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Foreword

The theory of noonomy is one of very few attempts to provide a holistic, theoretically grounded perspective on the socioeconomic development of human civilization. For that reason, this theory, whose premises and content have already been articulated by the author in a series of articles and substantial monographs, has attracted attention both in Russia and abroad. But those who (for whatever reason) cannot study these works in full, or who rely on third-hand information, frequently perceive noonomy ideas in a partial, fragmentary, and sometimes distorted way.

This book is conceived as a kind of guide to the fundamental ideas of noonomy theory, making it easier for the reader to understand the theory's underlying approach and come to terms with its logic. The author's ideas are communicated here in the form of concise theses and basic definitions. Step by step, the reader is invited to follow the author's main arguments and conclusions, which are expressed in vivid, concentrated form.

This manner of expression helps to trace the author's series of arguments and conclusions and directly grasp their mutual interconnection. The reader will be able to appreciate how each idea expressed here fits into the overall system of the noonomy worldview and see which points need to be studied further in order to grasp the general theory. This book is based on reworked portions of the author's prior books *Noonomy* (Moscow: Cultural Revolution, 2018) and *General Theory of Noonomy: A Textbook* (Moscow: Cultural Revolution, 2019).

To the Reader: A Door to the Future

How does one open a door to the future? After all, not all motion signifies movement towards the future: we might be treading water, going in circles, or even turning back, without finding the road that would lead us to a new world, a genuine (and better) future. "If a person does not know to which port they are sailing, no wind is favorable"—this phrase from Seneca is worth remembering every time we think about long-term strategic prospects for development.

To recognize a genuine path towards greater social development, we must go beyond merely using our common sense or orienting ourselves with preconceptions about what would personally benefit us or our neighbors. What is needed is a scientific theory that holds powerful predictive potential; a theory capable of sorting through the facts and tendencies of the present to reveal the possibility, and necessity, of the future.

Developing such a theory requires us to stand upon the stable ground of scientific method. One of the most important components of this methodology is determining the nature of the relationship between technological development and the evolution of the social order. By studying just this fundamental interconnection and mutual influence of human knowledge (as materialized in productive technology) and social relations (which shape the possibility of technological development and, in turn, are affected and changed

by technological upheavals) we will be able to make scientifically grounded predictions.

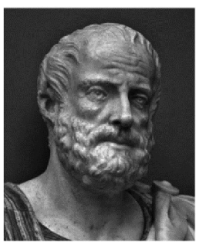
But the future is not a path predetermined by fate. Our actions and decisions will determine whether we wander in darkness, turning away from the prospects we uncover, or manage to take advantage of newly discovered opportunities for development. Theory can tell us which actions are necessary to open the door to the future, but we ourselves must carry out these actions.

The theory of noonomy, developed by the author, offers a view of a path capable of leading us out of the dead ends and contradictions that human civilization has so far managed to generate. Development will always be contradictory: these contradictions are precisely what motivate us to seek solutions to problems and move forwards. It is important that the path leading out of contradiction be creative, not destructive, and that the contradictory aspects of new developmental stages serve as an impulse to improve society rather than plunging it into a morass of conflict.

The author invites you to join him and cast your eyes on a possible path forward, to grapple with the logic of human society's evolution under the influence of greater knowledge and technological progress and appreciate the steps that must be taken in order to move towards a better future.

Thinkers Who Have Contributed to the Study of the Interconnections between Technological and Social Development

Aristotle



Posed the question of how technology (*technē*, art or craft) relates to human needs. However, the problem of technology's influence on the ordering of society escaped him, since the slow pace of technological development in antiquity provided no material capable of offering insight into such influence.

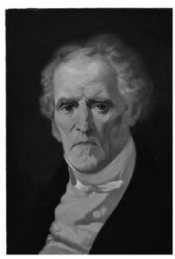
Francis Bacon

Following the Aristotelian tradition, Bacon saw the goal of science and technology as providing society with various goods. Formulated the idea that the comparative levels of development of different societies were defined not by the natural conditions of their existence, but instead by their degree of scientific and technological development.

