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Creating the Metaverse: Consequences for Economy, Society, and Law

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augmented reality,
cyberspace,
digital avatar
digital platform,
human rights,
law,
meta-universe,
neural rights,
virtual reality

Abstract

Objective: to define the degree of influence of such developing technological field as metaverse on various spheres of society and to identify the need for reaction on the part of law.

Methods: the key method used for the research is the systemic-structural method, which allows establishing connections between various elements of the society as a complex system, analyzing the regularities generated by the spreading influence of metaverse prototypes in one sphere on other ones. Additional methods used are formal-logical, comparative-legal methods, as well as the methods of legal modeling and forecasting.

Results: the practical implementation of the metaverse concept will open new opportunities for people, but will be accompanied by drastic changes in the economic subsystem of the society, in particular, the multifold growth of the share of virtual economy and structural changes in employment. The changes will also occur in the social subsystem: the social links and the education models will transform, new personal demands will occur. Changes in the economic and social spheres will entail the need to adapt law to them, in order to preserve the effective legal regulation of social relations. Also, it should be noted that the metaverse will increase the capabilities of not only people but also the artificial intelligence, for which virtual environment is actually the "natural" one. Legal norms must provide protection of a human under the increased virtual component in people's lives, accompanied by intellectualization of the environment.

Scientific novelty: the author has systematically analyzed the changes taking place in various spheres of the modern society in connection with the development of the technological field of metaverses; highlighted

the key issues arising due to the said development and requiring legal solution both at the constitutional level and at the level of sector legislation; and proposed the necessary changes in legal regulation.

Practical significance: the research materials can be used when preparing proposals on changes and amendments in the current legislation, as well as in pedagogical activity, in particular, for implementation of educational courses or modules related to law under digital transformation of the society.

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Contents

Introduction

The term “metaverse” became commonly known in 2021: earlier in was used mainly by computer game developers and philosophers interested in cosmology, but after the IT giants like Meta*, Google, Microsoft, Amazon, Nvidia announced the creation of digital universes prototypes, metaverses became a technological trend, and more and more economists, sociologists and lawyers from various countries get involved into discussing it.

A metaverse (a parallel digital universe) is a virtual future world which will exist alongside the physical world and be “inhabited” by digital avatars of real people. So far, the existing virtual worlds are fragmentary, autonomous and not connected with each other, interacting only out of necessity[1]. With appearance of the metaverse, everyday life will

[1] The examples of virtual world – the interactive virtual 3D environment – are currently, first of all, multiuser online games, which can be played simultaneously by hundreds of thousands people creating personal avatars capable of participating in the activities of the given virtual world and communicating with each other (World of Warcraft, Star Wars: The Old Republic etc.).

transfer to the virtual environment. The anticipated terms of appearance of such metaverse is from five years[2] to several decades[3].

The metaverse is to become the next generation of the worldwide web (Web 3.0), the permanently functioning virtual space, in which people would be able to work, communicate, and relax. Is it feasible? The metaverse concept is closely connected with digital technologies: virtual and augmented reality (VR/AR-technologies), artificial intelligence, wireless communications, distributed ledger technology (blockchain), etc.; their development makes the creation of a "full-fledged" metaverse highly probable within the next two decades.

It will be the result of the Internet evolution. According to the Garthner[4] chief analyst T. Nguyen, "[t]he transition to the mature metaverse will be similar to previous technology shifts, such as the Industrial Revolution or the mobile era, in that its evolution will introduce a new set of technology leaders while potentially displacing some from the previous era"[5]. The world is now at the first (emerging) stage of forming the metaverse, which will last at least up to 2024, after which the second phase will begin – the "advanced" metaverse with advanced solutions characterized by technological convergence, appearance of new technologies for convenient navigation around the physical and digital spaces, development of technologies for sensing and mapping people, places, things and processes (expected in 2024–2027). The transition to the third stage – "mature" metaverse may begin after 2028. As a result, there will be formed a network of interconnected virtual worlds, where people will interact with each other and the digital content, forming an ecosystem connecting the digital and the physical worlds by combining the virtual and augmented realities, transferring from the 2D Internet (with the two-dimension computer graphics) to the common 3D space, in which the Internet is characterized by interoperability[6] and synchronism.

The creation of the metaverse will be accompanied by numerous changes in all spheres of social life: the economic system, he social links, and the law will transform. Let us consider the main changes.

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2 Newton, C. (2021, July 22). Mark in The Metaverse. *Facebook's CEO on why the social network is becoming 'a metaverse company'*. https://www.theverge.com/22588022/mark-zuckerberg-facebook-ceo-metaverse-interview

3 Ball, M. (2021, June 29). *Framework for the Metaverse. 'The Metaverse Primer'*. https://www.matthewball.vc/all/forwardtothemetaverseprimer

4 One of the world largest research and consulting companies specializing in the information technologies market.

5 Nguyen, T. (2022, May 11). *Here's how the metaverse will evolve*. https://www.techrepublic.com/article/heres-how-the-metaverse-will-evolve/

6 Interoperability is the functional compatibility, the ability to interact with other systems without access restrictions.

1. Changes in the economy

As early as in 2011, a Stanford researcher W. Brian stated that routine processes in economy were already closely intertwined with the digital world: "Now … digital economy isn't producing anything tangible. … But … [i]t's helping architects design buildings, it's tracking sales, … executing trades and banking operations, controlling manufacturing equipment, … billing clients"[7]. The share of the "invisible" digital economy grows every year. At the modern stage of digital transformation of the economy – Industry 4.0 – robotization of production continues, content personalization based on big data analysis takes place, digital twins technologies are improved (virtual models), which allows using them in various spheres of production (Lv et al., 2022).

