

Understanding algorithmic societies: Hybrid intelligence and its zombies

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Source: *QUO VADIS*

DRAFT TRANSLATION: PLEASE DO NOT CITE

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As often happens with innovative, forward-thinking texts, they are published in the wrong place at the wrong time. This is what

happened with the book by S. Rastogiev and V. Chibisov's book "The Goal as a Cryptogram. Cryptanalysis of synthetic goals". It was published in Moscow in 1996 in the Yachtsman publishing house in 500 copies. The people on whom something depends did not read it either in our country or abroad.

Machines of the third type

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At the end of the XIX century, Ludwig Noiret published in German the book "Tools and their significance in the history of mankind" 31. 31. In it, for the first time, "tool and machine" were clearly distinguished. A machine is a tool that can perform work relatively autonomously from man and whose power does not depend on his physical capabilities. **A machine is powered by a motor that uses any, but *not* muscular, human energy.** S. Lem remarked, "Machines are self or relatively autonomously acting algorithms" 46. Machines, as L. Noiret pointed out, "are always constructed according to drawings and represent a connection or composition of separate parts, nodes, blocks. A machine is always a mechanism, not an organism" 31. 31.

J. Mumford, who recognized machines of the first type, called material machines used in production and in everyday life machines of the second type. As for the machines of the first type, he defined them as follows: "The earliest, the greatest and the most enduring innovation is the invention of the primary machine. This unusual invention was, in fact, the earliest model for all later complex machines, although the emphasis gradually shifted from human working beasts to more reliable mechanical elements. The

unique challenge for royalty was to recruit and manage the right amount of human labor to perform work on a scale never before attempted. The result of this invention five thousand years ago was a vast engineering effort that rivals the best of today's advances in mass production, standardization, and detailed design" 24. 24. Machines of the first type in the history of mankind became proto-state organizations that ordered and structured mutual action within rather unstable communities, tribes, etc.

The machines of the third type were born before our eyes. This is the information and communication environment, where algorithmic machines, such as programs, services, platforms, etc. operate independently or relatively autonomously. If the **machines of the second type are the projection and outwardization (externalization) of the physical abilities of a human being as a living being in the aspect of a biological automaton**, the machines of the third type are **the projection and outwardization of the human psyche**. However, not human psyche in its entirety, but its predominantly unconscious, algorithmizable contour.

Here it is appropriate to emphasize the specifics of the human psyche.

Outstanding psychologists who have created theories based on the generalization of hundreds and thousands of experiments that lasted for decades, such as D. Kahneman and A. Tversky 14, S. L. Rubinstein and A. V. Brushlinsky 7, distinguish at least two types of thinking, or contours of psychics. (V. Nalimov, on the basis of many years of experiments, discovered a third psyche contour - semantic, or comprehension 29). In Kahneman's case it is heuristic and rational thinking, fast and slow. Brushlinsky's is algorithmic and search-prognostic. Brushlinsky formulates the key distinction between the two types of thinking, or psyche, as follows: "Mental, as a process, is initially and always continuous in

the most precise and profound sense of the word. The continuity of the mental is objectively conditioned by its leading role in the regulation and self-regulation of human activity (and animal behavior). The mental is initially included in the continuous interaction of a human being with the world, i.e., first of all, in the continuous interaction of the subject with the object, which, in the final analysis, is potentially the entire Universe.

While the procedural aspect of thinking (in its above-mentioned sense) is studied only by psychology, its operational aspect is studied besides psychology by other sciences: cybernetics, mathematical logic, game theory, etc. The latter is particularly clear. These latter especially clearly reveal the discontinuous nature of intellectual operations, first of all, in the case of solving so-called well-defined or closed problems" 6. 6.

This third nature (way of being human...), filled with algorithmic machines of the third type, **is the outwardly rendered contour of the psyche**. But not all of it. It is outwardly fast thinking according to Kahneman, operational thinking according to Brushlinsky, or, as he wrote, the disjunctive aspect of the psyche consisting of discrete operations.

The real problem, which is not only unreflected but not even realized by computer gurus, the most astute methodologists and cognitive psychologists, is the following. Philosophers, sociologists, and psychologists belonging to different, often opposite, directions of intellectual practice **are united in the belief that human beings are largely (though by no means completely) shaped by activity, its structure, factors, and external conditions**. Interactionist J. Mead 27, behaviorist B. Skinner 40, and Marxist A. N. Leontiev 20 are in agreement on this point. A person conducts activity, and activity shapes a person. **The essence of the problem is that machines of the first, second, and third**

types are increasingly turning humans into psychophysical automata, and communities into algorithmic organizations.

Platforms as the basis of an algorithmic society

We are witnessing the integration of the three natures (the machines of the three types) into one with the addition of machines of the third type. Let us illustrate this process with the most obvious examples.

