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**VIRTUALIZATION OF MODERN SOCIETY: ONTOLOGICAL,
EPISTEMOLOGICAL, AXIOLOGICAL, ANTHROPOLOGICAL
ASPECTS**

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Abstract

The phenomenon of the Internet can be considered as a consequence of virtualization of society. The possibility of obtaining data about the object as close as possible to reality, which constitute its image, has become a qualitatively new aspect of the informatization of society. If to understand virtualization as a substitution of reality by its simulation (image) not necessarily using the computer technology, but necessarily using virtual reality logic (immaterial impact, convention of parameters, evanescence) the following question arises: Is virtualization an information process, and if so, what are its main characteristics? Virtual reality is a term characterizing a special type of interaction between heterogeneous objects (located at different hierarchical levels), as well as specific relations between them, i.e. generation and interactivity. Objects of the virtual level are generated by objects of the underlying level, but, despite their generation status, they interact with the objects of the generating reality as ontologically equal. The combination of virtual objects relative to the generating reality forms a virtual reality. Virtual objects exist only “here and now”, while in the generating reality there are processes generating them. The virtual objects disappear when the process of generation is over. It also makes sense to talk about virtual reality as a reality, because virtual reality has its own laws of nature, its own characteristics of time and space, which cannot be reduced to laws, time and space of the generating reality. An example of these kinds of objects can be virtual particles.

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1. Introduction

The information society is a society in which the majority of workers are engaged in the production, storage, processing and sale of information, especially of its highest form, which is knowledge. The following features are typical for this stage of development of society and the economy:

- increasing role of information, knowledge and information technology in society;
- increasing number of people employed in the information technology, communications and the production of information products and services, an increase in their share in gross domestic product;
- growing informatization of society using telephony, radio, television, the Internet, as well as traditional and electronic media;
- creation of global information space which provides the following:
 - effective information interaction of people;
 - access to world information resources;
 - meeting people's needs for information products and services.
- development of e-democracy, information economy, e-state, e-government, digital markets, e-social and economic networks.

2. Problem Statement

The category of virtuality had been actively developing in scholasticism and it was necessary to solve the problems of scholastic philosophy, including the possibility of coexistence of realities of different levels, as well as formation of complex things from simple ones.

For example, Nicholas of Cusa in his work *The Vision of God* wrote "... I turn toward at this large and tall nut tree, whose Beginning I seek to see. And with the sensible eye I see that it is large, spacious, colored, laden with branches, with leaves, and with nuts. Then with the mind's eye I see that this tree existed in its seed not in the manner in which I here behold it but potentially. I consider attentively this seed's admirable power, wherein were present the whole of this tree, all this nuts, the entire seminal power of the nuts, in the seminal power of the nuts, all trees" (Kuzansky, 1979).

As is seen from this text, Nicholas of Cusa thinks differently than a modern scientist. If the latter is looking for the causes of growth in the conditions and lower levels of reality than the seed level, i.e. in DNA, biochemical reactions, physical laws, then Nicholas of Cusa is looking for such causes in higher levels of reality, while applying the category of virtuality.

For another philosopher, Thomas Aquinas, the category of virtuality is also crucial. With its help, he solved the problem of coexistence of realities of different levels and the problem of formation of a complex of simple elements. In particular, he considered the coexistence of thinking soul, living soul and vegetable soul: ... "it should be recognized that no other substantial form is present in man besides the substantial soul alone, and the latter virtually contains the sensual soul and the vegetative soul ..." (Borghosh, 1966).

Perhaps in the considered statements the category of virtuality does not fully coincide with the concept for discussion; however, for the most part it reflects the main features of the philosophical term.

In comparison with the teachings of Aristotle, scholasticism considers the establishment of connection by dint of *virtus* between higher and lower realities. That is where a new sense of virtuality arises if in this case that is what is meant. Aristotle, on the other hand, had developed a category structure for the reality, a substantial one, which is passive, non-developing, existing in the absolute, i.e. in its own, unrelated to higher reality, time and space. However, the scholasticism considered only two realities, the substantial and the divine, and this approach cannot be considered the creation of a complete and independent hierarchy of realities, since two objects can always be considered as dependent on each other. At that time, virtuality was determined through the diversity of worlds and realities.

In many ways, the development of medieval philosophy and then the philosophy of New Times was determined by the attitude to the intermediate reality: whether it exists or not. The scientific picture of the world, which arose in modern times, has excluded the divine reality, renaming the divine laws into the laws of nature, thereby proclaiming the existence of one reality, i.e. the natural one. At the same time, the idea of power (the scholastic *virtus*) was preserved (Borgosh, 1966).

