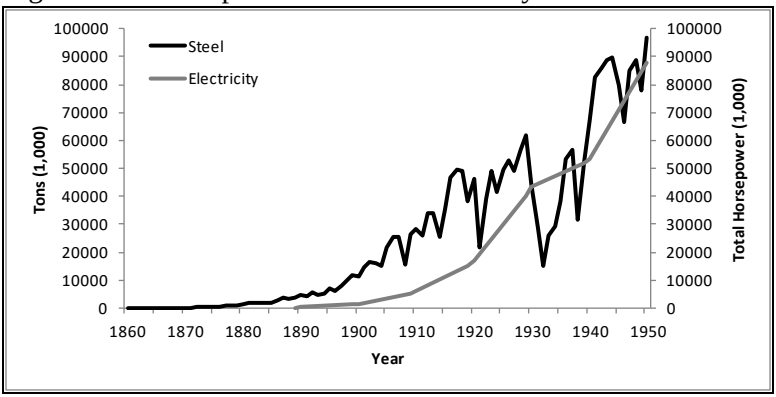
vi. The Second Technological Revolution

In the first technological revolution steam engines and railroads raised the organic composition of capital in department I relative to department II, which led to a structural transfer of surplus value in favor of the industries producing means of production. This had the effect of accelerating mechanization and developing new technologies which defined subsequent technological revolutions. The second technological revolution featured the growth of steel and electricity, as shown in Figure 17. The advances of metallurgy and electricity went hand in hand, transforming the economy and giving rise to modernism. Combustion engine and automobile production also made progress (chassis assembly time fell from 728 minutes to 93 minutes thanks to the moving assembly line and in the US the number of passenger car registrations totaled 8,000 in 1900, 1.6 million in 1914, and 23.1 million in 1929) but would become even more prominent in the third technological revolution.[89]

The Bessemer process and other breakthroughs revolutionized steel production and greatly reduced per-unit costs. Being far more durable, steel replaced and superseded cast iron and wrought iron as the principal input of many important applications, including railways, ships, automobiles, and engines and motors. Skyscrapers dramatically increased in height with the use of steel frames and were made practical through the use of electric elevators, transforming city life and culture. Steel also became commonplace in consumer commodities, such as kitchenware, bicycles, etc. Different steel alloys had properties tailored to meet various needs, such as increased strength for cutting, electrical

resistance for transformers, and resistance to corrosion for consumer commodities (stainless steel).

Figure 17: US Output of Steel and Electricity[90]



The infrastructure of electric utilities (plant and equipment of power stations and transmission throughout the grid) relied on steel and copper while electricity powered the machinery and buildings built with steel. Electrochemistry, using electricity to drive chemical reactions, made strides and proved useful for extracting metal from ore, purifying metals, and producing a variety of chemicals on an industrial scale. Electricity offered greater flexibility than steam power in the layout of factories as well as finer control over equipment. Light bulbs, telephones, and tramways in cities were important early applications of the new technology. In the US, by 1930 over 80% of factories used electricity (which supplied 78% of the power used by industry).[91]

Steel and electrical production hastened the process of monopolization, through the sheer scale of their operations (giving rise to giants such as US Steel and General Electric) and by enabling other industries to scale up. Accordingly, the need arose for an even more intensive division of labor including full time professional management, accounting, sales teams, and other supporting white collar employment. So-called scientific management, or Taylorism, was deployed to conduct time and motion studies to economize labor, optimize production processes, and keep track of costs and profits.[92] College-educated managers displaced informally educated small-scale proprietors as engineering and the sciences became increasingly important for the further development of industry. The improved organizational capacities

in turn expanded the scale of production. These trends gave rise to Fordism (featuring a greater emphasis on standardization of interchangeable parts, the moving assembly line, and efficiency wages) and the labor process became more repetitive and bureaucratic.

The UK failed to adapt as competitors leapfrogged ahead in the new fields of industry. The UK was still in the lead in 1880 with 23% of global manufacturing output, but with 14% in 1913 fell behind the US with 32% and Germany with 15%. This is partly due to heavily investing in its colonies, which reduced the investment available for domestic modernization- over half of net capital formation took place abroad in the years leading up to World War I.[93] The UK retained its advantage in controlling colonial territory but its empire had reached its apogee and began to unravel with the outbreak of world war. Following World War I the US was in a stronger position relative to Europe and this was greatly accentuated after World War II. The US definitively eclipsed the UK as the leading capitalist superpower.

D. Late Capitalism (1940-1979)

i. Historical Context

The Great Depression signaled that the capitalist economy left to its own devices was no longer viable. New methods of state involvement to rescue and support the economy were introduced, ranging from welfare state policies (including public works and social safety net programs) to fascism depending on the country. While fascism produced full employment by ramping up military production and sharply raised the rate of exploitation by annihilating the labor movement, it was unstable and precipitated its own demise by provoking the bourgeois democracies and prompting stiff Soviet resistance in World War II. Ultimately, World War II brought the capitalist world out of the depression and a "golden age" of capitalism ensued over the following decades, sustained by technological development and crisis management by the state. The in-demand and organized working class enjoyed a rising standard of living during this period, though this did not necessarily extend to disadvantaged populations in the advanced countries or neocolonial world.

The post-capitalist world expanded with the satellite states of the Eastern bloc, followed by China, North Korea, Cuba, and Vietnam. All of these would suffer from bureaucratic deformation and a lack of democracy, depriving working people of the opportunity to exercise

genuine control over the economy, state, culture, and day to day life. Along with the destructive experience of two world wars, the spread of post-capitalist states led to efforts to reduce capitalist in-fighting and unify the capitalist world under the leadership of the US as the sole capitalist superpower in the Cold War. Global institutions including the United Nations, International Monetary Fund, World Bank, and the General Agreement on Tariffs and Trade (the predecessor of the World Trade Organization) were launched in the 1940s. Using a mixture of reformism and consumerism, the capitalist class in the advanced countries also attempted to placate the working class into accepting the social order. Anti-capitalist struggles continued nevertheless, erupting in France in May 1968 and Italy in 1969, but foundered due to ineffective leadership and inadequate leftist political parties. Bureaucracy plagued unions and working class political parties alike. The more or less conciliatory standpoint adopted by the labor movement weakened its fighting spirit and proved disastrous going into the stagflation crisis of the 1970s as the post-World War II boom came to an end, setting the stage for a number of working class setbacks under neoliberalism.

ii. Keynesianism

The Great Depression caused double-digit unemployment rates in most advanced economies, affecting up to a quarter of the labor force in the US.[94] People were desperately looking for work but the capitalist class could not profitably employ them. Faced with the enormity of the crisis, poorly-performing conventional economic theories (including the laissez-faire approach which would allow wages to continue to fall, though workers were already on the brink of disaster) were abandoned in favor of pragmatic approaches to reviving the economy, in which the state took responsibility for saving capitalism.

Guided by Keynesian theory, governments stepped in to boost demand and provide employment to offset lagging business investment and stimulate the economy through counter-cyclical policies. Government involvement included public works projects, social safety net programs (such as welfare, unemployment assistance, publicly funded health care, and old-age and survivors insurance), and even state ownership of enterprises and a degree of voluntary economic planning. With the aim of stabilizing capitalism, Keynesianism does not substantially redistribute wealth. In fact, the working class funds just about all of the social welfare benefits it collectively receives.[95]

Government spending funded by taxation would not provide much of a stimulus- increasing government spending would be offset to roughly the same degree by falling consumer spending and investment. In order to stimulate the economy a significant portion of government spending must be funded through deficits. Creating new purchasing power raises demand, which leads businesses to raise output and, if the stimulus is sustained and grows over time, invest in expanding production. By increasing demand and subsidizing capital (for instance by providing publicly funded research, guaranteeing profit through state contracts, etc.) the government facilitates the circulation of capital.

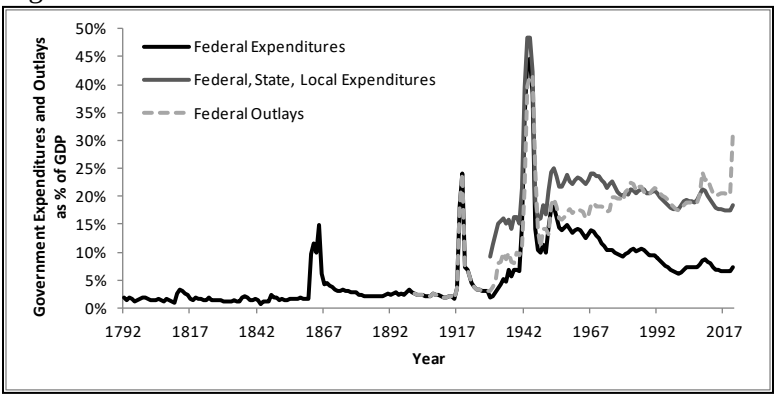
Yet the effectiveness of Keynesianism runs up against the limits of capitalism. By reducing unemployment, labor is empowered and the rate of surplus value becomes constrained, which places downward pressure on the rate of profit and dampens accumulation. As private investment is constrained, it becomes necessary for the government to increase its spending even more to maintain the economy.[96] However, excessive spending causes inflation rather than unbounded economic growth and there are limits to the amount of debt governments can sustain.

In practice, Keynesianism did not end the Great Depression- only the massive mobilization of World War II accomplished that. During the post-war boom, however, strong government intervention in the economy remained necessary (in addition to all the baseline functions it continued to serve), as shown in Figure 18. Neoliberalism would chip away at government expenditures decades later, yet government outlays (which additionally include transfer payments, redistributing money for entitlement programs for instance) have continued to grow nevertheless. The government is obliged to step in to redirect revenue flows through outlays, provide employment, and augment investment through expenditures, all on a massive scale, simply to maintain the social order. This in itself is a damning critique of the capitalist mode of production and an admission that laissez-faire policies do not create the best of all possible worlds.

A return to laissez-faire capitalism is inconceivable. On the one hand, the government has to continually remedy market failures to prevent crises from spiraling into depressions. On the other hand, the economy reached a level of complexity and socialization that demands greater agency from public institutions. Only the state is capable of performing certain necessary functions which are either unprofitable or too large for individual businesses, such as implementing highway

transportation systems, advancing public research, and coordinating economic activity through tax incentives and indicative planning (market forecasting which businesses optionally follow, rather than planning in the sense of a socialist planned economy). The expanding role of the state in stabilizing and managing capitalism reveals the need for public control over the economy, which only socialism can ultimately offer.

Figure 18: US Government Economic Involvement[97]



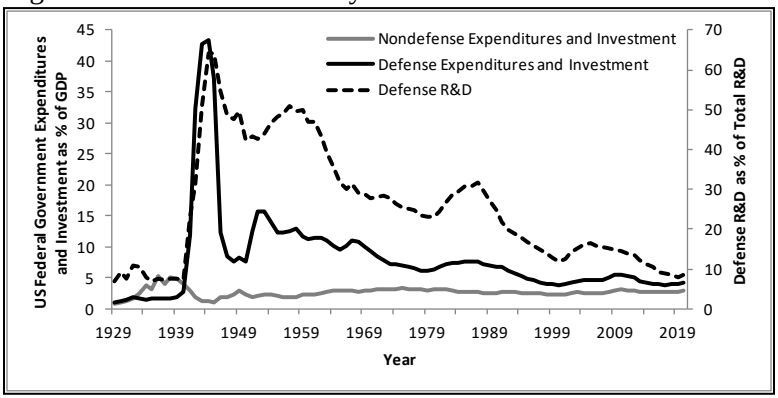
iii. The Arms Economy

Prior to the twentieth century military spending tended to deplete the social surplus available for accumulation. Investment opportunities seemed limitless under free competition capitalism (at least during suitable phases of the business cycle) and taxation was kept to a minimum to promote industrial accumulation. As capital grew in magnitude it faced increasing difficulties finding profitable outlets for investment. During classical imperialism monopoly capital sought additional markets by colonizing vast regions around the world. Following World War II capital came to rely on maintaining high levels of military expenditures, even during peacetime, which greatly exceed nondefense government expenditures (which have remained fairly stationary relative to GDP), as shown in Figure 19.

Keynesian government expenditures are primarily centered on militarization for several reasons. Arms production does not produce commodities that directly compete with private businesses or benefit the working class, which would lessen exploitation and reduce the rate of profit (whereas if the government were to build housing or produce consumer goods this would compete with industry and benefit workers).

Arms production does not satisfy consumer needs (which are necessarily finite), but instead is geared towards the limitless task of improving military capabilities and so can go on seemingly endlessly. The arms industry provides wages to buy consumer commodities without contributing to overproduction, since output is guaranteed to be purchased by the state. Additionally arms production bolsters the imperialist countries' ability to exert influence over neocolonial regions, militarily intervene to counter uprisings and revolutions, and contain anti-capitalist movements (especially in the context of the Cold War).

Figure 19: US Arms Economy[98]



Militarization is not a cure-all for the issues besetting capital accumulation. As a capital-intensive sector of the economy, arms production raises the organic composition of capital, which tends to reduce the overall rate of profit. Arms production consumes sizable quantities of raw materials and commodities used across industries (fuel, metal, etc), and so drives up their prices by raising demand, which negatively impacts business generally. Similarly, arms production accounts for a considerable portion of research and development, increasing competition over intellectual labor to the detriment of the private sector.

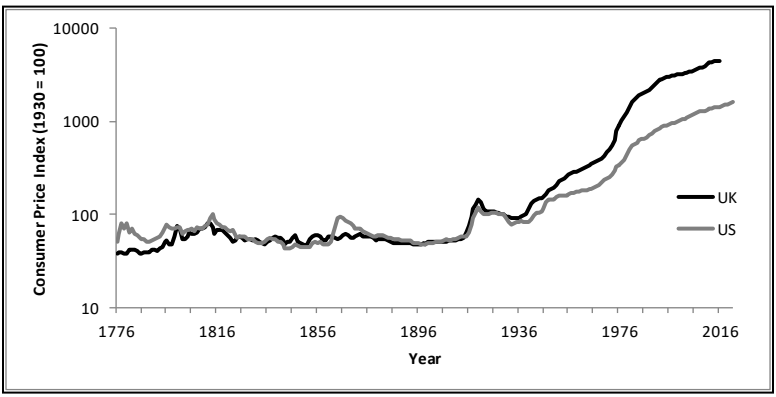
Given the materials it consumes and the labor it preoccupies, militarism is a tremendous waste of resources and effort, which only befits the generalized competition and decadent spending that capitalism engenders. As Eisenhower acknowledged, "Every gun that is made, every warship launched, every rocket fired signifies, in the final sense, a theft from those who hunger and are not fed, those who are cold and are

not clothed. This world in arms is not spending money alone. It is spending the sweat of its laborers, the genius of its scientists, the hopes of its children."[99] Though the arms economy has declined in relative terms, particularly once the Cold War ended, it remains a significant component of government spending in absolute terms which diverts production away from other uses which could raise the standard of living. For all the money poured into the arms economy, the only lasting benefits are the technological spin-offs which have civilian uses (such as sonar, microwave ovens, and the internet). Even more significant breakthroughs would be possible if research and development and production were consciously directed towards improving the quality of life from the very start, rather than honing instruments of destruction.

iv. Permanent Inflation

Through Keynesianism the state became more active in monetary policy, not just fiscal policy. To allow greater monetary flexibility, the advanced economies abandoned the gold standard in the 1930s. Banknotes and gold could no longer be exchanged at a fixed rate through official channels (though gold is always for sale in exchange for token currency on the market). From then on inflation became permanent, as shown in Figure 20.

Figure 20: Permanent Inflation after Abandoning the Gold Standard[100]



Even under the gold standard the cost of living could increase significantly, especially in times of war, but these periods would alternate with periods of decreasing costs such that there was no long-

term trend in price indices during free competition and classical imperialism. Inflation under late capitalism and neoliberalism shares some commonalities with prior bouts of inflation but is clearly a novel development. To approach the issue of permanent inflation the relative prices of commodities will be assessed, taking into consideration metallic currency, convertible currency, and unconvertible currency.