For the first 20 years of the Internet's history, human activity - both in production and in everyday life - was carried out according to established schemes and templates. **A revolutionary change occurred when the digital environment became integrated on the basis of platforms.** "A platform is a hardware and software environment for algorithmic search, implementation and control over the execution of transactions (other interactions) on the basis of intellectual analysis of big data" [71](#). The first full-fledged platform - the secondary market of goods and services eBay - appeared in the nineties. But only in the tenth years platforms became the "nerve nodes" of the Internet and other types of networks.

Today, social networks, online stores, various services, etc. have moved to the platform principle. The most common examples of platforms are the services of the so-called collaborative market economy, such as Uber, Yandex.Taxi, Airbnb, and so on.

However, platforms are different from traditional marketplaces. "Marketplace is a free, unrestricted and unprogrammed interaction on a specific physical or virtual site. **The platform assumes**

that users, such as sellers or buyers of services, act according to certain rules and procedures, strict algorithms and, although they have the right of free choice, they continuously receive recommendations from the platform that correct their behavior and determine their choice. They act according to the algorithm programmed into the payment form and eventually achieve what they are looking for - ordering a cab, renting an apartment in an unfamiliar city, hiring a particular freelancer etc. Moreover, the behavior of both sellers and buyers is algorithmic" 68.

Platform or algorithmic way of organizing commercial activity is developing exponentially. Back in 2012, platform forms accounted for less than 1.5% of the total commercial turnover in the U.S. consumer sector, now it is more than 15%, and by 2020, according to a conservative forecast, it will account for more than 30% 57. Taking into account the fact that platform principles and algorithmization of interaction between sellers and buyers are increasingly used by retail chains, by 2020 at least more than half of the American economy, excluding the financial sector, will move to the category of algorithmic 67.

American and most foreign authors consider platforms as a triumph of the principle of P2P systems, or peer-to-peer systems. In reality, this is not the case. Each platform has a host - an owner. The host controls algorithms and owns big data, determines the structure of activity of sellers and buyers, rules and in many respects the results of their interaction in the process of transactions. Payment forms only pretend to be markets. In reality, it is an environment of continuous forced planning and behavior management.

Social programming and nudging

Even the classics of Marxism-Leninism wrote that objective reality is given to us in sensations. For example, there are no colors in nature: colors are the result of the interaction of our sensors with reality. **Any interaction is through an interface, something that connects us to the reality of all three worlds.** All three types of machines have an interface.

In the last three to five years, it has become clear that interfaces are the best way to algorithmize human behavior. Using interfaces, it is possible to induce a person to take certain actions, to make a predetermined choice from several alternatives. The use of interfaces for algorithmic behavior is called "nudge" [13](#). Nudging (literally translated as "nudge") is realized both in real life and in the information environment. Thus, C. Sunstein and R. Thaler found that schoolchildren's choice between healthy but not too attractive products and harmful but attractive treats for children depends not only on their preferences but also on the location of products on the shelves of school canteens [76](#).

D. Halpern, one of the leading cognitive psychologists and designer of program and service interfaces, describes how much users' choice is influenced by such seemingly small things as the location of this or that interface element, font, length of the user agreement, etc. As an example, he cites the experience of a well-known recommendation service for fans of TV movies. As an experiment, during a week the service inserted a clause in the user agreement stating that in case of sudden death the service's clients bequeath their internal organs to the service's owners, who can use them as they see fit. In the course of every-

More than

250 thousand people did not sign the user agreement, i.e. less than 1.3% refused from the service during the week 59.

The experiment was a joke, but the developers of nudge-technologies use automatism of human behavior for quite serious purposes. In 2017, the OECD report "Behavioral Insights and Public Policy. Lessons from Around the World" 47. According to the report, the governments of 25 countries already use more than 100 applications, programs, and resources that implement nudge to solve public tasks related to the management of citizens' choices and behavior. The use of nudge in business is even more widespread. More than 200 companies - mostly in the US, UK, EU, Singapore and Hong Kong - are using Nudge for commercial purposes, primarily in the B2C sector.

In the shadow of the blockchain

The third (along with platforms and interfaces) major trend in the algorithmicization of human activity is the global expansion of blockchain. When bitcoin emerged, the general public and experts were mesmerized by its leaps and bounds; therefore, unlike algorithmicists, programmers, and advanced entrepreneurs, policymakers, law enforcers, and information conflict professionals failed to notice the blockchain's powerful potential. The speculative potential of cryptocurrencies and tokens, already numbering close to 1,000, has created unprecedented excitement. Everyone sees the blockchain mainly as a base for investments in cryptocurrencies - these tulips of the 21st century. 23. On a more fundamental level, blockchain is seen as the basis for payment and

more broadly financial services, a kind of communication prototype for the Internet of Money 38. But this fair assessment misses the point.

The essence of blockchain is the algorithmicization of any activity carried out in conditions of incomplete trust (which includes the overwhelming majority of human activity outside the family sphere). "Blockchain allows transactions and interactions to take place in conditions of incomplete trust through transactions of money, property or other assets only when conditions pre-recorded in the code are met. If the conditions are not met, ownership of the assets does not pass to the participant in the transaction who violated the condition.... In blockchain, program code replaces many instructions, business rules and legal regulations. Blockchain is not so much a ledger as a law written in code with a guarantee of its fulfillment" 75. 75.