The creation of the metaverse corresponds to the second phase of digital transformation of the economy – Industry 5.0. The spread of the Internet of Things entails the growth of "smart" ecosystems, characterized by high degree of automation, AI assistants are improved – software agents with elements of artificial intelligence capable of performing intellectual tasks for a user. Appearance of the metaverse will broaden the field of people's activity, will enable to eliminate the special, temporal and resource restrictions imposed by nature, and will lead to the appearance of new products, services, business models, new professions and forms of employment. "The metaverse as a global economic trend may facilitate turning the chaos of future digitalization into an interaction system, become a platform for economic subjects and a successful strategic project" (Alabina et al., 2022).

According to the head of Nvidia J. Huang, the virtual world economy may surpass the real world economy within a decade, thus the metaverse economy will surpass the global GDP[8]. The experts of the international consulting company Analysis Group disagree, believing the if metaverse would develop similarly to mobile technologies then its contribution to the global GDP will reach just 2.8 % in ten years. At the same time, they mark that the metaverse advantage is creation of new markets, therefore "the form and shape of the metaverse will materialize slowly at first, and only after a critical mass of adoption is achieved, will its full potential begin to take more concrete shape"[9]. Analysts of one of the largest banks – Citibank

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7 Brian Arthur, W. (2011, October 1). *The Second Economy*. https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-second-economy

8 Kindig, B. (2022, February 18). *Nvidia on How the Metaverse Can Overtake the Current Economy*. https://www.forbes.com/sites/bethkindig/2022/02/18/nvidia-on-how-the-metaverse-can-overtake-the-current-economy/?sh=5c3301a23614

9 Christensen, L., Robinson, A. (2022, May 16). *The potential global economic impact of the metaverse*. https://www.analysisgroup.com/globalassets/insights/publishing/2022-the-potential-global-economic-impact-of-the-metaverse.pdf

(Citi Global Insights) – predict high growth rates and estimate the overall available market for the metaverse economy as about 13 trillion dollars by 2030[10].

With the growth of the share of virtual economy, the metaverse will expand; production and trading corporations are already "occupying their places" in the metaverse prototypes created. The first sectors to "switch on" were entertainment, fashion and cryptocurrencies. For example, Gucci, Ralph Lauren, Louis Vuitton, Paco Rabanne, Valentino and Burberry fashion houses launched digital clothes collections. More and more often, advertising is being experimented with: well-known brands use videogames and augmented reality technologies, attracting consumers to digital platforms, introducing more and more people to virtual environment. Patent applications by Meta* show that advertising and sponsored content will become an important part of the metaverse development strategy[11]. It increases interest in non-fungible tokens (NFT) – blockchain-based digital certificates, which confirm the right for a virtual asset possession. Fashion houses, auctions and sport clubs are already selling NFT[12], which contributes to the creation of the metaverse, facilitating the development of digital trade platforms.

The market is changing: multiple offline players actively develop their digital ecosystems and strive to create superapps – applications with extended sets of functions. The leaders of this sphere pursue the goal of creating a virtual environment where a user to solve their tasks would want or be forced to stay permanently.

Large employers, especially such high-tech companies as Lenovo[13], are interested in "switching on" to the metaverse. The number of companies interested will grow, as by now almost all economy sectors have oriented themselves towards mobile business processes, that is why the trend has embraced not only high-tech but also traditional companies; for example, McDonald's and Nike have already declared their desire to adapt to the metaverse conditions[14].

In the near future many people will probably have to spend most of their time in virtual reality, shopping in virtual malls, communicating in virtual forums and doing online tasks at work. People will perform these actions with digital avatars – their virtual embodiments, reflecting the image and individual features of the person. So far the gadgets for getting into

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10 Metaverse and Money. Decrypting the Future (2022, March). *Citi GPS*. https://ir.citi.com/gps/x5%2BFQJT3BoHXVu9MsqVRoMdiws3RhL4yhF6Fr8us8oHaOe1W9smOy1%2B8aaAgT3SPuQVtwC5B2%2Fc%3D

11 Murphy, H. (2022, January 18). *Facebook patents reveal how it intends to cash in on metaverse*. https://www.ft.com/content/76d40aac-034e-4e0b-95eb-c5d34146f647

12 Frank, A. (2022, June 21). *Bella Hadid Arrives in the Metaverse with a New Line of NFTs*. https://www.vogue.com/article/bella-hadid-nft-metaverse-interview

13 Lenovo Story Hub (2022, January 13). *Enterprise Metaverse: Employees Are Ready, Can Organizations Deliver?* [Press Release]. https://news.lenovo.com/pressroom/press-releases/enterprise-metaverse-employees-ready-organizations-deliver/

14 Kilzi, M. (2022, May 20). *The New Virtual Economy of The Metaverse*. https://www.forbes.com/sites/forbesbusinesscouncil/2022/05/20/the-new-virtual-economy-of-the-metaverse/?sh=78850cc546d8

the virtual reality are rather expensive and not everyone can afford them, but the same used to be true for personal computers and smart phones. With technology development, the price for technological products will decrease, and purchasing a VR/AR-device will become routine.

