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INTERACTIONS DESIGN IN TECHNOGENIC INFORMATION AND COMMUNICATION ENVIRONMENTS

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Abstract

The article is devoted to the problem of humanitarian control of interactions in modern technological culture. Particular attention is paid to the technology of information manipulation, the relationship of digital culture and the individual lifeworld. The objectives of the article include identification of the specifics of interacting subjects in information environments, clarifying the principles of their design in the network order. The need is stressed for a civilizational approach that emphasizes the relevance of ethical relationship as the basis for the humanitarian control over the design of interactions in technogenic environments. Nowadays, civilization is interpreted as a "society of knowledge" that unites the components of the technosphere and the political, ethical, cultural, mental aspects of social life. The study is conducted in terms of the interdisciplinary approach, in which context any object is treated as a sociotechnical one, included into the communication environment and into the system of subject interactions. The article specifies the methods of subject interactions design in information environments. The practical aspect of interactions designing technology is demonstrated in the process of making optimal decisions when a new product is created. The main conclusion is that in the network space, the interaction of human and technology should be considered from the standpoint of partner relations.

Keywords: Technogenic space, interactions design, information environments, interdisciplinary approach, ethical connection, partnership.

1. Introduction

Modern digital culture, generated by the global information and computer revolution of the late 20th century, is characteristic by intensive development of the network technological order, as well as by interaction subjects and interaction space virtualization (Floridi, 2014). The objectives of humanitarian control over technological culture refer to sociotechnical interactions designing on the base of harmonious combination of various aspects of relation in information environments (such as, technological, communicative, sociocultural, value). In the conditions of intensive development of technogenic information environments as an element of the planetary system, an interdisciplinary analysis of the interaction phenomenon becomes particularly acute.

1.1. Directions of sociotechnical interactions' design

In the modern design methodology, three main areas are distinguished: 1) object orientation; 2) subject orientation; 3) problem focusing. The object-oriented method emphasizes the objectivity and scientific validity of the developed projects. As a rule, it aims at any object of modernization (for example, a sports complex); but inter-subject relations and connections can also be considered as an object. Subject orientation allows to theoretically generalize designing experience, including both development and implementation, for whether large or small projects. The problem-oriented method brings to the forefront the task of development of a fundamental theory of project activities as the specific technology. This one is focused on the humanitarian knowledge integration into the process of developing options for solving current and future problems, taking into account the available resources and the intended goals of development for the regulated situation. Despite the fact of sufficient coverage of the design topic in the modern literature, the own characteristics of interacting subjects, which, as a result of design, change their links with the environment and also change themselves (Kari, 2012; Floridi, 2013), still remain mostly unaccounted.

1.2. Worldview attitudes in interactions design

Worldview modeling is a key importance in the methodology of interactions design. The universe appears as a surrounding reality, which is modeled conceptually and perceived through image - scientific, artistic, religious. It is significant that there is the definition for the word "universe", construed as an infinitely extending space, appeared only recently in the subject field of philosophy, although thinkers of different eras had been trying to find it. In Plato's Dialogues, Timaeus retells to Socrates the myth about the world creation, emphasizing that this is an opinion, but not knowledge. Johannes Kepler in his book "The Cosmographic mystery" (1596) builds the structure of the universe on the basis of "space geometry". In the 20th century and nowadays, ideas about the universe utilize the conceptual apparatus of modern physics (Unified Field Theory, Theory of Physical Vacuum, The Big Bang Theory).

Philosophical conceptions of Russian religious thinkers emphasize that the world has its own inherent being, evolving from outside and from within. The universe also includes the cognizing subject. Each stage of civilization development, marked by the formation of fundamentally new ways of social interaction, comes along with emergence of a new type of knowledge. Researchers, analyzing the modern

digital technological culture and its negative consequences, note the importance of humanitarian control in the design of subject interactions in network information environments. "The processes of personal knowledge creation, dissemination and use are impossible without an ethical component, without extending subtle and better humanness, creating a comfortable, respectful and confidential atmosphere in relations between people" (Kleyner, 2005, p. 65). In this dimension, the civilization of knowledge differs from the civilization of robots.

