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TECHNOLOGICAL REVOLUTION: URGENCY AND FEASIBILITY OF QUALITATIVE CHANGES IN SOCIOECONOMIC DEVELOPMENT

Discussions on *Noonomy* by S. D. Bodrunov

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Abstract: The beginning of the 21st century is also the beginning of a new industrial revolution. Smart factories, the Internet of Things, bio-, nano-, and information, and communication technologies of the sixth technological mode are becoming a new material basis of production. The author of the book *Noonomy*, Sergey Bodrunov, focuses on the current changes taking place in the economy, entailing the birth of a qualitatively new system of relations that is noonomy (Bodrunov 2018). This theoretical research, which is purely scientific in its content, also contains an analysis of a wide range of practices. It makes the book accessible not only to a highly professional reader since it is written in plain language. This book is for everyone who wants to not only understand but also contribute to the better future of our economy.

Keywords: Noonomy; industrial revolution; new industrial society of the second generation; technological mode; economic transformations

***Noonomy* (in Russian), by Sergey Bodrunov, Moscow, Cultural Revolution Publishing House, 2018, 432 pp., ISBN 978-5-6040343-1-6.**

Research conducted by Russian scholars rarely evokes a wide international response. It is particularly true for books published in Russian and made available in English only in the format of translated manuscripts. Thus, Sergey Bodrunov's *Noonomy* is an

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even more prominent exception to the general rule. This book and a series of related articles published in top academic journals have not only enjoyed wide acclaim in Russia, but have also been discussed at international seminars in Berlin, Cambridge, Lisbon, New York, Moscow, and St. Petersburg in 2018–2020. The work won the Distinguished Achievement Award in Political Economy for the Twenty-First Century conferred by the World Association for Political Economy (WAPE) in Berlin.

Why is that? There is no denying that the author is a famous scholar and public figure, professor, and president of the Free Economic Society, Russia's largest (comprising more than 300,000 members) and oldest (founded in the 18th century) public organization. But *Noonomy*'s success has less to do with Bodrunov's popularity and more with his main concept—a monumental and pioneering construct which simultaneously looks to the future and relies on wide practical material available to the author, as he is not only a prominent scholar, but also the head of one of Russia's few large high-tech clusters. The book was destined to evoke not just wide public interest, but also a heated debate.

The book consists of ten chapters divided into three sections. It provides a consistent and comprehensive scholarly assessment of the image of the future, strives to predict its key features, and discusses current ways of influencing society in a way that would facilitate further progress targeting both the development of individual human potential and general human abilities.

Chapter 1 is entitled “New Industrial Society and Postindustrialist Chimeras: Lessons from the Recent Past.” In this chapter, the author proves that in spite of ongoing changes the modern economy is predominantly industrial, at least in its technological basis. But the perception of the industrial society as a system that is continuously evolving in its technological aspect was overruled by a new concept put forth by adepts of post-industrialism. An approach that denied the leading role of material production was gaining popularity. According to Sergey Bodrunov, who underlines the industrial basis of modern social development, the post-industrial concepts of modern society are fundamentally wrong. Ruling elites' growing affection for post-industrialist theories brought on the crisis of the modern economy. Deep down, this crisis is not rooted in problems with the financial system—even though they constitute an extremely important contributing factor—but rather is the consequence of its true causes. Economists even coined the term “new normal” to describe the new reality. It results from objective reasons, such as the beginning of the transition to a new stage in civilizational development, i.e., the new industrial society of the next (second) generation (NIS.2). The existing development model has exhausted itself. Change is in the air.