The metaverse will become a common digital platform used for work, education, treatment, relaxation, i.e., for human existence in general. Today, the metaverse economy is being built, and large companies have become to virtually "capture" space. Innovations accompanying the metaverse creation will influence the real economy, too, changing its infrastructure and management. With the development of the metaverse, saving resources and reducing the amount of wastes become possible, due to the decrease in physical consumption.

In the sphere of labor, metaverse will broaden the opportunities for digital work platforms, which are already actively functioning. The growing share of platform employment is recognized in the report of International Labor Organization "The role of digital labour platforms in transforming the world of work"[15] published in 2021. According to the report, from 2010 to 2020 the number of digital labour platforms increased at least fivefold, while the monitoring of labor force supply and demand at them shows a constant growth. The modern platform economy is a draft of the future metaverse economy[16]. In terms of labor relations, it means the following:

– the metaverse will become the "working place" for many employees, including those who work remotely nowadays;

– employers will acquire remote access to the labor force of potential employees globally, which will allow transferring more work for outsource;

– algorithmic supervision, which is already often applied to remote workers, will become even more widespread;

– a growing number of people will work to "service" the metaverse.

The consequence of changes in the labor market will be the transformation of employment, which together with changes in the sector economy and management, due to the increased share of virtual economy, will contribute to the alteration of the social landscape.

One also should not forget about marketing policy. To understand the ways of the metaverse development, it is essential to realize that its construction, like that of any digital platform, is not a charity; it is based on commercial interest: the business model is based on acquiring profit. As the platform users are, as a rule, against paid subscription for access to digital services, free access is available in exchange for advertising. In this model, a lot is initially based on tracing and profiling the users' behavior and interests, that is, the users are a product bought and sold, not a client paying the bills. This makes

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15 *Prospects of employment and social protection in the world: the role of digital labor platforms in transformation of the labor sphere. Technical support group on the issues of decent labor and ILO Bureau for Eastern European and Central Asian countries*. Moscow: ILO, 2021. 282 p.

16 De Stefano, V., Aloisi, A., & Countouris, N. (2022, February 1). *The Metaverse is a Labour Issue*. https://socialeurope.eu/the-metaverse-is-a-labour-issue

one "rely on a certain level of state regulation, to prevent exploitation of users within the metaverse" (Rosenberg, 2022). Devices for access to virtual reality gather a lot of user data; exchange of these data between companies will allow using them for profiling and displaying personalized advertising, having a stronger impact on a consumer than the modern advertising.

2. Influence on the society

Thus, the metaverse as a global digital platform becomes a new round in the development of cyberspace uniting all digital canals. The process of the metaverse creation is a part of the Internet evolution: the Internet technologies constantly develop, and alongside with them – the interaction between people and the Web. In this process, one may distinguish three stages of online communities' development: the past stage Web 1.0 (uniting users on the basis of virtual networks), the current stage Web 2.0 (creating online communities), and the future or already beginning stage Web 3.0 (forming the virtual world belonging to the communities) (Shkarupeta, 2022).

A number of companies are engaged in creating metaverses; does that mean that there will be several metaverses? Supposedly, competition between the prototypes of metaverses created will lead to their merger or acquisition; as a result, the "full-fledged" metaverse will be single, but comprising the multiple worlds and segments, for example, "the Chinese", "the Russian", etc.

The metaverse as the next version of the Internet will be a collaborative open environment of mixed reality, in which people and intellectual things interact within multiple virtual worlds created by various corporations on a common technological, economic and ethical platform[17]. Some researchers speak of the determination of building a "decentralized society" at the stage Web 3.0 (Weyl et al., 2022).

In any case, the previous social fiber, including various social groups, will largely lose its significance in the virtual world. IT giants strive to transform the people's way of life and the very human nature, implementing the idea of the metaverse transforming life into a "digital format": the importance of online identification, professional and social online communication, and digital assets will drastically increase.

Education, skills improvement will also take place in the metaverse, being available from any point on earth. As an educational tool, the metaverse is very attractive: one may attend lectures of the best universities, study in a safe environment. The transition to the fifth, then the sixth generation of mobile communication (5G and 6G) will allow holographic presence of remote users in visualized space and transmittance of tactile sensations with sensors.

[17] Gopka, A. (2021, September 14). *The next version of the Internet: how life in the metaverse will change*. https://www.forbes.ru/tekhnologii/439893-sleduusaa-versia-interneta-kak-izmenitsa-zizn-v-metavselennoj

Neurophysiologists mark that the training of attention and self-control in the combined physical and digital worlds would yield better results with less effort (Tang et al., 2022).

According to the opinion of the researchers of one of the largest analytical centers Brookings Institution, stated in the report devoted to the influence of the metaverse on education, "education lags behind the digital leaps, technologies, not teachers, define the educational opportunities"[18]. An example set in the report is: getting acquainted with the Ancient Greece in a History lesson via virtual immersion is like a trip in a time machine, where each student can use their digital avatar to become an archeologist equipped with appropriate virtual tools, or study antiquity otherwise.

The strategy of the metaverse development is aimed mainly at the younger generation used to interactive computer games. By now, the role of videogames (especially on mobile platforms) in everyday life has already increased. Interactive games get more and more "built in" the reality and adjust it for them. The attempts to create gaming platforms with extended functionality are welcomed by the users, thus the number of developer companies is growing.

