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Perspectives of Generative AI in the Context of Digital Transformation of Society, Audio-Visual Media and Mass Communication: Instrumentalism, Ethics and Freedom

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***Abstract* – 2022 is called the year of "generative AI," and the increased interest in ChatGPT in 2023 proves not just a sign of the popularity of neural networks among the mass audience but rather a trend. The number and quality of neural network models are growing, accelerating the digital transformation of society and its subsystems towards a new paradigm – Society 5.0. In this study, the authors analyze the functional potential of generative AI in the fields of social development, mass communication, and audiovisual media and identify several serious ethical challenges and dilemmas directly related to the operationalization of this digital technology. Along with the techno-optimistic concepts of "digital happiness" and "super smart society" and the excitement of fast and efficient operation of technologies using FM and LLM, even the most progressive adherents of Society 5.0 do not deny the existence of a number of risks to society and humans generated by AI, among other things. It goes about the threat of rapid and convincing multiplication of fake news and narratives, excessive dependence, the risk of copyright infringement and related ethical dilemmas, challenges to freedom of creativity, the instrumentalization of intellectual and artistic (including audiovisual) practices, digital manipulation of consciousness, and social exclusion associated with the deformation of the existential foundations of human life and communication.**

Keywords: **Artificial Intelligence, Generative AI, Society 5.0, Audiovisual Production, Industry 4.0, Digital Transformation, Communication**

I. INTRODUCTION

At the beginning of 2024, it is evident that both developed and actively developing countries are leading the way in socio-technological evolution. There is a significant active transformation from the paradigm of "Society 4.0" (informational or post-modern society) to the next paradigm, known as "Society 5.0." The Japanese government developed the project in 2016, and its essence is the total digitalization and synergy of society's resources through the integration of physical and cybernetic spaces. In other words, it is a "super smart society" in which people and robots (or artificial intelligence) coexist and work to improve the quality of life by providing finely differentiated and customized services that meet the needs of modern users (Ellitan, 2020; López Aranguren, 2023). The advantages of "Society 5.0" are related to the economic basis, which allows to overcome crises of overproduction, as well as to systematically balance economic growth with solving social problems through deep and high-tech integration of cyber structures into the human world, which in the near future helps to achieve "digital happiness" (Badri et al., 2023). Moreover, in the popular science bestseller "Homo Deus: A Brief History of Tomorrow," Harari, (2017) notes that this happiness can be achieved thanks to the latest technologies and, in particular, artificial intelligence (AI) (Jelena &Srđan, 2023).

Indeed, Industry 4.0 technologies (blockchain, big data, the Internet of Things, neural networks, and quantum computing in production) have already successfully replaced people in many areas and are actively contributing to the growth of global GDP, which in 2022 amounted to about $101.6 trillion. However, the war in Ukraine may have cost the global economy about $1 trillion last year, and this is also why the Organization for Economic Cooperation and Development noted that global GDP growth in 2023 will be 3.0% (after 3.3% in 2022), and in 2024 it will slow to 2.7% (OECD, 2023). Nevertheless, the technological process has no intention of slowing down, and one of the leading technologies of Industry 4.0, generative AI, is increasingly being used by modern researchers in the humanities, among other things.

Generative AI is defined as a technology that uses deep learning models to create original information materials (text, images, videos, etc.) in response to a human request (Lim et al., 2023) and is considered a new, much more advanced intelligent digital tool for working with information that is likely to influence the development of society in the next 5-10 years (Lecler et al., 2023). In November 2022, OpenAI presented a free ChatGPT chatbot based on a more advanced version of the algorithm (GPT-3.5), the third generation of Natural Language Processing (NLP) algorithms. ChatGPT-3 and its capabilities have aroused great interest among a wide range of users, including those in mass communication, education, journalism, and audiovisual production. At the same time, scientists have begun to draw attention to many problems associated with the active use of this technology. For illustration, some of the existing algorithms are capable of self-learning and increasing their accuracy with the amount of information provided, but in most cases, these are static codes that perform the same function every time. Therefore, we should not expect AI to be "conscious" and detect fake narratives in the content it creates. Therefore, the introduction of AI in the field of mass communication poses a threat of rapid (and, most importantly, convincing) multiplication of fake news and narratives. We can also add excessive dependence, the risk of copyright infringement and related ethical dilemmas, serious challenges to freedom of creativity, and the instrumentalization of intellectual and artistic (including audiovisual) practices (Goswami & Pandya, 2021).