Chapter 2 “Technological Prerequisites for the Transition to a New Stage of Industrial Production” and Chapter 3 “NIS. 2: Future in the Present Day” emphasize that in the future economy the industrial core of production will not only

remain, but increase its significance. The industrial production's ability to reach a qualitatively new technological level will shape the future economy. The world is entering the era of the fourth industrial and technological revolution and will soon transition to an economy based on a new technological mode. Its main characteristics are as follows: constant increase in the information component and decline of the material component; miniaturization, tendency toward energy efficiency and the reduction of material consumption and product capitalization (flexibility, modularity, unification, etc.); replacement of vertically integrated structures with a network model; implementation of modern methods for manufacturing process management and control (just-in-time production, lean production, etc.); environmental agenda and focus on new energy sources; development of qualitatively new technologies in material production, transportation and logistics (nanotechnologies, 3D printing, etc.); decline of traditional processing industry due to the development of additive technologies; and emphasis on quality and efficiency.

Bodrunov further contemplates post-NIS.2 development options in Chapter 4 bearing the intriguing title "Choice of the New Technological Revolution in Global Development Trend: Techno or Bio. Or something Else?" In Bodrunov's opinion, the most promising option is embedded in the concept of noosphere. In its rational iteration, the concept of noosphere can hardly be contested. Vladimir Vernadsky's main idea that in the 20th century humanity will become the leading geological force responsible for the reproduction of the Earth's biosphere has been frequently confirmed by positive and negative historical practice. Two paths lie before us: first, a technotronic civilization resulting in the annihilation of humans and their replacement with other beings capable of thriving in this environment; and second, a conscious and deliberate pursuit of an alternative which can be labeled as the *noocivilization*.

Thus, the author logically transitions to Chapter 5 of his book, "Evolution of the Technosphere: Opportunities and Risks." The author shows that technosphere growth has already outpaced natural biological evolution. Left unchecked and chaotic, it will jeopardize our very existence. On the other hand, technological development provides opportunities for the resolution of issues associated with technogenic pressure on the environment.

Chapter 6 considers the implementation of nooproduct from the perspective of technological changes and the social structure. Technological shifts that underlie the transition to nooproduct cause radical transformations in all areas of public activity because humans' disengagement from immediate material production has resulted in dramatic changes in social relations. The new type of production may be referred to as *nooproduct* because human intellect and knowledge will play the part of its major resource and main regulator.

Chapter 7 "Nooproduct: New Human Subject, New Needs and New Ways of Demand Satisfaction" focuses on controversies in the formation and

development of human needs. The modern economy constitutes the production of not only private but also public goods and involves different types of social transfers. It can be assumed—and this hypothesis should come as no surprise—that the workforce, consumers, and entrepreneurs are currently focusing on maximizing their income and minimizing costs, as well as on developing their human potential (the same applies to the off-market segment), job satisfaction, etc. So humans are already not just *zoo*, but also *noo* beings, for they are intelligent and seek to promote genuinely humane values.

These ideas are further developed in Chapter 8 “Economy: From Zoo to Noo.”

Chapter 9 “Noonomy: Cultural Imperatives and the End of Economic Civilisation” analyses key characteristics accompanying the genesis of noonomy.

The nature of the new rationality and, consequently, new development objectives come to the fore under the noonomy since it relies on the transition from the paradigm of growth based on economic rationality (targeting the increase in volumetric cost indices) to the paradigm based on the achievement of specific goals and satisfaction of various human needs. The new production program needs to be considerably flexible and adaptable in the face of change and random perturbations. The main economic principle for the near future can be summed up by a popular slogan: “we need wide economic development criteria, but not just an economic growth.”

Theoretical analysis presented in the monograph wraps up in its final Chapter 10 “Russia: Catch Up or Overtake?”

As a conclusion, we can stress that the main idea in the work is that the fourth technological revolution and increasingly active growth of knowledge-intensive production are giving rise to a qualitatively new public system based on non-economic satisfaction of rational needs—the noonomy. Our civilization is about to perform a qualitative leap, as people will gradually move away from direct involvement in material production and assume the role of watchmen and regulators, as Marx portended. Under this coming future, traditional economic categories and laws, such as value, property, money, etc., will lose their significance and maybe disappear entirely. Rational time management and efficient use of resources will become technical, as opposed to social, issues. These issues will be increasingly resolved not by humans, but by an external (from the perspective of the human society) construct in a human-less, autonomous and self-regulated technosphere.