There are already no technical barriers for "transforming videogames into endlessly renewed, event-generating interactive universes" (P. E. Arkhipov, 2022), the technologies are just not yet suitable for massive use due to economic characteristics. The gadgets necessary for logging on to the metaverse are not comfortable for constant carrying, and huge resources are allocated to solve this problem. After the devices with which users interact with the metaverse become more convenient, they will become their indispensable part, later probably built into a human body.

While earlier the difference between the virtual environment and the reality could be felt (in movements, in the degree of the avatar rendering), today the level of hyperreality is reached – a simulation undistinguishable from the real world. Earlier, the creation of such content was a complicated and expensive process, but now the artificial intelligence can construct a cheap and rather realistic "synthetic content". In the years to come, the metaverse will be developed towards immersive (with participation effect) experience in hyperreal virtual environments inhabited by avatars which look and sound exactly like people. It will allow attracting millions of people into the metaverse: the generating models of the artificial intelligence will more and more use the data from the surrounding world to visualize impressions and objects, scaling the personalized content for billions of people[19].

Social communication will change: people in the metaverse will interact not only with avatars of other people but also with avatars-agents created by the artificial intelligence.

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[18] Hirsh-Pasek, K., Zosh, J. M., Shwe Hadani, H., Michnick Golinkoff, R., Clark, K., Donohue, Ch., & Wartella, E. (2022). *A whole new world: Education meets the metaverse*. Report: Policy brief. Washington, Brookings. https://www.brookings.edu/wp-content/uploads/2022/02/A-whole-new-world_Education-meets-the-metaverse-FINAL-021422.pdf

[19] Graham, T. (2022, June 18). *Can humanity be recreated in the metaverse?* https://venturebeat.com/2022/06/18/can-humanity-be-recreated-in-the-metaverse/

It is worth mentioning that the capabilities of the artificial intelligence in the metaverse will change. The metaverse will be an ideal medium for the artificial intelligence systems (AI-systems), both virtual and cyberphysical. In cyberphysical systems, the artificial intelligence is contained in a material body, which is a carrier of the artificial intelligence. The virtual AI-system is not "attached" to a specific material object, but uses hardware facilities, through which it can influence the physical world, including by overmastering the "weaker" cyberphysical AI-system. For the virtual AI-system, the virtual world is a natural environment. Cyberphysical AI-system, having the "body" and thus advantages compared to virtual systems in the real world, lose it in the metaverse. Nevertheless, they retain the capability to log on to the virtual world and do not need special external devices, unlike people.

The modern society has already expanded the limits of the real world, entered "the artificially created virtual space and turned into a hybrid society" (Nedzvetskaya & Prostakov, 2022). With time, the humans will treat communications in the digital environment as real ones, transferring to digital avatars the possibility of real human interactions (Fedoseeva & Egarmin, 2022). According to the results of sociological research, children often perceive contacts with virtual AI-assistants as those with living beings (Bylieva et al., 2021). However, this can be said not only about children: "the artificial intelligence is becoming more and more social: the agents initially oriented towards solving instrumental tasks become a medium and participants of human interactions" (Rezaev, 2020). What this means is a graduate formation of "artificial sociality". Creation of the "full-fledged" metaverse will allow going further and "immersing the deceased creators into a new hybrid environment as active elements" (Gurov, 2022), to continue creating works of science, literature and art. More and more often sociologists pose the question: can the metaverse, expanding the limits of interactions and sensations of its participants, claim to creating a new basic human reality? (Vatoropin et al., 2022).

Among the arising social problems one can mention:

– the emergence of new needs ("virtual objects" will now be demanded not only by gamers, their use will become a common practice);

– the inequality in access, which will stem from the price for gadgets, accessibility of the global network, the level of digital literacy;

– the loss of confidentiality in human life, as immersive headsets and virtual tools of the metaverse will register where a person goes, what they look at, how their facial expression and voice modulations reveal their emotions;

– the problem of individual identity (people will create digital avatars to navigate across the metaverse, which adds to the possibilities for representing oneself as someone else in the virtual world);

– the increased problems with health (cyberaddiction, "sensor conflict", problems due to the lack of movement) (Denisov, 2019);

– the degradation of moral values in the virtual environment, which will also reflect in the physical world (Gurov & Konkova, 2022);

– the provision of children's safety when "immersing" into the metaverse, as children, despite user age restrictions, as a rule, master new technologies faster than their parents; in terms of monetization, children are a highly profitable segment, therefore many virtual worlds are oriented towards them, etc.

3. Need to constitutionalize the new rights

Digital technologies made large communities real; now these communities make the technologies obligatory (Zhukov, 2022). Virtualization of the society and the transfer of a growing share of contacts into the digital environment will continue, hence, the acuteness of the above stated social problems will grow, which causes the need to adapt law to the new conditions. One may not exclude that creation of the metaverse as a complex multi-aspect phenomenon will require establishing experimental legal regimes (Malashenko & Shestakov, 2022).

As early as in 2013, analyzing the impact of gaming virtual worlds, a researcher from Saint Petersburg State University V.V. Arkhipov came to a conclusion that virtual worlds deserve a close attention of lawyers; being "a conceptually new and socially significant phenomenon", they "can be used as models of the real world and as a space for a social experiment" (Arkhipov, 2013). Later in another article he stated that "under digital transformation of the society, a number of juridical issues is actualized, which are related to the limits of interference of actual law into the virtual space" (Arkhipov, 2019).