Based on the labor theory of value, at first approximation gold will exchange with commodities based on the socially necessary labor they embody. For instance, if it takes the same amount of labor time to produce one gram of gold and four of a given commodity:

1 gram gold = four commodities; 0.25 grams gold/commodity

If the productivity of labor increased in manufacturing such that twice as many commodities were produced in the same amount of time:

1 gram gold = eight commodities; 0.125 grams gold/commodity

The exchange value of gold appreciated (the same amount of gold can purchase more commodities) while the exchange value of commodities depreciated (less gold can be had per commodity). The opposite takes place when productivity of gold mining exceeds manufacturing productivity gains:

2 grams gold = ten commodities; 0.2 grams gold/commodity

The exchange value of gold depreciated (the same amount of gold can purchase fewer commodities) while the exchange value of commodities appreciated (more gold can be had per commodity). With a metallic currency the golden price will depend on the relative productivity of gold production and commodity production.

The amount of money (M) needed to cover all exchanges of commodities per year is equal to the total price of commodities in circulation (P_c) divided by the number of times money changes hands per year in commodity exchange, representing the velocity of money circulation (v_m):

$$M = \frac{P_c}{v_m}$$

If the total price of commodities falls and/or the circulation of money speeds up, less gold will be used as money and instead will be hoarded. When the total price of commodities rises and/or the circulation of

money slows down, less gold is hoarded and more is used as money (additionally the growing demand for gold may increase gold mining).

Convertible paper currency does not change the situation significantly so long as it is pegged to gold. If fifty dollars are issued per gram of gold, then relative prices of commodities may be expressed in dollars just as well as in grams of gold. The money prices of commodities are determined then by the relative price in relation to gold and the valuation of the paper currency (the amount of gold each dollar represents):

$100 = 2 grams gold = ten commodities; $10/commodity

The valuation of the paper currency could be readjusted when gold reserves appreciably change. For instance, if gold reserves fell significantly (due to being used to settle foreign trade deficits, for example), it may no longer be feasible to redeem a gram of gold for fifty dollars through official channels (if gold reserves would sooner or later run out at this exchange rate). To stem the loss of gold reserves the gold peg may be revalued, for instance to one hundred dollars per gram of gold, causing inflation:

$200 = 2 grams gold = ten commodities; $20/commodity

Under the gold standard a stable currency valuation was typically maintained, except in times of war. This monetary system had the advantage of being self-regulating: during recessions the price level of wage labor, commodities, and capital would fall as supply exceeded demand, which would devalue capital and cheapen the inputs of production, which raise the profit rate on new investment, leading to renewed expansion of output. However, the recovery only arrives after deflation aggravates the crisis. A falling price level makes it difficult to obtain a profit, given that the price level at the start of production is higher than the price level at the end of production (for instance, if inputs cost $1000 while the outputs are anticipated to be priced at $900 capitalists will not engage in production, instead they will hoard money). As profitability is constrained and output curtailed, there is downward pressure on wages, which reduces demand, and the price level may continue to fall in a deflationary spiral.

The severity of the Great Depression, exacerbated by deflation, prompted a historic shift in monetary policy by abandoning the gold standard and transitioning to unconvertible paper money. Gold is no longer exchanged with paper money through official channels- only on

the market. If paper currency is issued in moderation with respect to gold the money is still "as good as gold." However, unconvertible paper money has continually expanded without being constrained by developments in gold production. To keep the circulation of capital flowing, the role of money as a store of value was sacrificed in favor of accentuating its role as a medium of exchange.

While the gold standard was in effect, gold rushes historically boosted the economy. The growing supply of gold, produced at a higher level of productivity, enters circulation and the new purchasing power bolsters output and raises the prices of commodities. After abandoning the gold standard, continually creating unconvertible money also has a similar effect of creating new purchasing power. Government deficit spending and the growing extension of credit (which creates purchasing power without immediately increasing the supply of commodities) are the main sources creating new purchasing power which tend to generate inflation.

Moderate inflation stimulates the capitalist economy in a variety of ways. A growing supply of money helps to sell a growing supply of commodities. Inflation encourages immediate spending, since the purchasing power of savings only deteriorates over time. The working class does not typically fight increases in the cost of living with the same militancy it fights wage cuts (even when the rising cost of living reduces the standard of living to the same degree as a wage cut; real wages may fall despite increasing nominal wages), such that inflation helps to raise the rate of surplus value. Inflation staves off the collapse of asset and commodity prices in times of recession, making the crisis less severe but more prolonged (inflation keeps relatively less competitive businesses afloat rather than allowing the crisis to purge them and relieve the overaccumulation of capital). Under the gold standard capital would be devalued in the specific industries and firms which face economic failure, whereas inflation is a blunt instrument which devalues all money and so takes its toll on the entire economy.

If commodity output kept pace with the growing money supply, inflation would not be prevalent. However, there are limits to expanding production, which is a more gradual process than simply printing paper money. Capitalists do not expand production unless it is anticipated to be profitable and the maximum sustainable growth rate is limited by the profit rate. Therefore increasing the money supply will tend to cause inflation when the profit rate is low and when the growth rate is already

approaching its limit. This occurs when supply chain bottlenecks disrupt the circulation of capital. Throwing additional money into circulation as the economy approaches full capacity and full employment is typically inflationary.

The rate of profit and rate of growth are materially limited to a relatively narrow range, while printing money is not nearly as constrained. Excessive unconvertible money typically causes moderate inflation to devolve into double-digit inflation or occasionally hyperinflation in crisis situations. Such instability can be just as detrimental as deflation and so governments normally regulate the money supply within certain bounds. Even so, an unstable and constantly devaluing currency is a source of uncertainty which strains long-term forecasting and investment decision-making. Without fundamentally overcoming the limits of capital in any way, permanent inflation is at best a lesser evil in comparison to the rigid gold standard.

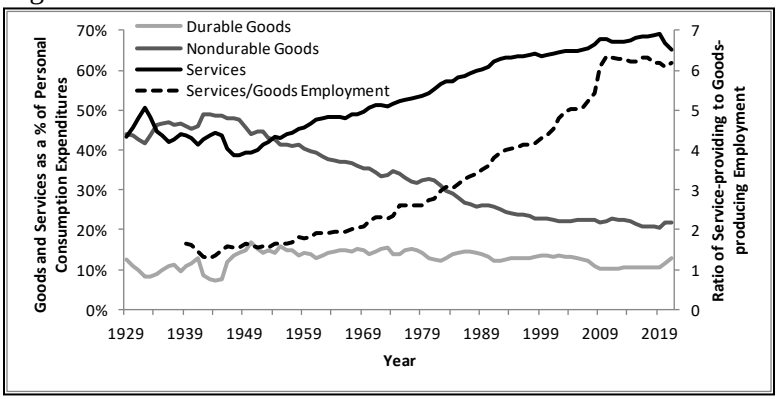
v. The Rise of the Service Sector

Just as industry outstripped agriculture as capitalism progressed, services later succeeded industry. Industrialization was only possible on a mass scale once agriculture was sufficiently productive to free a growing proportion of the population from farming to meet their subsistence needs. Likewise, the service sector is built atop the foundation provided by industry and relies on the commodities it supplies. By and large, society must first meet its most fundamental needs (such as the provision of food) before attending to the basic amenities of life (such as indoor plumbing, electricity, etc.), which then facilitate intellectual and cultural pursuits, whether directed at improving the standard of living (such as scientific research) or purely for leisure (such as tourism). Of course, agriculture, industry, and services are all co-developing. Technological advances within industry impacts the further development of services, academic research transforms agriculture, and so on.

In the US, agricultural employment accounted for around 74% of total employment in 1800, 40% in 1900, 12% in 1950, and 2% in 2000. Manufacturing employment as a percentage of the total rose from 3% in 1810 to 20% in 1900, reached a peak of 26% in 1953, and declined to 8% in 2010.[101] In terms of personal consumption, services gradually increased from 30% of the total in 1869-1873 to 42% in 1927-1931.[102] However, the service sector took off during the post-World War II boom

as shown in Figure 21. Healthcare was a leading component in the rise of the service sector, while the relative drop off in goods-producing employment in the advanced economies partly reflects changes in the international division of labor as developing countries industrialized.

Figure 21: The Growth of the Service Sector in the US[103]



Important cultural developments expedited the growth of the service sector. In the US, the female labor force as a percentage of the total labor force incrementally rose from 16% in 1890 to 21% in 1930. Then with World War II it accelerated, reached 43% in 1980, and leveled off around 47% after 2000.[104] Many services traditionally provided by housewives were increasingly supplied on the market as married women joined the workforce, including childcare, cooking, and cleaning. Women began to outnumber men in college attendance, as higher education became accessible to people from a working class background in order to supply the skilled labor the service sector demanded.

Workers laboring in their own households (repairing clothing, doing yard work, etc.) do not sell labor-power or generate profit. When workers pay other laborers to perform these services, this redistributes the total revenue of wages among different sections of the working class but does not yield any profit. However, the service sector is more and more organized along the lines of capitalist business models (fast food chains displacing home cooking, corporate health care systems displacing private practitioners, etc.), as capitalism continues to extend into every possible domain. This is reflected in declining self-employment (in the US the ratio of full-time or part-time employees to the self-employed was 3.4 in the 1930s, 11.4 in the 1970s, and 15.8 by 2020).[105] When

workers purchase services from capitalist businesses, wage revenue is transferred to capital. In this way the provision of services is another approach (besides commodity production) which capitalist firms use to appropriate profit.

Businesses in the service sector compete by mechanizing operations and reducing labor inputs, just as they do in any other sector. These developments are especially important considering how labor-intensive the service sector is (in other words, the organic composition of capital is initially fairly low). Services become commoditized and automated. Laundry machines, dishwashers, and other ubiquitous appliances exemplify this trend. Employment of switchboard operators and elevator operators was decimated and automated systems are now poised to make inroads into even the most skilled white-collar professions (for instance laboratory robotics, machine translation, etc.).[106]

Typical of the contradictions of capitalism, the rise of the service sector creates immense possibilities for expanding human potential (through education, health and wellness, etc.) but remains stifled by profit-seeking concerns. Capitalism nurtures many services which contribute little to actually improving the quality of life, as excessive financialization and outsized sales departments demonstrate. Overall, the proliferating service sector consumes considerable sums of commodities and reduces the turnover period of capital by furthering the division of labor, thereby boosting industrial production in a roundabout way. Besides creating new lines of business, the substitution of machine-provided services for human-provided services increases commodity production, surplus value generation, and capital accumulation. Capital sought to relieve the pressures of overaccumulation within industry by flooding the service sector, but only reproduced the same susceptibility on a broader scale.

vi. The Green Revolution

Throughout free competition capitalism and classical imperialism, industry developed by leaps and bounds while agriculture lagged behind. However, the advance of industry laid the groundwork for further developments in agriculture. Greater demand for raw materials and food to sustain a growing urban population, improvements in transportation catalyzing national and international markets for agricultural output, and the introduction of farming machinery all contributed to agricultural growth. In the US, between 1869 and 1948 manufacturing labor

productivity in terms of output per hour increased at an annual rate of 2.0% while agricultural labor productivity increased at a rate of 1.2%.[107] A turning point was reached after World War II. Between 1948 and 2011 manufacturing labor productivity continued to grow at an annual rate of 2.4% while agricultural labor productivity increased at a rate of 4.3% (and then slowed somewhat in the following decade).[108]

Prior to the Green Revolution most farming tasks were performed by hand or powered by animals and farms were largely self-sufficient (out of necessity given the relatively undeveloped state of transportation). The Green Revolution linked farms to infrastructure, industrialized agriculture through capital-intensive investments, introduced specialized machinery powered by electricity and the combustion engine, and deployed chemical fertilizers and pesticides on a massive scale. Tractors, which were mass-produced not long after automobiles, all but completely displaced draft animals in the decades following World War II. Scientific management techniques and best practices were applied as well, featuring new varieties of high-yield crops (including hybrids). In the US only 4% of agricultural working hours were performed by laborers who received college education in 1950 but by 2017 the figure reached 40%.[109]

Small farmers found it difficult to compete with a rising strata of large farmers who consolidated the market (a classic example of the concentration and centralization of capital), especially amidst rising land prices. Accordingly, subsistence agriculture was transformed into private enterprise and the division of labor turned food processing into a separate industry apart from farming. In the US the number of farms rose to over six million in the early 1900s and fell precipitously after World War II to below three million in the 1960s and around two million in 2020. Meanwhile the average farm size more than doubled between 1945 and 1975 to over 400 acres. In 2020 the largest 3% of family farms accounted for 46% of production.[110] The spread of wage labor accompanied this trend- the ratio of hired farmworkers to family farmworkers rose from 0.31 in 1950 to 0.55 in 2000.[111]

The Green Revolution raised agricultural output to feed a population of 3.0 billion in 1960 and 7.8 billion in 2020 and contributed to reducing poverty as well as hunger.[112] Globally the urban population increased from 34% of the total population to 56% over the same period.[113] As progressive as the achievements of the Green Revolution are, capitalism corrupts their full potential. Displaced farmers and peasants often

struggle to find employment in cities, leading to the formation of slums in the underdeveloped world and rural poverty throughout the advanced economies. The inequitable distribution of wealth and income translates into food insecurity in many regions. Monoculture farming reduces biodiversity and negatively impacts nutrition. The chronic inability of capitalist enterprises to adopt sustainable practices, in their efforts to maximize profit, has greatly depleted groundwater, polluted environments with chemical runoff, and eroded the quality of topsoil.[114] The population growth and city migration forecasted to continue for decades to come, besides the disruptions of global climate change, will place additional strain on capitalist agriculture.

vii. Neocolonialism

Immediately following World War II imperialism was weakened and colonies had greater success in their fight for independence. The US emerged from the war as the leading capitalist superpower and had an interest in the dismantling of European colonial empires in favor of free trade, considering the US achieved a significant advantage in labor productivity. Inter-imperialist conflict gave way to the common cause of countering the Soviet bloc and preventing colonial revolutions from turning into socialist revolutions. Most colonies gained independence through national liberation struggles by the 1970s (India in 1947, most of Africa and Asia throughout the 1950s and 1960s) though the movement would continue for decades to follow, particularly in colonies with settler populations. Numerous wars and conflicts broke out as imperialist countries resisted decolonization, continued to meddle in the affairs of former colonies, and attempted to retain influence over the developing economies.

In place of direct colonial plunder, exploitation of the formally independent neocolonial countries is principally mediated through servicing debt and free trade with the advanced countries.[115] The productivity of labor is monumentally higher in the advanced economies (and labor is more skilled), such that developing economies have to trade the output of several hours of relatively labor-intensive production in exchange for the output of each hour of highly mechanized labor from advanced economies. In this way free trade between countries with vast differences in the productivity of labor creates unequal exchange, similar to competition within a country between sectors with sizable differences in productivity (for instance small-scale agriculture and industry).[116]

Multinational corporations invested in the neocolonial countries, frequently through joint ventures with neocolonial governments and domestic businesses. This investment was a way of getting around high tariffs regulating foreign trade of commodities (the commodities could be produced and sold in the neocolonial country and the profit repatriated). In addition to continuing to procure raw materials (now facing competition from synthetic materials produced in advanced economies, such as synthetic rubber and nylon), the production of consumer goods and some basic industrial products grew in importance within neocolonial countries as an opening stage of light manufacturing. However, many neocolonial countries were still heavily reliant on- and at the mercy of- the export markets of a few agricultural products and natural resources. This dependence contributed to persistent economic instability, which only intensified as the post-World War II boom drew to a close.

Capital took advantage of low wages, which were restricted by a large reserve army of labor replenished from large populations of peasants and other pre-capitalist elements. However, low wages also constrained the growth of the domestic markets in developing economies, compounding the underdevelopment resulting from unequal exchange, foreign ownership of enterprises, and competition with the advanced economies. Consequently, much of the profit appropriated by the neocolonial capitalist class was reinvested in the advanced economies rather than riskier domestic markets, which further reinforced underdevelopment. These dynamics perpetuated inequalities during neocolonialism, despite formal political independence.

Disparities within and across countries contribute to income inequality on a global level. From the industrial revolution until neoliberalism, income inequality between countries became increasingly significant, rising from around 11% of total global income inequality in 1820 to 57% in 1980.[117] The value fell to 32% by 2020 as attacks on the working class in advanced countries caused the inequalities within countries to become more pronounced and some developing countries managed to industrialize (particularly China). Yet inequality between advanced and developing economies is still considerable, as shown in Table 7. Far from producing consistent, harmonious, and equitable growth, capitalism has exacerbated inequality and class divisions on a global scale for centuries.