In March 2023, tech giants Google, Microsoft, and OpenAI announced the development of an updated and more advanced version of GPT-4 (Akila & Revathi, 2023). This development brought several issues to the forefront. Consequently, the authors of the article decided to explore the functional potential of generative AI in the areas of social development, mass communication, and audiovisual media (Kolomeets et al., 2019). They also examined several significant ethical challenges and dilemmas associated with the implementation of this technology (Llopiz-Guerra et al., 2024)

II. METHODOLOGY

When examining the theoretical and practical aspects of generative AI implementation across various sectors, it is essential to delineate conceptual frameworks that characterize AI as a strategic technology. This perspective recognizes AI as a significant catalyst for the forthcoming wave of technological advancement, grounded in rigorous analysis.

The National Science and Technology Council Committee on Technology, (2016) defines AI as a computerized system capable of rationally solving complex problems or acting accordingly to achieve its goals in any real-world circumstance. These systems think and act rationally like humans, as evidenced, for example, by cognitive architectures and neural networks, their ability to pass the Turing test using natural language processing, automated thinking, and learning. (Russell & Norvig, 2016). The European Commission's Communication on AI (2018) emphasizes that these systems, which can be purely software or embedded in hardware devices, demonstrate intelligent behavior by analyzing the environment and acting with a certain degree of autonomy to achieve specific goals. Such interpretations of AI align with media determinism by H. M. McLuhan and others as a kind of technological determinism, the flip side of which calls for countering "digital totalitarianism" in the XXI century.

Any definition of AI must consider the software and hardware nature of technical solutions and the purpose of their application automation and copying of human intellectual behavior. This emphasis on the purpose of AI applications is crucial in the context of the ongoing efforts by different countries to implement regulatory frameworks. For instance, the European Union proposed the Artificial Intelligence Act (AIA) in 2021, which is currently in the final stages of approval. In the United States, the Algorithmic Accountability Act (AAA) was proposed in 2022 but was rejected in January 2023. Meanwhile, in China, several regulations have been introduced, including the Provisions on the Administration of Algorithm Recommendation for Internet Information Services (2022), the Provisions on the Administration of Deep Synthesis of Internet-based Information Services (2023), and the Measures on the Administration of Generative Artificial Intelligence Services.

The legislative steps taken by countries in response to the challenges and benefits of AI are the result of ongoing discussions between techno-optimists and techno-pessimists. These discussions are crucial in understanding the context of the ethical and scientific discourse in which the authors of this article develop their thoughts. Techno-optimists like S. Pinker ("Enlightenment Now: The Case for Reason, Science, Humanism, and Progress") or M. Andreessen with his "The Techno-Optimist Manifesto" advocate technological progress and emphasize that slowing down the pace of AI development is tantamount to killing our future. On the other hand, techno-pessimists, such as Séguéla, write about the new digital reality in which humans find themselves and how they

should build relationships with the world of new technologies that have given rise to AI, big data, and social media, and the digital monsters such as GAFA (Google, Apple, Facebook, Amazon) that run them (Séguéla, 2018).

III. Results and Discussion

AI and the "Aporias" of Digital Society Transformation

Proponents of Society 5.0 are highly optimistic and emphasize that digital technologies will provide people with new jobs, especially those with creative thinking, whose work cannot be replaced by machines. They hope that a new generation of people the I-Generation – will be interested in such work, which, among other things, will involve close interaction with the latest digital technologies. These adherents of Society 5.0 also associate further digital transformation with the further democratization of the political sphere of society, ensuring openness and transparency of the authorities (in particular, through the institution of electronic voting or "open government") and expanding communication between people through social networks, which have effectively replaced the public offline platforms of the pre-digital era. This will strengthen and develop horizontal ties between network users, intensify their self-organization, and lay the groundwork for civic initiatives, expanding public solidarity and further developing civil society.

