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The Singularity of "Blind Spots" as a Self-Organization of Uncertainties and Risks in a Digitalized Society

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Abstract

Topicality. Digitalization of society is accompanied by deep changes in social, economic and political relations, generating uncertainties and risks. The growth of technology, particularly artificial intelligence, is transforming the nature of information, communication and management, creating "blind spots" that require insight and systemic analysis.

The purpose of the article. To identify and investigate the mechanisms of the formation of "blind spots" as a phenomenon that characterizes the self-organization of uncertainties and risks in a digitalized society. Special attention is paid to illusions of cognitive perception and their impact on social interactions.

Research methodology. The methodological basis includes the concept of singularity, the ideas of scenario planning by Pierre Wack, of the singularity by Ray Kurzweil and the theory of self-organization of social systems. Metaphors of "black swan", "gray rhinoceros" and other images are used to structure risks and uncertainties.

The main conclusions of the discussion. The article emphasizes the importance of critical thinking, a universal approach to education and the introduction of ethical norms for the use of artificial intelligence as key aspects in countering the formation of "blind spots" and overcoming risks in the modern digital environment.

Keywords

digitalization of society, blind spots, technological singularity, artificial intelligence and risks, critical thinking in the digital age

Introduction

The first quarter of the 21st century demonstrated major technological breakthroughs in digitalization. Active use of artificial intelligence, virtual and augmented reality. Which led to the military revolution, which we see in many military conflicts, especially in the Russian-Ukrainian war, the Palestinian-Israeli military conflict, the Syrian war, and others. This period demonstrated a large space of uncertainties, risks and threats of pandemic, famine, terrorism and nuclear war. For almost three years now, the biggest modern convention war of a new generation has been going on in Europe, a new era, a world system is being rebooted, so we have to study the trends and processes that determine the future. Figurative designation of complex phenomena and regularities in scenario forecasting reflects the desire for the integrity of perception of the situation, process and interaction of people between themselves and the environment. These metaphors are a convenient propaedeutic tool for entering the theory of risk and uncertainty, actualized during or as a result of extreme situations.

Forecasting the totality of change has led Ray Kurzweil to conclude that by 2045, humanity will face a technological singularity, the point at which technological progress will become unmanageable and irreversible, leading to unpredictable changes in human civilization. According to him, the basis of the singularity is the exponential growth of technological achievements, which is mainly driven by artificial intelligence capable of self-improvement. Robotization and complication of tasks that will be solved by AI will lead to systemic social changes in the economy, politics, education, health care, production, security threats, ethics, social inequality in access to effective communication with AI, etc.

"The term "singularity" is borrowed from mathematics (where it refers to an undefined point in a function, like when dividing by zero) and physics (where it refers to the infinitely dense point at the center of a black hole, where the normal laws of physics break down). But it is important to remember that I use the term as a metaphor. My prediction of the technological Singularity does not suggest that rates of change will actually become infinite, as exponential growth does not imply infinity, nor does a physical singularity. A black hole has gravity strong enough to trap even light itself, but there is no means in quantum mechanics to account for a truly infinite amount of mass. Rather, I use the singularity metaphor because it captures our inability to comprehend such a radical shift with our current level of intelligence. But as the transition happens, we will enhance our cognition quickly enough to adapt" (Kurzweil, 2024, pp. 1-2).

While recognizing the perspective of Ray Kurzweil's technological singularity, we propose to consider in this article the singularity of the formation of the integrity of "blind zones" as a self-organization of uncertainties and risks in a digitalized society.

Research methodology

In the methodological design of this scientific study, we are based on the following important points:

1. On the idea of singularity as qualitative (exponential) growth of technological achievements. At the same time, we maintain that in sociological and socio-philosophical research we must take into account qualitative changes in social relations through the mediation of technological means and artificial intelligence. Therefore, the focus of our research is not so much on the qualitative changes in technology as on the qualitative changes in social relations during rapid and uncontrolled technological changes.

2. In the methodological design for our work, the ideas of Pierre Wack's scenario planning about the "soft art of rethinking" (Wack, 1985a, 1985b) are significant, in our article we consider the "blind spots" of decision making, which are often considered as uncertainties

and risks, which are currently under investigation through "metaphors", holistic images of the development of situations to which people show their negativity to act or act on prejudice.

The soft art of rethinking has evolved into the concept of VUCA (volatility, uncertainty, complexity and ambiguity) (U.S. Army Heritage and Education Center, 2018), with the growth of the activity factor, a VUCAS world is formed (unexpectedness, such as surprise and suddenness, is added to volatility, uncertainty, complexity and ambiguity).