Table 7: Global Inequality[118]

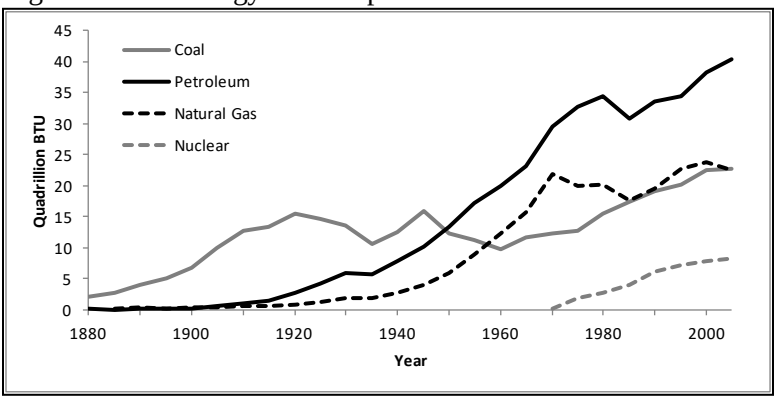
Year	Ratio of 10 Wealthiest to 10 Poorest Countries (Real GDP Per Capita)	Ratio of High Income to Low Income Countries (Real GDP Per Capita)
1820	3	-
1870	6	-
1913	8	-
1981	32	31
2018	70	54

viii. The Third Technological Revolution

As agriculture caught up with industry and colonialism transitioned to neocolonialism, differences in productivity across industries became an increasingly important source of above-average profits. Relative surplus value was augmented by technological innovation, which took advantage of the spillover benefits of military research and development (evident in the nuclear energy industry and computer science, for instance). Continual research and development, in both the public and private sectors, became integral to developing new products and fields of investment for capital, to avoid ruinous competition and crises of overproduction in developed industries. In the US, before the 1940s research and development totaled half a percent or less of GDP but grew to 2-3% in the 1960s onward.[119] The advancements of industry in turn elevated science and gave further impetus to research and development.

Electricity and steel, features of the second technological revolution, were applied on a larger scale in the new electronics industry and automobile production commensurate with suburbanization. Electronic appliances (such as refrigerators and washing machines) became indispensable as women joined the workforce en masse. An endless proliferation of electronics accompanied the rise in consumerism, including televisions, transistor radios, record players, electric razors, etc. While electronics diffused throughout the economy, the automobile also had a major effect, generating demand in numerous related industries and sectors (oil, steel, repair shops, construction of suburban housing, tourism, and so on). Moreover, the mass production techniques of Fordism were applied throughout manufacturing. Automobiles and electronics were powered by fossil fuels (directly or through the generation of electricity), as was industry. Petroleum and natural gas overtook coal as the principal sources of energy (nuclear energy also gained market share to a lesser extent), as shown in Figure 22.

Figure 22: US Energy Consumption[120]



The role of labor-power was altered as mechanization progressed, the scale of output grew, and electronics spread throughout industry. In addition to using handheld tools and machine tools, workers began operating semi-automated systems. According to one US business survey published in 1960, more than a quarter of plants had incorporated the following automation technologies: process sensing and control instruments, automatic weighing, automatic measuring and gaging, interlocked controls of operations, and drive and speed regulation. The automation market for equipment and controls amounted to $6.2 billion in 1960, equivalent to 10% of US domestic business investment.[121] Numerical control automated the movements of machine tools using information stored on punched tape. Throughout the 1950s computers were commercially deployed, followed by industrial robots in the 1960s, particularly in the automotive industry.

Automation reduces human error and improves precision, extends the range of industrial capabilities to smaller scales and larger scales (particularly important when handling sensitive or hazardous products, for instance in the chemical industry), and enables continuous production in place of batch production (reducing the turnover period in the process). Without automation workers would not be able to safely operate nuclear power plants, efficiently form miniaturized components of electronics, or produce quantities of commodities above a threshold dictated by exhaustion in physically demanding work. Just as machinery overcomes the limitations of working by hand, so automation overcomes the limitations of manually operating machinery (marking another milestone in the growing socialization of labor).

Overseeing and tending automated processes, instead of performing more grueling manual labor, objectively creates the possibility for reducing the length of the workweek and raising the standard of living. Capitalism, however, does not share the benefits of automation in a selfless manner- it is only concerned with amassing profit. As constant capital continues to grow in relation to variable capital, labor-power's function of conserving the value of constant capital becomes increasingly important relative to creating new value. Idle plant and equipment depreciate without transferring value to any commodities, hence the push to keep production going at all hours of the day once fixed capital takes on massive proportions. Automation maximizes the utilization of fixed capital so long as workers are compliant and do not interrupt production by going on strike. Reasserting control over the working class to ensure the circulation of capital continued undisturbed became a priority as the post-World War II boom came to an end and labor struggles intensified.

E. Neoliberalism (1980-Present)

i. Historical Context

Confronted with the structural crisis dating from the mid-1970s, Keynesian theory could not explain simultaneously rising unemployment and inflation. Keynesian policies could neither control stagflation nor stabilize the falling rate of profit. Instead, aggressive policies aiming to reassert the ruling class' power and privilege swept through political and economic institutions, and enabling economic theories (which were previously marginal) moved to center stage. The movement came to be called neoliberalism since the hard-line measures it imposed echoed the platitudes praising competition, trade, and free market fundamentalism, which date back to the early liberal era of capitalism. Favored policies include cutting taxes (particularly for corporations and the wealthy), reducing social services and government interference in the economy, privatizing the public sector, deregulating private business, reducing barriers to trade (such as tariffs) and financial mobility, globalizing the division of labor, and increasing the exploitation of labor.

Neoliberal policies were first piloted in Chile, after the democratically elected Socialist Party president Salvador Allende was overthrown in a military coup (backed by the CIA)[122] which installed Augusto Pinochet as dictator in 1973. Neoliberalism became hegemonic in the early 1980s when Margaret Thatcher in the UK and Ronald Reagan in the US began implementing their agendas. Throughout the

1980s and 1990s capital went on the offensive and neoliberalism breached the rest of the advanced economies (though in more moderate form than in the UK and US in some respects, with the social safety net remaining more intact), engulfed the developing economies, and remolded the economies of post-Soviet states and China in the process of capitalist restoration. Neoliberalism failed to restore growth rates to the levels achieved in the post-World War II boom, but stabilized the rate of profit and transferred an enormous amount of wealth to the ruling class.[123] Social polarization and the outbreak of crises, most notably the Great Recession,[124] have left broad sections of society disillusioned with capitalism and reinvigorated a range of social movements. Labor remains on the defensive, however, decades into neoliberalism.

ii. Attacks on the Working Class

Labor was strengthened in the advanced economies during late capitalism, with relatively high rates of unionization and a growing wage share in national income. However, a falling rate of profit diminished investment activity, which lowered the demand for labor-power. In the US, unemployment averaged 5% throughout the 1950s and 1960s but rose in the 1970s to reach 10% in the early 1980s.[125] Wages no longer kept pace with productivity growth and the minimum wage fell in real terms. With wages stagnating, productivity growth translated into increasing relative surplus value.

Assaults on unions further weakened labor, epitomized by Reagan dissolving the air traffic controllers union during a strike in 1981 and Thatcher defeating the union of mineworkers in a historic strike in 1984-1985. Unions suffered serious losses not just because of unfavorable economic trends- they were also weakened by bureaucracy (dampening rank and file militancy) and a reformist outlook (accommodating to capitalism rather than challenging it). Unionization in the US was already in relative decline, falling from a high-water mark of 36% of the private sector unionized in 1953 to 20% in 1980. The value fell precipitously and reached as low as 6% in 2019.[126]

The position of the working class in the advanced economies was further undermined by automation,[127] offshoring (with businesses flocking to cheaper sources of labor and weaker regulatory environments in Mexico, East Asia, and elsewhere), deindustrialization, and deteriorating social programs (such as welfare being supplanted by workfare, the retirement age being pushed back, etc.). Jobs became more

"flexible" with a rise in temporary and part-time work (cheating workers out of full-time benefits) and less secure employment (forcing more workers to take on multiple jobs and switch jobs several times in their careers). On top of everything, cheap imports (ubiquitously "made in China") sold through giant retail corporations (Walmart, Amazon, etc.) lowered the value of labor-power, which contributed to raising the rate of surplus value. The growing income inequality is highlighted by CEO compensation towering above the pay of workers- the US CEO-to-worker compensation ratio increased from 21 in 1965 to 351 in 2020.[128]

When crises inevitably break out, the pressure increases on the working class to bear the costs associated with restoring the rate of profit. The state intervenes with austerity policies which cut the funding of important social services. This drives up the unemployment rate, holds back wages, and makes life more precarious for workers, thereby accentuating the stark class inequality which characterizes neoliberalism. While deployed to ostensibly revive the economy, austerity is a tactic used to deliberately intensify crises in order to gain leverage in the class struggle. The capitalist solution to a stalling economy is a thoroughgoing crisis- only the irrationality of the capitalist mode of production could require a crisis as a precondition for further growth- and the working class suffers far more than the ruling class during economic downturns, in terms of the impact on quality of life.

iii. Deregulation

Deregulation allowed businesses to cut corners in areas including collective bargaining rights, consumer protections, and environmental conservation. New markets were opened to capital and businesses were given free rein to pursue profit while overriding the public interest as reflected in reduced government oversight. According to one indicator, on a scale from zero (completely regulated) to one (completely deregulated), global competition increased from a steady value of approximately 0.25 in the 1960s and 1970s to approximately 0.60 by the end of the century.[129]

Regulations were rolled-back in the financial sector with disastrous consequences. Deregulation of financial markets led, after a spree of profit-making, to the savings and loan crisis (which cost the public over $100 billion in bailouts) and the 1987 Black Monday stock market crash. The largely unregulated "shadow-banking" system took off, featuring financial intermediaries performing esoteric banking functions in the

absence of safeguards such as deposit insurance and the backing of central banks, adding an element of risk to the financial sector and economy as a whole.[130] The Glass-Steagall Act (which separated commercial banking from investment banking) was rescinded, fueling financial speculation and asset bubbles which collapsed in the Great Recession (in which $700 billion was allocated for bailouts in the US). To prevent the recession from turning into a depression, governments intervened to save businesses considered "too big to fail,"[131] a reflection of the monopolization of capital abetted by deregulation and declining enforcement of antitrust laws.[132]

Corporate welfare, which privatizes profits and socializes losses, is an egregious example of the contradiction between the neoliberal ideology advocating small government and the continual state involvement in the economy for the benefit of the elite.[133] Despite deregulation, government consumption has trended upward from 15.7% of global GDP in 1970 to 17.7% in 2020.[134] Federal government outlays in the US, which averaged 21% of GDP during 2000-2020, are projected to rise to approximately 30% by 2050.[135] The state has had to continuously intervene in the economy to adjust monetary policy, impose austerity measures on the working class, coerce neocolonial countries into free trade agreements, and otherwise maintain a business-friendly environment amid persistent and growing social tensions.

iv. Privatization

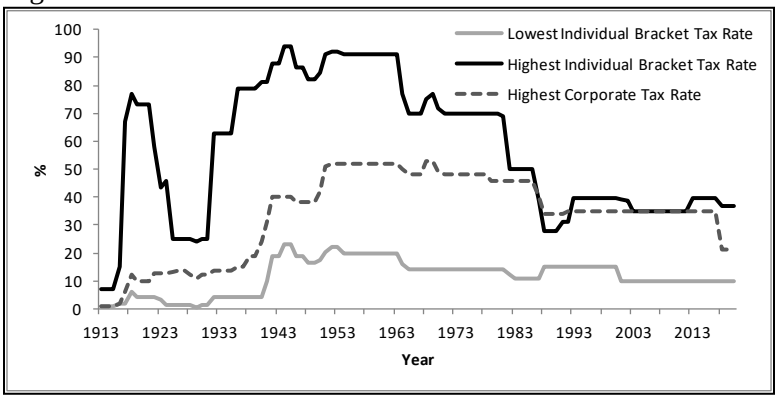
Facing diminishing profitability in production, neoliberalism relied on redistributing income and wealth to stabilize the profit rate. Deregulation paved the way for governments to briskly offload public assets onto the private sector. Nationalized industries, public utilities, natural resources, and social service provision (such as health care and education), were sold off (frequently undervalued) to for-profit enterprises. Over 8,000 instances of privatization took place globally between 1985 and 1999, collectively valued at more than $1.1 trillion in 1985 US dollars.[136] Privatization continued into the twenty-first century, with valuations typically exceeding $100 to $200 billion annually.[137]

Corporations were now sufficiently large to take on certain functions which previously only governments could handle. This increased the scope of the market and generated investment opportunities, which often created fortunes overnight for business magnates. Privatization is a form of accumulation by dispossession, converting vast amounts of public

wealth into the private property of the ruling class. Indebted governments sell assets as a way to raise revenue, however any stimulus is short-lived considering governments forfeit future income from the holdings after they have been privatized.

The shortfalls in government budgets, which clear the way for deregulation and privatization, are largely a product of low tax rates on corporations and the wealthy. As shown in Figure 23, tax rates on the capitalist class were substantially reduced under neoliberalism. "Supply-side economics" brazenly propagandized cutting taxes on businesses and the rich as being in the public interest and shifted progressive taxation towards regressive taxation. Tax cuts for capitalists typically do not encourage economic growth insofar as inequitable income distribution constrains effective demand- surplus value production is limited by difficulties realizing surplus value in distribution.[138]

Figure 23: US Tax Rates[139]



v. Financialization[140]

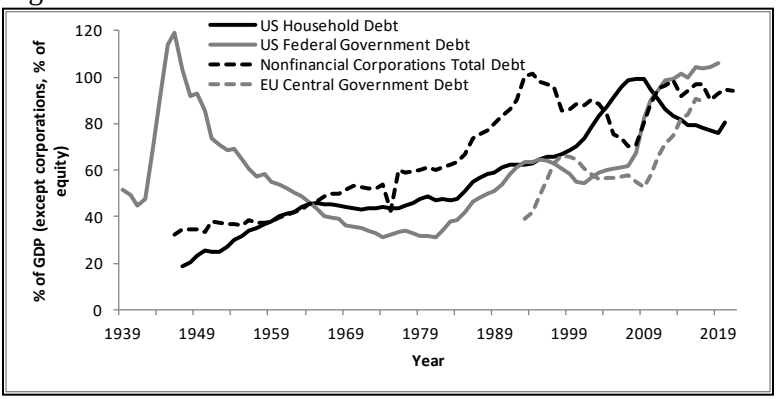
To counter inflation, central banks raised the interest rate to double digits in the 1980s. The quantity of money in circulation was curtailed as it flowed into banks to take advantage of the high interest rate. Then, in an effort to bolster growth, the interest rate was reduced to nearly zero over the following decades. A low interest rate increases the net profitability of enterprise (the difference between the rate of profit for capital actively engaged in production and the rate of interest for passive bank savings), thereby stimulating investment in production.

Large nonfinancial corporations increasingly financed investment out of retained profits and, searching for other profitable outlets for a

plethora of capital, engaged more and more in financial activities (such as extending credit to consumers, organizing stock buybacks, etc.). These corporations became relatively less dependent on banks, which reacted by redoubling efforts to collect fees for financial transactions and provide mortgages to households. Faced with stagnant wages and diminishing public services, households turned to private finance to obtain housing, education, healthcare, and transportation. Retirement savings were also financialized, with pension plans replaced by 401(k) and IRA programs.