But another function of blockchain has yet to be noticed by even the most in-depth experts in the field. Platforms - the supporting structures of algorithmic societies - belong to the Internet, i.e. to hierarchical networks. Blockchain is a protocol for P2P or peer-to-peer networks. It allows to combine network and hierarchical connections, to segment not just the World Wide Web, but human activity.

Who created bitcoins is still not known. But the crypto-graphic principle on which bitcoin is based was described for the first time. In 1996, cryptographers from the U.S. National Security Agency in an article entitled "How to Create a Coin: The Cryptography of Anonymous Electronic Currency" 62. 62. Even earlier, the book "Momentum Accounting and Triple Entry Book-keeping: Exploring the Dynamic Structure of Accounting Measurements" was published in the United States 63. 63. It described for the first time the transition from conventional double

to triple-entry bookkeeping, which is realized in blockchain and cryptocurrencies based on it.

The composition of platforms, nudge interfaces, and blockchain using behavioral automata and big data mining allowed the 2016 conference organized by Gartner to "proclaim the beginning of a new era - the era of algorithmic economy" 55. 55. BlackRock founder Larry Fink, engineer, entrepreneur and investor Iton Musk, and Jeff Bezos, head and creator of the Amazon Internet company, all agreed with this assessment. The digital economy is thought by the powers-that-be to be the basis of the new digital world, whose arrival was heralded by E. Schmidt and J. Cohen, the heads of Google, a few years ago 45.

Masters of information flows and their technologies

Information is necessary for the basis of the fundamentals of intelligent life - reacting to reality, defining goals and orienting oneself in a changing situation 3.

At the turn of the 21st century, Eli Pariser's bestseller about Internet bubbles was published 33. In the preface to the English edition of the book, the author wrote: "My book is about how the Internet, once 'open' and 'free', began to control us and limit our information. The major Internet companies use multiple algorithms and filters to show us what is most relevant to us. Google, for example, adjusts its search results based on our interests. The same happens with the Facebook newsfeed - only the people whose links we click on most often are there. And there are plenty of examples like this.

The idea of a "relevant Internet" is not bad in itself. But there is a downside to this phenomenon. First, we cannot see the whole picture through filters. We see only an edited version of it. Secondly, we do not notice the filters themselves. Therefore, we do not even realize that something has been thrown out of the picture, that there are other points of view. And finally, today it is not us who determine what is important and interesting to us. Machines do it for us. 70.

This is not because of the insidious intrigues of S. Brin, L. Page or M. Zuckerberg, but because each resource tends to retain the user as long as possible, to attract his attention, to form the tastes, interests, habits of each individual person. It is not for nothing that in the algorithmic economy the main and most scarce resource is attention.

The key parameter is **the time parameter of staying on the resource**. If in the middle of the 2000s it was more than 3.5 minutes, now it does not exceed 17 seconds. The most powerful platforms are engaged in a real battle for attention.

Information technology guru M. Goldharber recalls that he started talking about this more than 30 years ago: "The real goal in an information choice situation is attention - the attention of others. The supply of such attention is limited, since each person can give only his or her attention during a lifetime. At the same time, attention is undoubtedly desirable; everyone needs it and, unlike material goods, there is no such thing as too much attention. Therefore, both current and future 'information technologies' are better understood as 'attention technologies', each offering its own weapons in the battle for attention" 35. 35.

The Internet bubble has become an information prison of an as yet non-strict (repressive) regime. In 2017, speaking on one of the leading American channels, the author of the international

bestseller "Explaining individual behavior on the social net" V. Hendricks reported that up to 70% of Americans and more than 80% of EU citizens are satisfied with already mastered and constantly visited Internet resources, groups in social networks and TV channels. They passively consume information and have no inclination to research online. In the same statement, referring to Google statistics, V. Hendricks said: "In the U.S. in 2015-2016, an average Internet user aged 21 to 45 years old has more than 70 routine queries per one query to Google search engine regarding a new object of interest and attention, specifying certain characteristics, price, parameters, etc. of objects that are familiar and interesting to the user" 61. 61.

Forced narrowing of the cognitive diversity of users by search engines and platforms in pursuit of attention, attracting advertisers, etc. leads to social instinctivization, develops automatism and strengthens stereotypes of behavior. As experimentally demonstrated by Russian neurophysiologist and neuropsychologist S. Saveliev, automation of cognitive behavioral activity leads to morphological changes in the brain 37.

Due to the amazing plasticity of the brain, the cerebral consolidation of algorithmic behavior occurs not within millions and thousands of years or even centuries, as was believed until recently, but within decades 9.

The second direction of purposeful, partly organized, partly spontaneous impact of the infosphere on cognitive features and behavior of people is the rapid noise in the information space. According to N. Silver, one of America's leading forecasters, the power of information noise in the Internet is continuously increasing 39.

There are at least three reasons for this. The first one is the avalanche-like growing mass of spam and plagiarism on the Internet.