Methodologically important to our work is the approach of the Oxford School of Scenario Planning by Rafael Ramirez and Angela Wilkinson in their OSPA strategic approach, which incorporates TUNA (conditions of turbulence, uncertainty, novelty and ambiguity), which is an important contribution of scenario research to the blind spots. «The OSPA is distinctive in several ways. We consider scenario planning as intervention: a set of social and intellectual processes that are designed for someone, or a group of people, and their specific needs. We position the role of the strategist as primarily a learner: effective and shared learning is enabled by directing attention to unexpected and less familiar changes in their wider context and with this, becoming able to challenge taken-for-granted assumptions. We use social ecology theory to explain and guide the effectiveness of scenario planning under what we call TUNA conditions—conditions of turbulence, uncertainty, novelty, and ambiguity—that characterize a more connected, plural, and multipolar world» (Ramírez & Wilkinson, 2016, p. xiv).

Although scenario planning is often described as a strategic tool (Bradfield et al., 2005; Grant, 2003; Mintzberg, 2000; Porter, 1985; Spee & Jarzabkowski, 2009), its role in cognitive benefits lies in its dynamic capabilities (Teece et al., 1997; Ramírez et al., 2013;. Schwarz et al., 2019), and its integration with future awareness and education (Vecchiato, 2019; Meissner & Wulf, 2013), and as strategic activity (Bowman & MacKay, 2020).

I agree with Hillmann, Duchek, Meyr, and Guenther, (2018) that managers play an important role in creating organizational resilience. In highly volatile and uncertain times they must employ long-term visioning, think in alternatives, and deal with complexity in order to promote organizational resilience capabilities (Hillmann et al., 2018).

3. Among the significant ideas of the methodological design of our research is the consideration of the qualitative characteristics of the integrity and generalization of social relations, which is referred to as "digitalized society", how it changed the concepts of "information society" and the expectation of achieving the "knowledge society", which was not achieved. Instead of the conceptualization of the "knowledge society" there was a summation of the processes marked by the term "post-truth" - the distortion of knowledge and objective information by fakes, lies, information operations, spin doctoring and information special operations. What caused the need for a scientific understanding of the opposition to the post-truth, as well as the development of critical consciousness. The digitalized society forms new mechanisms and new emergencies in social relations. Digitization of big data, knowledge, information and noise raises new questions, digitization of services – new spheres of business and social relations in it. Artificial intelligence defines a new mediation in both the media world and social relations. We have to understand it.

4. New emergentities are new qualities and properties of integrity, a system in which the properties are not reducible to the properties of the elements that make it up. Therefore, in this article we ask questions not only about positive emergencies, but also about negative ones for people and social institutions of self-organization. We have labeled these negative trends as "blind spots", which include all kinds of uncertainties and risks. At the same time, we take into account that uncertainties reflect the fact that people cannot establish the probability of their occurrence. At risk, people can calculate the possibility of negative events.

Therefore, in the methodological design of the article, we will use the main ideas of the theory of self-organization.

Preliminary results of the study

The concept of a "black swan" entered the modern scientific and expert discourse "with a light hand" of Nasim Taleb, which he marked with the following signs: "First, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable. I stop and summarize the triplet: rarity, extreme impact, and retrospective (though not prospective) predictability. A small number of Black Swans explain almost everything in our world, from the success of ideas and religions, to the dynamics of historical events, to elements of our own personal lives." A little later, he adds such a feature as "the unexpectedness of the event" (Taleb, 2007, pp. xvii-xviii).

His scheme of metaphors was continued by Michele Wucker, who directed the "Institute of World Politics" in New York. She identified a special category of surprises, which she labeled the "Grey Rhinoceros" image. Her work is "The Gray Rhinoceros: How to Recognize and Act on the Obvious Dangers We Ignore" (Wucker, 2016).

In an interview for the Carnegie Council for Ethics and International Affairs, M. Wucker explained this image: "The gray rhinoceros is a big and scary creature that comes straight at you. You have a choice: to do something or not. It's gray because when I came up with this image of the impending threat, I learned that there are black rhinos and there are white rhinos, but none of them are actually black or white; they're all gray… That's the central point of the book: talking about the looming threats that are right in front of you, that we're much worse than we think we are at dealing with obvious threats, either because we're used to them or because that we think we can't do anything about them, or simply because we forget they're there and worry about other things, perhaps sudden or emotionally charged events. We really miss the most important thing that is ahead of us" (Wucker & Stewart, 2016). As Michele Wucker has pointed out, gray rhinos are the children of the "elephant in the room" (a clearly visible but disruptive event) and the improbable and unpredictable "black swans" (a huge, usually bad impact).