As shown in Figure 24, indebtedness grew on all fronts under neoliberalism. Low interest rates make it easier to obtain larger sums of credit, since the debt payments are reduced per unit of credit. Consumers relied on credit to maintain their standard of living. Facing a relative decline in tax revenue as a consequence of slashing tax rates, governments also became increasingly indebted (despite the neoliberal rhetoric regarding small government, balancing budgets, and fiscal responsibility). Businesses leveraged debt to expand their operations. Globally, nonfinancial sector debt reached a record $152 trillion by 2015, equivalent to 225% of GDP and more than doubling since 2000.[141]

Figure 24: Levels of Indebtedness[142]



In the US, the ratio of financial sector financial assets to nonfinancial sector assets rose from 0.55 in 1950 to 0.70 in 1980 and then jumped to 1.86 in 2010 (before subsiding to 1.69 in 2020). Financialization even grew markedly within the nonfinancial sector: financial assets rose from 16% of assets in 1950 to 22% in 1980 and then jumped to 44% in 2009. Grouping financial and nonfinancial sectors together, financial assets rose from 46% of total assets in 1950 to 54% in 1980, and exceeded 70%

starting in the 1990s, reaching as high as 81% in 2020.[143] Financial capital appropriated a growing mass of profit. In the US, corporate financial profits as a percentage of total corporate profits ranged between 5% and 19% during 1940-1988, then (with the exception of 2008) ranged between 20% and 37% during 1989-2020.[144]

The average monthly volume of stock market trade for the S&P 500 rose from 2 billion in 1985 to 117 billion in 2009 (and dropped below 100 billion in later years).[145] The ratio of US stock market valuation to GDP increased from 38% in 1979 to 153% in 1999, after which it has subsided (but remains volatile).[146] Thanks to deregulation a number of risky and complex financial products proliferated, such as credit default swaps, collateralized debt obligations, and mortgage-backed securities. Throughout the 2000s the derivatives market soared to hundreds of trillions of dollars, many times greater than the entire global GDP.[147]

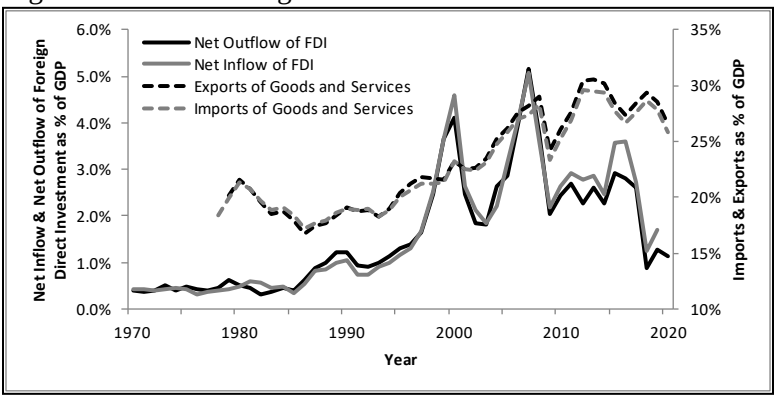
Much of financialization is in no way helpful for facilitating core functions of the economy and raising the standard of living, but only serves as a tool for gaining rapid profits while making the economy increasingly volatile and prone to economic bubbles.[148] Whereas buying and selling assets in the real economy takes time and the assets can be used as collateral, buying and selling financial assets can take place nearly instantly in the digital age and may be highly speculative. Risky financial dealings played a significant role in the Great Recession, in which "14.3 trillion dollars, or 33 per cent of the value of the world's companies, had been wiped out."[149] When crises break out, neoliberal monetary and fiscal policies prove inadequate. With the interest rate maintained at a low level as a matter of monetary policy, there is not much potential to stimulate the economy by cutting the interest rate. When governments are not busy implementing austerity measures, any turn to expansionary fiscal policy is half-hearted at best.

vi. Globalization

Financialization expedited the globalization of capital, enabling businesses to quickly enter markets wherever profit beckoned (as well as exit markets with relative ease). Information and communications technology was deployed to manage growing supply chains and investment holdings around the world. The requisite government policies and trade agreements accompanied the free movement of capital. Transnational corporations grew in number from approximately 7,000 in 1970 to more than 100,000 in 2018, with the top 2,000 raking in $40

trillion in revenue and owning assets valued at $186 trillion in 2019.[150] The ascendancy of globalization is reflected in rising foreign trade and foreign direct investment (in which investors control the business operations, in distinction to portfolio investment which entails passively buying stocks in foreign companies which retain control), as shown in Figure 25. These measures of globalization remain fairly volatile due to financialization, crises, and political instability. Overall economic globalization for the world increased (on a scale from 1 to 100) from an index value of 37 in 1970 to 58 in 2007 (after which globalization settled into a holding pattern).[151]

Figure 25: World Foreign Direct Investment and Trade[152]



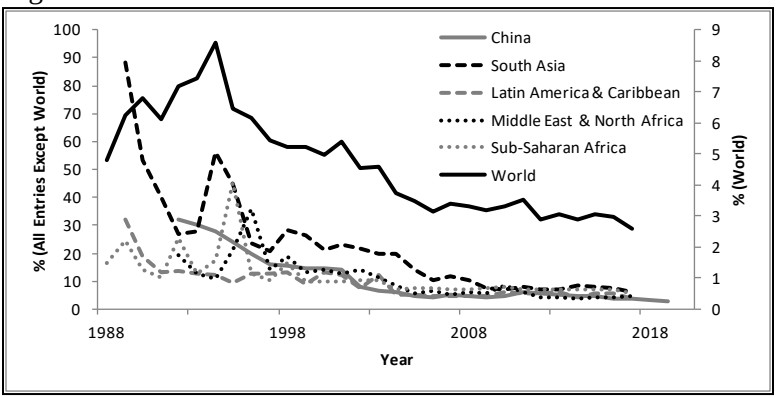
Market consolidation spread across advanced economies (for instance the Maastricht Treaty created the European Union) and between advanced economies and developing economies (for instance NAFTA and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership), facilitating the movement of capital. As the global labor force grew,[153] the mobility of labor remained relatively restricted although significant changes also took place under neoliberalism. Citizens of the European Union may generally work and reside anywhere within the territory. In the US immigrants rose from 7% to 17% of the workforce between 1980 and 2019 (overall, immigrants constituted 5% of the population in 1970, a historic low which rose to 14% by 2018, just shy of the record 15% in 1890; approximately a quarter of the immigrant population is unauthorized in the US as of 2017).[154]

Global institutions including the World Bank, International Monetary Fund, and World Trade Organization (founded in 1995) made

efforts to substantially reduce barriers to free trade, as shown in Figure 26, and impose the neoliberal agenda around the world. The policy requirements known as the Washington Consensus became the criteria for developing economies to access aid and loans:

- Fiscal restraint to minimize government spending and budget deficits.
- Privatization of state-owned enterprises and deregulation of the economy.
- Tax reform favorable to business.
- Financial systems ruled by the market.
- Export-oriented development and exchange rates conducive to this end.
- Liberalized trade with minimal levels of protectionism (scaling back tariffs in particular).
- Openness to foreign direct investment.
- Protection of property rights (including intellectual property).

Figure 26: Reduction of Tariff Rates[155]



These directives were often imposed during economic crises when developing economies were not in a position to attain more favorable terms. The adopted neoliberal policies (structural adjustment programs) frequently aggravated crises, leading to new rounds of even stricter neoliberal measures, creating a vicious cycle. For instance, indebted governments enforce austerity programs (at the expense of the working class) to pay off debts at all costs rather than defaulting (which would

come at the expense of investors in government bonds) and the cuts to social spending and wages prolong and deepen economic downturns.

Far from ushering in a new phase of robust growth, neoliberalism is characterized by crises- especially in the developing economies (for instance the 1980s "lost decade" of stagnation due to the debt crisis in Latin America, the 1997 Asian financial crisis, the 1998-2002 Argentine depression, etc.). However, the advanced economies have not been spared either (for instance the "lost decades" of stagnation in Japan following the bursting of an asset bubble in the early 1990s, the 2000 dot-com crash, the European debt crisis following the Great Recession, etc.). Throughout this turmoil deindustrialization spread across the advanced economies, while industrialization progressed in the developing economies. Although per capita GDP remains relatively low, especially for rural populations, China, India, and Brazil joined the ranks of the largest economies in the world. As a result of this development extreme poverty has declined significantly, yet by any standard poverty continues to afflict much of the underdeveloped world.[156]

vii. Capitalist Restoration

Globalization was truly global in the aftermath of the Soviet Union's collapse. The legacy of Stalinism, lack of democracy, bureaucratic mismanagement, Cold War hostilities, and the ebb of revolutionary movements internationally all contributed to the fall of the USSR and advantaged capitalist restoration over any advance towards a democratic socialist system. The Eastern bloc began unraveling in the late 1980s and around the same time market reforms accelerated in China, leading to capitalist restoration in nearly all post-capitalist economies by the end of the century. Approximately a quarter of the world population was thereby integrated into the global capitalist market, along with the resources spanning a fifth of the world's land surface. The capitalist restoration economies accounted for approximately 5% of world GDP in 2000 and around 20% in 2020, mostly due to the growth in China.[157]

The transition to capitalism in Russia immediately caused a severe depression- between 1990 and 1998 GDP fell by nearly half and inflation was rampant, culminating in a financial crisis. The shock therapy of neoliberal policies was disastrous by all accounts. Accumulation by dispossession privatized state-owned industries on an unprecedented scale as a handful of oligarchs rapidly seized the country's wealth. The experiences of other post-Soviet countries were similar though not quite

as severe, leading to relatively earlier recovery and integration into the world market. Germany was reunified and several eastern European countries joined the European Union beginning in 2004. Amid continuing economic stagnation, the Russian plutocracy turned to military interventions to reassert its geopolitical status.

Capitalist restoration in China reshaped the global economy to an even greater extent. Market reforms starting in 1978 created special economic zones open to private enterprise, solicited foreign direct investment, founded stock markets, weakened job security, decollectivized agriculture, and diminished the influence of state-owned enterprises and central planning. During the 1990s, privatization and integration into the global economy took on new dimensions. In 1980, state-owned enterprises and collective-owned enterprises together comprised nearly all of industry and this figure fell to 90% in 1990, 37% in 2000, 10% in 2010, and 4% in 2018.[158] Corporations and private enterprises gained ownership over most of industry, along with foreign funded enterprises and enterprises funded from Hong Kong, Macao, and Taiwan. Many of the largest multinational corporations (McDonalds, Coca-Cola, Nike, etc.) expanded their business by moving into this vast new market and exploiting its workforce. However, China remains state-capitalist, with the state owning a sizable portion of the country's wealth and corporate equity, besides actively intervening in economic affairs.

Around 2010 China became the world's largest manufacturer and exporter, as well as the second largest economy. Real per capita GDP doubled between 1993 and 2002, 2002 and 2009, and 2009 and 2020.[159] However, the economic growth (which is winding down to more typical levels) has been accompanied by tremendous inequality, symbolized by China maintaining the most billionaires after the US. "The sweatshop of the world" has some of the worst working conditions in the history of capitalism, including long shifts (for instance the "996 working hour system" entails working from nine in the morning to nine at night for six days a week), forced labor, wage theft, etc. After taking into consideration the human and environmental costs (for instance, from 2011 to 2013 China poured 50% more cement than the US in the entire twentieth century),[160] China's model of growth is hardly an example which other countries should emulate. Nor can small nations with typically weak governments ever hope to compete along the same lines. For every neoliberal "success story" there are a dozen counterexamples of economies ruined by the competitive race to the bottom.

viii. The Fourth Technological Revolution

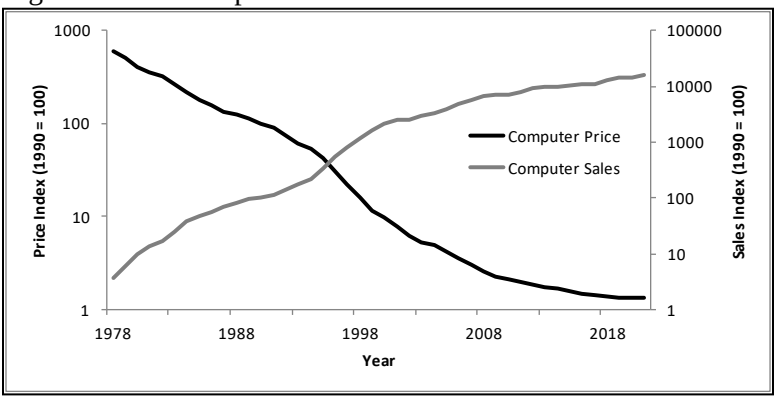
Facing constricted growth and a dearth of new lines of industry, neoliberalism sought to "rationalize" established industries. As the service sector continued to expand, it became imperative to raise the productivity of white-collar employees performing relatively labor-intensive intellectual work. Multinational corporations also demanded improved means of communication to support their sprawling businesses. Since fixed capital grows at a faster rate than circulating capital and has a lengthy turnover period, long-term planning became increasingly important for business operations. Computerization was deployed to meet these challenges, enabling firms to streamline work tasks and refine decision-making by efficiently processing vast amounts of information.

Information and communications technology (ICT) investments throughout the 1970s and 1980s laid the groundwork for the fourth technological revolution which radically expanded ICT output in the 1990s. In the US, output of computers and related equipment in 2000 was sixteen times the level of 1990.[161] The exponential growth of computers and their steeply falling prices are shown in Figure 27. ICT rapidly spread into businesses and households, especially following the commercialization of the internet. In the US, the proportion of workers using a computer on the job increased from around one quarter in 1984 to three quarters in 2012.[162] Personal ownership of computers and internet access likewise proliferated (in the US internet users per 100 people totaled 1 in 1990, 43 in 2000, 72 in 2010, and 91 in 2020).[163] Mobile phones, including smartphones with computer capabilities from the 2000s onward, also featured prominently in the ICT revolution (in the US mobile phone subscriptions per 100 people totaled 2 in 1990, 39 in 2000, 92 in 2010, and 106 in 2020).[164]

The digital economy in the US reached approximately 7% of GDP by 2017, larger than such sectors as wholesale trade, retail trade, construction, and transportation.[165] The internet has created a global marketplace which is open twenty-four hours a day, all year long. The speed of communication is nearly instantaneous with the advent of email, websites, social media, and cell phones. Information is generated and distributed on an entirely new scale.[166] Computer-based labor productivity gains (including time-saving software applications, advances in automation, and the diffusion of E-commerce) increased the annual number of turnovers of circulating capital. With labor on the

defensive under neoliberalism, increasing productivity and reducing the turnover period of circulating capital have contributed to raising the annual rate of surplus value and exacerbating inequality.[167]

Figure 27: US Computer Diffusion[168]



The developments of the fourth technological revolution suggest the next technological revolution will likely feature artificial intelligence and advanced robotics ushering in a new stage of automation, in an economy increasingly powered by renewable energy.[169] Industrial robots continue to proliferate, essentially tripling between the 1990s and 2020.[170] In the US, approximately a quarter of jobs are at high risk of automation (70% or more work tasks being vulnerable to automation) and more than a third of jobs are at medium risk of automation (30%-70% of work tasks being vulnerable to automation) in the decades to come.[171] Autonomous vehicles and robots capable of performing surgeries independently of human assistance already exist and applications for artificial intelligence are continually expanding and becoming more affordable. Along with the previous technological revolutions, these advances have the potential to benefit all of humanity by reducing the burden of labor and fulfilling material needs, or simply to enrich the capitalist class and reinforce alienation. This tension between the liberating potential of technology and the narrow-minded pursuit of profit becomes increasingly threatening as artificial intelligence makes strides and may conceivably escape societal control in the absence of vigilant safeguards (hence the need for banning "killer robots" and autonomous weapons, regulating artificial intelligence to keep it firmly under control, etc.).[172]

9. Socialist Economics

A. Transitional Demands

Compared to the rest of the capitalist world, the most progressive countries (principally located in Western Europe) feature a relatively strong social safety net, high rates of unionization, and less pronounced inequality. Fairly high taxes redistribute income and fund the services underlying the welfare state. Due to the level of government involvement, which may include nationalized enterprises, these economies are sometimes misleadingly referred to as "mixed economies," which implies that a capitalist private sector is blended with a "socialist" public sector. In reality, the vast majority of enterprises are privately-owned (90% in Sweden, for instance)[173] and the public sector is oriented towards supplementing the private sector. The US is not partly socialist just because government expenditures account for a sizable portion of GDP and neither are the Western European countries, no matter how much state spending contributes to the economy. They are all entirely capitalist- exploiting labor (domestically and in the neocolonial world), experiencing the business cycle, competing on the world market (including military arms exports), and following the directives of neoliberal institutions.

State capitalism is a more accurate term for capitalist economies in which the state plays a considerable role, indicating that the state under capitalism is not neutral between competing class interests. Instead, as history demonstrates, it consistently serves bourgeois interests. Thus, while state capitalism in parts of Western Europe is progressive relative to much of the rest of the capitalist world it retains all the contradictions and limitations of capitalism and is ultimately inadequate for fully developing human potential. In other words, even under the most favorable capitalist conditions a transition to socialism is warranted.

Through historic struggles the working class in many countries around the world has achieved significant reforms under capitalism such as abolishing child labor, limiting the length and intensity of the working day, and securing basic labor rights including the right to unionize. However, capitalism with its many contradictions and overriding class structure cannot tolerate all the reforms which socialists demand. Even the reforms which have been won are only provisional concessions which capital threatens to repeal, especially in times of crisis, as the history of neoliberalism has shown. This applies not just to the labor

movement, but to all social movements (the environmental movement, feminist movement, peace movement, etc.).