Formation of the metaverse will entail the "reflashing" of the real world, which changes with the spread of digital technologies. The alternation of generations is another step forward, as those born in the era of digital gadgets are more technologically tolerant than the previous generation.

What issues demand attention on the part of law?

Development of cyberdemocracy promotes the transference of political decision making process into the cyberspace. The current legislation already stipulates electronic voting; for example, in 2022 Federal Law "On the main guarantees of electoral rights and the right to participate in plebiscite of the citizens of the Russian Federation"[20] was complemented with Article 64.1 on the possibility to hold a remote electronic voting. VR/AR technologies can make voting accessible regardless of the person's location, preserving the participation effect. Creation of the metaverse eliminates the drawback of the modern cyberdemocracy – the lack of a place where people may gather to discuss and make a collective decision, sensing the real presence of each other (Williams, 2006).

As the use of the Internet increases the probability of citizens' participation in voting (Mossberger et al., 2007), formation of the metaverse will make it possible to fully implement

[20] On the main guarantees of electoral rights and the right to participate in plebiscite of the citizens of the Russian Federation: Federal Law No. 67-FZ of 12.06.2002. (2022). *Collection of legislation of the Russian Federation*, *24*. Art. 2253.

the concept of digital citizenship, changing the habitual means of political and other rights' implementation. It corresponds to the current platformization of public governance, when the state becomes more and more similar to a digital platform for rendering public services. Elections and plebiscites via state digital superservices (advanced "Public Services" or similar platforms) are, probably, a matter of the nearest future.

At the same time, IT giants more and more control the infrastructure of public discourse (Nemitz, 2018); these corporations have already captured the digital social sphere and, using often uninformed consent of a user, have substituted law for company servicing regulations, which state bodies cannot always control. Thus, corporations have actually taken up many functions within the competence of the state, and many countries cannot offer sufficient resistance (D'Cunha, 2021). With the help of digital technologies, IT giants and states – the world technological leaders – acquire the capabilities which allow then to strongly influence the global community. This was explicitly stated in the report "Confronting Reality in Cyberspace: Foreign Policy for a Fragmented Internet" prepared in 2022 by researchers from the US leading scientific and analytical centers, in particular, Stanford and Columbia Universities (Fick et al., 2022).

Globalization of communications opposes the state sovereignty as freedom from external control; thus, under globalization of informational processes and spread of information wars, new threats to national interests arise, which actualizes provision of digital sovereignty (Zozulia et al., 2021) and requires changes in legislation. Measures for providing digital sovereignty include development of national operational systems, tools for working with big data, and national protocols of digital ciphering. The need to regulate digital assets as a critical infrastructure, the protection of digital citizenship, the setting of requirements to algorithms governing social interactions, the location of servers and data processors on the territory of the state – all these measures are actively discussed in parliaments of various countries[21].

Development of metaverses raises, on the one hand, the question of creating the legal norms aimed at impermissibility of erosion of confidence in the governments, and on the other hand – the issue of norms aimed at prevention of establishment of a digital dictatorship. After all, the government will be able to apply the metaverse technologies for surveillance of citizens, tracking their activities and relocations in order to control information flows and restrict the possibilities for people to express opposite views and create mass consensus (Akyeşilmen, 2021). The solution of this task becomes easier with the development neuro technologies, which allow using neuro interfaces as the main canals for delivering content and providing interaction between a human brain and the objects not existing in the reality.

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[21] Gak, M. (2021, December 9). *A ten-point manifesto for a Digital European Citizenship*. https://www.opendemocracy.net/en/technology-and-democracy/a-ten-point-manifesto-for-a-digital-european-citizenship/

It should be taken into account that the basic prerequisite of the existence of law is human interaction, based on emotions, desires, and pursuing certain interests. Law and trust (interpersonal, systemic trust) are linked with each other – this leads to an assumption that law loses its relevance when the relevance of trust decreases (Koos, 2022).

Thus, the tasks of constitutional legal regulation, stemming from digitalization of the society and formation of the metaverse, are associated with eliminating the risks of:

1) discrimination and digital inequality;

2) loss of political rights;

3) reduced right to privacy;

4) manipulation of human consciousness.

To minimize the above risks, the constitution must stipulate the rights, which are necessary for a person under digitalization of all spheres of the society and the growing virtualization of the environment.

First, the right to free access to the Internet must be recognized as a constitutional right of an individual. This basic digital right must be stipulated in constitutional norms, which would ensure the implementation of a set of human rights demanded after the appearance of virtual environment (Rozhkova, 2020). By the way, Mexico has already recognized this right, in has been stipulated by its constitution since 2014[22]. Legislative bodies of Italy and France are discussing this issue. According to some representatives of the National Assembly of France, the reform should include "the fundamental right promoting a free, equal and universal access to digital networks" (La Raudière, 2018). The first draft of a constitutional law related to this issue[23] was introduced by the French President into the National Assembly in 2018.