An attempt to generalize the metaphors of the risk industry and define them through the theory of probability, statistics and uncertainty was made by Sasho Andonov, a lecturer at the Military Technology College in Muscat (Oman) and at GAL ANS in Abu Dhabi (UAE), where he taught aviation disciplines (EASA Part 66 and ACEP), currently works at the Faculty of Aviation Sciences at the Higher College of Technology (Khalifa bin Zayed Aviation College) in Al Ain (UAE). In a 2022 book, Safety Accidents in Risky Industries: Black Swans, Gray Rhinos, and Other Adverse Events, he defined his focus as "beginning to study the impact of these 'animal hazards' in risky industries" (Andonov, 2022).

Among his "dangerous animals", in addition to the already mentioned "black swan" and "gray rhinoceros", there are also the following: "invisible gorilla", which reflects the effect of the illusion of attention; "grey swans", which are events that have a huge impact, they are not so unexpected, but they cannot be predicted; a "black elephant event," a metaphor coined by New York Times reporter Thomas Friedman to refer to a well-known catastrophic event; "ostrich in the sand", which is a bad event that is very likely to happen, but it has been marginalized for some subjective reasons; monkeys "do not see - do not hear - do not speak"; the Dragon Kings events as a statistical outlier, an event that is extreme in its impact but does not belong to the same population as other events that are part of the system; "red herring" as a diversionary maneuver - something used to distract people from the true nature of things (Andonov, 2022, pp. 125-132).

1. Different social environments, in themselves, are a factor of uncertainty, "blind zones", since the transition from one environment, which has its own regularities, its own chaos and

order, determines human disorientation, misunderstanding of what is happening and where the interaction of "man" is directed from another environment - environment".

Therefore, such a transition determines the need for adaptation, and in extreme conditions, a rapid restructuring of interactions and goal orientation. At the same time, there is a need to know about "fantastic beasts and where they live" or "where to look for them", to use the metaphor of the film based on the stories of JK Rowling. Such a traveler is considered from the standpoint of the "Kings - Dragons" social system. But the environment itself can be built according to the principle of an attraction, something that attracts and imitates, but being in this attraction either teaches something or distracts from something. Here, a person interacts with a simulated goal-oriented environment aimed at determining the dynamics and trajectory and amount of time of a person or people entering the attraction.

Uncertainty directly defines people who find themselves in either a simplified or an overcomplicated environment that requires rapid changes in perception of the unknown.

2. In the metaphors of "dangerous animals" there is a reflection of "blind zones in interaction with events, which have different signs both from the side of the event and from the side of people.

Thus, a classification of "swans" was introduced based on the characteristics of "rarity, extraordinary impact and retrospective (though not prospective) predictability" - "black swan, changing rarity to non-rarity leads to the definition of "gray swans", changing two characteristics to normality and predictability in addition to extraordinary influence means "white swan". Here, the characteristics of the event, as perceived by people, are determined to a greater extent, but the events themselves are dominant.

In the group of "black elephant" and "gray rhinoceros" effects, the subject's relationship to known events is defined, "blind zones" of uncertainty arise as a result of the inability of subjects to prevent and overcome undesirable and catastrophic events. The extreme form of loss of subjectivity is "ostrich in the sand", denial of objective facts and probabilities, social marginalization or self-censorship of undesirable events in a group of consciousness or ignorance. Self-censorship and censoring is reflected in the monkey metaphor of "see nothing - hear nothing - say nothing", these effects are especially destructive in decision-making systems closed from information.

3. The socio-psychological content of "blind spots" related to perception is interesting. This effect is referred to as the "invisible gorilla," which was introduced in Christopher Chabris and Daniel Simons' 2010 book The Invisible Gorilla (and Other Ways Our Intuition Tricks Us). Their psychological experiments were conducted in 1998 with Harvard University psychology students and recorded on video. This effect became "viral" because it clearly demonstrated how we do not see the movement of the "gorilla", which moves peripherally for our attention.

In the future, Chabris and Simons investigated that six illusions are characteristic of humans: illusions of attention (invisible gorilla); illusion of memory; illusion of confidence; illusion of knowledge; the illusion of reason; the illusion of potential (Chabris & Simons, 2010).

4. A special group of uncertainties should be the uncertainties of human interaction, what was defined as "reality" in contrast to reality - the interaction of subjects who can consciously mislead, manipulate other people and even wage informational and psychological wars, since the loss of objectivity and critical thinking, formation of "post-truth" leads to defeat, to loss in competitive or combat operations.