It is difficult to overestimate the role of AI in this, as recently (especially during the lockdown at the height of the COVID-19 epidemic) this technology has been increasingly used to influence social, supervisory, and even administrative relations (Sharifi et al., 2021). Since the beginning of the 2010s, when the concept of four main driving forces in the information technology market (social networks, mobile solutions, cloud computing, and big data) was formulated, the race in AI has accelerated, and the sphere of its influence has expanded significantly. Searching, pattern recognition, imagination, inference, common sense knowledge, and reasoning, learning through experience, planning, epistemology, heuristics, genetic programming, dialogues and correspondence on various topics, imitation of art, compilation of various texts, selection of necessary materials, forecasting all these options and more constitute the functional potential of AI, which makes it a powerful factor of social development at the present stage.

As a social agent, AI can be understood in two ways: narrow and broad. The narrow interpretation refers to Artificial Narrow Intelligence (Narrow AI), which describes the software and hardware's capacity to replace humans in specific tasks. In contrast, the broader perspective is aligned with the concept of Artificial General Intelligence (AGI) or Strong AI, which delves into the philosophy of AI's overall potential. It refers to a system and a machine that can understand the environment and the world as a whole like a human being and has a similar learning potential. One of the definitions of Strong AI (and there are many) is a hypothetical intelligent agent that can master or learn to perform various intellectual tasks that humans or animals can understand/perform (Goertzel, 2014). This lays the groundwork for a new digital social and communication ontology. However, it is worth emphasizing that so far, general AI exists at the level of a hypothesis, even though there is an active debate in computer theory and industry about how to create it and whether it is possible (Gates, 2013). Despite the occasional alarmist statements, the authors share the position that it is too early to talk about the existence and full functioning of AGI, as it requires the agent to synergize abstract reasoning, foresight, practical wisdom, causal communication, transfer learning, and decision-making (one of the most challenging areas of its development).

Nevertheless, people/developers are doing everything to achieve this. Generative AI based on machine learning models, or foundation models (FM), such as GPT models, commonly referred to as large linguistic models (LLMs), is "trained" on billions of dollars worth of supercomputers by a large team of highly skilled programmers and other specialists, including psychologists and sociologists. They are taught to apply their knowledge in different contexts and use incredible amounts of information in various fields, which often leads to the perception of the concepts of generative AI, neural networks, and LLM as synonyms. With the emergence of ChatGPT and modern large language models based on it, many experts suddenly realized that we are on the verge of universal AI. This has led to different reactions: while Tesla intends to spend more than $1 billion on the Dojo supercomputer to train AI on self-driving cars, Terry Sejnowski, in his YouTube video "ChatGPT and the Talking Dog," offers a somewhat cautionary philosophy, considering the very question of intelligence as a separate entity to be incorrect. He perceives ChatGPT as a rival to the human mind, like a stochastic parrot that imitates human intelligence by picking up and combining fragments of meaningful human texts. It is more like an alien intelligence with non-human mechanisms of thinking and understanding that allow solving rational problems without having a general picture of the world, solely due to possessing gigantic amounts of information and computing power (Vcuresearch, 2023).

This reveals the central "aporia" of the digital transformation of society, including with the help of generative AI, which, on the one hand, is being actively implemented in society and tries to restructure it completely, change the conventions and axioms of individuals and entire communities, ostensibly for a good cause (according to Coupeau, (2023), the most illustrative example is the Rememory program of the South Korean company DeepBrain AI, which specializes in generating IT clones or digital copies of people during their lifetime), on the other hand, it poses considerable challenges and threats. That is why at the end of July 2023, shortly after the emergence of ChatGPT and other similar generative AIs,

the UN Security Council held a meeting on "Artificial Intelligence: Opportunities and Risks for International Peace and Security," during which the UN Secretary-General supported the calls of a number of member states to establish a new AI body within the global organization to address future threats, establish and implement internationally developed monitoring and control mechanisms. This is quite understandable since the "super smart society," of which generative AI is an integral technical component, poses several socio-anthropological challenges:

- Deepening "alienation" and socially unequal access to the benefits of digital civilization despite expectations and hopes.
- A significant increase in unemployment associated with the robotization of unskilled labor.
- The extinction of routine professions.
- The displacement of people from the sphere of production and management to the sphere of sales and services dominance of netocracy.
- Blurring of traditional features of personal identity and digital manipulation of consciousness.
- Instrumentalization and deformation of existential constants of human life and communication.

