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SYNCHRONIZATION OF TECHNOLOGICAL, SOCIAL AND ECONOMIC TRANSFORMATIONS IN THE CONDITIONS OF “ISLAND” TRANSFORMATION¹

Annotation: the development of human civilization has been and is going through a series of continuous transformations in various spheres. Today, the world is going through another series of intensive technological, social and economic transformations. These transformations are connected with the evolutionary development according to the scheme: “modernity – a new industrial society of the 2nd generation (NIS.2) – noonomy”. An important role in this development is given to information (digital) technologies. They serve as a link between socio-economic transformation and are also an important element of modern technological transition. The integrating properties of digital technologies are because they form and maintain a single information, knowledge field. But in the modern historical period, there has been a tendency to break this single information field. Moreover, this happens synchronously with the formation of a multipolar world in the socio-political plane and glocalization in the economic plane. According to the author, these changes are natural and interrelated. Based on the analysis, the transition to a new stage of social evolution is postulated, which is characterized by “island” development, the essence of which is the formation of relatively autonomous “islands” in the global civilizational space in the technological, social, and economic sense. The idea of the need to study this new phenomenon based on a new scientific concept of “island development” is being formed.

Keywords. information technology, new industrial society of the 2nd generation (NIS.2), noonomy, “island” transformation, socio-economic transformation, technological development.

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«岛屿模式»转型条件下技术、社会和经济的同步变革

摘要:人类文明的发展一直在经历一系列不同领域的不断转型。今天,世界也正在经历一系列激烈的技术、社会和经济变革。变革的路径:现代社会—— 第二代新工业社会(NIS.2)—— 智慧经济。在这个

¹ Prepared based on the materials of a speech at the seminar of the S.Y. Witte Institute for New Industrial Development “From the Theory of Noosphere to the Theory of Noonomy”, October 26, 2022.

过程中信息(数字)技术具有重要作用,它是当今社会经济转型的纽带,也是现代技术进步的重要因素。数字技术的融合特性体现在它形成并维持统一的信息和知识空间。但在当前历史时期,出现了打破这一统一信息空间的趋势。这种现象与社会政治领域多极世界的形成和经济领域全球化同步发生。作者认为,这种现象的出现是必然的,而且是相互关联的。作者假设过渡到社会演变的新阶段,通过分析发现其特点是"岛屿模式"——其本质是在全球文明空间中形成技术、社会和经济意义上相对独立的"岛屿"。文章提出了需要在"岛屿"发展模式的新科学概念基础上研究这一新现象的论点。

关键词:信息技术、第二代新工业社会(NIS.2)、智慧经济、"岛屿模式"转型、社会经济转型、技术发展。

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Introduction

The modern world is changing rapidly which is defined by serious and simultaneous transformations in technological, economic and social spheres [Vertakova, Klevtsova, Polozhentseva, 2018; Institutional Transformation..., 2020; Rukinov, 2020] that overlap to cause a peculiar effect similar to the light wave interference: essentially, the resulted formation, an interference pattern, differs from the initial simple light flows¹.

However, while the phenomenon of interference has been well examined in optics, its patterns are already well-known and described in a strict mathematic language, the overlaps of technological, economic and social dynamics are much less examined in the socio-economic reality. Among other things, this is due to a lesser strictness of the models existing in this field, as well as incompleteness and uncertainty of the information about the current transformations.

The problem of technological, economic and social transformations is undoubtedly very important and relevant, since it is their cumulative effect that changes the society, serves as a driving force behind the social progress [Bodrunov, 2022]. Besides, as it has already been noted, all these changes are closely interconnected and mutually causal. A lot of examples can be provided to prove this point.

For instance, development of the Internet (a technology) led to expansion of remote interaction practices both in the communities (social media) and in the economy (virtual enterprises) which then resulted in emergence of new organizational and technical ideas for further development of telecommunication networks. Moreover, these changes are simultaneous, they interpenetrate creating a single flow of changes. So to identify the initial, secondary, tertiary and other changes shall not be completely impossible, but at least extremely difficult. All of them are interconnected with a system of direct and reverse ties.

