

ANNA LATAWIEC

## SOME REMARKS CONCERNING VIRTUALITY\*

**Abstract.** The development of computer sciences has transformed the way of thinking and our perception of the world. To express this new view of the world, a new language is created, which uses such notions as “virtuality”, “virtual world”, “virtual reality”. These words have already worked in our colloquial speech and our thinking. However, they are used in various contexts and have a different meaning. The paper offers some remarks on the problem of the meaning of these notions and draws some consequences of their interpretation.

**Keywords:** virtuality; reality; IT

1. Introduction 2. The concept of virtuality. 3. Contextual approaches. 3.1. Universal approaches. 3.2. Technical approaches. 3.3. Psychological approaches. 3.4. Philosophical approaches. 4. Conclusions

### 1. INTRODUCTION

Science is developing rapidly. The signs of this development include the changes taking place in the scientific language: the appearance of new terms, as well as new meanings assigned to old notions. Therefore, the requirement to specify terms becomes obvious<sup>1</sup>. M. Lubański notes that the consequence of specifying the notions is: making the meaning of the term more precise, which is achieved

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1 M. Lubański proposed such specification in his paper *Uwagi w sprawie precyzowania i porządkowania terminów naukowych*, in: *Między filozofią przyrody a ekofilozofią. W piętnastą rocznicę śmierci Księdza Profesora Kazimierza Kłósaka*, eds. A. Latawiec, G. Bugajak, Wydawnictwo ATK, Warszawa 1999, 55–67.

by defining them and pointing to possible ways of understanding them, i.e. their various meanings<sup>2</sup>.

The times we live in are frequently referred to as the era of computerisation, and the people are referred to as the information society. The growth of computerisation entails a change in the way of thinking and perceiving the world. To describe this newly perceived world a new language is created, and new concepts are introduced. The notion of virtuality, the virtual world, virtual reality is becoming increasingly popular. These concepts already exist in our everyday language and thinking. They are used in different contexts as well as with different meanings. The aim of the considerations undertaken is to investigate the content of these concepts and indicate the consequences of their understanding.

## 2. THE NOTION OF VIRTUALITY

The term “virtual” is commonly used to mean something that is created by computer simulation, something that does not exist in reality, and therefore something unreal, something that is a product of imagination. Thus, in this common understanding, the “virtual world” is a substitute for the natural world. It seems that in this colloquial understanding the “virtual world” is often understood as the unreal world, which is the opposite of reality.

In a common understanding, “virtual reality” is a reality that can exist, can exist, and is created. However, the term “virtual reality” itself is misleading, since if “reality” means something real, and “virtual” means something unreal, then we are dealing with a contradiction – unreal reality. Therefore, it seems appropriate to replace the term “virtual reality” with “virtual world”.

In English, however, the term *virtual* means actual, real, proper, potential, apparent<sup>3</sup>, while *virtuality* means a feature or virtual state, as well as potentiality, potential existence, existence<sup>4</sup>. The Latin

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2 Ibid, 55–56

3 See: *The Kosciuszko Foundation Dictionary English-Polish. Polish-English*, vol. 1, eds. K. Bulas, F. J. Whitfield, New York 1972, 996.

4 <http://www.webster-dictionary.org/definition/virtuality>.

language leads us to a completely different understanding, as Latin *virtualis* means effective, while *virtus* means power, virtue.

The above-mentioned overview reveals great ambiguity and differences in interpretation of the terms in question.

### 3. CONTEXTUAL APPROACHES

Another way to understand the meaning of these terms is to trace the contexts in which they appear. Different levels of presence of the terms “virtuality”, “virtual world” and “virtual reality” may be distinguished.

#### 3.1. UNIVERSAL APPROACHES

Thus, the terms “virtual reality” and “virtual world” are commonly used interchangeably. These terms appear in statements in everyday speech or artistic expression. In the former case, these terms usually mean “unreal reality”, a form of the illusion of reality, or even a lie.