According to the Gartner agency, if in 2000 the share of original text content on the Internet was 75-80%, in 2010 it decreased to 30-35%, and now it does not exceed 5-7%. The Internet has turned into a global information dump.

The second reason is the growing gap in the intellectual potential of Internet users. A growing share of the population perceives deep information-rich and practically useful resources as white noise - useless information. Most people no longer have the necessary knowledge and cognitive skills to perceive, let alone comprehend, complex content.

The third reason, first mentioned by E. Schmidt and D. As-sange during the discussion of the draft book "The New Digital World" 45, is the measure of the value of the digital world. 45, is the measured noise in the information space to mask and conceal really important messages and knowledge. Recently, Russian researchers E. Lutsenko and A. Orlov mathematically proved that white noise can be almost the most stable and effective cryptographic algorithm. They also showed that "noise in the information space leads to the formation of information inferiority and powerlessness complex in the most intellectually advanced inhabitants of the space, who guess about the cryptographic function of white noise, with the subsequent algorithmicization of their cognitive activity" 22. 22.

The information environment reacts sensitively, and often ahead of the curve, to real conflicts, clashes, wars and changes. The industrial revolution, regardless of its number, is invariably accompanied by the growth of local and global conflict - riots, revolutions, "hot" and "cold" civil and interstate wars. The current one is no exception. In 2016, according to the Oxford Dictionary, the word of the year was "post-truth" (post-truth). The term describes a situation when the truth becomes unimportant 66. The

2016 presidential campaign in the United States was held under the sign of post-truth. Democrats and Republicans actively accused each other of using lies, fake news, armies of bots spreading untruths, etc.

Meanwhile, there is nothing new about post-truth. More than 25 years ago, political analyst and Chinese scholar G. Isaacs, whose first book on the Chinese revolution was prefaced by L. Trotsky, published his work "Idols of the Tribe: Group Identity and Political Change" 65. 65. The book shows the inevitability of conflicts in developed countries and their transition from the phase of disputes and competition to the stage of struggle and "cold" and even "warm" civil wars. In such wars, according to G. Isaacs, a group identity is inevitably formed on the basis of the opposition of one group to another on the principle of "others". This opposition will be most acute not in politics and economics, where confrontations are limited by institutions and rules, but in the information sphere. The Russian media communications theorist and practitioner V. Solovey has drawn on an array of historical data. Solovey has shown the inevitability of intra-civil conflicts growing into information wars on the basis of an array of historical data 41.

In the course of information wars (as well as "cold", "warm" and "hot" wars), the truth takes a back seat. In the infosphere, as on a real battlefield, the principle of "everything for the front, everything for victory" applies. It does not matter who, what and how truthful the information is. The main thing is that information harms the enemy and strengthens one's own identity.

All wars (and information wars are no exception) presuppose clear planning and unquestioning obedience. Accordingly, The post-truth times are the era of total control of information flows that program and algorithmize mass behavior 22.

Human Beings in the third nature

Trends in the development of the information environment in the last 25 and especially 10 years - with Internet bubbles and echo-chambers, total content pollution, blurring the boundaries of information and disinformation, psychological and information wars - have led to the emergence of three fundamentally new phenomena.

First, more and more users, especially young people, have conceptual-logical thinking, which gives way to figurative-associative, or clip thinking [1](#). Clip thinking involves focusing on perception and experience rather than understanding and analysis [10](#). Clip thinking has its pros and cons. Researchers at MTI and the Complexity Institute in Santa Fe have found that clique thinking increases people's suggestibility and susceptibility to suggestion by an order of magnitude [49](#).

Second, about half of users of all ages and more than 90% of young people are in non-stop information consumption mode. If in the works of psychologists and sociologists of the nineties and two thousands, this phenomenon was described as Internet addiction, now, after the publication of the above-mentioned book by E. Schmidt and D. Cohen, researchers write about the migration of young people into the digital world. On average, a young American aged 18 to 35 years old turns to gadgets at least once every 10 minutes. And the intervals between accesses from year to year are decreasing exponentially [58](#).

Thirdly, the once unified Internet is disintegrating into separate clusters and fragments with little connection between them. The

division is not only based on intellectual or property criteria. Even within families, friends, and relatives - mainly according to cultural orientations, political beliefs, pastimes, etc. - are being divided. Although formally the law of five handshakes continues to apply on the Internet, more than two-thirds of Internet users in developed countries do not even choose Dunbar's number, maintaining real more or less permanent contacts with less than 150 people ⁷².

A person dwelling in the world of the third nature, among machines of the third type, is confused and disoriented. This tendency of the information society was recognized by the famous American sociologist and political scientist G. Lasswell at the turn of the 1950s-1960s - the heyday of radio and television. He described the then United States as "a highly manipulated society in which information flows control the behavior of citizens and cure their psychological ailments" ^{18. 18.} Disorientation, combined with susceptibility to suggestion of a significant part of the population, stimulates elites to support not only theoretical but also practical developments in the field of social programming of groups of different sizes ⁷⁴.