5. Among the modern uncertainties in the era of robotization, digitization and the development of computer programs and artificial intelligence, there is a group of "blind spots" in the relations between man and technology, man and software, and man and artificial intelligence. This group of "blind spots" is unevenly distributed across generations and individual social groups and so-called "information bubbles", but it is already sufficiently effectively used by micro-targeted advertising and influences on these bubbles from the "blind spots" of reality

and illusions (hyperreality as defined by J. Baudrillard).

Let's summarize our theses: modern metaphors of "fantastic animals of uncertainty" or "danger animals" are aimed at the propaedeutic assimilation of knowledge of the characteristics, dynamics and processes of the interaction of "person-environment-event" (Lepskyi, 2024, p. 8-11).

This interaction defines specific types of uncertainties, namely:

1. Man - environment with interaction options "man from another environment or development phase - environment"; human interaction with attractions (simulated goal-oriented environment); the interaction of "a person and a simplified or complicated environment", "a person and the dynamics of intersections of different environments". In these types of uncertainties, we consider human interactions with objective and objectified surrounding processes and, by this nature, the emergence of "blind spots".

2. A person is an event, as options for interaction with rare, influential and unpredictable events; or known and those ignored or marginalized events, as the definition of human subjectivity and agency in catastrophic and extreme events. In these relations, there are sources of "blind spots" depending on the capacity of the subjects and the openness of the connection and assembly of events, individual states of social relations and situations, which has a significant impact on further social relations, both positive and negative.

3. Features of the "blind spots" of people's perception are marked in the socio-psychological effects of uncertainty, as illusions of attention, memory, confidence, knowledge, reason and potential. The circle of these effects can be expanded in relation to the perception of "a person is another, a friend, and a stranger", "a person and his interaction with a group and an organization", a person's transition to an unfamiliar social system and institution.

4. "Blind zones" of the reality of subjects are reflected in the relations of solidarity and competition, war and peace between people and large-scale social communities, since often in such relations hostile or competing subjects use technologies of manipulation and disorientation, destruction of objectivity, scientific, moral-will component and critical thinking, known as fakes, information-psychological and information-psychological special operations and so on.

5. From the relations "man - technology", "man - software", "man - artificial intelligence" originates a special type of uncertainty associated with the expansion of intermediaries in the form of equipment, programs, artificial intelligence, which forms new "blind zones", their results and impacts, "information bubbles" and their impacts.

This problem actualizes the further study of metaphors and interaction of people with uncertainties, risks, dangers of various social, natural and man-made etiology.

Discussion

Modern digitalization leads to two important processes: firstly, it is a simplification that is associated with the archaization of human interaction through the mediation of electronic devices and other Internet tools, through the help of artificial intelligence; secondly, it is a complication associated with the emergence of many applications and computer programs, internet platforms, consoles and devices (VR and AR technologies) that require soft and smart skills in their use, understanding, application and maintenance , especially after failures and errors.

These processes can be considered in the dialectic of unity and the struggle of opposites. but the contradiction, like any contradiction, is the source of the development of the third, or can lead to catastrophic events. Simplification means loss of activity in some area, reduction of people's actions to extremely simple and often inadequate solutions to the problem,

simplification often means primitivization, destruction of already achieved and structured knowledge. Simplification during archaization, the negative tendency to reduce the knowledge of integrity to only contact and visible elements. This process means underdevelopment, the fact that a person does not understand this and does not see, or sees and does not identify and does not understand.

In this matter, we have to distinguish universals and simplifications - these are completely different things.

Universals play the role of invariants, laws and regularities that operate and are already established as knowledge. This is not a simplification, but they have such a characteristic as clarity (Rene Descartes insisted on this). Universal knowledge provides the flexibility of the mind and the use of intelligence as knowledge accumulated by memory through universal objectivity, repeatability, necessity, internal regularities of integrity and interaction with other integrity. Universality as generality is one of the sides of objects, but the other sides are particularity and singularity, which gives an understanding of specificity and concreteness. Simplification tends to isolation, universality to integral multifaceted images. That is why universities should return to their genetic name, marked by universal knowledge, which does not negate, but rather heals (makes whole) specific and concrete knowledge. The universality of knowledge was provided by the education system, which was formulated as the integrity and formed the integrity of the perception of the world and the activities of people in it.