Jean-Antoine de Condorcet

Posed the question of technology's, as well as society's, historical development. Advanced the thesis that scientific progress and the progress of industry influence one another and that their joint impact determines the "progress of the human race."

Charles Fourier

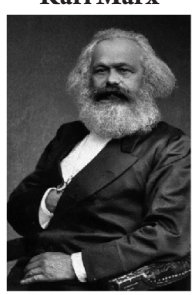


Proposed a theory of stages of social development dependent on the progress achieved by the development of science and production, which he measured according to the possibilities attained for satisfying social needs, on which basis he separated out historical stages with various systems of socioeconomic relations.

Claude-Henri de Saint-Simon

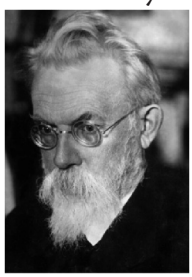
Advanced the thesis that there is a necessary correspondence between economic and political development and a society's intellectual and moral level. Developed a theory of the alternation of critical phases with quiet phases in the development of society and of the interconnection between scientific and political revolutions. He believed that the cause of social development was, in fact, changes in scientific worldviews.

Karl Marx



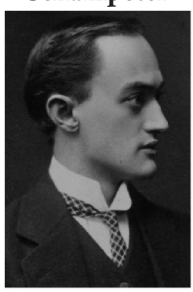
Theoretically grounded the materialist conception of history and advanced the thesis of production as a twofold process: the production of the goods of life and the production of social relations. Founded a theory of social development as decisively determined by changing modes of production, which appear as a contradictory unity of mutually acting productive forces and production relations, each at a particular level of development.

Vladimir Ivanovich Vernadsky



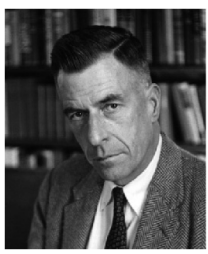
Articulated humanity's role as the decisive geological force acting on Earth's surface, influencing the development of its biogeochemical shell. Formulated the idea of the noosphere, according to which human reason becomes a factor that regulates the process of natural, as well as social, evolution.

Joseph Schumpeter



Advanced the theory of the entrepreneur as innovator and "creative destruction" (the destruction of old combinations of resources during economic development and the creation of newer, more effective ones). Proposed the idea that Kondratiev cycles depend on the introduction of new technologies and examined the particularities of innovation in different phases of a Kondratiev cycle. Demonstrated the influence of the various phases of a Kondratiev cycle on the course of a medium-term business cycle (a Juglar cycle).

John Kenneth Galbraith



Demonstrated the influence of technological upheavals over the course of the twentieth century on the character of socioeconomic structures (the allocation of property rights, corporate structures, the economy's division into a market system and a planned system, the creation of systems for consciously generating demand, the role of the state, and so on), transformations which he described in his theory of the new industrial state.

Daniel Bell

Proposed the hypothesis of post-industrial society based on the fact that the relative weight of industry in the economies of developed countries substantially decreased during the second half of the twentieth century. Several of Bell's predictions about the evolution of society's economic and social structure have been confirmed. However, many leading economists and sociologists are skeptical of the judgment that contemporary society qualifies as "post-industrial," believing that Bell underrated industry's critically important role and hypostatized knowledge production.

Method of Investigation

Before making our first step along the road of studying the evolution of human society as influenced by technological change, we must define the methodological premises that ground us. The bulk of these premises were worked out during a time when humanity embarked on a path of profound and rapid transformations in the material basis of its existence—the nineteenth and twentieth centuries. These are exactly the transformations that made it possible to discover the laws by which technological change influences social development.

* * *

Karl Marx (1818–1883) was perhaps the first scholar to make a serious contribution toward placing the study of the reciprocal influence of technology, on the one hand, and society's socioeconomic order, on the other, within a firm scientific framework.

* * *

In his research, Karl Marx adopted the point of view that people's social relations are defined by the conditions of their material production and that the interaction of social relations and material production determines the transition from one historical stage of society's development to another. Marx set this principle as the foundation of his theoretical investigations in the realm of political economy, which allowed him to take a step away from formulating general philosophical research principles and towards an understanding of the concrete laws of the mutual influence of technological and economic development.