New European philosophy did not accept the statements of Plato. He argued that ideas are visible. For the philosophy of New Times, the ideas are mental concepts. Plato was talking not about ultimate reality, but about the reality of the next level the objects of which for people outside of it are, in fact, only intellectually knowable; however, for people in it, are the real objects.

If we recognized the existence of several levels of reality, then we must admit, on the one hand, the irreducibility of realities, otherwise it would all drain into one or two ultimate realities, and on the other hand, find how they are related to each other, otherwise we would be forced to solve the problem of building a complex object from several simple ones, when there are several fairly simple realities and they need to be combined into something single.

It should be noted that such an approach was proposed as early as the IVth century by the early Byzantine philosopher (and not only the philosopher) Basil the Great, who, in his work *The Six Days*, proved an idea that a certain reality could give rise to another reality, the laws of which would be reduced to the laws of existence of generating reality. On the basis of this idea, he interpreted the act of creation of the world and built a model of generation of the world and its existence (Lukyanenko, 1996).

3. Research Questions

The idea of virtuality, in one way or another, was considered by ancient philosophy, as well as Eastern and Byzantine. The term virtuality has been actively used in the last decade in modern philosophical science, as well as in other fields of human activity.

It should be noted that in relation to virtual reality the meaning changes its content; the vast majority of philosophical concepts need to be revised (Datsyuk, 1997)

In recent years, the development of information technologies has allowed the creation of technical and psychological phenomena, which are called virtual reality and cyberspace in popular and scientific literature.

The development of programming techniques, the rapid growth of semiconductor IC manufacturing, the development of special means aimed at transmitting information to humans, as well as feedback - all this created a new quality of perception and experiences, perceived as virtual realities.

The external effect was that a person got into the world, very similar to the real one, or previously conceived, written by a programmer, or received new possibilities in terms of thinking and behavior. The most impressive achievement of new information technology is the opportunity for a person who has entered the virtual world not only to observe, but to act there independently.

As a matter of fact, a person could easily get into the world of virtual reality, for example, plunging into the contemplation of picture, movie, or simply reading a book with enthusiasm. However, in all such cases, the activity of a person was limited to his position as a spectator or reader; he or she could not get involved into the action as an active character.

All this, apparently, predetermined the boom of needs for new information technologies and, accordingly, their rapid development. However, a wide dissemination and introduction of such technologies creates many specific problems and trends that humankind has not encountered before and which cannot be ignored (Datsyuk, 1997).

The medieval logician Duns Scott gave the term *virtual* connotations that have become traditional: the Latin *virtus* was the main point of his theory of reality.

He insisted that the concept of a thing contains empirical attributes not formally (as if the thing existed separately from the empirical observations) but virtually. To understand the properties of a thing, we may need to delve into our experience; the real thing itself already contains a multitude of empirical qualities in its unity, however it contains virtually, otherwise they would not last as the qualities of this thing.

The term *virtual* was used by Scott to bridge the gap between the formally unified reality (assumed by our conceptual expectations) and our irregularly diverse experiences (Petrova, 1997).

4. Purpose of the Study

Modern virtual reality technology began with an attempt to combine visual perception with the perception of motion and sound. Its initial application precedes the invention of computer.

It was a flight simulator, in the original model of which a moving picture and pneumatic gears like organ tubes were used.

The Link Trainer lever simulator, patented in 1929, made the modeling device move, rotate, fall, change the route and thus created a satisfactory sense of movement.

In 1956, Morton Heilig created the Sensorama Experience Theater, where shaking, noise, gusts of wind, smoke, and smells were simulated during the demonstration of the film about the trip. There were other attempts to develop various means of imitation, with the help of which a person could get a sense of pseudo-reality of some artificially created environment. In 1964, in Krakow, Stanislaw Lem's book *Summa Technologiae* was published. The entire chapter of this book was devoted to phantomology. According to Lem, phantomics is a field of knowledge that solves the following problem: How to create a reality, which for intelligent beings, who live in it, would not differ from the normal reality, but would obey some other laws? (Lem, 1968).

5. Research Methods

The fantomatics involves the creation of bidirectional communication between the artificial reality and the person perceiving it ... The fantomatics involves the creation of a situation in which there are no exits to the reality from the created fictitious world.

The fantomatization is a short circuit, in another words, it is a process of connecting person to the machine that falsifies the reality and isolates him or her from the external environment (Lem, 1968).