Nowadays, the logic of these transformations is generally well-examined and clear. One of the quite popular explanations keeps in line with the step-by-step implementation of the concepts suggested by S.D. Bodrunov, corresponding member of the RAS: "modernity – a new industrial society of the second generation (NIS.2) – noonomy" [Bodrunov, 2018]. The literature on the subject of these perspective ways of economy's and society's organization (NIS.2 and noonomy), prereq-

¹ Light interference is a redistribution of the light intensity as a result of the overlap (superposition) of several coherent light waves. This phenomenon is accompanied by the intensity maximums and minimums alternating in space. Its distribution is called an interference pattern (URL: <https://dic.academic.ru/dic.nsf/ruwiki/15545>).

uisites and factors as well as alternative ways of their generation is quite extensive [Glaziev, 2022; Galbraith, 2022; Maslov, Khabibullina, 2021; Smolin; 2022], so we shall not dwell on this issue in so many details.

The goal of this research is less general: it is to try to examine the specificity of technological, economic and social transformations in the modern context, special features of their behavior defined by the modern factors.

The concept of technological modes

It should be noted that the modern technological transformations can easily fit in the concept of technological modes thoroughly examined by S.Yu. Glaziev [Glaziev, 2015], G. Mensch [Mensch, 1971], C. Perez [Perez, 2011], Yu.V. Yakovets [Yakovets, 2018] and some other specialists [Minakov, 2017; Popov, Alieva, 2019; Rogatin, 2021]. These developments are based on the Long Wave Theory suggested by N.D. Kondratiev in the early 20th century [Kondratiev, 2002]. These developments testify that a transition of the social and economic system to the next level of technological development can not happen painlessly, as it is inextricably linked to the rearrangement of the economical pattern and social disturbances.

As N.D. Kondratiev pointed out, “an upward wave of a major cycle is linked with renewal and extension of the main capital goods, with radical changes and rearrangement of the main production forces of the society” [Kondratiev, 2002, pp. 390-391]. Meanwhile, “both wars and social upheavals are included in the rhythmic process of large cycles and turn out to be not the initial forces of this development, but just its manifestation... Sure, they in their turn have a powerful and sometimes perturbing effect on the speed and direction of the economic dynamics” [Kondratiev, 2002, p. 383].

It is this kind of manifestations we have a chance to witness nowadays [Grishkov, Plotnikov, Frolov, 2022]. A deterioration of the military and political situation that by February 2022 escalated into an armed conflict with participation of Russia (in the format of a special military operation) is essentially a manifestation of the society’s cyclical transformation forecasted by N.D. Kondratiev and caused by cumulative effects of technological and economic factors. The author realizes that this statement is surrounded with a flair of fatalism, but, unfortunately, it is what it is. The transitional processes to the new forms of society arrangement are not only powerful, but, as the historical experience often proved, ruthless for those involved in them.

Essentially, in the moments of such changes the social system finds itself at a bifurcation point¹ after which the trajectory of its further development can change significantly. We are even willing to reinforce this thesis and call the modern transitional state the “polyfuration”, as there are not only two, but several possible variants of its further development, and not all these options can be understood by the observer involved in the process. Due to a high degree of uncertainty, the insights into the lists of possible scenarios of this situation’s development can be incomplete. That is when the proximity aberration effect called so by L.N. Gumilev which is essentially a distorted perception of the current events by the contemporaries manifests: “As not all the consequences of some phenomenon are clear yet, the researcher who perceives an extensive data flow is not able to compartmentalize, separate the husk from the grain, so the events lose their true scale. Some processes seen as insignificant by the contemporaries will prove important

¹ Bifurcation (*Lat. bis* – “twice” and *furca* – “a pitchfork”). Division, diversion of something in two directions (URL: <https://dic.academic.ru/dic.nsf/ushakov/747726>).

in the future... On the other hand, significance of many recent events is hyped with the propaganda or public opinion that also have some impact on the historian” [Sydykov, Shanbai, Amanzhol, Michurin, 2013, pp. 12-13].

Nevertheless, we try to outline the possible ways of further evolution of such a powerful technological trend of the modern era largely defining the transition to the next technological mode as digitalization of the economy and society in general [Verstakova, Tolstykh, Shkarupeta, Dmitrieva, 2017; Kovalchuk, Stepanov, 2017; Nazarov, 2018; Plotnikov, 2018; Public Administration..., 2020; Rudenko, Griбанov, 2019]. Rapid development of information technologies, the all-encompassing digitalization of not only manufacturing, distributive, logistic and other economic processes, but of a much wider range of ones is a significant part, one of the bases of the modern technological transition.