Socialists recognize that all social issues are interrelated and effectively fighting for progress requires coordinated action on all fronts, guided by a robust platform which clearly delineates immediate demands and ultimate goals. The *minimum program* describes the pressing objectives which are possible in a capitalist society while the *maximum program* describes the long-term aims which are only possible in a post-capitalist society. For example, a public works program to reduce unemployment is a minimum program demand while guaranteed employment is a maximum program demand.

There is a danger that the achievement of minimum program demands, as far as they go, may reconcile the working class to capitalism by making living conditions more agreeable. For instance, whereas a shorter working day undermines capitalism by reducing the amount of surplus value produced, higher wages beyond a certain point tend to integrate workers into the consumer culture which complements the circulation of capital. To not lose sight of the big picture, *transitional demands* must be introduced in the struggle for minimum program demands, which push the struggle into anti-capitalist territory. In this way transitional demands bridge the gap between the minimum program and maximum program by fundamentally challenging the class power of the capitalists (that is, by focusing on the social balance of power between classes, not just achieving specific material demands for their own sake).

For example, demanding workers' control over production (rather than just particular improved working conditions), dismantling the military-industrial complex (rather than just the end of a specific war), housing as a human right (rather than just rent control), and non-profit universal healthcare (rather than just an expansion of government-funded health care provision) are all transitional demands which can elevate the class struggle and raise class consciousness. Through fighting for transitional demands, which the ruling class cannot abide, the working class gains the experience and awareness necessary to turn reform struggles into revolutionary struggles for a socialist world. Unlike capitalism, which developed organically within a decaying feudal order, socialism must be created consciously and deliberately by an educated, organized, and determined working class experienced in class struggle.

B. The Transition Period

Overcoming capitalist property relations is not synonymous with achieving socialism- it only marks the start of the transition to socialism. Following the October Revolution and subsequent revolutions, capitalism was superseded but socialism was never achieved. Starting from a low level of development and suffering the effects of bureaucratization, workers did not practice democratic self-management, labor productivity generally did not surpass the level in advanced capitalist economies, scarcity persisted, classes remained (the industrial working class and the peasantry) along with fairly substantial inequality within classes, and the distribution of consumer goods was mediated with money (which means commodity and market relations were not entirely overcome). Politically, one-party dictatorships are incompatible with socialism- eliminating democratic decision-making and mismanaging the economy only raises the likelihood of eventual capitalist restoration.

Post-capitalist economies could take decades or longer to transition to socialism depending on how long they remain isolated (in the hostile environment of a global capitalist market), the initial endowment of resources and means of production (advanced economies having a head start in subduing scarcity), and the timeline of achieving environmental sustainability. The productivity of labor objectively regulates the potential for satisfying all basic human needs, achieving a suitable standard of living, and fully developing human potential (tailored to individual needs). Accordingly, the relatively underdeveloped economies must prioritize mechanization and accumulation to a greater degree than the advanced economies. As the productivity of labor increases, so expands the potential for overcoming scarcity and creating a classless society. In order for this potential to be realized, the social surplus must be wrested out of the hands of the ruling class and placed under the democratic control of workers.

The material conditions which exist today are far more developed than those which existed at the outset of the earliest socialist revolutions, in terms of education, technology, and wealth. In the US, 25% of adults aged twenty-five and older graduated high school and 5% earned a bachelor's degree or higher in 1940, while 88% graduated high school and 33% obtained at least a bachelor's degree by 2015.[174] Business sector labor productivity in 2022 in the US reached five and a half times the level of 1947.[175] Globally, real GDP per capita surpassed $10,000 (in

2015 US dollars) in 2014, which is double the level of 1970.[176] Real GDP per capita in the US surpassed $60,000 (in 2015 dollars) in 2019 and (extrapolating the rate of increase observed under neoliberalism) is on track to reach $100,000 before the end of the century. Population growth rates tend to decline as economies develop (some advanced countries already have declining populations),[177] which also contributes to raising per capita wealth. In the advanced countries the levels of wealth are already sufficient to meet all the basic needs, provide a suitable standard of living, and make progress towards fully developing human potential for everyone- so long as the wealth is equitably distributed, which requires transitioning to socialism.

There is no ready-made blueprint for constructing a socialist society. Considering all the momentous changes and challenges which accompany forging a new mode of production, successfully navigating the transition period critically relies on widespread democratic participation, adapting the technologies capitalism bestows, and engaging with the new social possibilities which materialize as capitalism is superseded. Progressively advancing democratic self-management, planning, and internationalism helps to guide the transition to socialism insofar as these develop the productivity of labor to finally overcome scarcity and foster the cultural conditions to overcome class distinctions and unconstructive competition.

A successful transition period leading to socialism must transcend the laws of motion governing capitalist development and the underlying structural elements of capitalism:

- Commodities- the use value of goods and services must be accentuated and the role of exchange value and money must diminish over time, to promote utility and the satisfaction of needs so everyone may equitably enjoy an improving quality of life along with a decreasing workload (thereby resolving the contradiction of subordinating use value to exchange value).
- Markets- the production and distribution of goods and services must take place more and more through conscious planning efforts, to rationally meet society's needs in a deliberate, methodical, and optimal manner (thereby resolving the contradiction between economy and waste implicit in the uncoordinated allocation of resources by blind market forces).
- Wage labor- the right to a livelihood and freedom from want must be secured through guaranteed employment and empowered unions, to

ensure labor is treated with dignity and workers have control over their working conditions and compensation (thereby resolving the alienation of being unemployed or precariously employed at-will and the instrumental use of economically coerced labor to generate profit for the ruling class).

- Private property- the means of production and distribution held by relatively large firms must become publicly owned, to ensure they are operated in the public interest, managed democratically by workers, and integrated into central planning (thereby resolving the contradiction of a growing social division of labor and the continuation of private appropriation).
- Capital- the control over unpaid labor mediated through the ownership of assets must be eliminated, to allow more humane social relations to flourish which put working people in control of economic, political, and social affairs (thereby ending the economic basis of alienation and overcoming the law of value).
- Profit- the exploitation of labor must be abolished, to progressively eradicate social stratification and place economic decision-making under the democratic control of working people (thereby putting people before profit and resolving the alienation of class divisions).
- Competition- the competitive struggle for survival and profit which pits class against class and all against all must be replaced with the cooperation and solidarity of working people internationally, to progressively create a classless society (thereby resolving the contradiction of class struggle and overcoming the inhumane legacy of all forms of exploitation and hierarchy).
- Accumulation- the growth of the economy must be determined democratically, based on principles of internationalism, and implemented through social planning, to conscientiously satisfy all basic human needs, provide everyone a suitable standard of living, and fully develop human potential while at the same time vigorously pursuing environmental sustainability (thereby resolving the contradictions of uneven and combined development and the impossibility of endless accumulation).

C. Democratic Self-Management

While capitalism provides requisite conditions for transitioning to socialism (a proletariat forming the majority of the population, modern science, technologies extending to automation, a continual reduction of

necessary labor time, a growing social surplus, consolidation of the means of production and distribution in a few relatively large firms, etc.), it also bequeaths a legacy of exploitation, hierarchy, and alienation. Capitalism tries to solve every problem with a technological solution, without challenging status quo class relations, and therefore performs poorly in resolving social issues, aggravating them more often than not. Democratic solutions are circumscribed- bourgeois democracy is typically limited to voting once every few years and does not extend to the workplace, much less the economy as a whole. Capitalist businesses are, as a rule, governed by hierarchies of unelected managers topped by a board of directors (either appointed or elected by shareholders, based not on the principle of one person one vote but one dollar one vote).

Representative democracy and hierarchy were suited to the early stages of capitalism, while labor productivity was relatively undeveloped (which obliged most of the population to perform long hours of manual labor to eke out a living) and education was in short supply such that only a minority of the population was even literate. The development of labor productivity and an increasingly educated working class make it feasible to transition towards direct democracy, once the working class frees itself from having to devote time and effort providing surplus labor to maintain a ruling class.

Opposition to economic exploitation, lack of democracy, and social shortcomings motivates workers to organize in unions, working class political parties, and grassroots organizations to try and take matters into their own hands. Without these forms of organization the proletariat suffers a chronic lack of experience and leadership in socio-economic and political affairs owing to its class position (the obligation to continually sell its labor-power, the limited education and income it receives, etc.). It is in the struggle against capitalism, which requires coordinated and conscious effort, that the proletariat develops the activism and leadership capable of managing a post-capitalist society. In the absence of struggle, working class organizations are susceptible to bureaucratic degeneration and fail to serve workers' interests.

Workers under capitalism have little to no say in day-to-day affairs on the job. The promise of democratic self-management is consequently one of the major advantages socialism has to offer workers- not just the common ownership of the means of production and distribution, but a vast extension of democracy into economic concerns, from the workplace all the way up to the highest levels of the economy. Initially,

while workers lack the experience required for full self-management, progress towards this goal could take the form of workers' supervision over management, followed by co-management. Rotating job responsibilities, limiting wage differentials, establishing quotas of rank and file workers in leadership positions, and guaranteeing employment (which gives workers the freedom to speak their mind without fear of retaliation) would prevent and mitigate risks of bureaucracy and hierarchy in the transition to self-management.

In a post-capitalist society the working time freed up by ending exploitation can reduce the length of the workweek and extend the time available for democratic deliberations (managing the workplace, participating in workers' councils, planning the economy, etc.). Increasing labor productivity makes it objectively possible to shorten the length of the workweek and shortening the workweek also tends to increase productivity (even under capitalism) as workers are less stressed, better rested, and have a better work-life balance.[178] Together these trends progressively lighten the burden of menial labor and expand the possibilities for exercising direct democracy and fully developing human potential. Socialism will only succeed through the active support of an educated and engaged working population participating in a flourishing democracy, never through bureaucratic coercion and dogma (as history has amply demonstrated). Just as science requires criticism, debate, open discussion, and academic freedom to make progress, the same applies to socialism.

Work itself would be made less oppressive by preferentially automating the most disagreeable work tasks or eliminating them altogether (substituting alternative approaches as necessary). Workers would have the freedom to regularly rotate between a variety of occupations, to counter the monotony and boredom which currently accompany the division of labor, and to develop their skills and gain all-around experience. As the productivity of labor increases, relatively less labor may be allocated to mass production as labor transitions towards more creative, artisanal, and intellectual efforts. In this way labor would be viewed less and less as a burden necessary for survival, instead becoming more and more the pursuit of genuine and freely cultivated interests. The role of education would likewise undergo a dramatic transformation- from being primarily concerned with fostering the skills and knowledge required for economic growth to becoming freely available for lifelong development of unconstrained human potential.

D. Planning

Extending democracy into economic affairs requires socialized means of production and distribution governed by planning, so people may consciously decide in a cooperative and collective way which goals to prioritize and strike a balance between shortening the workweek and expanding production (to achieve optimal consumption suited to individual needs rather than chasing after maximal consumption). Key decisions include setting the length of the workweek, determining what variety of goods and services to produce, how they are to be produced, how resources are allocated between consumption and investment, how investment is allocated between improving means of production and means of consumption, and budgeting consumption between individual consumption and public consumption.

Just as the potential for direct democracy develops but remains stifled under capitalism, so the tools for wide-scale planning are developed but their application remains limited under capitalism. Businesses of course plan their internal operations, so that planning already takes place on an international scale with multinational corporations. The development of computers and artificial intelligence greatly facilitate the process of optimizing planning procedures, which become increasingly complicated as more inputs are integrated into a coherent plan.

Instead of using planning to maximize profit at the level of an individual business, socialist planning is used to optimally raise the standard of living for society as a whole. Instead of catering to the rich, socialism prioritizes providing everyone with their basic needs and a suitable standard of living. The first objectives would include putting an end to poverty, hunger, homelessness, and preventable suffering which results from a lack of medical care, in addition to conserving scarce resources and transitioning to environmental sustainability. Instead of the roundabout allocation of labor and resources mediated through market exchange (which involves wasteful trial and error culminating in crises), socialist planning allocates resources and labor up front so that the means of production and means of consumption may develop in a balanced manner consistent with the needs of society. Planning draws on several factors to reduce waste and promote growth, including ensuring full employment, reducing distribution costs and needless unproductive expenditures (such as marketing), developing the division of labor on

larger scales as planning becomes international, expanding access to education, and focusing on sustainable long-term growth.

To be effective, planning must be flexible and not overly-centralized. Information must flow not just from the top down (central planning setting targets for regions and firms), but from the bottom up (regions and firms communicating status reports to central planning so any necessary modifications to the plan may proceed uninterruptedly). Initially planning is most appropriate at the macroeconomic level, while market mechanisms (supply and demand feedback) persist at the microeconomic level, most notably in the survival of money wages (since issuing rations is a far less efficient way to mediate consumer demand and rationing is unpopular to say the least). Rather than micromanaging details down to the level of individual firms, planning may set quotas (at a given standard of quality) and allow firms to decide how best to meet the targets.

Socialized large-scale firms which form the bulk of the economy are the best candidates to integrate into planning right from the start. Small-scale firms (such as family businesses) comprising the private sector would continue to operate independently but face regulations to ensure they do not exploit labor. As planning improves and the benefits of socialization gain appeal, small-scale firms may progressively become integrated into planning on a voluntary basis. This approach also applies to farming. Land would be socialized and large capitalist farms expropriated and subject to planning, while family farms continue to operate in the private sector with the option of forming cooperatives or joining in the planning process. Forced collectivization of small producers would only lead to disastrous mismanagement and social upheaval, reminiscent of bureaucratic policies in the USSR and China.

In conjunction with democratically selecting the social priorities to pursue, planning efforts translate the goals into feasible, balanced output requirements for all relevant sectors of the economy (planned at the enterprise, local, regional, national, and international levels). Planning measures are conveniently summarized using input-output tables.[179] Each sector of the economy supplies all of the other sectors with a certain output while receiving inputs from them in turn. Above and beyond the materials used up within production, the remaining output is divided between individual consumption, social consumption, and investment (so that technological progress may continue to reduce the length of the workweek and serve the material needs of society). Though exploitation

is abolished, it is still necessary to produce a surplus product for investment, insurance, and to support sections of the population exempted from labor (such as people with certain disabilities). In a democratic fashion, economic planning could be openly published and updated in real-time for transparency.

Planning must be internally consistent so that appropriate quantities of materials are provided to each sector to fulfill the targets. Prices may still be assigned to resources for accounting purposes to facilitate planning, just as a company may assign prices to commodities that move from one plant to another to manage their business (though they are not actually being sold on the market until the final product is distributed). Pricing would continue to play a considerable role in the distribution of consumer goods and in setting wages. However, even in these areas planning would make progress. As the costs of higher education are socialized, wage differentials between skilled and unskilled labor can diminish over time (when education is free, skilled labor does not need to be compensated as high as it otherwise would need to be to pay off college expenses). Despite individual preferences, at the macroeconomic level consumption patterns are fairly predictable. Planning could begin with goods with inelastic demand (in which the level of consumption is consistent regardless of price changes) and progressively extend to goods with relatively elastic demand.

When scarcity is reduced there is less need to strictly ration goods through pricing (including the rationing implicit in wages). Social consumption, typically meager under capitalism (public housing, public transportation, etc.), can then reach new dimensions in the transition to socialism guided by the principle "from each according to their abilities, to each according to their needs." Increasing productivity makes it possible to expand public services and reduce prices so that scarcity is overcome in an equitable manner. Increasing security and wellbeing will transform culture, reducing the role of material incentives and money in motivating behavior, so people are free to pursue their interests as they see fit.[180]

Eventually- once society's basic needs are met, everyone has a suitable standard of living with an optimal level of consumption, and people are freed from labor to pursue their full potential- economic growth may reach an end. This will only be possible when the vast structural inequality in the standard of living between the advanced and developing countries, which characterizes the history of capitalism, is

eradicated. Solidarity of working people internationally is necessary in order to confront historical inequities and exploitative social relations which constrain the satisfaction of physiological and cultural needs in the most disadvantaged parts of the world.

E. Internationalism

Capitalism is global and so socialism must ultimately be global as well to end exploitation once and for all. Production and trade networks in pre-capitalist societies typically encompassed hundreds or thousands of people, while capitalism has drawn millions and billions of people into consolidated markets and the global division of labor. Labor is increasingly socialized and that trend will only continue in the transition to socialism as the means of production and distribution are socialized as well. The efficiency gains of mass production and a developed technical division of labor will be maintained, at least until a decent standard of living is accessible to everyone and competition from capitalist economies is no longer a threat.