Social software on the threshold

Social programming is deeper in its arsenal and essence than nudge. While nudge uses mainly behavioral stereotypes and habits, social programming involves the development of certain languages that can be used to describe procedures that force a person to perform certain actions. And the main thing is not just

to describe, but to implement these procedures. Social programming uses not only stereotypes and habits, but also peculiarities of perception and characteristics of psychological states, such as anxiety, agitation, aggression, and so on. Theoretical and practical developments in the field of social programming or social software have advanced the most in the USA, Great Britain, the Netherlands, and Japan 59.

The Iron Heel of Automation

We are witnessing the integration of the second and third nature on the basis of the domination of the third type of machines over the second type. The most visible features of the process are progressive robotization, the widespread spread of the Internet of Things, and the widespread use of various synthetic and, in recent years, organic implants in health care. Trends in the transformation of the physical environment have the same impact on humans as processes in the information environment.

According to the International Federation of Robotics, there are currently about 300 thousand robotized sites, lines, and production facilities operating in the world. The number of robots is growing by an average of 20% per year. China, South Korea, Japan, the United States and Germany account for 75% of manufacturing robot sales. The United States produces more than 75% of the world's output of robots equipped with computational intelligence and capable of multifunctional activities. The number of transportation and household robots is growing exponentially 64.

Robots already cause fear among workers, lawyers, and representatives of other professions with repetitive labor operations. Thus, in the 2016 election, the strongest correlation between voting for Trump was observed with the indicator of the share of workers in the electoral districts whose work may be robotized in the next 5-7 years. Trump has deliberately exploited fear of the future and longing for the past.

But fear of the future is only one side of the story. The other is that, having been moved directly from the sphere of production to the sphere of control, management and force majeure, the worker is still forced to adjust to the robots. It is the human being who becomes the most unpredictable and therefore unreliable link in automated production.

The Internet of Things, which is rapidly turning into the Internet of Everything, also algorithms people's behavior. It generates huge amounts of machine-readable information about people's everyday behavior.

If the data from the usual Internet characterize the mental world of a person, his/her purchasing behavior, the Internet of Things already records every step of a person in developed countries, creating a constantly updated archive of his/her daily life activity 50.

The essence of the Internet of Things is that the environment surrounding a person - from sneakers to a kettle, from a vacuum cleaner to an apartment as a whole - is transformed into machines of the second type controlled by a machine of the third type. It is clear that in a world of universal algorithmization of control and function, man must algorithmize his own behavior. Even if he resists, companies producing gadgets, things, cars, etc. connected to data mining platforms will do everything for him.

The current programming of user-consumer groups is based on huge, constantly replenished arrays of behavioral data. Today, this consists of three components. One part of the data belongs to the owners of platforms, search engines and Internet resources. Another is owned by the manufacturers of operating systems for gadgets, primarily Apple and Google. The third is the manufacturers of smart things, the information from which is received by both telecommunication providers and manufacturers. Today, the largest information companies have behavioral data storages that are not only comparable, but apparently exceed the capacity of the new NSA data center in Utah. And all this data is obtained with the full consent of the users.

In addition to using behavioral data for their own purposes, companies legally sell it to third parties, primarily to data brokers. The largest of them, Axiom, has behavioral archives for almost one billion people on the planet, including all major countries except China. On average, the data profile for one person has from 120 to 150 parameters [58; 73](#).

In addition to the Internet of Things, the Internet of Implants is increasingly making its way. Now more than 2% of Americans use implants that have a remote control system via the Internet along with an autonomous one. These are mainly pacemakers, as well as cerebral implants in the brain. According to medical experts, by 2020 not only the cost of implants will be drastically reduced, but also a new generation of implants will appear, created not from synthetic, but from organic substances obtained as a result of the achievements of synthetic biology. In the next five to ten years, up to 20% of Americans will have externally programmed implants in their bodies. As with the Internet, other countries will follow America into the bioinformational future with a lag of 5-7 years [60](#).

Thus, biophysiological algorithmization will be added to psychological and behavioral programming in the coming years. It is time to talk about the transition from the stage of "reasonable man" to the stage of "programmable man".

The reality of zombies

This trend has long been noticed by the most astute thinkers. One of the three most cited researchers in the field D. Dennett, a philosopher and psychologist of consciousness, states: "It is possible to realize human consciousness in a machine. Ultimately, the machine is ourselves. We are robots made of robots made of robots made of robots. We are incredibly complex, trillions of moving parts. But they're all robotic parts. There is no miracle here." 8. Dennett views consciousness as a randomized stable composition of memes. Leading cognitive neuropsychologist T. Metzinger denies the existence of human consciousness as a special phenomenon: "Although our brain creates a tunnel of ego or consciousness, no one lives in this tunnel. We live through and through this tunnel, but there is no 'little man' who runs everything in our heads. There is no such thing as a self or psyche in the world. The biological organism as such is not the Self. The ego is not the Self either. It is only a form of representational content - the content of the self-model activated in the brain. The self is an illusion. 26. Dennett and Metzinger's positions are mainstream not only for most contemporary neuropsychologists, but more importantly for politicians, financiers, technologists, program and service developers.