Impact of Generative AI on Audio-visual Media

Today, audio-visual media are a channel for receiving information and an essential tool for digital socialization. They play a significant role in shaping the behavioral strategy of social communities, providing a public platform for expressing views and interacting with different social groups. Big Data analysis allows for studying social processes in real-time, and the creative sector of the economy, which is currently associated with audio-visual media and TV journalism, is gradually introducing AI into the production of audio-visual content.

A 2017 Associated Press report highlighted the advantages of AI testing in the media, including a better and more comprehensive selection of the necessary information in large data streams, text, images, and video, that this technology will help to understand the needs of the audience better, monitor what is trending among consumers in real-time, and contribute to the creation of new types of journalistic stories and transmedia narratives. In 2019, Newman, a researcher at The Reuters Institute for the Study of Journalism, interviewed 200 digital leaders (editors-in-chief, CEOs, and heads of digital technologies) from 29 countries and identified three main areas of AI use in TV journalism: (1) personalization of content and creation of recommendations for the audience (based on the user's (reader's) views, likes and comments, in this case, "contextual journalism" functions); (2) automation of stories and videos, or robojournalism (AI generates texts using natural language processing algorithms, and nowadays more and more such materials are published in the media); (3) tools for combating information overload (workflow organization, news tracking, audience interaction, fact-checking, data visualization, image recognition, video production, and others) (Newman, 2019). Table I presents models of AI technologies and their applications in audio-visual media and journalism.

TABLE I OVERVIEW OF AUTOMATED CONTENT GENERATION TOOLS

Tool name	Description
Wordsmith/Automated Insights	This tool generates reports based on financial data
Reuters Connect	This platform displays all Reuters content in real-time, including archives and content from media partners worldwide
Reuters News Tracer/Thomson Reuters	This service tracks major daily events on social media and verifies the authenticity of tweets
Heliograf/The Washington Post	Used for covering sports events and election campaigns
Wibbitz	Employed by organizations like Reuters, USA Today, Bloomberg, Forbes, and NBC, it automatically generates short video clips from existing footage
Factmata	This technology monitors current trends, forecasts relevant topics for the near future, and detects malicious content

It is impossible to ignore the successes in the field of AI when working with images, audio files, and video streams. We are talking about the ability to generate images indistinguishable from real life, generate music, and detect moving objects in a video stream in real time. Manual processing of a large amount of complex data causes errors due to the subjectivity factor. One of the advantages of neural networks is the ability to process disorganized data by separating and classifying it. They also have an adaptive structure, quickly transform and adapt to new conditions, and are highly dependent on data. If the data is unsuitable for the neural network, the analysis results may be erroneous and distort the actual results of calculations. A separate breakthrough in synthetic data generation research is the generative network GAN, which is successfully used for image generation, image coloring and stylization, object detection, and manipulation of objects in an image.

A new technique for increasing the speed of GAN training, ProGAN, is also used, and the SAGAN network looks for dependencies between pixels that are far from each other. Another neural network, DALL-E, generates unique detailed images in any style using a description in English. At the same time, the result of total instrumentalization is manipulation, such as face replacement using the StyleGAN neural network, its transformation when the MorGAN model is used in addition to the above, or even the generation of DeepFake videos (Andreini et al., 2020; Pavlik, 2023; Rathgeb et al., 2022).

There are several moral challenges. First, the generation of DeepFake videos on TV and other media platforms using AI is a powerful tool for those who want to misinform the masses and directly influence socio-political processes, quickly disorient and plunge the world into chaos. Moreover, neural network machine learning technologies are rapidly

improving, and it is not a matter of years. However, in months, we are approaching a situation where AI will be able to generate such believable dipshits that they cannot be distinguished from reality. Ordinary users can create them without special technical training or unique equipment (Carroll, 2019). Second, many media professionals fear losing their jobs, which is entirely justified. At his time, K. Hammond noted that by 2030, 90% of news will be written by machines, which means that journalists can expand their interests because they will no longer be generating stories from data (Johnson, 2023).

How AI is Changing Mass Communication Today

AI is machine intelligence, an algorithm that can make equivalent human decisions in a limited domain, albeit faster and better than humans. It is capable of cognitive activity and self-learning to process new information beyond the initial program (King, 2016). Its introduction into the communication system – social networks – increases the ability of this system to provide appropriate conditions for self-realization of society members.