Capitalist restoration, whether through overt imperialist aggression or coercive market pressure, always remains a danger to individual countries transitioning to socialism, so long as capitalism is the dominant mode of production internationally. No individual country has the resources to build socialism in isolation from the rest of the world. Even the most developed economies lack all the natural resources and industrial capabilities required to bring about the greatest levels of material wellbeing and the most efficient division of labor- the proliferation of international trade makes this clear. While countries transitioning to socialism must trade with capitalist countries to some extent, a state monopoly of foreign trade can insulate the economy from market forces and improve the terms of trade.

Though the fruition of socialism is only possible on a global scale, individual countries may nevertheless begin the transition to socialism. The more democratic these countries function and the more they exercise direct democracy in ways that are unimaginable under capitalism, the better the example they set for workers in the rest of the world, which will build support for socialism globally and hasten the expansion of the world revolution. As more and more countries join the post-capitalist world, planning will expand on an international scale and differences in standards of living will progressively diminish through the deliberate efforts of international solidarity. Increasing social consumption relative

to private consumption will provide equal opportunities for a growing number of people. Gradually equalizing wages for equal durations of work will iron out international differences in compensation which otherwise result from varying levels of technological development. Ultimately, a growing abundance of goods and services may be freely distributed based on need when productivity finally overcomes scarcity.

As internationalism spreads, the role of the state may be greatly reduced as militaries are scaled down and finally done away with altogether. When culture reflects the security and wellbeing of having overcome scarcity there will be less need for police, prisons, surveillance, and the like. Other state functions can be eliminated through automation. These advances all serve to avoid wasting the social surplus on superfluous unproductive activities. Just as hierarchy will be tamed in economic affairs when workers are in control of planning the collectively owned means of production and distribution, so in politics the state bureaucracy will be dismantled by workers exercising direct democracy. Democracy will progressively spread throughout society and around the world, in step with socialist development.

Even under capitalism, market relations are considered unsuitable to areas of life considered particularly important. Within families and between friends goods and services are typically provided based on need rather than through exchange (for instance gratuitous gift giving, parents raising their children without being reimbursed, etc.). Hospitals provide emergency services even if patients lack the ability to pay. Charities provide free resources to people in need. Profiteering in these contexts would be considered especially appalling. Socialism simply expands the domain considered sufficiently important to exempt from crude profit-seeking behavior and market relations to all of humanity and all human activities. Nothing less is required to finally overcome the alienation and antagonisms of capitalism and create a classless society. The pursuit of this aspiration is worth every effort and calls to mind Ella Fitzgerald's reflections on withstanding racial segregation: "I went through all those experiences, so I feel great that I have been able to pay those dues because when you pay them you know what it's all about. That's how we become greater, by learning to face these things."[181]

Endnotes

[1] Henry IV, part I, shakespeare.mit.edu/1henryiv/full.html.
[2] It is notable that classical political economists, often cited in support of capitalism, recognized the importance of class and the conflicts of interest it engenders: "The proposal of any new law or regulation of commerce which comes from [those who live by profit] ought always to be listened to with great precaution, and ought never to be adopted till after having been long and carefully examined, not only with the most scrupulous, but with the most suspicious attention. It comes from an order of men whose interest is never exactly the same with that of the public, who have generally an interest to deceive and even to oppress the public, and who accordingly have, upon many occasions, both deceived and oppressed it." Adam Smith, *An Inquiry into the Nature and Causes of The Wealth of Nations*, Marxists Internet Archive, 1776 [1937], marxists.org/reference/archive/smith-adam/works/wealth-of-nations/book01/ch11c-3.htm. "The dealings between the landlord and the public are not like dealings in trade, whereby both the seller and buyer may equally be said to gain, but the loss is wholly on one side, and the gain wholly on the other…" David Ricardo, *On The Principles of Political Economy and Taxation*, Marxists Internet Archive, 1817, marxists.org/reference/subject/economics/ricardo/tax/ch24.htm.
[3] Oxfam, "Time to Care," p. 10, 2020, oxfamamerica.org/explore/research-publications/time-care.
[4] To cite a few references: "Extensive research has conclusively demonstrated that children's social class is one of the most significant predictors – if not the single most significant predictor- of their educational success. Moreover, it is increasingly apparent that performance gaps by social class take root in the earliest years of children's lives and fail to narrow in the years that follow." E. García and E. Weiss, "Education inequalities at the school starting gate," Economic Policy Institute, September 2017, epi.org/publication/education-inequalities-at-the-school-starting-gate. "Demographers have established that the rich live longer, on average, than the poor. In recent years, a substantial body of research has also demonstrated that the gap in average life expectancy between the rich and the poor is growing significantly." Congressional Research Service, "The Growing Gap in Life Expectancy by Income: Recent Evidence and Implications for the Social Security Retirement Age," July 2021, sgp.fas.org/crs/misc/R44846.pdf. "The more income inequality, the less likely people are to help someone (in an experimental setting) and the less generous and cooperative they are in economic games… unequal cultures make people less kind. Inequality also makes people less healthy. This helps explain a hugely important phenomenon in public health, namely the 'socioeconomic status (SES)/health gradient' – as noted, in culture after culture, the poorer you are, the worse your health, the higher the incidence and impact of numerous diseases, and the shorter your life expectancy… it's not so much *being* poor that predicts poor health. It's *feeling* poor… it's not so much that poverty predicts poor health; it's poverty amid plenty – income inequality." Robert Sapolsky, *Behave: the Biology of Humans at our Best and Worst* (New York: Penguin Press, 2017), pp. 292-294.
[5] In the US 37.2 million people were living in poverty (approximately 11% of the population), including approximately eleven million children (one in seven children) in 2020. US Census Bureau, "National Poverty in America Awareness Month: January 2022," January 2022, census.gov/newsroom/stories/poverty-awareness-month.html; Center for American Progress, "The Basic Facts About Children in Poverty," January 2021, americanprogress.org/article/basic-facts-children-poverty.
[6] The "Great Gatsby Curve" correlates income inequality with social stratification over time. As income inequality increases, upward mobility for the next generation decreases. D. Vandivier, "What is The Great Gatsby Curve?" June 2013, obamawhitehouse.archives.gov/blog/2013/06/11/what-great-gatsby-curve.
[7] Under capitalism, women may achieve income equality with men only in the distant future: S. Jackson, "It will be 257 years before women have equal pay, gender gap report says," NBC News, December 2019, nbcnews.com/news/world/it-will-be-257-years-women-have-equal-pay-new-n1103481. Racial wealth gaps are also structurally unequal, with white households in the US typically possessing approximately ten times the net wealth of black households. K. McIntosh et al.,

"Examining the Black-white wealth gap," Brookings Institution, February 2020, brookings.edu/blog/up-front/2020/02/27/examining-the-black-white-wealth-gap.

[8] Of the population spanning twenty-five to fifty-four years of age in the US, an average of 67% were in the workforce (employed or unemployed) in the 1950s and this value rose to 82% in the 2010s. Federal Reserve Bank of St. Louis, "Population Level - 25-54 Yrs." (Series ID: LNU00000060), "Employment Level - 25-54 Yrs." (Series ID: LNS12000060), "Unemployment Level - 25-54 Yrs." (Series ID: LNS13000060), Federal Reserve Economic Database, fred.stlouisfed.org.

[9] "The things which have the greatest value in use have frequently little or no value in exchange; and, on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water: but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it." Adam Smith, *An Inquiry into the Nature and Causes of The Wealth of Nations*, Marxists Internet Archive, 1776 [1937], marxists.org/reference/archive/smith-adam/works/wealth-of-nations/book01/ch04.htm.

[10] Each data point represents an individual manufacturing industry. Calculated from: U.S. Census Bureau, *Manufacturing Industry Series*, various years, census.gov/programs-surveys/economic-census/year.html. Federal Reserve Bank of St. Louis, "Gross domestic product (implicit price deflator)" (Series ID: A191RD3A086NBEA), Federal Reserve Economic Database, fred.stlouisfed.org.

[11] The values of commodities previously produced may be altered when the benchmark of socially necessary labor changes. For example, consider a machine which typically costs a million dollars on the market until a more efficient production process generates identical machines at half the price. A company may have purchased the machine for a million dollars originally, but it has subsequently become worth only half that amount.

[12] "Half a billion unemployed or underemployed worldwide: UN report," DW, January 2020, dw.com/en/half-a-billion-unemployed-or-underemployed-worldwide-un-report/a-52081744.

[13] Technological progress may only increase the amount of surplus value if productivity gains are made in the production of consumer goods which form the workers' subsistence (reducing the length of the workday necessary for producing the workers' subsistence). Technological progress which increases the efficiency of producing commodities like luxuries, which do not factor into the workers' subsistence, would not impact the length of the workday needed to reproduce the workers' labor-power and therefore would not increase the amount of surplus value. However, increasing the productivity of producing luxuries has the effect of reducing their value, allowing the capitalist class to acquire more luxury commodities, holding the amount of surplus value constant.

[14] Technically, the rate of surplus value only applies to workers performing productive labor (since workers performing unproductive labor do not produce surplus value) while the rate of exploitation (the ratio of necessary labor to surplus labor) applies to all workers employed by capital (including workers performing unproductive labor). This point is raised throughout Anwar Shaikh and E. Tonak, *Measuring the Wealth of Nations* (New York: Cambridge University Press, 1994).

[15] The calculation of the rate of surplus value is based on a more exacting procedure found in Anwar Shaikh and E. Tonak, *Measuring the Wealth of Nations* (New York: Cambridge University Press, 1994), Table 5.13. The source data are insufficiently detailed to adequately differentiate between productive labor and unproductive labor classified under services (as well as within the productive sectors of the economy); a fraction of the service sector (not including government) is considered productive. Variable capital is calculated as the sum of employee compensation in agriculture, forestry, fishing, hunting, mining, construction, manufacturing, transportation, utilities, warehousing, and information, as well as a third of employee compensation in the service sector. Surplus value is calculated as the difference between net national product and variable capital. Calculated from: Bureau of Economic Analysis, "National Income and Product Accounts," Table 1.7.5., Table 1.12., Table 6.2A-B., apps.bea.gov/iTable/index_nipa.cfm.

[16] Calculated from: Bureau of Economic Analysis, "National Income and Product Accounts," Table

5.10., apps.bea.gov/iTable/index_nipa.cfm.
[17] For a more elaborate model see David Harvey, "Visualization of All Three Volumes of Capital," peoplesforum.org/wp-content/uploads/2019/07/Visualization-of-all-Three-Volumes-of-Capital.pdf.
[18] For instance, industrial capitalists typically sell commodities below their value to distributors who sell them around their value and in this way appropriate surplus value. When a car dealer buys a car for $30,000 from a manufacturer and sells it for $40,000, it is being sold around its value rather than the dealer creating $10,000 of value.
[19] Due to the discontinuation of data on the gross stock of capital, profit rates are calculated using the net stock of capital. This introduces a bias which overestimates the rate of profit. For instance, between 1925 and 1993 the ratio of fixed nonresidential net private capital to fixed nonresidential gross private capital ranged between 0.46 and 0.60, averaging 0.54. Bureau of Economic Analysis, "Fixed Reproducible Tangible Wealth in the United States: Revised Estimates for 1991-93 and Summary Estimates for 1925-93," *Survey of Current Business*, 74:8 (August 1994), p. 61, apps.bea.gov/scb/pdf/national/niparel/1994/0894wlth.pdf. Thus, profit rates calculated on the basis of net capital stocks are roughly twice as great as values calculated on the basis of gross capital stocks. "Conventional" rates of profit are calculated as corporate profit divided by fixed corporate net private capital. The "Marxist" rate of profit is a rough approximation of a more exacting procedure found in Anwar Shaikh and E. Tonak, *Measuring the Wealth of Nations* (New York: Cambridge University Press, 1994), Table 5.8. Surplus value is derived previously in Figure 4. Capital is defined as fixed nonresidential net private capital. Stocks of variable capital and circulating constant capital could not be derived from the data and so are not included in the estimate of capital; there is not a significant impact on results, however, considering fixed capital accounts for the bulk of total capital. Calculated from: Bureau of Economic Analysis, "National Income and Product Accounts," Table 6.17A-D., Table 6.19A-D., apps.bea.gov/iTable/index_nipa.cfm; "Fixed Assets Accounts Tables," Table 6.1., apps.bea.gov/iTable/index_FA.cfm. Federal Reserve Bank of St. Louis, "Current-Cost Net Stock of Fixed Assets: Private: Nonresidential" (Series ID: K1NTOTL1ES000), Federal Reserve Economic Database, fred.stlouisfed.org.
[20] Calculated from: Bureau of Economic Analysis, "National Income and Product Accounts," Table 5.8.5A & Table 5.8.5B, apps.bea.gov/iTable/index_nipa.cfm.
[21] The money available to be loaned greatly exceeds the initial money deposited, owing to fractional-reserve banking. Banks retain a typically small fraction of deposits, to cover withdrawals. The loan which one bank issues may be deposited in another bank, which accordingly retains a fraction and loans the remainder- the new loan may be deposited in yet another bank which also retains a fraction and loans the remainder, and so on, creating a multiplier effect. "Loans in support of extended reproduction have always only rested to a very small extent on the operations of banks acting as 'middlemen between actual money capitalists and borrowers', e.g. putting savings at the disposal of firms for investment. Banks have always lent far more than the deposits made with them, the savings they have collected and their own proprietary capital." François Chesnais, *Finance Capital Today: Corporations and Banks in the Lasting Global Slump* (Chicago: Haymarket Books, 2017), p. 84.
[22] Real GDP per capita in 1900 was 3.6 times the level of 1800 and the level in 2000 was 8.1 times that of 1900. Calculated from: Congressional Budget Office, "Historical Data on Federal Debt Held by the Public: Data and Supplemental Information," cbo.gov/publication/21728. US Census Bureau, "Fast Facts," census.gov/history/www/through_the_decades/fast_facts.
[23] Federal Reserve Bank of St. Louis, "Index of Manufacturing Production for United States" (Series ID: A0107AUSA322NNBR) and "Industrial Production: Manufacturing (SIC)" (Series ID: IPB00004NQ), Federal Reserve Economic Database, fred.stlouisfed.org.
[24] National Bureau of Economic Research, "US Business Cycle Expansions and Contractions," nber.org/research/data/us-business-cycle-expansions-and-contractions.
[25] D. Frasquilho et al., "Mental health outcomes in times of economic recession: a systematic literature review," *BMC Public Health*, 16:115 (February 2016), ncbi.nlm.nih.gov/pmc/articles/PMC4741013.
[26] After World War II jumpstarted the economy, value added per unit capital fell as shown by the

trend line. Calculated from: Federal Reserve Bank of St. Louis, "Net value added: Net domestic product: Business" (Series ID: A363RC1A027NBEA) & "Current-Cost Net Stock of Fixed Assets: Private: Nonresidential" (Series ID: K1NTOTL1ES000), Federal Reserve Economic Database, fred.stlouisfed.org.

[27] For an extensive study of the contradictions of capitalism, see David Harvey, *Seventeen Contradictions and the End of Capitalism* (New York: Oxford University Press, 2014).

[28] Trade attributable to global value chains rose from approximately 37% of global trade in1970 to over 50% before the Great Recession (after which the value fell somewhat). World Bank, *Trading for Development in the Age of Global Value Chains* (Washington, DC: World Bank Publications, 2020), p.19, worldbank.org/en/publication/wdr2020.

[29] Global Footprint Network, Earth Overshoot Day, overshootday.org/how-many-earths-or-countries-do-we-need/.

[30] Of course, capitalist enterprise at the micro level has its own varieties of waste and inefficiency: lack of motivation for wage laborers to work any harder than necessary for bosses, excessive supervisory functions including micromanagement, poor communication across insular departments, corporate culture stifling creativity and innovation on the part of rank and file workers, etc.

[31] Ernest Mandel, *Power and Money* (New York: Verso, 1992), p. 42.

[32] Global climate change is anticipated to reduce GDP by 18% (compared to what it would be in the absence of climate change) by 2050 if no action is taken and by 4% even if the Paris Agreement is fulfilled. Swiss Re, "Why no action on climate change is not an option," 2021, swissre.com/risk-knowledge/mitigating-climate-risk/no-action-climate-change-not-option.html.