The idea on the need to combine technological achievements and mental elements of human was repeatedly suggested by scientists, researchers, humanists of different eras (in the 20th century among them, there were V. I. Vernadsky, M. Foucault, F. Fukuyama, J. Habermas, etc). Michel Foucault in the books "The Archaeology of knowledge", "The Will to knowledge" postulates the humanitarian-ecological approach to the analysis of the modern era, arguing that the humanitarian aspect of science and technology development neglect is fraught with serious costs. Modernity confirms M. Foucault's ideas that, using super-technologies, human being is able to transform living nature, human immune system, intellect and neurosystem.

2. Problem Statement

In the context of the anthropogenic civilization doctrine, the prospects of science in the next decades can be assessed as follows: creation of technologies correcting global energy-information processes, formation of a person operating like a machine, and development of a machine operating like a person. Actual vectors of technological development include such directions as improvement of human nature using of NBIC-convergent technologies (in the long term aiming at the creation of posthuman, an immortal super-rational physical being, functionally similar to machine), creation of artificial intelligence (in the distant future aiming at formation of complex self-developing systems, populated by technological beings, functionally similar to human).

Innovative economy of the globalizing world in the late 20th and the early 21st century outlined new factors of social progress. Spheres of production, science, education and civil government, traditionally had been being separated, started to require integrating their organizational structures. The conception of H. Marcuse emphasizes the totality of "organized society" domination over a human (Marcuse, 1994). In the totally organized society, machinery operates as both hardware and telecommunication management organization and becomes the main tool for human suppression. The individual loses his personal space in totalitarian universe of technical rationality. He has no alternative, he has to integrate into the digital technological structure, which provides global communication in the modern world. Despite the fact that the structure of digital reality is formed on the basis of depersonalized subject interactions and forms impersonal relations of subjects in telecommunication systems (Bylieva, 2014), the humanitarian attitude of sociotechnical design shifts priorities in the interactions analysis methodology to those components of human activity that differ fundamentally from information and technical components. Humanitarian control highlights the relevance of the ethical relationship as the basis for interactions' design in information and communication technogenic environments. Pechchei once noted that the revival of humanism was the main feature of the post-industrial civilization experiencing the initial period of the formation phase (Pechchei, 1985, p. 10).

3. Research Questions

The strategy of subject interactions in network information environments can be built on the basis of standard methods of any project development in conditions of total competition: description of project goals and objectives – order placement - data collection - results evaluation and correction. When forming an interactions strategy, one should keep in mind the objectivity of specific conditions analyzing, specialists' competence, speed of results processing, and communicative environment factors. According to J. Habermas, communication is an action, "when actors are going into internal coordination of any their goals only if the agreement on the situation and the expected consequences had been already reached, or it is still to be arranged" (Habermas, 2000, p. 103).

3.1. The network environments as a factor in interactions design

In the network technological order, where multimedia innovations become a component of the communication channel, the effectiveness of subject's interaction in creating technological product is determined by information possession (Gritsenko & Malkova, 2012). Design phase including into the technological chain of product creation requires diagnostics of the communicative (network) environment condition. Environmental factors are analyzed from different viewpoints, such as: 1) the probability of the communicative environment change; 2) the availability of intangible resources ensuring the project implementation (these include the interests of subjects that fall into project plans or models, accounting for external and internal trends, the project clarity and attractiveness); 3) the presence of spontaneous changes of the network environment; 4) possible forms controlling spontaneous changes of the environment. Diagnostics of the communicative environment allows developing various ways to achieve the stated goal of the technological project, optimizing interactions system, predicting economic and social risks reduction.