* * *

The *object of political economy* in Marxism is, primarily, *people's objective relations* within the process of material production in the broad sense of the term, that is, *both* production proper *and* trade, distribution, and consumption. Let me reiterate this: *specifically*, objective social relations, and *specifically*, within production. Marx here continued the tradition of classical political economy. This constitutes the principal **difference** between the science of classical political economy and the current reigning discourse within economic theory (designated by the word "economics") in which attention is centered upon individuals' *subjective* choices and focused primarily on the sphere of *trade* rather than production.

* * *

Political economy always emphasized that it was necessary for development to ensure a *dialectical correspondence between, on one hand, the material and technological basis of production* (which Marxism refers to as "productive forces") *and, on the other hand, socioeconomic relations of production.* Studying capitalism, Marx demonstrated on one hand how the character of economic relations spurs forward technological progress, determining the stages of the evolution of productive forces, and on the other, how this evolution of productive forces modifies that same character of productive relations.

* * *

The significance of the Marxist approach is also defined by its *historical and systematic method of researching economic reality.* For us, the economy is not only a sphere in which various more or less rational actors operate, but a multitude of historically developing economic systems. One of these is Russia's economic system. This system has its own *trends of development* which, in a *specific* (to our region and to our civilization) way, refract the general laws of economic development.

* * *

Without taking Marxism's contributions into account, moreover, we cannot fully understand the *role of economic development's "human dimension"*—for example, the growing importance of **knowledge** for the modern economy. The Marxist method permits us to provide an explanation for the critically important role of science and education in the transition to a model of economic development which would not only make it possible to carry out nationwide *modernization* on a modern technological basis, but also open a path towards *constant* economic modernization based on prioritizing the development of

knowledge-intensive production—production whose main factor is knowledge rather than machines or raw materials.

* * *

It is not a coincidence that political economy combines two conceptions: politics and economics. Its major strength is that it accounts for the sociopolitical component of economic processes. Indeed, in the framework of Marxist political economy, the most important question is *which* social strata, and in what kind of relationship with one another, are produced by a given economic order.

* * *

In this way, the method of classical political economy not only makes it possible to show the *functional links* between diverse economic phenomena but also it allows us to delineate what is *typical* and what is *contingent* in the economy, to investigate the economy as it *develops*, **systemically and historically**. And, most importantly, by putting processes of material production, rather than processes *of trade alone*, at the heart of its research, it pays very close attention to *human relationships* and social collectives, examining the interaction of *socioeconomic interests.*

* * *

The most valuable thing about Marx for us now is not only the theory of surplus value, nor just the labor theory of value, both of which have been subjected to unending criticism—showing at the very least that these theories, serving as objects of criticism for more than one hundred fifty years, have yet to lose their relevance. Much more interesting for our purposes are *Marx's predictions, which are coming true at this very moment, about material production's long-term developmental tendencies*—predictions that were based, incidentally, on the same theoretical assumptions mentioned above.

* * *

Marx predicted *man's displacement from the direct process of material production*, man's transition from being a direct participant in production into becoming its "watchman and regulator." This is based on the transformation of natural processes into controlled and directed technological processes, "where labor in which a human being does what a thing could do has ceased," when labor appears "as an activity regulating all the forces of nature" and becomes an "experimental science, [a] materially creative and objectifying science," when human development takes place "as a constant suspension of its [own] *barrier*"

and amounts to the "absolute working-out of [the human being's] creative potentialities."[1]

* * *

There is another economist known for his research into the problems of technological development and innovation and their influence on society's economic condition and structure—the Austrian-born American economist **Joseph Schumpeter** (1883–1950)—whose ideas undeniably echo Marx's (as Schumpeter himself did not deny). At the same time, Schumpeter substantially differs from Marx in many ways in his approach to studying the role and place of technological upheavals in the economy.

* * *

Above all, Schumpeter introduced the difference between economic *growth* and economic *development* into economic theory. Growth means increased production and consumption of already existing goods, while economic development signifies the continuation of production based on new innovations: new commodities, new technologies, new methods for organizing production.