These statements actually represent a prototype of modern definition of virtual reality: Virtual reality is a computer system used to create an artificial world the user of which can feel him or herself in this world, can be controlled in it and can manipulate its objects. It also describes in more detailed way the meaning of *anti-eye*, which is placed on the user with the help of special glasses - a device for entering visual information into the human eye, what is now called an *eyephone*. Questions related to virtual reality in one way or another have been examined by Lem in various aspects and in many other works (Lem, 1990).

6. Findings

Since the early 1960s, Ivan Sutherland had been engaged in the development of technical devices, which were later evaluated as the first real results in the field of VR. In 1965, he outlined the results of his research in the work *The Ultimate Display*, which marked the beginning of technological developments, including his participation in the field of processing and displaying images.

In 1972, Myron Krueger coined the term the artificial reality to define the results that could be obtained by using a video overlay system for an image of an object (person) on a computer-generated image and by other means developed at that time. The main ideas were published in the book *Artificial Reality* (1983).

In 1984, William Gibson published his novel *Neuromancer* where he introduced the concept of cyberspace: Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. After the release of the novel, the cyberspace began to be called the space created by the world telecommunication network and other computer and communication systems. Some ideas from this and other works of Gibson were implemented by the developers of VR systems (Lukyanenko, 1996).

With the advent of a new generation of computers in the mid-80s, there was a breakthrough in the development of VR systems. At the same time the term Virtual Reality appeared, which in 1985, was introduced by Jaron Lanier, who is currently one of the most well-known experts in the field of VR, a businessman, a writer, a musician, an artist and at that time a former computer hacker.

Since then, virtual reality has been identified with a deeper approach associated with many difficulties. It requires a head-up display and a glove box (or other means of managing virtual objects). Full immersion requires the user to wear a touch suit that transmits motion data to a computer. The head-up display is represented by two very small video monitors, which are mounted in such a manner so that each of them is in front of the corresponding eye; they look at it through special wide-angle lenses.

These devices are installed in a mask or helmet in such a way that the eyes can accept an image that the brain identifies as three-dimensional. Some displays are equipped with headphones that create a sound environment. Other methods, such as special electronic glasses, the image speed of which is comparable to video displays, allow users to work in a real environment while simultaneously accessing images in a virtual environment. Television is a forerunner of virtual reality. In fact, it has long been used by a great number of people to dive into a non-existent, invented reality, involving them in completely virtual events of soap operas, television games, animated series or thrillers. At the same time, people get so drawn in that they perceive television characters as if they were their family members; they empathize with those events as if they happened to people close to them. Such perception cannot but have a strong effect on the psychology (Lem, 1990).

One of the most frequently raised topics is the influence of violence scenes shown on a television screen on the psychology of children. It is known that the more “real” the violence looks, the stronger its impact; however, even the scenes of violence in cartoons increase the aggressiveness of preschoolers and children of primary school age.

There have been conducted the studies during which was established the effect of violence occurring in real life on the representation of violence scenes in TV reality. This correlation is not limited to statistical fluctuations. The perception of violence affects attitudes towards violence, i.e. people begin to treat it as a common phenomenon and an acceptable way to solve problems. However, not everything is so unequivocal. The same studies have shown that such influence has a greater effect on the individuals with a large relative level of aggressiveness, that is, one who is predisposed to aggression is looking for a good reason to express it. And can do it without computers and TV.

Two ancient Greek words the catharsis and mimesis were used to explain the influence of the artistic depiction of violence in art. The word mimesis refers to the process of teaching children through the observation and perception. The catharsis was called the emotional discharge of the audience during the presentation of a tragedy. An observer of the art scene depicting violence, having experienced a catharsis, can expel atavistic antisocial demons from his soul and become less aggressive after the performance. But the dynamics of his behavior can take the form of mimesis, and the spectator, having run out into the street, would begin to reproduce and replicate the scene of violence, which he or she has just perceived.

Television, books and other mass media cannot yet be considered real VR because they lack the ability of interaction. In other words, they do not give us feedback. We see some kind of an action on the TV screen, but our reaction cannot influence this action in any way in order to change its plot. In this sense, the next, the deeper level of the involvement in virtuality is provided by computer games.

Although the events taking place in the game are certainly less real than those that can be seen on television, the fact that the player directly participates in these events creates a much more powerful effect of immersion in the virtual world.

In addition, studies have shown that, being not quite real and leaving room for fantasy, such a world often becomes very attractive (Lem, 1990).

An excessive passion for computer games often leads to the dependence on them. Psychologists distinguish computer dependence of the first and second type.

Those who belong to the 1st type feel in high spirits during the game. They love to play with groups in the network, receive positive reinforcement from the group when they become winners, and this is what is most important for them.