In the latter, both terms are used interchangeably with the term “fictional world”. In the world of art, film, or music (including digital), it is possible to notice the creators’ desire to achieve a certain ideal or abstract original piece. The creator of this world is limited by the accepted standards of beauty, fashion and workshop. The film, which is usually close to empirical reality, for instance through the use of photographic technique, mixes naturalistic and unrealistic elements. This is the result of using the same measures to reproduce and transform reality<sup>5</sup>.

It is worth to notice that the virtual world, which has its source in the real world, constitutes its false image. Moreover, man is the creator of this world. These solutions allow the user to simulate situations similar to the real ones (driving, climbing, shooting, etc.). Man creating reality, and thus creating its fictional character, deprives themselves of the possibility to verify the created world. Fictions are difficult to verify.

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5 Cf. A. Hauser, *Filozofia historii sztuki*, PIW, Warszawa 1970, 374.

### 3.2. TECHNICAL APPROACHES

This group includes IT context, research projects and virtual objects. The IT context has the most significant meaning. It is about the world created by means of computer technology<sup>6</sup>. It is worth to mention that with regard to the IT level, the introduction of the term “virtual reality” in the 1960s is commonly attributed to J. Lanier, a philosopher, IT specialist and musician considered to be a man of the Renaissance. He claims, however, that it is the contribution of the philosopher of art, S. Langer, who in the fifties (i.e. before the modern technology era) spoke about the virtual world using this term as a metaphor. The term “virtual worlds” was also used by the father of computer graphics I. Sutherland to define what a person may see when looking at a computer-generated world with the idea that it is real. It is Lanier’s merit to see the difference between the term “virtual world” and “virtual reality”. According to him, the world is something that is observed, something that is outside, and reality is the participation of man and other people with the possibility of interaction. Therefore, in his view, the use of the term “virtual world” is shifting towards the term “virtual reality”. The author stresses that numerous users prefer the term “virtual world”, similarly to I. Sutherland. L. Kruger, on the other hand, uses the term “artificial reality” (1970s), and for Lanier the most appropriate is “virtual reality”. Therefore, it should be assumed that for Lanier the difference between these terms is included in the content of the terms “world” and “reality”<sup>7</sup>. Whereas people can only observe the world, the reality is an area of active human activity. Thus, the world is an image of reality and

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6 I wrote more broadly on this subject in my paper: A. Latawiec, *Rzeczywistość a świat wirtualny*, in: *Symulacja systemów gospodarczych. Prace Naukowe Instytutu Organizacji i Zarządzania Politechniki Wrocławskiej*, Seria: *Studia i Materiały*, eds. A. Balcerak, E. Radościński, B. Mielczarek, Wydawnictwo Politechniki Wrocławskiej, Wrocław 2003, 121–131.

7 Cf. interview of 11 February 2002 by M. E. Behr, *Jaron Lanier, “Virtual Reality” Inventor*, PC Magazine (2002), as cited in <http://www.extremetech.com/article2/0%2C1558%2C100970%2C00.asp>.

reality is a place of interaction between humans and their environment. This remark is extremely important as it shows the awareness of the consequences of placing different content under terms often used interchangeably.

The virtual world is a world supported by various computer software that enables simulating conditions similar to those existing in empirical reality. This world is attractive due to the application of various technical solutions that introduce the computer user into the field of influence of a number of stimuli through the use of virtual helmets, gloves, glasses, etc.<sup>8</sup>.

Thus, the virtual reality is understood as a computer simulation of a real or imaginary system allowing to operate within this system in real time. It is a hypothetical three-dimensional world created with the use of a computer<sup>9</sup>.

The term “virtual reality” has recently been identified with the term “cyberspace”. It derives from the Greek word *kybernetes* – control, manage and English *cyberspace*<sup>10</sup>. This term is used to describe all resources available in computer networks. The media promote a very common and simplified understanding of cyberspace, identifying it with the Internet. In this view, any contact with the Internet means crossing the borders of cyberspace<sup>11</sup>.