Second, the right to personal data protection must be drawn to the level of a constitutional principle, for example, by amending Article 2 of the Russian Constitution, which stipulates the priority of human rights, with part 2. Today, the Russian Constitution has Articles 23, 24 and 29, stipulating in general the right to privacy, the conditions for information searching and distributing, but it should be noted that monitoring in the metaverse rises to a new level, and the capabilities for manipulation increase manifold, as VR/AR technologies are initially built on illusion of senses. It allows providing the necessary information by using the obtained personal data for precise targeting on particular people at the time needed. Artificial intelligence contacting with a person, in order to convince them, will act with the account of the data on their previous behavior and reactions to other content. The acuteness of the personal data protection issue increases

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22 *Digital government toolkit. Digital government strategies: good practices. Mexico: Legal Framework for the National Digital Strategy.* (2014). https://www.oecd.org/gov/mexico-legal-framework.pdf

23 *Projet de loi constitutionnelle "Pour une démocratie plus représentative, responsable et efficace"*. (2021, Août 23). https://www.gouvernement.fr/action/projet-de-loi-constitutionnelle-pour-une-democratie-plus-representative-responsable-et

with the growth of their digitalized volume during "immersion" into the metaverse. Legislation must provide maximal transparency in terms of what data are gathered and how they are used.

Third, as a guarantee of privacy, to exclude the probability of illegal surveillance by public bodies or private corporations, we must think of including a new group of human rights into the constitution, namely, the so called neuro rights: the right to mental immunity, the right to mental integrity and the right to intellectual self-determination (cognitive freedom) (Ienca & Andorno, 2017). The first state in the world to include neuro rights into its constitution, became the Republic of Chile; the discussion of the issue of neuro rights as a new group of rights at the Parliamentary Assembly of the Council of Europe[24], which started in 2020, emphasized the importance of this issue (Filipova, 2022).

The guarantees of human rights will be reinforced by a constitutional stipulation of the principle of algorithms transparency for the transparent functioning of artificial intelligence. The requirement of transparency includes the right to know the reasons for a decision made by the artificial intelligence, the right to know about the natural or artificial essence of the subject contacted by a person, and the right to a decision based not solely on automated processing.

4. Issues of sector regulation

With the development of the metaverse, the significance of digital profiling increases. The lack of legal restrictions for forming digital profiles decreases privacy, infringes the right to human dignity, and eases making deepfakes by wrongdoers applying artificial intelligence. "While today the digital profiles of citizens are just a summary of official information contained in some governmental informational systems and public registers, in the future… this infrastructure can be used for profiling, deep analysis, monitoring and forecasting their behavior, as it is already done by some governmental and non-governmental institutions" (Mochalov, 2021).

It is necessary to adopt a list of data which cannot be included into a digital profile of a citizen, a list of inadmissible purposes of using digital profiles, and to stipulate an obligation of operators to intelligibly notify users of the facts and legal consequences of profiling. Creation of high-accuracy digital profiles must be prohibited to avoid discrimination of citizens, while collection of such psychophysiological parameters as heart rate is only allowed for medical purposes. All the above requires inclusion of the relevant norms into the sources of constitutional and administrative law.

[24] Parliamentary Assembly of the Council of Europe. (2020). *Documents adopted by the Assembly on October 12–13 and 22–23*. Preliminary issue. Strasbourg, 2020. https://rm.coe.int/adoptedtextscp-oct-20-ru/1680a043a6

The norms of administrative and civil law must stipulate "protection of citizens' rights during collection, evaluation and use of data within the frameworks of digital profiling" using the artificial intelligence systems "based on algorithms discriminative in terms of a certain social criterion" (Minbaleev, 2022).

With the spreading of digital avatars, the question of their legal regime arises. They "correlate with virtual worlds as a part and a whole, hence, they can be viewed as an object of legal relations in the sphere of intellectual property"; on the other hand, avatars are a means of user self-representation, expression of their identity, their "digital bodies", which makes legal scientists "correlate avatars with categories of personal data and non-material goods" (V. V. Arkhipov, 2022).

A digital avatar is a "virtual embodiment of a person, reflecting their image and most essential traits of character, features of individual digital rituals" (Fedorchenko, 2020). Avatar as a means of self-presentation of a human in the virtual environment often reflects their fears, desires, mental deviations; "relation between an avatar and a personality is determined by the theory of projection proposed by A. Freud" (Zaslavskii, 2021). Can digital avatars have their own legal identity or they will remain just a projection of the personality of a human being controlling them? What if an avatar is created and controlled by the artificial intelligence system? Legal norms are needed which would require an obligatory difference of artificial agents in the metaverse from real people.

A researcher from Singapore University B. C. Cheong believes we should admit digital avatars to be legal subjects. In his article "Avatars in the metaverse: potential legal issues and remedies" he writes: "users would expect their avatars' rights to be protected in the metaverse… one way the problem could be resolved would be by making an avatar responsible for their actions" (Cheong, 2022). Imagine an avatar steals a digital "Gucci bag"; accordingly, an effective punishment would be to apply a sanction to this avatar in the metaverse. This is all the more reasonable if the avatar was created and controlled by the artificial intelligence, not a person. According to B. C. Cheong, even an avatar created by a human being, if it is complemented with an artificial intelligence and constantly learns decision-making from its human master, independently interacting with other subjects in the metaverse, can be recognized a subject of law in the metaverse. This raises to a new level the dispute on recognition/non-recognition of the legal standing of artificial intelligence, which involves more and more lawyers (Naumov, 2020).

One more problem requiring legal solution is the technological capability of one person to create multiple avatars in the metaverse; hence the need to have administrative-legal norms regulating this aspect. The same is true for the possibility to change or replace an avatar, as this influences the transparency of social behavior. "Legal protection of the avatar must then be reconciled with appropriate legal control of the avatar's potential for abuse" (Dwivedi et al., 2022).