If in the XIX-XX centuries Marxism first raised the problem of alienation of man from his materialized abilities and results of labor activity, today the issue is more acute and practical. For the last 15 years, the process of purposeful change of a human being as a reasonable, developed psyche, social being with free will has been going on at an increasing pace. Activity itself, its information environment and material factors suppress the processive, non-disjunctive (to use V. Brushlinsky's term), creative contour of psyche and thinking, replacing it with a disjunctive, operational and algorithmic one.

Phase transition

This process is favored by the global world situation. For over 25 years, the process of negative convergence has been actively underway in the world: capitalist countries, especially developed ones, are acquiring more and more features of administrative, bureaucratic socialism. And most former socialist countries have absorbed the worst features not only of capitalism, but also of archaic pre-capitalist formations.

With the collapse of the bipolar world, the emphasis was shifted from the development of abilities to the satisfaction of needs. Consumerism and consumerism became the mainstream, shaping the values, goals and behavior of the bulk of the population in developed countries. At the same time, consumer behavior began to be determined not by income from production activities, but by the terms of credit. The terms of consumer loans themselves are a powerful tool of social software.

The increasing algorithmicization of humans is facilitated by their neuropsychophysiology. The brain consumes about 20% of the energy consumed by the human organism, although it is only 2% of the body weight. When solving complex problems and intensive thinking, energy expenditure increases to 25-27% [74]. Thinking is energy-consuming, and therefore, from an evolutionary point of view, it is often unprofitable. If a society does not impose high intellectual requirements on its members, people tend to minimize complex thought processes and replace conscious behavior with psychophysiological and social automatisms.

From the psychological point of view, a significant part of the processes of human life and activity, related not only to psychophysiology, but also to social interactions, occurs unconsciously through attitudes, behavioral stereotypes, cultural rules, everyday habits, etc. This has been proven experimentally [2]. This has been proven experimentally [2]. Therefore, if the external environment not only favors, but also directly pushes a person to algorithmic, operational behavior using stereotypes, people willingly switch to the automatic mode of existence.

Finally, social programming most fully expresses the inner nature of power. "...True power is, as a rule, secret power or explicit power in its covert actions" [43]. Secret in meaning, but overt in content, the actions of the powerful are cryptocracy. Cryptocracy is not violence, not persuasion, but algorithmization, consistent reduction of degrees of freedom and imperceptible for a person transformation of personal and group interests into an unconditional motivation for achieving goals external to him.

Power of intellect

Filling power with program-technological content presupposes and is accompanied by qualitative changes in the ruling elites. The most advanced part of the ruling groups is turning into a different humanity, into another species of sapiens. Back in 2015, Mikhail Kovalchuk, Director of the Kurchatov Institute, spoke about this in the Federation Council [15](#).

Any technology has a threefold application: civil, military, and criminal. It is less commonly understood that technologies are ambivalent in terms of efficiency criteria. Thus, the technology that provides algorithmization and reduces the degrees of freedom of behavior, when used otherwise, contributes to the reduction of external determination of activity and increases the subject's dominance over the environment. This applies not only to individuals, but also to society as a whole.

In the course of the tenth years, a technological cluster was formed and is exponentially developing, which makes it possible to form a new kind of intelligent man in the short term. It includes: artificial intelligence; the Internet of Everything with total digitization, storage and processing of data on everything; synthetic biology; pre-complete reality and direct brain-computer interface [6](#); [48](#).

This cluster is a technological package for the creation of hybrid (interacting human and computational) and then superintegral [44](#) human-machine intelligence.

The basic technology of hybrid intelligence is deep machine learning, recognizing processes, connections, objects and anomalies on the basis of deep neural networks and other computational methods. The closing technology of the technopackage is the

creation of a direct multifunctional, implantable brain-computer interface 34.

For an adequate understanding of the basic technology it is important to get rid of the prevailing understanding of artificial intelligence as a similarity of human intelligence. This approach is most vividly represented in the assessment of whether a hardware-software complex belongs to artificial intelligence by means of the Turing test (whether a user, interacting with a computational intelligence, can determine whether he or she is a human or a machine).

A much more pragmatic and at the same time operational approach was formulated in early 2017. Stephen L. Morris, FBI Deputy Director for Information Technology: "Artificial intelligence is a hardware-software complex that supports and/or makes effective decisions in a dynamic, unstable environment at a set time, based on information that is known to be incomplete, vague, and lacking a complete evidence base. For some tasks artificial intelligence makes decisions independently, but in most cases it is an element of hybrid intelligence, interacting with humans" 32. 32. It is hybrid rather than artificial intelligence that is the main road to superintelligence.

Three leading corporations have already started creating multifunctional direct interfaces between the human brain and computational intelligence. These projects are Brain Machine Interface F (BMIF), Neuralink, and Directconnection. They are led respectively by Facebook, Elon Musk and Alphabet (Google). The approximate time of release of a full-fledged multifunctional interface is 2022-2025. 77.