That is the forecast for a not-so-distant future which accounts for changes that are barely visible but have already taken root and attest to the emergence of not just an economy, but a qualitatively different phenomenon—*noonomy*.

How has the research community responded to this concept?

We would like to offer an overview of opinions shared by top scholars from different countries during discussions of the book held at international forums, conferences and seminars and further detailed below.

It would be wise to begin with a recap of the international seminar organized at Jesus College of the University of Cambridge in October 2018 and the workshop arranged by the *Science & Society* journal in New York in July 2019 because these two discussions specifically targeted the correlation between technological and socioeconomic transformations and the concept of noonomy.

Virtually all participants of the Cambridge seminar agreed that the concept of the post-industrial society, which became popular in the 20th century, had not been confirmed, and this idea served as an important starting point for further discussion. Moreover, the issue of restoring material production as a leading area of the economy is particularly relevant nowadays.

Radhika Desai, Professor at the University of Manitoba (Canada), started her talk at the Cambridge seminar with the criticism of post-industrialist myths. She stated that Professor Bodrunov was right to reject many of the more common understandings of a post-industrialist economy. Professor Desai also backed Bodrunov's insistence on the centrality of production. She stated that the approach presented in *Noonomy* reflects a much more profound understanding of the issue than a transition from one sort of capitalism to another because Bodrunov is saying that what is going on right now essentially requires the transformation to a completely different type of society. What he is saying is that technological changes are at a very critical moment. The old paradigms are dying, and the new cannot be born. And the reason why the new cannot be born is because our society is still dominated by the structures of capitalist production, by which we should understand not merely production for profit (which of course it is), but, in a more fundamental way, value production. According to professor Desai, in terms of exactly what is the content of this transition, Bodrunov is right in stressing that there is an increase in the creative content of production. This increase implies something to those who are talking about the knowledge economy. Our society has always lived in a knowledge economy. From the moment when the first humanoid threw the first stone at the first animal, he knew; he was employing some kind of knowledge. So that is not the issue. The issue is that we have to move beyond, and the transition that Professor Bodrunov is talking about requires us to take very seriously higher-value production, production embodying more knowledge and creativity. This transition is obstructed by capital. If we think about the noonomy as essentially an attempt to give modern form to Marx's idea of communism, then basically we should measure economic growth by the quality of life of human individuals, by our ability to train them, by how many years of schooling they will have, their longevity, health status, creative access to culture, etc.—all of these should be a measure of economic growth.¹

David Kotz, Professor Emeritus in the Department of Economics at the University of Massachusetts Amherst (USA), also participated in the discussion at

the Cambridge seminar. In his analysis of Sergey Bodrunov's *Noonomy*, Professor Kotz pointed out Professor Bodrunov's rejection of the common view that the growing role of information has superseded material production and argues that advances in information processing have transformed material production. Bodrunov acknowledges an intellectual debt to John Kenneth Galbraith's ideas about the centrality of technology and specialized knowledge in the contemporary economy. Thus, his critique of contemporary global capitalism is well-founded, and his proposals for Russia's development are much needed.²

David Lane, Emeritus Reader in Sociology at Emmanuel College of Cambridge University (UK), analyzed Bodrunov's book from the perspective of social development issues. In his talk at the aforementioned seminar, he emphasized that *Noonomy* critically elaborated on J. K. Galbraith's and Manuel Castells' ideas on the transition of capitalist societies to a new type of society. David Lane supported the idea that the book is innovative and predicated on a discussion of nooproduct and the noonomy. It is a well-referenced and informative book that provides a critique of neoliberal economic fundamentalism. The author links systems of economic management, digital and cognitive technologies—the knowledge-based economy—to the emergence of a new type of post-industrial civilization. In Lane's opinion, the book brings out the importance of understanding future technologies and the horizons they open up for human development and this is an interesting book that raises many fundamental questions not only in economics but also in public policy, particularly with regard to the environment. Sergey Bodrunov not only brings out the urgency of the “re-industrialization” of Russia but also emphasizes the need for such development to be modern and embedded in new technology.³

Participants of the workshop organized by the *Science & Society* journal in Left Forum in New York (July 2019) and dedicated to the presentation of *Noonomy* highlighted other aspects of Bodrunov's concept, with technological determinism being the focal point of discussion. Let us point out that this topic was among the key issues raised at the Cambridge seminar, which has already been covered above.