This term was introduced by W. Gibson in 1984 in the famous fantasy science novel *Neuromancer*<sup>12</sup>, to designate a world in which the human body is equipped with various cybernetic extensions that enable it to exchange information with a computer network of global reach. It is a world of a kind of hallucination.

Cyberspace is also an environment of the interaction of different media that enables the creation of different reality. It is an artifi-

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8 Cf. e.g. P. Sitarski, *Rozmowa z cyfrowym cieniem. Model komunikacyjny rzeczywistości wirtualnej*, Rabid, Kraków 2002.

9 <http://www.webster-dictionary.org/definition/virtual%20reality>.

10 Cf. <http://www.webster-dictionary.org/definition/cyberspace>. In English used interchangeably with the terms: *a computer network*, *Internet*, *Net*.

11 <http://www.ws-webstyle.com/cms.php/en/netopedia/cyberkultura/cyberprzestrzen>.

12 W. Gibson, *Neuromancer*, transl. P. W. Cholewa, Gollancz, Warszawa 1992.

cial environment created by computer technology and appropriate software. Thus a cyber world without borders is created<sup>13</sup>. It means a communicative space created to establish contacts between users using computer or telephone technology.

The virtual world in this understanding also includes the world of computer games, in which computer graphics, music and all types of supporting devices are of great importance. The technical area of the virtual world is the Internet<sup>14</sup>. Its main advantage is almost unlimited access to all kinds of databases, the ability to quickly, beyond the geographical area, establish contacts with other users of the Internet. In this meaning, the virtual world created by means of the Internet becomes a useful tool for overcoming barriers existing in the real world. Within the Internet, for example, different portals are used, i.e. a kind of multi-topic web portals or one-topic portals. They provide access to the latest information from various areas. They are equipped with mechanisms for searching files (web pages) on the Internet, i.e. the so-called search engines (e.g. Yahoo, Google, Lycos, and in Poland Onet or Wirtualna Polska).

Another development of the virtual world are the so-called blogs, i.e. online diaries created and shared on the Internet. There is a great variety of them, from typical diaries rich in graphic illustrations, through collections of photographs, to those presenting poetry. Blogs are a place to publish personal thoughts, memories, to present what in the real world does not find interest or audience. They allow to keep full anonymity, and thus encourage the authors to "come out of hiding". Sometimes they include a kind of intellectual exhibitionism. Some authors treat them as an unusual phenomenon, despite this exhibitionistic character, since they are a form of protest against the screaming reality<sup>15</sup>. Blogs inspire comments and discussions.

Chats, which are a kind of simulation of conversation, are even more interactive. These online meetings are engaging, so it is easy to fall into the trap of forgetting that this is a kind of game with variable rules,

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13 Cf. <http://www.ssi.civ.pl/data/cyberprzestrzen.php>.

14 Cf. A. Rothert, *DEMO-NET. Wirtualna projekcja rzeczywistości*, Scholar, Warszawa 2001.

15 Cf. e.g. W. Diduszko, *Samotność w sieci*, Warszawa 2003.

imposed by a group of participants determining the topic, level and culture of speech. This world is created right here and now. It offers an opportunity to hide under a chosen mask. The choice may relate to the self-image: gender, education, etc. A blog or a chat provides an illusion of freedom from any limitations, deluding hope for fulfilment.

It proves that regardless of the content of these terms, a man takes over the role of the creator of the virtual world, virtual reality, or cyberspace. This world is subject to verification as far as its coherence can be established. Research projects seem to be an example of another representation of the “virtual world”. The research work, the idea of the conducted experience, the hypotheses made, proposals of solutions, or finally, projects of scientific works have their origin in the mind of the scientist. It also seems that regardless of the scientific branch in which they are implemented, they have their reference to the empirical reality available to the researcher. As an idea they are characterized by potentiality, that is, at least at the stage of the project they are promising to be implemented. Thus, in this area, humans are creators of this reality. They create the conceptual apparatus, develop scientific methods, create science. However, it should be stressed that the content of these projects is related to empirical reality.