* * *

Joseph Schumpeter noted that the development of new innovations does not happen continuously over time. He studied the innovative activity of entrepreneurs, leading to technological upgrades in production, as a factor in gaining competitive advantage and as the main engine of economic development.[2]

* * *

He justly viewed competition based on innovation and scientific development by corporations as the main factor underlying the economic dynamics of capitalism.[3] Schumpeter referred to the use of competitive advantage based not on lowering production costs and prices for traditional goods, but rather on new innovations as effective competition.

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1 Karl Marx, *Grundrisse*, trans. Martin Nicolaus (London: Penguin, 1993), 705, 325, 612, 712, 542, 488.

2 Joseph A. Schumpeter, *The Theory of Economic Development*, trans. Redvers Opie (New York: Routledge, 2017).

3 Ibid.

Another of Schumpeter's contributions was his differentiation of interconnected complexes of technologies and corresponding stages of technological development. Innovations do not appear gradually and consistently, but come into being as interconnected groups of innovations, that is, as clusters (bundles).[4] It is precisely new scientific discoveries that lead to the emergence of these innovation clusters. The term "waves of innovation" has established itself as a way to refer to periods (stages) of predominant development of particular technologies.[5]

* * *

Joseph Schumpeter tried to combine his theory of the role of technological innovation with N.D. Kondratiev's notion of "long conjunctural waves." In his conception, the phase of a wave of technological change that underlies a Kondratiev cycle interacts with the waves of technological change underlying a medium-term Juglar cycle, with the former determining the latter. In this way, both long-term and medium-term waves of technological renewal and the phases of long-term and medium-term cycles prove to be dependent on one another.[6]

* * *

Schumpeter saw that the concentration of capital in large corporations opens additional possibilities both for financing scientific research and development and for investing in the application of new technologies. At the same time, he feared that the concentration of production and formation of enormous corporate organisms would lead to a decline of individual competitive spirit (along with its romantic urge to innovate), the crowding-out of small and medium-sized entrepreneurs, and the erosion of private property.

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The extent to which Schumpeter's forecasts were and were not validated was later shown by the research of another famous economist, **John Kenneth Galbraith** (1908–2006).

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4 S.M. Menshikov and L.A. Klimenko, *Long Waves in the Economy: When Society Changes Its Skin*, 2nd ed. (Moscow: LENAND, 2014), 192.

5 Mark Blaug, *Great Economists before Keynes: An Introduction to the Lives & Works of One Hundred Great Economists of the Past* (Brighton, Sussex: Wheatsheaf Books, 1986), 215–217.

6 Joseph A. Schumpeter, *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process* (New York: McGraw-Hill, 1939), 181–182.

Galbraith observed that economic life was undergoing "the application of increasingly intricate and sophisticated technology to the production of things. Machines have replaced crude manpower. And increasingly, as they are used to instruct other machines, they replace the cruder forms of human intelligence."[7] These processes led to the consolidation of production, demanding more and more significant capital investments, and attracting more and more highly qualified specialists. The result was the emergence of large corporations as the predominant type of economic organization capable of attracting the capital necessary for such production.

* * *

What became quite clear at this point was a process that had begun much earlier: the *fragmentation of the entrepreneur-proprietor figure who both organizes production and reaps its income.* Galbraith, building on the reflections of a series of authors from the first third of the twentieth century (Thorstein Veblen,[8] Adolf Berle and Gardiner Means,[9] Stuart Chase,[10] and others) and in some ways intersecting with Karl Marx's ideas about the separation of joint-stock companies' capital into "capital-property" and "capital-function," noted that at the start of the twentieth century, control by private owners had been replaced with control by the technostructure, that is, managers and technical specialists.