3.2. Interdisciplinary character of interactions study

Information and communication environments are a component of intellectual environments that characterize operating conditions for entire potential of the knowledge accumulated by human, which, in turn, enter into a more extensive structure of technogenic environments. In the studies of these technogenic environments, human civilization and the impact of human activity products on people in the postindustrial world are analyzed.

The concept of information environments includes a full set of factors that provide new knowledge emergence and transmission, as well as hidden mechanisms of impact on individuals. New intellectual and virtual environments creation, their comprehension and interpretation constitute the basic function of human adaptation in the world around, which is perceived through knowledge and understanding symbols (Lukianova & Fell, 2015). Humanitarian control of information environments is extremely important for proper functioning of the techno sphere and sustainable development of society in the post-informational stage, when the growth of informational and semantic pressure in the network is most clearly manifested (Gursoy & Celikoz, 2017), criteria of understanding and the boundaries of person's real life world are being eroded.

The importance of humanitarian control in modern digital culture is emphasized by the methodological attitude, considering any object as a sociotechnical one, included into the information and communication environment and into the system of subject interactions. In sociotechnical interactions construction, the person and his mentality should acquire the basic meaning as indicating the value boundaries of perception, understanding and action inherent in some community or other (Shipunova & Kuznetsov, 2015).

Thus, the problems of human-to-technology interactions humanization in the digital world is of interdisciplinary character, and it seems to be impossible without accounting the traditions of the past and the achievements of the present, and also without focusing on the image of the future. The methodological aspect of interactions design in information and communication environments, indicated in this article, aims at interdisciplinary synthesis of knowledge, at combining of technological, sociocultural, intellectual, communicative, value aspects of interactions analysis in network environments.

4. Purpose of the Study

Strengthening of technological determinism as a trend of information environments formation is resulted from rapid development of digital networks, in which the interconnection between human nature and technology becomes increasingly multilayered. In the conditions of the network technological order, which is characterized by radical change of interactions in information environments, the existence of any phenomena (including subjects) depends on their representation in the information flows. In the process of continuous technical renewal of the objective world, the new reality emerges, whose spontaneous construction today appears to be determined by the technologically formed environment. Penalty of such construction is that the individual loses his life-purpose reference.

The key problem of interactions in the digital world, generating from the rapid growth of communicative technologies, is the protection of subjects from destructive information impact (Marissa, 2016). The inversion of real and virtual being of the individuals and things, as the prospect for the next generation, requires special attention to the humanitarian approach in a technology of interactions design.

The methodology of subject interactions design in the conditions of global technological culture on the basis of interdisciplinary synthesis is a new topical problem of scientific and practical significance.

- The research subject in this article is the specificity of interactions in information environments of the modern technological order.
- The purpose of the study is to clarify the methodology for interactions design in network information environments.

5. Research Methods

The basic settings of the research lie in the framework of the system approach and the information paradigm in combination with the principle of subjectivity in digital interactions. Focusing on the analysis of sociotechnical nature of interactions design is promoted by the conception of communicative

rationality by J. Habermas, as well as by the concept of N. Luhmann's autopoietic system, which indicates the ability of system to build up its structures through new communications.

Interdisciplinary interpretation of the humanitarian approach allows bringing together the theoretical aspects of interactions design presented in the conceptions of information society, and the applied aspects of interactions design, particularly in the field of electoral space, public relations and mass media (Soldatov & Soldatov, 2012).

The information approach makes it possible to identify general and specific features of human-to-environment interaction mechanisms in technogenic space. While examining general methods of interactions design, the authors rely on the principles of project activity set out in the book by Alan Cooper (2017).

6.   Findings

The methodological foundations for interactions design outlined in Alan Cooper's book can be reduced to three basic ideas. The key methodological components when creating of a new product are: analysis of what was (data collection); synthesis of what is (information on the current progress); forecast of what will be (attempts to foresee the future situation). These components correspond to the interdisciplinary approach (study of the subject field) and the humanistic oriented approach (where a human is the key element in interactions design). In terms of these approaches, three main stages of the work are postulated: studying the field, analysis of environment requests, defining the future project structure. These methodological tools require designing related subject interactions and should be harmoniously combined among themselves during the project implementation. Thus, interdisciplinary and humanist approaches to the process of sociotechnical interactions design can be treated as the dominant underlying the analysis of relationships between human and technology in network information environments.