Another area of the virtual world associated with the previous one is the area of virtual objects. Among the examples of those reality elements are virtual particles, e.g. transferring interactions between particles of matter (gravitons, photons, gluons, bosons), or quarks<sup>16</sup>. Physical virtual objects also appear in the vacuum “out of nothing” for one trillionth of a second at most and unexpectedly disappear e.g. near the horizon of events of the so-called black holes. All virtual particles are indirectly detected experimentally – they are observed e.g. as a trace in the accelerator. Their existence is predicted within the framework of quantum mechanics. These objects are deprived of the direct aspect of measurability. The reality of virtual objects is a new reality, revealed indirectly in empirics. Therefore, man is its discoverer only in a certain sense.

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16 S. W. Hawking, *Krótką historia czasu. Od wielkiego wybuchu do czarnych dziur*, transl. P. Amsterdamski, Alfa, Warszawa 1990, 68–82.

It is worth to emphasize the way the term “vacuum” functions within quantum mechanics. For example, the aforementioned so-called vacuum in the peculiarity connected with the black hole is not a vacuum in its classical understanding. According to S. Bajtlik, “One must therefore wander even further into intergalactic space. There, indeed, there are almost empty spaces – there is only so little matter that in the volume of one cubic meter we find only one hydrogen atom. This is almost a perfect vacuum. Almost, as at these great cosmic distances, this one hydrogen atom is still a lot. Sufficient to observe the light of distant quasars, we notice that it changes, scattered and absorbed by these single atoms”<sup>17</sup>. S. Hawking clarifies that this vacuum cannot be absolute, because then Heisenberg’s principle of uncertainty would not be observed. If there was no “nothing” in this area, then both the momentum and the position of the non-existent object would be clearly defined and would be zero<sup>18</sup>. Thus, it can be considered that the vacuum in its contemporary understanding is only potential since the vacuum in an absolute sense does not exist.

### 3.3. PSYCHOLOGICAL APPROACH

The virtual world is the world of thoughts and images, i.e. the world realized through visualization<sup>19</sup>. The world of imagination is created towards idealization or falsification of reality, i.e. the image of oneself or other people or situations. The world of imagination is a simulated world. Visualization is the ability to use one’s imagination, to recall images. Imagination helps to create and reproduce images. It is a function of the psyche, so it concerns both the area of consciousness and the subconsciousness.

Imagination is an ability associated with the sense of sight, hearing, touch or smell inspired by objects or phenomena previously perceived.

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17 S. Bajtlik, *Kosmiczny alfabet*, Prószyński i S-ka, Warszawa 2004, 80.

18 S. W. Hawking, *Krótko historia czasu. Od wielkiego wybuchu do czarnych dziur*, op. cit., 105–106.

19 Cf. e.g. F. J. P. Cavallier, *Wizualizacja: od obrazu do działania*, transl. A. Suchańska, Rebis, Poznań 2001.



It occurs by itself under the influence of appropriate perceptive, verbal or imaginative stimuli, as well as consciously under the influence of human activity<sup>20</sup>. This means that we create a picture of situations, phenomena, conversations, feelings, etc. Humans create for themselves a world in which they can relax, arouse or calm their emotions. It is a reality in which they play the role that they determine for themselves.

As J. Wais rightly points out, “our internal biography is as real as our external biography”<sup>21</sup>. They are both different and they form a unity only in a state of equilibrium<sup>22</sup>. Therefore, the inner world of every person is a natural element of their personality. Dreams influence the creation of the virtual world. Dreams are understood as imaginative and deliberate activity aimed at fulfilling desires, aspirations, and intentions related to one’s personal or social life<sup>23</sup>. Dreams that arise during sleep with limited brain activity are a special case<sup>24</sup>. They have different degrees of clarity, ranging from very vivid and clear to foggy. They are associated with a reduced sense of reality. They appear on the verge of consciousness and dream. Their content usually includes the fulfilment of desires, expectations with a strong emotional tone<sup>25</sup>. These states, as it can be seen, do not have to have a very strong reference to empirical reality, although they are usually inspired by it. According to C. E. Hill, “dreams reflect real life and are an attempt to incorporate real events into existing memory structures (patterns)”<sup>26</sup>. They are created in the brain, often under the influence of various types of stimuli. They contain a story. They are therefore an example of a virtual world.