* * *

The growth of corporate capital inevitably led to a transformation in the state's economic role. In the 1960s, Galbraith concluded that "the state undertakes to regulate the total income available for the purchase of goods and services in the economy. It seeks to insure sufficient purchasing power to buy whatever the current labor force can produce."[11]

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The first consequence of these changes was a significant *rise in the role of planning*. "The large commitment of capital and organization well in advance of result requires that there be foresight and also that all feasible steps be taken

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7 John Kenneth Galbraith, *The New Industrial State* (London: Hamish Hamilton, 1967), 1.
8 Thorstein Veblen, *The Engineers and the Price System* (New York: Viking, 1936 [1921]).
9 Adolf A. Berle and Gardiner C. Means, *The Modern Corporation and Private Property* (New York: Harcourt, Brace & World, 1968 [1932])..
10 Stuart Chase, *A New Deal* (New York: The Macmillan Company, 1932). This book's title was used by Franklin D. Roosevelt to refer to his program in the 1932 election.
11 Galbraith, *The New Industrial State*, 2.

to insure that what is foreseen will transpire"—this was Galbraith's highly important conclusion.[12]

* * *

In addition, *consumer demand became an object of planning.* Galbraith rightly stressed that the nature of technology and its associated capital requirements, along with the time needed to develop and produce products, made state regulation of demand necessary.

* * *

The task of *creating demand* (and not merely keeping track of it) is fulfilled by both the state and—more importantly—corporations. As Galbraith emphasized: "No mechanism of the market relates the decisions to save to the decisions to invest."[13] This assertion clearly echoes John Maynard Keynes' analogous conclusion from the 1930s.

* * *

In the end, Galbraith arrived at the conclusion that there is a profound conceptual distinction between small enterprises, all of whose successes rely on their complete control by a single person, and corporations. This difference, which could be seen as a boundary line distinguishing between millions of small-scale firms and thousands of giants, rests at the heart of the general *separation of the economy into "market" and "planned" systems.*

* * *

Thus, Marx, Schumpeter, and Galbraith all saw that economic evolution is primarily based on technological progress that changes the material foundation of industrial production. From various perspectives, they developed an approach to studying the influence of technological progress on the economic arrangement of society.

12 Ibid., 4.
13 Ibid., 42.

Step One

Grasping Reality

1.1. Production and Its Significance

Technology, on the one hand, and people's social relations, on the other, are intertwined very closely in the process of material production. **Material production** is simultaneously the production of the *material conditions* of human social life (human society could not exist if it did not produce) and the production of people's *social relations* and social existence, that is, the production of social people.

* * *

Human beings' social relations within production—the *social arrangement of production*—reflects the state of material production and of people's productive activity. In turn, the social arrangement of production serves as the basis for all other social relationships between people. However, these social relations (social structure, culture, ideology, politics, social psychology, etc.) are not a passive copy of production relations. They, in turn, actively impact the development of the sphere of production.

> *Production* is the process by which humanity transforms what it is given by nature, adapting natural material for human needs, and giving it the required form for consumption.

* * *

Nature can only be transformed once we have understood how it is organized and once the laws of its existence have been discovered. At stake is not only the transformative activity of humanity itself, but the far-reaching consequences of this activity, which also influence humanity's habitat. This is why scientific *knowledge* of the world becomes more significant as the horizon of this knowledge grows longer. Without it, technological improvements would be impossible.

1.2. The Elements of Production (Product, Means of Production, Technology, Labor, Organization, Knowledge)

The process of manufacturing products—that is, the transformation of natural substances for the purpose of satisfying human needs—is known as the production process. The most substantial elements of the production process are human *labor*, human *knowledge*, raw *materials*, *instruments of labor, technology*, and the *organization* of production.

* * *

The structure of society is affected by every element of the production process: the nature of labor and its level of productivity, the development of knowledge, the means of production that are used (raw materials, equipment, etc.), the technology of production, the character of the product being produced, and—following from all of this—the methods of organizing production.

> The *product* of production is an external object, a thing, which is obtained by transforming natural material via the production process and designed to satisfy human needs.

* * *

A **product** is the materialized result of the application of knowledge (its objectification) towards the satisfaction of human needs—primarily by manufacturing material devices or providing services which rely on the use of material products.

* * *

Products created by human beings have (in the philosophical sense) an objective and thing-like character, but they need not necessarily be embodied as