Digitization has broken integrity through uncertainty, simplification and chaos. Specificity and singularity became the stand-in not only for universality, but also for specificity. In education, this process takes place through the substitution of impressions of knowledge, emotionality of professional (special) knowledge, skills and abilities. The network information environment with algorithms fighting for attention and impressions creates a chaos of information that claims to replace knowledge, and the information itself is under pressure to be corrected by fakes, lies, and post-truths, spin doctors, and information specialists. Knowledge in such a double devalidation is devalued for the masses and elitist for the people in charge. I define devalidation as the opposite of the validation (establishing adequacy and conformity) process. If we use the terminology of Vilfredo Pareto, devalidation becomes a system of formation, derivatives - derivatives, the center of which is the origin of images of impressions, and therefore devalidation increasingly distances people from adequacy and objectivity, and it is no longer just a hyperreality, it is already an emotional one with compression rationality reality.

Hyperreality had a limited rationality compensated and supplemented by mass culture. Devalidated quasi-reality is completed by artificial intelligence. Human intelligence is formed in the economy of impressions and search, with micro-targeted programs for the formation of an "information bubble" of the reference information sphere. It is the "information bubbles" in the digitalized society that are the micro-strange attractors from which the formation of order in the chaos of information tapes and services begins. Microtargeted algorithms show the user only what the person has already shown interest in. A devalidated mind is conditioned to seek impressions, not adequacy. It is the task of rationality and processing of large data sets that creates the need for intelligent prosthetics. But this can form an inverse negative downward relationship, as there is a desire to replace even simple cognitive functions with artificial intelligence. Prosthetic intelligence with artificial intelligence in this case will reduce the capabilities of people's cognitive skills. At the same time, cognitive functions have positive upward feedback in the complexity of programming, the use of various applications as action algorithms to achieve results in the virtual digital world.

But everything is not such a threat, as long as the virtual and digitalized sphere has a non-critical importance in the budget of everyday life, which still needs to be studied. At the same time, it is already possible to testify that children perfectly understand symbols and

icons earlier and better than the printed word. It is the reduction of the time required for mastering competent printed reading and writing that causes concern, since intelligent artificial prosthetics is the very generation of printed and visual text (pictures and even videos).

Digitization and artificial intelligence have a powerful positive effect, we must know, apply and use it, these processes of saving knowledge and large volumes of information, quick search and access to them, acceleration of service provision. Artificial intelligence allows you to quickly provide information on request and combine data from different corners of the Internet with a tendency towards integrity through iterations of appeals in a neural network approach and algorithms of self-similarity - fractality. But this positive can only be in the presence of knowledge, the amount that forms reasonable questions - which are based on knowledge. But requests in the absence of knowledge increase the noise. And this is not accidental, because the "absurd request" provides an absurd answer. As it was once said, "God forbid the wrong question gets the right answer", in this case the noise in the question will get the noise in the answer, the absurdity in the question will form the absurdity in the answer. The question is only in intelligent algorithms, more often there will be queries with knowledge or absurdity, which will be repeated more often and form the probability for the answer algorithms. Artificial intelligence is a positive trend as an assistant for human intelligence, but a bad assistant if it compensates for underdeveloped cognitive abilities. This is very similar to Father D'Artagnan's opinion that "money is a good helper for people, but a bad master."

Digitization has positive mechanisms for reducing people's time to search for information and receive government services, banking services, food orders, repairs, purchases, and much more. But for now, this is a mediation task, since ultimately services are performed and programmed by people.

But we have to take into account that artificial intelligence can replace the intelligence of people who shape the structure of social and public relations. For example, it can be writing draft laws, receiving information (in an information bubble), and this further squeezes limited rationality, changes decision-making, the algorithm replaces people. In humans, artificial intelligence replaces what was not supposed to be universal knowledge, with special (special) knowledge and specific knowledge, abilities and skills.

In the interim conclusions, we have already identified several trends in the digital, digitized sphere and artificial intelligence:

1. Trends of simplification and complication, the question of which process will be strengthened and what it is aimed at. For example, simplifying the provision of services will always be positive for people, but at the same time, it will complicate the maintenance of "simplified programs" and the cyber security of these processes. The tendency to simplify rationality and complicate the sphere of impressions, on the contrary, will destroy education and simplify intellectual and cognitive activity, this will lead to the complication of institutionalization and socialization of people. Education in the digitalized world increasingly acquires the characteristics of the economy of impressions and applications, instead of the unity of episteme (universal knowledge - the search for truth), techne (specialized practically oriented knowledge) and metis (specific knowledge as a practice of solving real problems).

2. The second trend is due to the fact that the digitization of information is often not holistic, but indiscriminate or selective with limited rationality, so there is digitization of knowledge and digitization of noise, which manifests itself as a search for truth or doxa, truth or lies, information or fake. Distinguishing these processes is a matter of critical mind, but also of a holistic metacognitive approach to the logic of humanity in the unity of the general (universal) - special (specific) - individual (concretic) in education.