Specificities of the modern stage of digitalization

The result of intense digitalization processes is the further digital transformation of the economy and the society we have a chance to witness today, at least the first few stages of this transformation. The speed and extent of digital transformation can be measured, and for this purpose the assessments of social and economic system digital maturity shall be used.

Specifically, in 2022, the Ministry for Digital Technology, Communication and Mass Media of Russia compiled a rating of the Russian regions by digital transformation. Some leaders (10) and outsiders (10) are displayed in the table. The total rating points consist of assessment of several factors¹:

- 1) digital maturity in five areas (transport, education, healthcare, public administration, municipal service and construction);
- 2) introduction of a feedback platform;
- 3) measures of regional support for the IT industry (establishment of a tax rate, reduction of tax and lease rates, provision of grants, mortgage compensations);
- 4) information security (three special indicators: “cybersecurity”, “interaction with the State System of Detection, Prevention and Elimination of Consequences of Computer Attacks” and “interaction with the National Coordinating Center for Computer Incidents”);
- 5) digitalization of massive socially significant services;
- 6) import substitution.

However, let us get back to the political and economic and even military upheavals that have already affected Russia and many other countries.

These upheavals have a direct impact on the digitalization processes. Quite a large number of foreign companies in the IT sector have either completely ceased operations in our country or significantly reduced their activities with a prospect to leave in the future. Some examples are required²:

- **TeamViewer** (a remote access software developer) leaves Russia and Belarus;
- **SAP** (a software developer for the corporate segment) decided to put a complete stop to the cooperation with the Russian customers even based on the currently valid contracts;
- **Infosys** (a software developer) is closing its representative offices in Russia;
- **SAS** (a software developer) left the Russian market firing all the employees in the Moscow office;

¹ URL: https://www.tadviser.ru/index.php/Article:Digitalization_of_Russian_regions.

² URL: https://f.partnerkin.com/blog/allinfo/spisok_kompanii_kotorie_yshli.

Table
Russian Regions Ranked by Digital Transformation

Rank	Region	Score *
1	Yamalo-Nenets Autonomous District	21.0
2	Republic of Tatarstan	19.0
3	Khanty-Mansiysk Autonomous District – Yugra	18.7
4	Moscow Region	18.6
5	Chelyabinsk Region	18.6
6	Tomsk Region	18.1
7	Tula Region	18.1
8	Udmurt Republic	18.1
9	Tyumen Region	17.7
10	Kaluga Region	17.5
...
75	Republic of Mari El	10.6
76	Chechen Republic	10.6
77	Irkutsk Region	10.4
78	Leningrad Region	10.1
79	Republic of Dagestan	10.1
80	Astrakhan Region	9.8
81	Republic of Tuva	9.6
82	Tver Region	9.1
83	Republic of Ingushetia	7.5
84	Kabardino-Balkaria Republic	6.9

Note. * The maximum possible score is 28 points. Moscow was not been included in the rating due to the incompatibility of its indicators (significantly higher numerical values than in other regions).

- **Deutsche Telekom** aborted software development in Russia to stop operations in the country completely;
- **Avast** (a software developer specializing in cyber security) closed access to its products in Russia and Belarus, and the sales stopped;
- **NortonLifeLock.Inc** (an antivirus software developer) suspended operations in Russia;
- **Veeam Software** (a developer of software for visualization, backup and data recovery and management) suspended new sales in Russia;
- **Cisco Systems** (a manufacturer of network and telecommunication equipment) suspended operations in Russia and Belarus;
- **Autodesk** (a software developer for construction) suspends the operations in Russia;
- **Serpstat** (a platform for competitor analysis) sent notification letters to all the Russian users that their accounts would be blocked. The service plan money will not be returned;
- **IBM** announced that the commercial activities on the territory of Russia would be suspended;
- **Adobe** stopped selling its products (Photoshop, Lightroom, Illustrator, Premiere Pro) on the territory of Russia.