According to Stephen L. Morris, the complex realization of the superintelligence technopackage will require changes in the hardware base along with software. Here the key role belongs not so

much to quantum computers as to the hard disk not based on traditional chips, but using memristors, as well as graphic processors of new generation and graphene as a material for chips ¹⁴. According to a 2017 estimate by the Office of the Director of National Intelligence of the United States, a new kind of human with superintelligence will become a reality around 2025. Gartner and McKinsey provide similar estimates (between 2023 and 2027). Specific dates may be erroneous, but the emergence of superintelligence carriers is unalterable. All the basic components of hard disk and software for it have already been created. It is only a question of their improvement and layout.

Anthropological transition and reformatting of the world

The emergence of a new kind of people, who will undoubtedly belong to the current ruling elite and its immediate technological environment in the countries leading the technological race, will change human civilization beyond recognition.

Russian analytics and prognosticators are dominated by a picture of the world in which in the 21st century, as in the past, the main conflicts and struggles will take place between countries and blocs. Geopoliticians see the future as an extension of the past. For a slow world, this approach was acceptable. The fast, turbulent world rejects it. The future is separated from the past by a qualitative leap, a phase transition ⁴.

A significant part of the domestic ruling stratum - the beneficiaries of the Russian economy - is fatal in its forecasts. They believe themselves to be an integral part of the global ruling elite and

demonstrate the corresponding strategic, tactical and everyday behavior. They also demonstrate to the public on a daily basis their unbridled propensity to accumulate real estate, cash, luxury and low-risk financial assets, which they consider a guarantee of future prosperity. In a geopolitical world, this approach has its resonances. But where chrono-politics reigns supreme and the past and the future are separated by a phase transition, the main assets of the Russian quasi-elite in the world of the future are a burden, not a potential.

The Structure of domination

Already in the medium-term future, in the next 10-15 years, and perhaps even earlier, there will be a sharp division of the world not by geography, but by choral (time) or technological characteristics. An extremely small part of the ruling elite of the countries that are the undisputed technological leaders of the modern world, no more than 0.3-0.5% of the population, the so-called holders (holders), will emerge. These are the owners and developers of algorithms, programs and technologies. They will be the owners of hybrid intelligence and improved physiological carriers (bodies) based on the achievements of synthetic biology. According to Gartner estimates, about 5-10% of the population of technological leader countries will be staff, or "service people" according to M. Kovalchuk's terminology. They will be engaged in ensuring the functioning and development of the algorithmic economy and society as a whole.

The rest of the population of developed countries, regardless of their current assets, will turn into lamers. Lamers are not needed

for reproduction in the "beautiful new world". In one case, they will be allowed to feed themselves in territories controlled by the holdings; in the other case, they will be able to receive guaranteed maintenance - for example, in the form of an "unconditional basic income" - and live in a kind of limited communism 11.

The prospects for citizens of countries that are not included in the narrow group of leaders in the race for the future are much sadder. It is currently led by the United States, the United Kingdom, China and Japan. South Korea, Canada, Australia, Germany, Australia, and some Northern European countries are still behind the leaders. Russian analysts like to use the terms "controlled chaos," "color revolutions," and so on. They do not realize that in algorithmic societies, controlled chaos and "color revolutions" are much worse for the metropolises than for the countries and territories being destructed. Any chaos presupposes the presence of a large number of forces and groups possessing and using a variety of weapons, from firearms to cybernetic weapons. "Color revolutions imply the loss of the state's monopoly on violence and weakened control over arms trafficking. The current Ukraine is the best evidence of this.

In the era of weapons of mass destruction, fire and explosive systems, developed states were able to remotely control the production and transportation of weapons. Moreover, chaotic territories were separated from the subjects of chaotization by thousands of kilometers, insurmountable for the weapons of mass destruction involved in such conflicts. Even today, cyber, bio- and genetic weapons are not only as powerful as, but often superior to, weapons of mass destruction, up to and including tactical nuclear weapons. At the same time, control over such weapons is impossible today and will be difficult in the future. The production of such weapons is possible not only within small structures,

but also using distributed outsourcing networks. Finally, for cyber or bioweapons, the remoteness of the location of use is irrelevant. According to a 2017 assessment by the U.S. Office of the Director of National Intelligence, it is the United States, Japan, the United Kingdom and Western European countries that are the most vulnerable among all countries in the world to a cyber or bioweapon strike with unacceptable consequences. In this regard, the current situation around the DPRK can be regarded as a model for practicing the destruction of entities claiming to be self-sufficient in the algorithmic world.

The Trump administration, at least its military-political wing, sees its task in the preventive cleansing of potential centers of destruction and the development of effective technologies for this purpose. For the U.S. ruling elite, this is what the fight against ISIS is all about. This approach will only intensify in the future. Accordingly, the populations of countries that lose the race for the future will either have to perform services as part of the recreational use of their technology-free territories, or disappear - like the ancient Egyptians, Celts and other once great peoples. For algorithmic societies, these peoples are aliens. The reason is not the conspiracy of the conspiracy of the insidious backstage conspiracy of Googleberg, the alleged successor of the Bilderberg Group, but the security imperatives of algorithmic societies.