In particular, this issue was addressed by David Laibman, editor of *Science & Society*. He focused on the impression given by Bodrunov's work. It implies that the transition he is talking about relies on technologies and is contingent upon the need to keep up with all technological changes. Technological progress takes on many shapes and forms, but *Noonomy* talks about accelerated development and points out that we are currently witnessing this acceleration. Such an approach is to a certain extent taken out of context because we need to consider the social system as a whole. Professor Laibman has also posed several questions: Do we need to accelerate change? What is the adequate pace for the implementation of innovations and changes? Acceleration can be perceived as a synonym for

proletarianization because nowadays the working class is operating in the field of information technologies. But are these technological changes sufficient to ensure a change in public relations as well?

Furthermore, there is an emphasis on the increasing role of knowledge and the decreasing role of materials in the production process. In this regard, Professor Laibman was wondering about the following. How do you measure the share of knowledge? Does knowledge constitute an immediate part of material production? What units can we use to assess its contribution? For example, we can compare the current situation aligned with the development of modern information technologies with the industrial production of the past century. We can try and raise the point about balance between knowledge and materials. Has modern production become less material? Has its dependency on materials dwindled? Or have we already crossed over to some immaterial stage? David Laibman also posed questions about the situation in Russia. Why does Russia seem to be in a natural resource dependency situation? Professor Bodrunov answers this questions. The situation in Russia is as follows: the oligarchic elite fear the kind of neo-industrialization that Professor Bodrunov is proposing. They are afraid of it because the new technology would necessarily require democratization. It would require the dissemination of educational levels and skills throughout the population. It would require the stimulation of civil society to the degree that would challenge the current political and economic regime. And finally, according to Laibman, the question remains: is *noonomy* essentially a veiled depiction or another way of stating and projecting what Karl Marx would have called “the higher stage of communism”?⁴

These critical questions raised by our American colleague led to a heated debate, and the author of *Noonomy* promised to provide a detailed response in his future publications.

Ideas expressed by Sergey Bodrunov, who on multiple occasions has publicly criticized market fundamentalism, naturally evoked ambivalent responses. Monetarists did not agree with him, but their opponents, in particular academicians of the Russian Academy of Sciences and adviser to the president of the Russian Federation, Sergey Glazev, provided a positive assessment of *Noonomy* at the St. Petersburg Economic Congress, which was held in March 2017. Glazev underlined that the theory of *noonomy* outlines our path into the future devoid of compulsory labor, poverty, and fighting over limited resources. Many thinkers have dreamed of such a society, but their attempts at building it could not succeed in the absence of an appropriate technological foundation. Sergey Bodrunov shows how the combination of quickly growing technological capabilities and a mature spiritual culture can deliver humanity from the kingdom of necessity to the kingdom of freedom provided that people become truly sapient (Maslov 2019).

As we have already pointed out, many Russian Marxists dispute the relevance of the evolutionary movement toward a new quality of society reliant on profound technological transformations. In this regard, we would like to emphasize that Sergey Bodrunov's stance is criticized in Russia and abroad by left-wing scholars for the lack of radicalism and the author's reluctance to call for a revolution, and by right-wing proponents of neoliberal ideas who reject key aspects of Bodrunov's concept such as his criticism of financialization and market fundamentalism and his call for strategic planning and an active industrial policy, not to mention the idea of moving toward a new social order devoid of market relations.