However, there are also risks associated with the cultivation of instrumental knowledge and technocratic thinking in modern society with the assistance of generative AI to the detriment of critical knowledge, given the totalitarian consequences. In this regard, we can appeal to the already mentioned dipshits, which are one of the main products of neural networks as tools for generating lies in mass communications, and to the formation of so-called online personalities in social networks, whose priority is the number of "likes" on the "product" through which they assert themselves. The ethics of such users are appalling: the freedom of speech and expression granted often degenerates into permissiveness of "hype" and the use of hate speech, and the right of users to decide for themselves which sources are reliable leads to the emergence of fake troll accounts to spread false news that can destroy the reputation of the intended victim in one click.

Indeed, AI and communication have been studied for a long time and continue to be studied along different trajectories: research on AI has mainly focused on attempts to reproduce features of human intelligence, including the ability to communicate, while approaches to conceptualizing communication have primarily concerned technologically mediated human interactions (Frankish & Ramsey, 2014). Nowadays, these trajectories are converging with the help of AI technologies as communicators. People regularly communicate with Amazon's Alexa, Apple's Siri, or other digital assistants. This kind of interaction between humans and smart devices is expected to grow with the development of the Internet of Things. This technology connects devices to a computer network and allows them to collect, analyze, process, and transmit data to other objects through software, applications, or hardware devices (Rainie & Anderson, 2017). Is it safe for humans? Isn't AI, in this case, a tool of bioengineering synthesis? As a result, a person is transformed into an artificial anthropoid (cyborg), losing the freedom of choice and self-determination.

As for generative AI, it has also become an integral attribute of mass communication, especially in education and media. Platforms like ChatGPT and others help process and distill information quickly and efficiently, bringing it closer to anthropomorphic requirements. They are operational and guided by the logic of instrumental efficiency, but they lack self-awareness. In this case, do they not contribute to the deprivation of the vital foundations of human existence and the intensification of the evolutionary drift in the transhumanist direction? What should we do with generative AI in creating digital infrastructure and synthetic constructions aimed at manipulating social media and mass communications, as contemporary researchers are currently writing about? Marcellino et al., (2023) support that these and other questions must be thoroughly analyzed and answered in the future.

IV. Conclusion

Generative AI is one of the digital technological trends of the first quarter of the 21st century. It has many definitions: "machine intelligence," "hypothetical intelligent agent," "an advanced type of machine learning," "rival of the human mind," and "alien intelligence with non-human mechanisms of thinking and understanding." In this sense, 2022 will be primarily remembered as the "year of generative AI," when Stable Diffusion and GPT-3 OpenAI radically changed the nature of social media manipulation and thus influenced mass communication at the present stage. The digital world we live in and are rapidly approaching Society 5.0 is created with the participation of AI and other Industry 4.0 technologies, where the generative potential of algorithms shows impressive results and has great prospects; it is confidently approaching the synergy of abstract reasoning, prediction, practical wisdom, causal connection, transfer learning, and decision-making.

The example of audiovisual media shows how AI is able to generate stories and narratives based on a large amount of data, forcing media professionals to look for other ways of professional fulfillment. It has turned into our virtual home interlocutor, blurring the line between digital space and reality, and this hides the downside of implementing this technology or the "aporia" of digitalizing society with its help. Techno-optimists applaud the next successes and results of generative AI, techno-pessimists warn against the consequences of total virtualization and instrumentalization of human life, while various states are trying to develop legislative mechanisms to regulate the implementation of AI, demonstrating a rejection of mindless technism and unlimited consumption in favor of a conscious and responsible desire to preserve Homo sapiens. It can be stated that the apparent advantages and prospects of generative AI in economic activity, business, public administration, and services conceal

the struggle between, on the one hand, AI as a "human-like system" that is rapidly digitalizing the real world and displacing people from their jobs, and, on the other hand, the people themselves who are still controlling these regulated algorithms, thus demonstrating their power to curb "technical totalitarianism" and freedom, their independence from digitalization. Time will tell how this confrontation will end, although the Society 5.0 project was conceived as a way to establish an anthropocentric civilization.

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