For them computer is a means to get social reward. These are people who actually use computer games for their development and socialization. Their dependence is akin to the dependence on the easel and tassels of young fans to paint or on the gym of young sports fans.

Those who belong to the 2nd type are the real victims of the virtual addiction. They use the computer to escape from anything in their lives, and their devotion to the computer is a symptom of deeper problems (for example, physical disabilities, low self-esteem, etc.). Virtual addiction can lead to social and emotional isolation, mental disorders and information overload, as well as to individualism and alienation (Gibson, 1997).

The cyberspace mentioned in the previous section is another specific kind of virtual reality.

Today, it is the Internet that has become the global cyberspace, providing a vast field for the development of virtual technologies. These include, for example, virtual shops when the user visualises a three-dimensional model of a store room on the screen, where he or she can see the goods simply by going to the corresponding shelf; having clicked a mouse on the corresponding goods, he or she may get acquainted with it in details; the user can take it and go to the checkout; by clicking the mouse he or she may select the payment option and immediately pay for the goods by credit card; then the goods can be delivered to the customer's home.

This is completely special type of virtual organizations that does not have unified managing center and a clear structure, which is dispersed throughout the planet and legally unidentifiable, but often turns out to be quite efficient due to its internal unifying morale.

However, the spread of the Internet gives rise to the issues of psychological dependence, similar to those described above with regard to computer games. A disadapted person may immerse into the Internet, where instead of the game characters on the other side of the screen there are real people (who also have their own problems and interests). Today, millions of people are involved in the social process launched by this new phase of information revolution.

So far, the communication process in the Internet is carried out by means of the text. There are no intonations and facial expressions. However, it does not mean that there are no feelings. The emotional involvement in the topic under discussion overcomes purely intellectual essence of computer. People establish emotional relationships, fall in love, quarrel, rejoice and survive.

The Internet psychopathology is somewhat different compared with real life. This is largely due to the fact that in the virtual space you can use an incognito mode. This anonymity in communication can push people who would never have behaved in the inappropriate manner in public to realize their destructive fantasies in the Web.

People can easily find like-minded people in cyberspace, no matter how exotic, strange or even deviant their interests may be, and create new groups, which have no analogues in reality.

Therefore, communication in cyberspace for such people is extremely attractive and stimulating. In this environment they manage to avoid the frustrations associated with realization of their pathological desires.

Nowadays, there exist such things as Therapy in Cyberspace, Online Psychologists and even psychotherapeutic services in the network, as well as centers that use technology as a means of protecting themselves and help with virtual addiction, in particular, with the Internet addiction (Lem, 1968).

Sophisticated technologies are a source of risk. In the beginning of the 1970s, a new type of crime appeared, i.e. a computer crime (from hooliganism to large-scale banking and postal theft).

Werner Sombart has put forward an idea that the introduction of new technology should always be accompanied and even preceded by a value analysis of its possible consequences (Sombart, 1935). This idea became the most significant statement of the philosophy of technology, requiring control in its implementation.

Cyberspace has generated specific subcultures peculiar only to its world. The first were hackers that appeared back in the 1960s, when computers were rare and scarcely accessible. Young engineers and programmers began to make their way into computer systems. From the computerization center - Massachusetts Technological University (USA), they spread to other scientific and educational centers, where they met with the related intellectuals who belonged to the hippie movement popular at that time.

At those times, hackers were called those people who were enthused about computers and who were involved in the development of a hardware kernel. The ethics of hackers began with the notion that no bureaucratic barriers can withstand the system improvement.

The belief that the information should be free was so strong that hackers preferred to work as mechanics, extracting information from them in their spare time. They sought to decentralize the empire created by IBM at that time and to create various forms of working with computers.

Hackers artificially kept their knowledge closed from everyone else, and this knowledge included the ability to navigate in virtual reality. Hackers forced computers to do what the IBM-oriented establishment could not even imagine, i.e. to draw and compose music. It was their effort that led to the development of personal computers, computer magazines, video games, in fact, the whole computer culture.

7. Conclusion

Modern society is largely interconnected with virtual reality. Virtual reality is a world created by technical means, where a person feels close to how he feels in the real world.

Although a certain interpretation of virtual reality can be understood as the Internet, in reality, its potential is much greater. This is a place where a person can dive completely and find there much more than in real life. Besides, there is no need to think about and to distinguish between the “virtual” and the “real”. Nowadays, various companies (both Russian and international) are developing hardware for full access to virtual reality, as well as for creating augmented reality.

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