Of course, strictly speaking the issue of working on one national market or another is ongoing, it's an issue for certain companies to choose the configurations for their businesses. Even in case these decisions are politically motivated. That is why we shall not comment on these decisions in the context of this research leaving it to the experts in the field of corporate management, law and political studies. Still, there is another question, a more fundamental one, behind all these issues. What is it about?

The idea of digitalization of social and economic processes as such is based on its comprehensive nature, the network information interaction of multiple subjects. Establishment of a knowledge-intensive manufacturing and manufacturing of knowledge-intensive products that are noted as distinctive features of NIS.2 and noonomy by S.D. Bodrunov [Bodrunov, 2018] require a constant access to significant amounts of data, a free data exchange, availability a shared information space. It is the availability of a shared information space that serves as a required technological prerequisite for a transition to NIS.2 and – then – to the noonomy.

The aforementioned actions of IT companies cause destruction, erosion of this shared information space, i.e. we are turning from the idea of shared platforms (global, national, industrial, regional) to the “insular principle” of digitalization. Or aren't we? Here is a question to research, and we still do not have an answer it. Moreover, we are facing it for the first time. And the answer is urgently required, it needs to be found – perhaps, using new empirical data that is received today literally in a real time mode.

The essence of “insular” development

So, based on rather solid grounds (given that the modern episode of the global political and economic opposition will feature the existing parameters for quite a long time), we suggest that in the mid-term perspective a shift away from the ideas of a shared digital space to the “insular” digitalization will be highly likely.

That said, the common logic of civilizational development as per the scheme “modernity – a new industrial society of the second generation (NIS.2) – noonomy” will not change. However, considering new conditions and the aforementioned circumstances, the strategy and tactics of this transition's implementation can change significantly. How precisely? The author does not have an answer to this question yet. This one – it should be repeated – requires further research. However, there is a high possibility that development will become “insular” by nature which is well consistent with the concept of the multipolar world [Afanasiev, 2022].

Meanwhile, come to think of it, such a turn of events might have been predicted already. Essentially, today's observable features of a technological transition from an all-encompassing digitalization model to the “insular” one correlate to everything that happens in the economic and socio-political areas pretty well. Indeed, over the recent years, we have observed a transition from globalization to glocalization in the economy [Ignatiev, 2020] based on the same idea of macro-regional “insulae” in the global economic space. As for the politics which is just a reflection of public interests and process, quite a painful transition from a unipolar world order to the multipolar one has been outlined.

In our opinion, these processes of splitting technological, social and economic spaces that can be observed almost simultaneously are inter-connected by a deep transformation logic which just waits to be explored and the mechanisms that just wait to be examined. These are challenging issues: availability of empirical data and the novelty of the outlined trends, a lack of deep enough

theoretical understanding do not allow delving deeper into this problematics. We just outline the program for further research – the one that seems so relevant and crucial for us.

Instead of conclusion. Russia and the “insular” transformation

And, finally, a few words about Russia, our country. What shall we do in the current situation, in the context of the outlined “insular” transformation? The respective metamorphoses in the socio-political and economic areas are already in full swing. They are understood, acknowledged, and the elements of respective conceptual views are incorporated into the state policy and the business practice.

There still has not been such an acknowledgement in the field of information technologies – it is a work in progress yet. Hence, in the author’s opinion, there are two closely interconnected alternatives for Russia.

The first is to create its own “insula” in critical areas of information technologies. Some measures have already been taken in this area: those worth noting include the Sovereign Internet concept [Juan, 2020], the works on generation of data processing centers with subsequent transfer of the national data preservation to the national jurisdiction [Sabennikova, 2022], etc. However, those measures were taken without a uniform plan and intention, without the proper conceptual relationship based on the theory of “insular” digitalization.

Secondly, it is about development and promotion of the open digital architecture, as it is this architecture only that can interlink “digital insulae” we’re speaking about. Also, technological, organizational problems and their tying up need to be resolved right now providing the opportunities for their mergence in the future and the joint use of resources. Otherwise, the generated “digital insulae” can remain isolated formations unable to merge into an integral whole. Meanwhile, it seems to us that it is unavoidable for them to be united, but nowadays the timeframes of this unification are a little bit shifted due to the reasons examined in this paper.

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