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20 *Słownik psychologiczny*, ed. W. Szewczyk, Wiedza Powszechna, Warszawa 1979, 327.

21 J. Wais, *Dwa światy*, ALBO albo. Problemy psychologii i kultury. Pismo interdyscyplinarnych poszukiwań (2003)2, 58.

22 *Ibid.*

23 *Słownik psychologiczny*, op. cit., 136.

24 On interesting analyzes of the physiology and psychology of dreams see: Z. W. Dudek, *Funkcje marzeń sennych a granice rzeczywistości psychicznej*, ALBO albo. Problemy psychologii i kultury. Pismo interdyscyplinarnych poszukiwań (2003)2, 25–36.

25 *Słownik psychologiczny*, op. cit., 136.

26 C. E. Hill, *Sen w psychoterapii*, transl. M. Kacmąjor, Gdańskie Wydawnictwo Psychologiczne, Gdańsk 2000, 19.

In a reality created in such a way, humans can realize themselves, they can act according to their own scenario, they can also experience situations which for various reasons they do not allow to exist in the real world. In virtual space, you can achieve professional success, change your image, love, kill someone – even many times – which is not possible in empirical reality. Therefore, it can be dangerous to get too involved in the virtual world<sup>27</sup>.

Psychologists draw attention to the threats to an individual's mental development that may result from considering the virtual world more interesting and attractive than the real world. Such threats are posed already by television. Viewers watching multipart series begin to be cut up about the characters' adventures more than their own family problems. Children watching unrealistic cartoons or playing computer games stop distinguishing fictional situations from the real ones in the yard. They try to transfer them into the world of everyday life, sometimes harming themselves or others. The spread of virtual reality using interaction, as well as interactive television, where you can influence the course of the film's action, can only increase these threats.

When analysing this area of the virtual world, it is easy to see that man is the creator of a new reality which draws patterns from empirical reality. This reality is not subject to objective verification.

#### 3.4. PHILOSOPHICAL APPROACH

The last context of referring to the virtual world can be found in philosophy. It seems that at least two philosophical currents are associated with the issues discussed: Platonic idealism and Aristotelian realism.

Plato was a dualist in the sense that he believed in the existence of two worlds: the world of ideas inaccessible to the senses and the material world. He claimed that perfect beings exist independently of our cognition, they are endless, flawless, while material (real) beings

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27 Cf. e.g. S. Juszczak, *Człowiek w świecie elektronicznych mediów – szanse i zagrożenia (o problemach tworzącego się społeczeństwa informacyjnego)*, Wydawnictwo Uniwersytetu Śląskiego, Katowice 2000.

are dependent on the former, shaped, according to the idea. Only the world of ideas is real. This world is made up of an infinite number of perfect and ideal beings that surpass material beings in their reality. Ideal beings are eternal and exist beyond time. To discover the world of ideas, one must free themselves from their senses. Material reality is an imperfect reflection of the world of ideas<sup>28</sup>. Thus, the world of ideas is indirectly related to material reality. If so, the world of ideas is a kind of virtual world, although it exists independently of man and all material beings. For it is infinite. In this sense, it is a world in which we find a model for empirical reality. If so, the world of ideas exists objectively. And if so, a man cannot be its creator.