6.1. Features of sociotechnical interactions design in network information environments

The field of ideas that provide respect for both technical and humanitarian value traditions seems to be promising for formulation of the subjective interactions' design conception in information environments. Recognition of the human dimension of any technical system and information and technological environment allows substantiating the seamless unity of human, technology and network information reality in general. This attitude highlights the priority of ecological and humanistic control in the development of network information environments, as well as the methods of interactions design based on a consistently expanding interdisciplinary synthesis (which includes data collection and examination, consideration of analogues in theoretical framework and empirical development; integrating ideas from technical, humanitarian and natural disciplines). Situations and technogenic information environments' assessment is conducted in accordance with the principle of humanism, postulating human to be a universal measure for all innovations.

In the information space, where the solution of any professional task turns into a dialogue between human and computer, the mutual influence of the human and the technical environment should be

considered from the standpoint of partner relations; this dialogue format is very promising for subject interactions formation within the modern technological order. Let us consider the features of sociotechnical interactions design in network information environments in order to identify the boundaries of project practice in line with the problem.

Firstly, sociotechnical interactions design in network information environments should be carried out with the account of the synergy principle, the effect of joint and mutually reinforcing concerted action, resulting into the fact that the sum of several factors in interaction appears to be significantly greater than the effect of each individual factor.

Secondly, in the sociotechnical interactions design, the human factor (for example, the level of information mastering, life experience of the product creators) should be taken into account. Such approach emphasizes the uniqueness of subjects' life-worlds and their semantic cohesion at different levels of the public organization (Bordovskaia & Kostromina, 2014). The process of a modern technological project development requires communicative environment analyzing and subject interactions planning in addition to the feasibility study, research of demand for the provided services, resources and other objective conditions. The success of a technological project is largely determined by its creator, who acts as the source of the project idea. It is important to stress that the initial setting of the project creates the basis for designing of new connections between human and technology.

Thirdly, sociotechnical interactions' design should be globally built and remain flexible to maximum extent, holding out an opportunity for planning maneuver space as to situation change. The designer should understand that he is constructing the subject future not only for himself and for the coming years, but for a whole community of people and for the long term (McLain et al., 2014). The feature of technical design is the result reliability and certainty. When designing public interactions, it is not always possible to successfully model the situation scenarios, to predict the trends of its development, to foresee all possible consequences of the information environment subjects' actions. Social experiment can lead to a negative result. The design of sociotechnical interactions should rely on the expediency principle at a certain moment in time and take into account those parameters of the communicative environment that are capable of ensuring the order implementation and that only can be identified in deliberate project.

7. Conclusion

Interactions design in network information environments is an important function of the global world community system formation, to a large extent ensuring the humanistic orientation of this process.

In the information epoch, the content of sociotechnical interactions design system is determined by identifying the necessary sections in the technological chains (production, regulatory, role and others). The qualitative filling of technological chains sections with relevant subjects ensures the effective connection of all spheres of human life. The humanitarian principle of interactions design in the digital world indicates the irreducibility of distinct subjects (individuals, groups, etc.) to technological processes.

In modern digital information environments, the spontaneous formation of human-to-technology relations, including virtual ones, is aimed at solving problems which are external for subjects and do not affect spiritual aspects of their being that falls outside the bounds of technologically defined society. An

internal devastation of personality, erosion of the spiritually creative principles take place along with technologies development. To consolidate the humanistic orientation of personality in the digital environment, it is necessary to introduce the function of human-to-technology interactions design, based on an anthropological attitude aimed at restoring technical and humanitarian principles correspondence in the technology of activity. At the same time, preservation of the personal principle priority over the technical component should underlie the subjects' interaction design in information environments.

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