[33] Small Business Administration, "Do economic or industry factors affect business survival?" 2012, sba.gov/sites/default/files/Business-Survival.pdf.

[34] As industries grow larger and more capital-intensive, the costs of entering and exiting the market typically increase. Accordingly, as firms grow they tend to augment reserve capacity to accommodate business cycle fluctuations, in place of opening and closing. With firms becoming more capital intensive and the economy growing at a decreasing rate, capacity utilization in US manufacturing has drifted downward from an average of 84%-85% in the 1950s and 1960s to 75% in the 2000s and 2010s. Federal Reserve Bank of St. Louis, "Capacity Utilization: Manufacturing (SIC)" (Series ID: CAPUTLB00004A), Federal Reserve Economic Database, fred.stlouisfed.org.

[35] For a comprehensive exposition on alienation see Bertell Ollman, *Alienation: Marx's Conception of Man in Capitalist Society*, 2nd ed. (New York: Cambridge University Press, 1976).

[36] "The mode of life, as it is determined for the individual by the peculiarity of an economic system, becomes the primary factor in determining his whole character structure, because the imperative need for self-preservation forces him to accept the conditions under which he has to live." Erich Fromm, *Escape From Freedom* (New York: Henry Holt and Company, LLC., 1994), p. 16.

[37] Only 20% of employees globally are engaged at work. Gallup, "State of the Global Workplace," 2021, gallup.com/workplace/349484/state-of-the-global-workplace.aspx.

[38] "Digital marketing experts estimate that most Americans are exposed to around 4,000 to 10,000 ads each day." J. Simpson, "Finding Brand Success In The Digital World," August 2017, forbes.com/sites/forbesagencycouncil/2017/08/25/finding-brand-success-in-the-digital-world/?sh=298afe78626e.

[39] "Humans are naturally social. Yet, the modern way of life in industrialized countries is greatly reducing the quantity and quality of social relationships… more and more people of all ages in developed countries are living alone, and loneliness is becoming increasingly common… There is reason to believe that people are becoming more socially isolated." J. Holt-Lunstad et al., "Social Relationships and Mortality Risk: A Meta-analytic Review," *PLOS Medicine*, 7:7 (July 2010), ncbi.nlm.nih.gov/pmc/articles/PMC2910600/. See also: Office of the U.S. Surgeon General, "Our Epidemic of Loneliness and Isolation," 2023, hhs.gov/sites/default/files/surgeon-general-social-connection-advisory.pdf.

[40] "Insofar as society does not permit real satisfactions, fantasy satisfactions serve as a substitute and become a powerful support of social stability." Erich Fromm, *The Dogma of Christ and Other*

Essays on Religion, Psychology and Culture (United States: Holt, Rinehart and Winston, 1963), p. 20.

[41] Taking alienation to an extreme, nature as such becomes commodified, with "natural capital" designating the stock of natural resources: "The term 'natural capital' is used to emphasise it is a capital asset, like produced capital (roads and buildings) and human capital (knowledge and skills)." Partha Dasgupta, *The Economics of Biodiversity: The Dasgupta Review* (London: HM Treasury, 2021), p. 506, assets.publishing.service.gov.uk/media/602e92b2e90e07660f807b47/The_Economics_of_Biodiversity_The_Dasgupta_Review_Full_Report.pdf.

[42] "Unlimited competition leads to a huge waste of labor, and to that crippling of the social consciousness of individuals… This crippling of individuals I consider the worst evil of capitalism. Our whole educational system suffers from this evil… I am convinced there is only *one* way to eliminate these grave evils, namely through the establishment of a socialist economy, accompanied by an educational system which would be oriented toward social goals." Albert Einstein, "Why Socialism?" *Monthly Review*, 61:1 (May 2009), monthlyreview.org/2009/05/01/why-socialism.

[43] By the final year of K-12 education (public and private schools) in the US in 2020, only 37% of students were proficient or better in reading, 27% in writing, 24% in mathematics, 22% in science, and 12% in US history. National Assessment of Educational Progress, "The Nation's Report Card," nationsreportcard.gov.

[44] Meanwhile, a high level of wellbeing promotes free thinking: "[In] societies characterized by plentiful food distribution, excellent public health care, and widely accessible housing, religiosity wanes. Conversely, in societies where food and shelter are scarce and life is generally less secure, religious belief is strong… [With few exceptions] the correlation between high rates of individual and societal security/well-being and high rates of nonbelief in God remains strong." Phil Zuckerman, "Atheism: Contemporary Numbers and Patterns" in *Cambridge Companion to Atheism* (United States: Cambridge University Press, 2007), p. 55-57.

[45] "West India Emancipation," University of Rochester Frederick Douglas Project, rbscp.lib.rochester.edu/4398.

[46] B. Stein, "In Class Warfare, Guess Which Class Is Winning," November 2006, nytimes.com/2006/11/26/business/yourmoney/26every.html.

[47] "When the preferences of economic elites and the stands of organized interest groups are controlled for, the preferences of the average American appear to have only a minuscule, near-zero, statistically non-significant impact upon public policy." M. Gilens and B. Page, "Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens," *Perspectives on Politics*, 12:3 (September 2014), cambridge.org/core/journals/perspectives-on-politics/article/testing-theories-of-american-politics-elites-interest-groups-and-average-citizens/62327F513959D0A304D4893B382B992B.

[48] Unique class relations in England generated market forces which helped to initiate the capitalist mode of production. "First, the English ruling class was distinctive in two related respects. On the one hand, demilitarized before any other aristocracy in Europe, it was part of the increasingly centralized state, in alliance with a centralizing monarchy, without the parcellization of sovereignty characteristic of feudalism and its successor states… On the other hand, there was what might be called a trade-off between the centralization of state power and the aristocracy's control of land. Land in England had for a long time been unusually concentrated, with big landlords holding an unusually large proportion, in conditions that enabled them to use their property in new ways. What they lacked in 'extra-economic' powers of surplus extraction they more than made up for with increasing 'economic' powers. This distinctive combination had significant consequences. On the one hand, the concentration of English landholding meant that an unusually large proportion of land was worked not by peasant-proprietors but by tenants… On the other hand, the relatively weak extra-economic powers of landlords meant that they depended less on their ability to squeeze more rents out of their tenants by direct, coercive means than on their tenants' success in competitive production. Agrarian landlords in this arrangement had a strong incentive to encourage – and,

whenever possible, to compel – their tenants to find ways of reducing costs by increasing labour-productivity… English tenancies took various forms, and there were many regional variations, but a growing number were subject to economic rents- rents fixed not by some legal or customary standard but by market conditions. There was, in effect, a market in leases. Tenants were obliged to compete not only in a market for consumers but also in a market for access to land." Ellen Meiksins Wood, *The Origin of Capitalism: A Longer View* (New York: Verso, 2017), pp. 99-100.

[49] Christopher Freeman and Francisco Louçã, *As Time Goes By: From the Industrial Revolutions to the Information Revolution* (New York: Oxford, 2001), p. 155.

[50] Eric Hobsbawm, *Industry and Empire: The Making of Modern English Society, Vol. II 1750 to the Present Day* (New York: Random House, 1968), p. 47.

[51] Christopher Freeman and Francisco Louçã, *As Time Goes By: From the Industrial Revolutions to the Information Revolution* (New York: Oxford, 2001), p. 168.

[52] Bank of England, "A millennium of macroeconomic data," A4: Output of key industrial sectors, A5: Output of key service sectors, bankofengland.co.uk/statistics/research-datasets.

[53] Christopher Freeman and Francisco Louçã, *As Time Goes By: From the Industrial Revolutions to the Information Revolution* (New York: Oxford, 2001), p. 183.

[54] Eric Hobsbawm, *The Age of Capital:1848-1875* (New York: Scribner, 1975), p. 310.

[55] Eric Hobsbawm, *The Age of Capital:1848-1875* (New York: Scribner, 1975), p. 40.

[56] Christopher Freeman and Francisco Louçã, *As Time Goes By: From the Industrial Revolutions to the Information Revolution* (New York: Oxford, 2001), p. 197.

[57] Federal Reserve Bank of St. Louis, "Miles of Railroad Built for United States" (Series ID: A02F2AUSA374NNBR), Federal Reserve Economic Database, fred.stlouisfed.org. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, M93, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v1.pdf.

[58] Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, P197, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf.

[59] Calculated from: US Census Bureau, "Manufacturing: Subject Series: Concentration Ratios: Share of Value of Shipments Accounted for by the 4, 8, 20, and 50 Largest Companies for Industries: 2012" (Series ID: EC1231SR2), data.census.gov/cedsci.

[60] Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, V55 & V57, 1960, census.gov/library/publications/1960/compendia/hist_stats_colonial-1957.html.

[61] Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, V1, V3, V10, & V12, 1960, census.gov/library/publications/1960/compendia/hist_stats_colonial-1957.html.

[62] Bureau of the Census, Statistical Abstract of the United States: 2010, Table 728, www2.census.gov/library/publications/2010/compendia/statab/129ed/tables/business.pdf.

[63] Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, P212, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf.

[64] Calculated from: U.S. Census Bureau, Statistics of U.S. Businesses Historical Data, "1988-2006 totals," "2007-2019 totals," census.gov/data/tables/time-series/econ/susb/susb-historical.html.

[65] Credit Suisse, *Global Wealth Databook*, various years, credit-suisse.com/about-us/en/reports-research/global-wealth-report.html.

[66] Note numerical results are not published for some of the most monopolized industries and industry classifications change over time. Values in 1901 are in terms of value added while the remaining years are in terms of value of shipments. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, P197, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf; US Census Bureau, "1947 - 1992 Economic Census Manufacturing Concentration Ratios," census.gov/data/tables/1992/econ/census/concentraion-ratio-data.html; US Census Bureau, "Selected Sectors: Concentration of Largest Firms for the U.S.: 2017" (Series ID: EC1700SIZECONCEN), data.census.gov/cedsci.

[67] Encyclopedia of Milwaukee, "Brewing," University of Wisconsin-Milwaukee, emke.uwm.edu/entry/brewing.

[68] National Beer Wholesalers Association, "Industry Fast Facts," nbwa.org/resources/industry-fast-facts. Movendi International, "Big Beer Exposed: Global Market Concentration in 2020," movendi.ngo/news/2021/09/17/big-beer-exposed-global-market-concentration-in-2020.
[69] "Global Automotive Executive Survey 2020," p. 27, automotive-institute.kpmg.de/GAES2020/downloads/global_automotive_executive_survey_2020.pdf. B. Wood et al., "Maximising the wealth of few at the expense of the health of many: a public health analysis of market power and corporate wealth and income distribution in the global soft drink market," *Globalization and Health*, 17:138 (December 2021), Table 2, globalizationandhealth.biomedcentral.com/track/pdf/10.1186/s12992-021-00781-6.pdf.
[70] Capital may be expressed algebraically as:

$$Capital = \frac{Capital}{Sales} \times \frac{Sales}{Commodities} \times \frac{Commodities}{Firms} \times Firms$$

Capital/sales is the amount of capital per unit of sales (representing the capital intensity of production), sales/commodities is the price per commodity (representing the price level), and commodities/firms is the quantity of commodities produced per firm (representing productivity). When technological innovation is stagnant, these factors do not change significantly, such that the capital per firm does not greatly increase. However, investment cultivates technological innovation which tends to raise the capital intensity, lower prices (after correcting for inflation), and boost productivity. The growing output per firm limits the number of firms needed to meet effective demand. Ultimately, a falling rate of profit culls firms from the market. This relates to capital intensity, which may be expressed algebraically as:

$$\frac{Capital}{Sales} = \frac{\frac{Capital}{Profit}}{\frac{Sales}{Profit}} = \frac{\frac{Profit}{Sales}}{\frac{Profit}{Capital}} = \frac{Profit\ Margin}{Rate\ of\ Profit}$$

Since capital/sales tends to increase with the application of technology, profit margin/rate of profit also tends to increase. If the profit margin increases, the rate of profit may also increase for a time. However, as the profit margin approaches the limit (in which profit equals sales, or profit/sales equals one), the rate of profit must begin to fall in order for the fraction to increase overall. If the profit margin decreases, the rate of profit must fall even more so in order for the fraction to increase overall. Whether the rate of profit falls belatedly or immediately, the long-term effect places downward pressure on the number of firms the market can sustain. When the application of technology is fairly uniform across firms, the market share (or concentration ratio) of the top firms is approximated by the number of top firms divided by the total number of firms. However, as technology advances and production is scaled up, capital becomes more and more unevenly distributed across firms and the market share of the top firms grows accordingly.
[71] Values denote simple averages. North American Industry Classification System industries are from the five digit level for consistency across time points. Calculated from: U.S. Census Bureau, *Manufacturing Industry Series*, various years, census.gov/programs-surveys/economic-census/year.html.
[72] Constitutional Rights Foundation, "Rockefeller and the Standard Oil Monopoly," crf-usa.org/bill-of-rights-in-action/bria-16-2-b-rockefeller-and-the-standard-oil-monopoly.html.
[73] A. Lutz, "These 6 Corporations Control 90% Of The Media In America," June 2012, businessinsider.com/these-6-corporations-control-90-of-the-media-in-america-2012-6.
[74] T. Nichols and V. Fouka, "John D. Rockefeller: The Richest Man in the World," Harvard Business School Case 815-088, December 2014, store.hbr.org/product/john-d-rockefeller-the-richest-man-in-the-world/815088?sku=815088-PDF-ENG.
[75] Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge: Belknap Press, 2014), Figure 10.6, piketty.pse.ens.fr/files/capital21c/en/Piketty2014FiguresTables.pdf.
[76] In the circuit of productive capital, labor-power and the means of production are brought together to produce commodities which are sold on the market. In this case, a stock of capital yields a flow of surplus value generated in production and appropriated in distribution, at a given rate of return.

Finance often works in an opposite manner, by capitalizing a flow of income at a rate of return to yield tradable financial assets (such as bonds and stocks), known as securities. For example, a privately owned company with a capital of $1 billion dollars raking in $100 million dollars in profits annually would have a profit rate of ten percent. If the rate of interest is four percent, the company could sell securities for $2.5 billion (since $2.5 billion times four percent equals $100 million). The surplus value accruing to the company would then be distributed to the owners of the securities.

[77] Federal Reserve Bank of St. Louis, "Cash Obtained Through New Security Issues on the New York Stock Exchange for United States" (Series ID: Q1027AUSQ144NNBR), Federal Reserve Economic Database, fred.stlouisfed.org.

[78] Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, X97 & X98, 1960, census.gov/library/publications/1960/compendia/hist_stats_colonial-1957.html; Federal Reserve Bank of St. Louis, "Commercial Banks in the U.S." (Series ID: USNUM), "Total Assets, All Commercial Banks" (Series ID: TLAACBW027SBOG), "Gross domestic product (implicit price deflator)" (Series ID: A191RD3A086NBEA), Federal Reserve Economic Database, fred.stlouisfed.org.

[79] D. Corbae and P. D'Erasmo, "Rising Bank Concentration," Working Paper 26838, National Bureau of Economic Research, March 2020, p.1, nber.org/system/files/working_papers/w26838/w26838.pdf.

[80] Calculated from: Congressional Budget Office, "Historical Data on Federal Debt Held by the Public: Data and Supplemental Information," cbo.gov/publication/21728; Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, X582 & X583, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf; Federal Reserve Bank of St. Louis, "Gross Domestic Product" (Series ID: GDP), "Securities in Bank Credit, All Commercial Banks" (Series ID: INVESTNSA), and "Loans and Leases in Bank Credit, All Commercial Banks" (Series ID: LOANSNSA), Federal Reserve Economic Database, fred.stlouisfed.org.

[81] "For firms in the global North, the liberalisation of trade and investment and the end of the socialist and developmentalist experiences [the fall of the USSR and capitalist restoration in China] offered new sources of profits and indeed new investment opportunities. These firms could exploit their dominant position in the global commodity chains to increase their profit margins as the price of their inputs fell. Moreover, they have rapidly expanded their international operations… allowing them to meet their shareholders' expectations by way of profits realised abroad… Since the 1990s, the higher profits received by shareholders have increasingly come from the rapid capital accumulation in emerging countries and the profits that this generates." Cédric Durand, *Fictitious Capital: How Finance is Appropriating Our Future* (New York: Verso, 2017), p. 150.

[82] Eric Hobsbawm, *The Age of Empire:1875-1914* (New York: Vintage Books, 1987), p. 59.