Criminal law will have to consider the growth of cybercrime, especially thefts of cryptocurrency and personal data, including biometric information. By the way, criminologists were the first to get interested in this field in terms of "virtual crime"

(Brenner, 2008), as early as in respect of online games, as consequences of in-game situations may impact the reality, which serves simultaneously as a cause and condition for intrusion of law into virtual environment (Stepanov & Filatova, 2021). Today, researchers often refer to the "Magic Circle Test" developed by B. T. Duranske (Duranske, 2008). It implies that the virtual space is separated by "a magic circle" from the reality, and the latter must not face the negative consequences of what happens in the former. Legal regulation is not required as long as everything deploys within the game and follows its rules (Adrian, 2010). However, the situation changes when it goes beyond the "magic circle". For example, having captured an account, someone uses another person's avatar, presenting oneself as another person, and commits a deed entailing legal consequences, including legal liability of that person.

Almost any crime possible in the real world can be committed in the metaverse: theft, destruction of property, infliction of bodily injury, homicide, etc. Bodily injuries or homicide may refer both to a digital avatar and a real person, as theoretically it is possible to inflict bodily injuries of various degrees to a user accessing the metaverse with a tactile costume. The "murder" of an avatar may also inflict serious harm to a person; for example, entering the metaverse for work, they find out that a hacker destroyed their digital avatar – a thoroughly constructed "digital body" which had taken a lot of means to create; it cannot be restored, so an important virtual meeting is missed and the employee is deprived of certain benefits. Who will compensate for the losses and will the wrongdoer be punished?[25]

In relation to civil law, a topical issue is that of "binding" the physical property with its digital equivalent: what will happen if possession of a physical object and its NFT equivalent are separate, what will change if the physical object is lost, stolen, or destroyed?[26]

Changes in the civil legislation will touch upon the provisions on intellectual property. Among the problems which will arise in the sphere of copyright, one may mention:

– the growing number of disputes on using copyright objects in the virtual space (the metaverse increases the risk of creating content using the results of someone else's intellectual labor, thus, copyright protection will have to be improved);

– determining the legal destiny of virtual objects created by artificial intelligence within the metaverse (Timshin, 2022).

Acquisition of rights for the image of a person (alive or deceased) can be the object of copyright; with the development of the metaverse this sphere may acquire new prospects. "When the metaverse is inhabited with human-based personages, one has to acquire rights to using a person's name, appearance, behavior, and artifacts. For living people, this is done via a license agreement, which must be maximally detailed.

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25 McCollum, C. (2022, January 24). *Metalaw: The Law of the Metaverse*. https://www.iotforall.com/metalaw-law-of-metaverse

26 Abraham, A. (2022, April 4). *Law & Order in the Metaverse*. https://www.finextra.com/the-long-read/376/law--order-in-the-metaverse

To use the image and name of a deceased person, the "clearance of rights" procedure is carried out (Dobryakova & Bliznets 2022). A cardinally important and still unregulated is the fact that the formation of the metaverse and development of the artificial intelligence will allow "creation" of new works of art by the deceased people who "revived" inside the metaverse and obtained "digital immortality".

The existing legal norms will be also insufficient for regulating labor relations between millions of employees and employers. So far, the labor legislation both in Russia and in foreign countries is not adapted to digital transformation. The burning issue today is the regulation of platform employment. Under the formation of the metaverse, a legislator will have to answer a number of new questions:

– what will be considered working hours, will it include the online presence of the avatar in the metaverse?

– must the avatar of an employee correspond to the real person?

– must avatars comply with the dress code at the working place?

– according to what rules must an employee be hired via the virtual reality?

– may the employer establish incentives for those employees who are more loyal to the transition to the virtual environment?

– what will be the liability of employers for law breaches committed by their employees in the metaverse?

– what liability will the employer bear in case of cyber harassment of the avatar of an employee?

– what will be the status of avatars performing the functions of employees but created by the artificial intelligence?

If these issues are not regulated by law, an employer will make decisions on each of them autonomously, without taking the employees' interest into account. Besides, labor migration is increasing all over the world, including by job offers at digital platforms. Such virtual migration does not require physical relocation of employees, and with the creation of the metaverse the process will rise to a new level (Glushchenko, 2021).

Changes will be required in the procedural law, too, which will have to stipulate an option of settling disputes with participation of avatars, holding virtual court sessions with participation effect, etc. International law cannot stay on the sidelines, for one thing, as the issues will arise related to settling trans-border disputes under the metaverse.

Some lawyers insist on the timeliness of forming the metaverse law[27], as its creation opens the previously unavailable opportunities for the society development, on the one hand, and raises the fundamental issues related to privacy, information security, and intellectual property, on the other. "These issues cluster around a single foundational dilemma: who is liable for what? Such difficulties are only amplified by the increasing complexity and interdependency

[27] *Metaverse Policy Institute*. https://www.metaversepolicy.org/

of AI systems. … it is becoming harder to assign legal responsibility to avatar owners, software coders and metaverse operators, all of whom may have varying degrees of control over the AI systems in question" (Moster & Yeoh, 2022). According to the proponents of forming the law of the metaverse, all the above requires a new type of legal infrastructure, a part of which will be the new group of norms regulating social relations under the metaverse. This opinion is not supported by the majority of legal scientists, first of all due to the fact that the society so far is at the initial stage of creating the metaverse. Some jurists believe that separation of the metaverse law is probable in the nearest future, but only within another alliance of norms – the cyber law.