The indiscriminate nature of digitization increasingly creates chaos and cacophony of information and fakes, noise overload in digitization, selective information with limited ra-

tionality forms maximalist, ideological, often extremely aggressive movements, which with their maximalist tendency resonate with the undeveloped rationality of the search for impressions and simple self-identity, with the exaggeration of the Ego and simplified performance

3. In the digitized world combined with the economy of impressions and the prosthetics of human intelligence by artificial intelligence, the most dangerous trend is the decline of literacy and education, because in the digital culture of fast search, emotions and impressions, there is a rapid switch as the destruction of concentration, focus of attention. namely printed texts and their mastering and understanding require such concentration and attention that is the basis of professional success and development. Therefore, in the education of the future there is an important question of the time budget for the digitized complex combination of documentary, oral and visual texts, and not the degradation of printed documentary text in favor of oral and visual.

4. The deconcentration of people is determined by the flow of things that are tiring and exhausting due to noise. At the same time, concentration and its preservation have their safeguards in human culture, namely due to real "offline" physically close communication, physical culture and performance orientation, which will require concentration training in education or in gaming (gaming complex practices that need skill development).

With the dominance of borrowing, query formulation and mediated prompt formations (resulting text queries for Artificial Intelligence), programming algorithms in programming languages, scripts and bots in social services and sales communications, the effectiveness will be up to their developers and specialists.

That is why uncertainty, noise, and chaos enhanced by digitized scaling form not only a "fog of disorientation" in the absence of knowledge, by analogy with the "fog of war" K. von Clausewitz. The fog of digitalization can lead to new religious digitized cults, but also to the appearance of "Morok (укр. Морок)", this Ukrainian word means an inner "fog" of perception, preoccupation and disorientation and deconcentration. Derivatives of "Morok" are "Zamorochenist (укр. замороченність)» - deconcentration, as a loss of clear thinking; and " Zapamorochennia (укр. Запомороченння)" - loss of consciousness, activity and reasonableness of behavior.

Therefore, we are on the threshold of not only the singularity of the formation of the integrity of artificial intelligence and automation, but also the threat of the formation of the integrity of noise, fog and gloom, which will form new forms of escapism from it, or its compensation.

Such threats define new challenges for the humanities and technical sciences in the metacognitive and holistic search for a new education, this process is very similar to the medieval search for the preservation of the core of science - liberal sciences and craft sciences. This process, the famous science fiction writer Neil Stevenson, marked by the formation after the "great terrible event" of categorization such as monastic (scientific-research), secular (professional-technological) and special (political, military, economic, etc.) education. In his work, it is scientific education that is anathema - closed from society with a simplified consumption of adepts and full concentration on science, as well as in the use of big data due to the constant help of artificial intelligence, its main role as an assistant (Stephenson, 2009).

Such an increase in the media worlds, which historically occurred as a gradual complication of the oral, written, printed, mass media, information to the digitized world and artificial intelligence. Currently, the general space and time for "live" communication and real relationships are shrinking. The transition to simulated and hyperreal professional skills, this development of events defines new "uncertainties and threats" that may have a complex and, God forbid, systemic nature. The search for alternative systems of education and science, which are able to respond to this self-organization of uncertainties and threats, which, when cognitive skills are reduced, form a systemic space of "blind spots", this becomes, in my opin-

ion, the most relevant direction for the future understanding of challenges and responses to the emergence of a digital society.

Conclusions and Recommendations

Current global events accelerate the complex dynamics of the formation of "blind spots", which contain uncertainties and risks in a digitalized society that is undergoing significant changes under the influence of technological progress and the rapid development of artificial intelligence. Therefore, our study of uncertainty, singularity and risks in the context of modern socio-technical interactions is updated, which directs our methodological approach to understanding these phenomena.

Exponential technological progress, in particular the development of artificial intelligence (AI), creates prerequisites for radical changes in social relations. These changes are often unmanageable and create new challenges, including ethical dilemmas, unequal access to AI resources, and privacy and security threats. I sympathize with Ray Kurzweil's understanding of the singularity, which sees it as a metaphor illustrating the inevitability and scale of change that transforms social structures. Pierre Wack's concept of scenario planning for uncertainty analysis is important for our work, which is aimed at researching possible risks and developing a strategy to overcome them. Attention is also focused on the self-organization of social systems in the conditions of digitalization, which generates both positive and negative emergent properties.