The balance of power

In the race for the future, the undisputed leaders have emerged. "Gartner, McKinsey, and the research groups of the World Economic Forum in Davos have been conducting a thorough analysis

of the ownership of the most promising companies and patents for technology packages related to the manufacturing revolution, hybrid intelligence, and social software. If we summarize their data for 2016 - early 2017, the following picture emerges. The United States is the undisputed leader: owners from this country account for about 75% of shares in the most promising companies and patents. They employ the world's most quoted researchers in algorithmic and hybrid intelligence technologies.

Then comes China with 8% and Japan with 5%. The remaining share is more or less evenly distributed between the UK, Israel, Germany, Northern Europe and South Korea. Russia - despite some achievements and tens of thousands of researchers, scientists, programmers working in the US, UK, EU countries and South Korea - has so far fallen out of the technological race.

Nevertheless, there is still a window of opportunity. The main reason for optimism is the composition of the superintelligence technopackage. Superintellect is the integration of hi-humel and hitech. Machines of the third type in the third nature are not sufficient for its realization.

As noted above, hybrid intelligence and the mass of zombies are two sides of the same reality - an algorithmic society. Algorithmic society, like any complex organization, is not a static phenomenon, but is in the process of constant change. The dynamics of algorithmic society is associated with a number of fundamentally irreversible risks, fraught with turning into threats to these societies.

Even if we abstract from the forthcoming inevitable crisis of the world financial and economic system, which will change a lot in the current situation, there are at least five key risks. With vigorous resourced work, their utilization can illustrate the biblical principle: the last shall be first.

And the last shall be first

Risk one is turbulence. Effective algorithmization, programming and control are possible only in environments for which external and internal perturbations are smaller than some objective parameters 5. Operational technologies, and hence also algorithmization, programming and control, are possible only in relatively static environments. If the environment is unstable, the results of using new technologies are unpredictable.

The second risk is the domino effect. The risks of intra-system failures and fan failures grow faster than the mutual interconnection and redundancy of system elements increases. Roughly speaking, the more everything is connected with everything, the higher the risk of failures and catastrophes not only due to purposeful actions, but also due to random causes 25.

The third risk is the risk of aggression, or S. Lem's nightmare. Back in the 1980s, S. Lem suggested that within the framework of technological progress, the ability of ever smaller groups, down to two or three people, to cause unacceptable damage to cities, countries, and blocs of countries is growing exponentially 46. In 2017. The U.S. National Intelligence Council published a report, *Global Trends: Paradoxes of Progress*, which states: "A trend has emerged in recent years that will have an impact over the next 20 years. Non-state groups, including terrorists, militants, criminal groups and activists, will have increasing access to an increasingly diverse range of lethal and non-lethal fire, infrastructure and behavioral defenses. With small terrorist, insurgent and criminal groups able to weaponize mass destruction technologies, a unique situation could arise, taking us back to the Middle Ages, when states fought with criminal gangs and mercenary groups. This trend is already manifesting itself" 17. 17.

The fourth risk is the risk of optimization. The main direction in the development of computational intelligence is deep machine learning using ever deeper neural networks. As a result, even today, when using deep neural networks with a depth of more than 30 layers, researchers cannot imagine how the computational intelligence came to the solution of a particular problem. When solving optimization problems, this means that users do not know the entire set of parameters for which the problem is best solved according to a given optimization criterion. Roughly speaking, it may turn out that the optimal solution for a given criterion assumes values of associated parameters that are incompatible with the existence of the optimized object 78.

Finally, the fifth risk is the risk of blindness, or hidden parameters. Since domination and subordination in algorithmic societies are built on the operational, algorithmic contour of psyche and control and represent the realization of machines of the third type, these machines and symbiotically related superintellecs are unable to work with the process, search and prognostic (creative) contour of psyche, thinking and activity. For them, all the solutions of this contour are in the zone of hidden parameters 30. For super-intelligence, they are in the so-called blind zone 42.

Accordingly, the most effective means of counteraction and, in a certain sense, the absolute weapon against algorithmic technologies in all their types is hi-hume and, specifically, psycho-practices in their broad sense.

Psychopractices are activities based on the non-disjunctive, process, exploratory, predictive and creative circuits of the psyche, thinking and activity. The main problem in the use of psychopractices is the unresolved issue of transforming them into technologies. For this purpose, languages and formal systems must be created. These are needed to describe psychopractices

and transform them from phenomena and personal experience into transferable, reproducible actions with increasing efficiency. The described psychopractices become psychotechnologies or other types of integral technologies as the unity of mental and physical reality. It is with this that not only the greatest constructive possibilities, but also the destructive potential of the decomposition of algorithmic societies in both of its oppositions - superintelligence and zombies - are associated.

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