One may agree with a researcher from Georgian Institute of Public Affairs (GIPA) L. Nanobashvili in that, despite the current uncertainty, at least two things are clear: first, the metaverse, judging by the dynamics of the events, will go on forming, becoming a reality, and second, the creation of the metaverse raises a number of questions of legal nature. "These issues require legal analysis which may keep lawyers and lawmakers busy for many years to come" and the metaverse "will probably develop faster than adoption of its legal regulation" (Nanobashvili, 2022).

Conclusions

The development of the technological aspect of metaverses leads to further virtualization of economy, provoking transformations in the production structure, management, marketing policy, and economics of labor. The employment conditions in the global labor market are changing, as well as the consumer demands. The share of producers and sellers of goods is increasing, which switch onto the development of digital ecosystems and creating applications with expanded functions to be conveniently used in the virtual environment.

The social fiber of the society is also changing, the everyday life comprising more and more virtual constituents: online communication, online learning, online services, remote work, etc., resulting in the change of habits, mundane and cultural preferences.

The European Parliamentary Research Service (EPRS), on June 24 2022, published a briefing "Metaverse: Opportunities, Risks and Policy Implications", which emphasizes that the creation of the metaverse would have a strong impact on "competition, data protection, liabilities, financial transactions, cybersecurity, health, and accessibility and inclusiveness"[28]. The European Parliament urged the European Commission to ensure compliance with the requirements by the companies which will function in the metaverse, and to that end to update the General Data Protection Regulation of 2018 (GDPR)[29]. Thus, legislative bodies have already

[28] *EU: EPRS reports on opportunities, risks, and policy implications of the metaverse* (2022, June 27). https://www.dataguidance.com/news/eu-eprs-reports-opportunities-risks-and-policy

[29] *Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).* (2016). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679

begun to pose the task to legal scientists to search for the ways of optimal regulation under the metaverse.

The development of the situation allows concluding that working over the creation of the legal norms taking into account the current changes related to the environment virtualization, will be inevitable in the nearest future, while the search for legal solutions will not be restricted to a single branch of law but will cause the need for a complex approach and interaction between branches.

We consider it necessary to constitutionalize digital rights in the public-legal understanding of the term. The general provisions on the right to privacy and on information dissemination stipulated in Articles 23, 24 and 29 of the Russian Constitution are not sufficient to protect citizens' rights under the development of metaverse technologies and their practical implementation. It is necessary, as a minimum, to stipulate at the constitutional level the right to free access to the Internet and rights to personal data protection as an essential constitutional principle.

With the development of neuro technologies, a question arises about including into the Constitution the rights aimed at protecting a human being against unsanctioned impact on the brain. The threat of such an impact will grow as a result of using neuro gadgets as devices for access to the metaverse, when neuro interfaces will become the main canals for delivering content into a human brain and scanning the brain rhythms via neuro headsets will become habitual for users.

It is insufficient to list the new rights the Constitution; the detailing provisions must be included into branch legislation, complementing the civil, criminal, administrative, labor and other branches of law with a number of norms, thus adapting the legal matter to new conditions in order to preserve the efficiency of legal regulation and ensure anthropocentrism in the society entering the era of artificial intelligence.

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* The organization is recognized as extremist, its activity is prohibited in the territory of the Russian Federation.

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Создание метавселенной: последствия для экономики, социума и права

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Ключевые слова

Виртуальная реальность,
дополненная реальность,
искусственный интеллект,
киберпространство,
метавселенная,
нейроправа,
права человека,
право,
цифровая платформа,
цифровой аватар

Аннотация

Цель: определение степени влияния такого развивающегося технологического направления, как метавселенные, на различные сферы общества и выявление потребностей в реагировании со стороны права.

Методы: основным методом, используемым при проведении исследования, является системно-структурный метод, позволяющий установить связи между разными элементами общества как сложной системы, проанализировать закономерности, порождаемые распространением влияния прототипов метавселенных в одной сфере на другие. В качестве дополнительных применяются формально-логические, сравнительно-правовой, а также методы правового моделирования и прогнозирования.

Результаты: реализация концепции метавселенной на практике откроет новые возможности для людей, но будет сопровождаться серьезными изменениями в экономической подсистеме общества, в частности многократным ростом доли виртуальной экономики и структурными сдвигами в занятости. Изменения коснутся и социальной подсистемы: трансформируются социальные связи, модели обучения, появятся новые потребности личности. Перемены в экономической и социальной сферах повлекут необходимость адаптировать к ним право в целях сохранения эффективности правового регулирования общественных отношений. Необходимо учитывать и то, что метавселенная увеличит возможности не только людей, но и искусственного интеллекта, для которого виртуальная среда является практически «естественной». Нормы права должны обеспечить защиту человека в условиях увеличения виртуальной составляющей в жизни людей, сопряженной с интеллектуализацией среды.

Научная новизна: системно проанализированы изменения, происходящие в различных сферах современного общества в связи с развитием технологического направления метавселенных, выделены основные вопросы, возникающие из-за этого развития и требующие правовых решений как на уровне конституции, так и на уровне отраслевого законодательства, предложены необходимые изменения в правовом регулировании.

Практическая значимость: материалы исследования могут быть использованы в работе по подготовке предложений о внесении изменений и дополнений в действующее законодательство, а также в педагогической деятельности, в частности, при реализации учебных курсов или модулей, связанных с правом в условиях цифровой трансформации общества.

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