The metaphor of "blind spots" as a risk analysis tool uses such images as the "black swan" by Nassim Taleb, the "gray rhinoceros" by Michele Wucker and the "invisible gorilla" by Christopher Chabris and others, which helps to structure different types of risks. They illustrate not only unknown events, but also those that are ignored for subjective or social reasons.

The "blind spots" of human interaction with technology are especially important in a digitalized environment, where information bubbles and algorithmic biases create risks of distorting reality.

Among the main social consequences of digitalization, we must consider that the digital society changes the mechanisms of education, communication and socialization, economy and politics. Instead of achieving a "society of knowledge", we are faced with post-truth phenomena that destroy the integrity of objective knowledge. The impression economy caused by micro-targeted algorithms reinforces cognitive fragmentation, which affects critical thinking and the ability to make rational decisions.

Defining the risks associated with the use of AI is important for our work. AI can serve both as a tool for supporting intellectual processes and as a factor in their degradation. Over-reliance on intelligent prosthetics can lead to loss of cognitive skills and deepening inequality. Problems related to the decline of literacy, superficial consumption of information and displacement of printed text become challenges for the education system.

The next challenge for society is to find a balance between technology and the humanitarian dimension. In order to avoid the negative consequences of digitalization, it is necessary to develop educational programs that preserve the universality of knowledge and promote the development of critical thinking. It is also important to consider the impact of digital technologies on social interactions, maintaining a balance between technological innovation and ethical principles.

Among the main trends, we note the following dynamics of changes:

The singular growth of technology and its impact on society through the introduction of artificial intelligence (AI), virtual and augmented reality is creating radical shifts in economics, politics, education and social relations. This leads to the formation of new structures of risks and uncertainties. Information bubbles and algorithmic bias (as strange attractors of

ordering chaos) limit access to objective data, creating "blind spots" in the information space.

There is fragmentation of knowledge; digitizers are subject to both knowledge and information, and fakes; noticeable trends are the degradation of critical thinking. Post-truth, fake news and distortion of information lead to devaluation of knowledge. Education increasingly gravitates toward the short-term satisfaction of demand for simple solutions rather than the development of critical and cognitive skills. The transition from universal knowledge to highly specialized competencies reduces overall intellectual flexibility.

The micro-targeting trend and the impression economy are particularly important. Using AI algorithms to personalize content creates closed information ecosystems. This promotes the spread of emotionally charged materials and exacerbates conflicts in society.

A dangerous trend is digital addiction and the decline of cognitive abilities. Excessive dependence on technologies (AI, gadgets, programs) forms habits of passive information consumption. This reduces attention, memory and ability to analyze. The emergence of the phenomenon of "intelligent prosthetics" (when people rely on AI to perform basic cognitive functions) deepens the degradation of critical thinking.

Among the mechanisms of self-organization of "blind spots", we note those that were shown in the experiments of Christopher Chabris and Daniel Simons with the "invisible gorilla", namely, six illusions characteristic of humans: illusions of attention (invisible gorilla); illusion of memory; illusion of confidence; illusion of knowledge; the illusion of reason; the illusion of potential. As shown in these experiments, people's attention is selective and simplistic. This means that a large proportion of events or signals can be ignored, even if they are obvious. People unconsciously focus on familiar or expected aspects of reality, ignoring unexpected or challenging events. In the digital environment, this is exacerbated by algorithms that tailor content to the user's prior preferences. People often overestimate their knowledge or ability to predict events, which creates "blind spots" in risk analysis. In the digital age, this is reinforced by the availability of superficial information that creates the illusion of competence and the advantage of "information bubbles".

At the same time, simulated environments and an economy of impressions are being formed in the digitalized society. Digital society actively uses simulation (virtual reality, simulations, gamification), which imitates reality, but does not require critical thinking. This creates environments where people adapt to simplified models of reality that form a biased perception of the world.

A separate mechanism of self-organization of "blind zones" is the dynamics of cognitive exhaustion. Information overload and noise (useless information) deplete people's ability to concentrate and analyze. The rapid switching of attention characteristic of the digital environment reduces the ability to analyze deeply.

In addition, the mechanism of self-organization of "blind zones" is the indirect influence of information technologies. AI algorithms work as intermediaries that decide what information users will receive. This forms a distorted view of reality, strengthens "blind zones" due to the unavailability of alternative points of view.