[83] Eric Hobsbawm, *The Age of Empire:1875-1914* (New York: Vintage Books, 1987), p. 347.

[84] Public Broadcasting Service, "The Berlin Conference of 1884-1885," wisconsin.pbslearningmedia.org/resource/6031c3a2-ada9-42b4-8045-52006e2a2b07/the-berlin-conference-of-1884-1885.

[85] S. Tharoor, "Saying Sorry to India: Reparations or Atonement?" Harvard International Law Journal, 2018, harvardilj.org/wp-content/uploads/sites/15/Tharoor-Reparations.pdf.

[86] Calculated from: Bank of England, "A millennium of macroeconomic data," A9: Nominal UK GDP at market prices, A10: UK Net Property Income from Abroad (GB+NI basis), Nominal GNI at market prices, A46: UK Net external assets, bankofengland.co.uk/statistics/research-datasets.

[87] By 1929, the ratio of direct investment in foreign territories to gross private domestic investment in the US reached 0.46. More than half (55%) of direct investment in foreign territories went to regions outside of Western Europe and Canada. Calculated from Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, F564, U41, U42, & U44, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v1.pdf, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf.

[88] Capital exports as percentage of goods exports: 1882-1957 calculated as machinery exports as

percentage of merchandise exports, 1958-2021 calculated as capital goods (except automotive) exports as percentage of total exports. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, U61 & U92, 1960, census.gov/library/publications/1960/compendia/hist_stats_colonial-1957.html; Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, U249, U252, & U260, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf. Bureau of Economic Analysis, "National Income and Product Accounts," Table 4.2.5., apps.bea.gov/iTable/index_nipa.cfm.

[89] Library of Congress, "Today in History - July 30," loc.gov/item/today-in-history/july-30. Federal Reserve Bank of St. Louis, "Automobile Registrations, Passenger Cars, Total for United States" (Series ID: A01108USA258NNBR), Federal Reserve Economic Database, fred.stlouisfed.org.

[90] Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, P265 and S13, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf.

[91] Christopher Freeman and Francisco Louçã, *As Time Goes By: From the Industrial Revolutions to the Information Revolution* (New York: Oxford, 2001), pp. 230-231.

[92] "Control has been the essential feature of management throughout its history, but with Taylor it assumed unprecedented dimensions… when he asserted as an *absolute necessity for adequate management the dictation to the worker of the precise manner in which work was to be performed*. That management had the right to "control" labor was generally assumed before Taylor, but in practice this right usually meant only the general setting of tasks, with little direct interference in the worker's mode of performing them… His "system" was simply a means for management to achieve control of the actual mode of performance of every labor activity, from the simplest to the most complicated." Harry Braverman, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century* (New York: Monthly Review Press, 1974), p. 90.

[93] Christopher Freeman and Francisco Louçã, *As Time Goes By: From the Industrial Revolutions to the Information Revolution* (New York: Oxford, 2001), pp. 249, 254.

[94] Federal Reserve Bank of St. Louis, "Unemployment Rate for United States" (Series ID: M0892AUSM156SNBR), Federal Reserve Economic Database, fred.stlouisfed.org.

[95] This is empirically evaluated in A. Shaikh, "Who Pays for the "Welfare" in the Welfare State? A Multicountry Study," *Social Research*, 70:2 (Summer 2003), pp. 540-545, anwarshaikhecon.org/sortable/images/docs/publications/welfare_state/2003/1-welfare_state.pdf.

[96] "Keynesian deficits, along with the increases of private borrowing that they facilitated, provided the additions to demand that made it possible for the economy to sustain worsening over-capacity yet avoid crisis and continue to expand. But they also held back the shakeout of high-cost, low-profit means of production that was needed to restore profitability." Robert Brenner, *The Economics of Global Turbulence: The Advanced Capitalist Economies from Long Boom to Long Downturn, 1945-2005* (New York: Verso, 2006), pp. 270-271.

[97] Calculated from: Congressional Budget Office, "Historical Data on Federal Debt Held by the Public: Data and Supplemental Information," cbo.gov/publication/21728; Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, Y336, 1975, fraser.stlouisfed.org/files/docs/publications/histstatus/hstat1970_cen_1975_v2.pdf; The White House Office of Management and Budget, Historical Tables, Table 1.1, whitehouse.gov/omb/historical-tables; Federal Reserve Bank of St. Louis, "Shares of gross domestic product: Government consumption expenditures and gross investment: Federal" (Series ID: A823RE1A156NBEA), "Shares of gross domestic product: Government consumption expenditures and gross investment: State and local" (Series ID: A829RE1A156NBEA), and "Gross Domestic Product" (Series ID: GDP), Federal Reserve Economic Database, fred.stlouisfed.org.

[98] Federal Reserve Bank of St. Louis, "Shares of gross domestic product: Government consumption expenditures and gross investment: Federal: National defense" (Series ID: A824RE1A156NBEA) and "Shares of gross domestic product: Government consumption expenditures and gross investment: Federal: Nondefense" (Series ID: A825RE1A156NBEA), "Gross Domestic Product: Research and Development" (Series ID: Y694RC1A027NBEA), "Government Gross Investment:

Federal: National Defense: Gross Investment: Intellectual Property Products: Research and Development" (Series ID: Y076RC1A027NBEA), Federal Reserve Economic Database, fred.stlouisfed.org.
[99] National Archives, "'The Chance for Peace' Address Delivered Before the American Society of Newspaper Editors, April 16th, 1953," eisenhowerlibrary.gov/sites/default/files/file/chance_for_peace.pdf.
[100] Federal Reserve Bank of St. Louis, "Consumer Price Index in the United Kingdom" (Series ID: CPIUKA), Federal Reserve Economic Database, fred.stlouisfed.org. L. Officer and S. Williamson, "The Annual Consumer Price Index for the United States, 1774-Present," 2022, measuringworth.com/index.php.
[101] S. Lebergott, "Labor Force and Employment, 1800-1960," Table 2, in *Output, Employment, and Productivity in the United States after 1800*, ed. D. Brady, 1966, nber.org/system/files/chapters/c1567/c1567.pdf; Federal Reserve Bank of St. Louis, "Employment Level" (Series ID: LNU02000000), "All Employees, Manufacturing" (Series ID: MANEMP), "Employment Level - Agriculture and Related Industries" (Series ID: LNU02034560), Federal Reserve Economic Database, fred.stlouisfed.org.
[102] Calculated from: Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, F106 & F110, 1960, census.gov/library/publications/1960/compendia/hist_stats_colonial-1957.html.
[103] Calculated from: Bureau of Economic Analysis, "National Income and Product Accounts," Table 1.5.5., apps.bea.gov/iTable/index_nipa.cfm. Federal Reserve Bank of St. Louis, "All Employees, Service-Providing" (Series ID: SRVPRD), "All Employees, Goods-Producing" (Series ID: USGOOD), Federal Reserve Economic Database, fred.stlouisfed.org.
[104] Calculated from: U.S. Census Bureau, "A110-111: Civilian labor force," "A112-113: Female labor force," Long Term Economic Growth: 1860–1965, fraser.stlouisfed.org/files/docs/meltzer/cenlon66.pdf; Bureau of Labor Statistics, "Data Retrieval: Labor Force Statistics (CPS)," Table A-1. Employment status of the civilian population by sex and age, bls.gov/webapps/legacy/cpsatab1.htm.
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[106] J. Liu, "High-paid, well-educated white collar workers will be heavily affected by AI, says new report," CNBC, November 2019, cnbc.com/2019/11/27/high-paid-well-educated-white-collar-jobs-heavily-affected-by-ai-new-report.html.
[107] Calculated from: U.S. Census Bureau, "A165: Manufacturing output per man-hour," "A167: Agricultural output per man-hour," Long Term Economic Growth: 1860–1965, fraser.stlouisfed.org/files/docs/meltzer/cenlon66.pdf.
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[109] US Department of Agriculture, S. Wang et al., "Farm Labor, Human Capital, and Agricultural Productivity in the United States," Economic Research Service, February 2022, p. 2, ers.usda.gov/webdocs/publications/103267/err-302_summary.pdf?v=5907.1.
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[111] Calculated from: US Department of Agriculture, "Farm Labor," Economic Research Service, March 2022, ers.usda.gov/topics/farm-economy/farm-labor.
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[113] The World Bank, "Urban population (% of total population)," World Bank Open Data, data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS.
[114] F. Harvey, "UN says up to 40% of world's land now degraded," The Guardian, April 2022,

theguardian.com/environment/2022/apr/27/united-nations-40-per-cent-planet-land-degraded.
[115] In 1970, the external debt of low and middle income countries amounted to 10% of GDP. This figure rose to 33% by the end of the 1980s, peaked at 38% in 1999, fell to 20% in 2008, and has risen a few percentage points since then. Calculated from: The World Bank, "GDP (current US$)," "External debt stocks, total (DOD, current US$)," World Bank Open Data, data.worldbank.org. Between 2000 and 2017, the net transfer of financial resources from developing to developed countries annually exceeded $100 billion and approached $1 trillion (or exceeded that sum, taking into account illicit financial dealings) in some years. United Nations Conference on Trade and Development, "Topsy-turvy World: Net Transfer of Resources from Poor to Rich Countries," May 2020, p. 2, unctad.org/system/files/official-document/presspb2020d2_en.pdf.
[116] According to one estimate, $62 trillion (in 2011 dollars) was transferred from the Global South to the Global North through unequal exchange between 1960 and 2017 and the transfer accelerated under neoliberalism. J. Hickel, D. Sullivan, and H. Zoomkawala, "Plunder in the Post-Colonial Era: Quantifying Drain from the Global South Through Unequal Exchange, 1960-2018," *New Political Economy*, 26:6 (March 2021), p. 5, static1.squarespace.com/static/59bc0e610abd04bd1e067ccc/t/60642e4f3bd29a1c5bb36e31/1617178208144/Hickel+et+al+-+Plunder+in+the+post-colonial+era.pdf.
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[118] Calculated from: Maddison Project Database 2020, rug.nl/ggdc/historicaldevelopment/maddison/releases/maddison-project-database-2020. The World Bank, "GDP per capita (constant 2015 US$)," World Bank Open Data, data.worldbank.org/indicator/NY.GDP.PCAP.KD.
[119] Federal Reserve Bank of St. Louis, "Gross Domestic Product" (Series ID: GDPA), "Gross Domestic Product: Research and Development" (Series ID: Y694RC1A027NBEA), Federal Reserve Economic Database, fred.stlouisfed.org.
[120] US Energy Information Administration, "History of energy consumption in the United States, 1775-2009," eia.gov/todayinenergy/detail.php?id=10.
[121] R. Bolz [editor of Automation Magazine] in: Joint Economic Committee, *New Views on Automation* (Washington: Government Printing Office, 1960), Exhibit 2 and Exhibit 6. Bureau of Economic Analysis, "National Income and Product Accounts," Table 5.1., apps.bea.gov/iTable/index_nipa.cfm.
[122] J. Doubek, "The U.S. set the stage for a coup in Chile. It had unintended consequences at home," National Public Radio, September 2023, npr.org/2023/09/10/1193755188/chile-coup-50-years-pinochet-kissinger-human-rights-allende.
[123] "A staggering *$50 trillion*. That is how much the upward redistribution of income has cost American workers over the past several decades [1975-2020]… That's $50 trillion that would have gone into the paychecks of working Americans had inequality held constant…" N. Hanauer and D. Rolf, "The Top 1% of Americans Have Taken $50 Trillion From the Bottom 90% - And That's Made the U.S. Less Secure," Time, September 2020, time.com/5888024/50-trillion-income-inequality-america.
[124] For analysis of the Great Recession, see A. Shaikh, "The First Great Depression of the 21st Century," *Socialist Register*, 47 (2011), socialistregister.com/index.php/srv/article/view/14330/11373.
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[126] Economic Policy Institute, "Explaining the erosion of private-sector unions," Figure A, November 2020, epi.org/unequalpower/publications/private-sector-unions-corporate-legal-erosion. See also: Congressional Research Service, "A Brief Examination of Union Membership Data," June 2023, crsreports.congress.gov/product/pdf/R/R47596.
[127] "But the fact is, the biggest problem of jobs is not offshoring, it's technological change. About 60

or 70 percent of the unemployment which occurred from the 1980s onwards was due to technological change. Maybe 20 or 30 percent of it was due to offshoring." David Harvey interviewed by Daniel Denvir, "Why Marx's Capital Still Matters," Jacobin, July 2018, jacobinmag.com/2018/07/karl-marx-capital-david-harvey.

[128] L. Mishel and J. Kandra, "CEO pay has skyrocketed 1,322% since 1978," Economic Policy Institute, August 2021, epi.org/publication/ceo-pay-in-2020/.

[129] International Monetary Fund, J. Ostry et al., "Neoliberalism: Oversold?" June 2016, Chart 1, imf.org/external/pubs/ft/fandd/2016/06/ostry.htm. Alternatively, product market regulation, an indicator on a scale from zero (the most business-friendly environment) to six (the most heavily regulated environment), decreased from 5.3 in 1975 to 1.7 in 2013 for the energy, transport, and communications sectors in the G7. For the overall economy the value fell from 2.0 in 1998 to 1.4 in 2013. Values are calculated as simple averages. Data is unavailable for the United States in 1975. OECD, "OECD Product Market Regulation Statistics: Economy-wide regulation; Energy, Transport, and Communications," oecd-ilibrary.org/economics/data/oecd-product-market-regulation-statistics_pmr-data-en

[130] "Shadow banks now make up about 14% of the world's financial assets and, like many non-banks, operate without the same level of regulatory oversight and transparency as banks." For comparison, conventional banks make up 51% of the world's financial assets. A. Cooban, "Banks are in turmoil but a bigger financial crisis may be brewing elsewhere," CNN, April 2023, cnn.com/2023/04/06/business/non-banks-shadow-banks-risks-explainer/index.html.

[131] "[Between] autumn 2008 and the beginning of 2009, the total amount that states and central banks in the advanced countries committed to supporting the financial sector (through recapitalisation, nationalisation, repurchasing assets, loans, guarantees, injections of liquidity) has been evaluated at some 50.4 per cent of world GDP!" Cédric Durand, *Fictitious Capital: How Finance is Appropriating Our Future* (New York: Verso, 2017), p. 39.

[132] Yale School of Management, "Modern U.S. antitrust theory and evidence amid rising concerns of market power and its effects," som.yale.edu/centers/thurman-arnold-project-at-yale/antitrust-enforcement-data.

[133] As financier Jeremy Grantham puts it, "Over the years, we've been trained to believe that the Fed is on our side. What the Fed has trained us to believe is that if we make a bet in the market and we win, we're on our own. We get to keep the profits. If we lose, they will bend every effort and every dollar they can get their hands on, one way or another, to bail us out. This is asymmetry of the most splendid kind." Public Broadcasting Service, "The Power of the Fed," 2021, pbs.org/wgbh/frontline/film/the-power-of-the-fed/transcript.

[134] The World Bank, "General government final consumption expenditure (% of GDP)," World Bank Open Data, data.worldbank.org/indicator/NE.CON.GOVT.ZS.

[135] See sources for Figure 18. Congressional Budget Office, "The 2021 Long-Term Budget Outlook," March 2021, p. 2, cbo.gov/system/files/2021-03/56977-LTBO-2021.pdf.

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[137] S. Estrin and A. Pelletier, "Privatization in Developing Countries: What Are the Lessons of Recent Experience?" *The World Bank Research Observer*, 33:1 (February 2018), p. 68, openknowledge.worldbank.org/bitstream/handle/10986/32175/wbro_33_1_65.pdf?sequence=1.

[138] "[If] the income share of the top 20 percent (the rich) increases, then GDP growth actually declines over the medium term, suggesting that the benefits do not trickle down. In contrast, an increase in the income share of the bottom 20 percent (the poor) is associated with higher GDP growth." International Monetary Fund, E. Dabla-Norris et al., "Causes and Consequences of Income Inequality: A Global Perspective," June 2015, imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/sdn/2015/_sdn1513.ashx.

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cepremap.fr/membres/dlevy/dle2004t.pdf. Internal Revenue Service, SOI Tax Stats - SOI Bulletin - Historical Tables and Appendix, Table 23 & Table 24, irs.gov/statistics/soi-tax-stats-soi-bulletin-historical-tables-and-appendix. Tax Foundation, Historical U.S. Federal Corporate Income Tax Rates & Brackets, 1909-2020, 2019 Tax Brackets, 2020 Tax Brackets, taxfoundation.org.

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