While for Plato the most important were ideas, for Aristotle it was concrete. That concrete seems to be a substance. For Aristotle was a realist. He was interested in individual, sensuously learned beings. It can be said that the form for Aristotle was the equivalent of the Platonic idea<sup>29</sup>. Aristotle assumed that the substance form gives the matter its shape. It is the form that constitutes the perfection of being, it has a perfect character. However, it is not the form that is the symbol in this concept of the virtual world, but the prime matter, constituting pure potential. It is characterised by a passive desire for the act, i.e. the potential possibility of taking any form. It seems that in Aristotle's system, the most important thing is this concept of potentiality, i.e. the possibility of updating existence<sup>30</sup>. If we consider that "potential" means "virtual", then in this sense the world proposed by Aristotle is virtual. It all comes down to matter, to potentiality, i.e. to movement. Potentiality is carried by material reality in a way. As such, it is not subject to human creation. Thus, the creator of the virtual world in terms of potentiality, for Aristotle, is nature. Virtual reality is "under control" of the real world.

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28 Platon, *Sofista. Polityk*, transl. W. Witwicki, PWN, Warszawa 1956, 60–66.

29 Cf. W. Tatarkiewicz, *Układ pojęć w filozofii Arystotelesa*, PWN, Warszawa 1978, 80; cf. also: M. Heller, *Filozofia świata. Wybrane zagadnienia i kierunki filozofii przyrody*, Znak, Kraków 1992, 41.

30 Cf. Arystoteles, *Metafizyka*, transl. K. Leśniak, PWN, Warszawa 1983, 125–128.

The idea of virtuality can also be found in Leibniz's system. This author adopts a relational concept of time<sup>31</sup> and space<sup>32</sup>. Such an understanding of these concepts results in them being treated not as objects, as in classical physics, but as a result of ordering of phenomena or their consequences. Thus, without the existence of real beings and relations between them, it is impossible to talk about time and space. But it can be said that they only exist in relation to each other, i.e. because of the relations between objects, whether spatial or temporal. This relativity brings with it the idea of virtuality understood as creating an image of the world from abstracted elements of reality – relations between objects, phenomena and events. In this system, the function of creating the virtual world lies in the very possibility of creating relationships. The virtual world, which emerges from philosophical contexts, can only be verified in a logical sense.

#### 4. CONCLUSIONS

If there is some connection between empirical reality and what is hidden under the term “virtual world”, “virtual reality”, then this empirical reality constitutes a limitation in the creation of everything virtual. This limitation disappears when a new reality is created. Thus, human creates a world where we do not find such a connection, or where reality is falsified.

The above analyses show that the primary source of the virtual world may be an empirical reality or a world of abstract objects (e.g. Plato's ideas, Pythagoras numbers, or general concepts). The secondary source is the world of thought. Its realisation leads in two directions: potentiality and fiction. The virtual world in the sense of potentiality is realised in science (e.g. in research works, in postulated virtual objects). It is subject to verification within the framework of empirical science methodology. The virtual world in the sense

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31 Cf. G. W. Leibniz, *Wyznanie wiary filozofa. Rozprawa metafizyczna. Monadologia. Zasady natury i łaski oraz inne pisma filozoficzne*, transl. S. Cichowicz, PWN, Warszawa 1969, 337.

32 Cf. *Ibid.*, 336–337.

of fiction is merely passively received (e.g. painting, literary work) or co-created (e.g. Internet: blogs, chats). In the case of passive reception of the virtual world, it is generally not possible to verify it, unless in confrontation with the applicable canons. On the other hand, in the case of co-creation of the virtual world, it is possible to verify it in terms of its conformity with objective truth.

It follows from the above that concepts so commonly used today, such as virtuality, virtual world, virtual reality, often used interchangeably, carry completely different meanings and contextual content. Therefore, M. Lubański's postulate about the need to specify the terms should be a basic requirement for reliably practicing science.

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Anna Latawiec  
Cardinal Stefan Wyszyński University in Warsaw, Institute of Philosophy, Poland  
ORCID: <https://orcid.org/0000-0002-0769-7328>  
a.latawiec@uksw.edu.pl

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