We must also define the processes of self-organization of "blind spots" in society. First, it is the institutionalization of information biases. "Blind zones" are formed at the institutional level when key decisions are based on limited data or distorted interpretations. An example can be political campaigns built on targeting algorithms. Secondly, there is social segregation in information bubbles. People find themselves in isolated information environments, which reinforces social and political divisions. This prevents constructive dialogue and reinforces stereotypes. Thirdly, self-removal of people from critical thinking is carried out. People are increasingly delegating complex cognitive tasks to technology. This creates the illusion of making life easier, but actually reduces society's overall decision-making competence. Fourthly, there is a strengthening of the impression economy. Algorithms focused on emotionally vivid content increase social tension because they manipulate human emotions. As a result, impor-

tant topics are often lost among sensational and entertaining materials. Fifth, new cognitive barriers are formed. New "blind spots" arise as a result of the complexity of the technological environment (AI, Big Data), which not everyone can grasp. People with different levels of access to technology find themselves in unequal conditions, which exacerbates social divisions.

The self-organization of "blind spots" in the digitalized society is based on the mechanisms of illusions of perception, fragmentation of attention and delegation of cognitive functions to technologies. These processes require deep understanding to develop strategies that would support the development of critical thinking and reduce the negative impact of technological transformations.

These trends, mechanisms and dynamics shape challenges for education and human management.

Among the challenges for education, we note the following:

1. The task of developing critical thinking. Information overload and simplification of knowledge due to the economy of impressions reduce the ability to analyze, think logically and assess the reliability of data. Therefore, there must be development and implementation of programs that develop critical thinking skills, including analysis of fake news, methods of evaluating information sources, and understanding cognitive biases.

2. Ensuring the integrity of education. Education is becoming fragmented due to the emphasis on highly specialized competencies and technological tools. A return to a universal approach in education, which combines general (humanitarian) knowledge with technological and applied skills.

3. Study of the impact of digital culture on literacy. The decline of print literacy and the ability to read deeply is often determined by the dominance of visual and short-term content. Scientists and educators should seek and maintain a balance between printed and digital educational content, form habits and skills of analytical reading of texts of different complexity.

4. Solving the problem of the educational gap. Inequality of access to modern technologies and educational resources creates disparities between social groups. The challenge is to create programs of equal access to educational technologies for all segments of the population, particularly vulnerable groups.

5. A modern challenge is learning to use artificial intelligence. Lack of knowledge about the capabilities and limitations of AI leads to its incorrect integration into professional activity and training. Introduction of training courses on ethics, programming and use of AI for various professional fields.

In the group of challenges for human management, let's pay attention to the following points.

1. The challenge is maintaining the transparency of algorithms. The use of AI algorithms in decision-making can be opaque, creating risks of discrimination and bias. Implementation of regulatory mechanisms to ensure the transparency of algorithms, especially in the areas of governance, law and social protection.

2. Adequate response to dynamic risks is an important task. "Blind spots" can quickly form in response to new technological changes (eg, automation, cyber threats). The development of flexible risk management models should take into account the exponential dynamics of technological progress.

3. Formation of an information security policy is an important challenge. Misinformation and manipulation in the digital environment increase uncertainty in society. Developing national strategies to combat fake news, creating information verification tools and strengthening digital literacy should be the way to solve this problem.

4. Formation of the management of cognitive resources of society is becoming an important challenge of modern times. Decreased cognitive concentration due to excessive consumption of digital content and algorithmic manipulations is a significant problem. Therefore, there

should be educational programs to stimulate the development of cognitive skills aimed at training attention, memory and creative thinking.

5. The challenge of integrating human and machine intelligence. Excessive dependence on machine intelligence threatens to reduce human subjectivity in decision-making. Creation of hybrid systems, where human intelligence remains the main decision-maker, and AI plays a supporting role – this should be a guideline for the development of a digitalized society.

Among the recommendations to prevent the self-organization of "blind zones", we emphasize the following provisions.

First, digital literacy policies must be developed. Spreading programs that teach how to recognize manipulation, disinformation and distortion in the digital environment. Secondly, it should be ensured by investing in education and research in the field of digitalization, social risks and "blind spots". Thirdly, it is necessary to create ethical norms for the use of AI. Development of ethical codes to ensure fairness, transparency and accountability in the use of technology. Fourth, it is necessary to make efforts to support interdisciplinary approaches, the combination of technological and humanitarian knowledge in solving the problems of uncertainties and risks. Fifth, the focus on cooperation and solidarity should be meaningful. Strengthening international cooperation to coordinate actions in solving global challenges related to digitalization.

These challenges require a concerted effort between educational institutions, governments, business and society to build an inclusive, sustainable and ethical digital future.

New social challenges generated by digitalization require a holistic and metacognitive approach to their solution in further research.

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