Professor of the University of Texas at Austin and the son of the famous author of *The New Industrial State*, James Kenneth Galbraith, who also partook in the Moscow and St. Petersburg discussions, has a very different perspective on Bodrunov's work. At the St. Petersburg Economic Congress, which was held in March 2017, Professor Galbraith pointed out that *Noonomy* constituted several important points. From his point of view, a deep inquiry into sources of well-being is necessary, and there is the need for an integration of technology and culture in constructing a knowledge economy under environmental challenges and resource constraints. Western readers will especially value Sergey Bodrunov's synthesis of Russian and Western texts—notably those of Galbraith's father—in the development of his ideas. *Noonomy* is a model, among other things, of transnational and cross-cultural research and reasoning (Subkhangulov, Maslov, and Zolotarev 2017).

The book also launched intense discussions with Marxist scholars who, unlike Sergey Bodrunov, believe that the path to the future is not an evolutionary process underpinned by the technological progress, but rather see it as a space of both socio-economic and political struggle, which leads to the social revolution and the formation of a qualitatively new—communist—public system. The author of *Noonomy* has had numerous discussions on this issue with Alexander Buzgalin, Professor at the Moscow State University, and his proponents at the Moscow forums, e.g., the Fourth International Congress in Political Economy hosted by the Lomonosov Moscow State University in May 2018.

Samir Amin, one of the world's most prominent representatives of the political left and director of the Third World Forum, who partook in the discussion of Bodrunov's work in Russia, provided positive feedback on *Noonomy*. At a seminar hosted by the St. Petersburg House of Scientists and dedicated to the discussion of the correlation between technological and socioeconomic transformations, Samir Amin, a forbearer of the world system theory, pointed out, that the book is quite informative. In Samir Amin's opinion Professor Bodrunov is distinguished by his fine and extremely useful sense of historical changes and trends which define social evolution. The concept he has offered provides a vivid illustration of

Marx's idea of the upcoming transition to communism as a higher stage of social development (Yakovleva 2019).

The book was also well received in China, as manifested in praises expressed by a number of participants of the Second World Congress on Marxism commemorating the 200th anniversary of Marx (Beijing, May 2018). This assessment was further confirmed by academician of the Chinese Academy of Social Sciences and president of WAPE, Professor Enfu Cheng. As he conferred the Distinguished Achievement Award in Political Economy for the Twenty-First Century on Sergey Bodrunov at the WAPE forum held in Berlin in July 2018, Enfu Cheng emphasized that Professor Bodrunov was a top Russian and international proponent of the transition from the new industrial economy to a new quality of public life referred to as "the noonomy." Academician Cheng particularly praised Bodrunov's practical findings. According to his thesis Russia needs to adopt a socioeconomic policy that would allow for accelerated progress by critically assessing and incorporating the Chinese and Northern European experiences, i.e., the introduction of an efficient planning system in conjunction with the market. China and Russia should eliminate the influence of the neoliberal economy, pursue comprehensive strategic cooperation in the process of developing a new generation of industrialization and the noonomy, jointly combat economic hegemonism and make a difference for the people of the two countries and the world.⁵

We have provided a rather detailed overview of issues raised by the author of the noonomy concept and its discussants due to their international relevance from both theoretical and practical perspectives. Clearly, *Noonomy* does not give answers to all of the aforementioned questions, but we hope that in the near future Professor Bodrunov will provide another reason for discussion with the forthcoming publication of his new book with a major English publisher. The monograph will cover several issues discussed in this overview of *Noonomy*, elaborate on ideas expressed in the author's previous texts, and integrate a number of new texts written, among other things, in the light of opponents' feedback and most pointed issues brought up by them.

Notes

1. Author's notes from the conference "Marx in a High Technology Era: Globalisation, Capital and Class," Cambridge, October 26–27, 2018. See <https://centralasia.group.cam.ac.uk/events/MarxConf>.
2. Ibid.
3. Ibid.
4. Author's notes from Left Forum in 2019, New York. See <https://la.leftforum.org/>.
5. Author's notes from the World Congress on Marxism (Beijing, 2018). URL: <https://wcm.pku.edu.cn/english/cg/index.htm>.

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