4th INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC CONFERENCE ON SOCIAL SCIENCES AND ARTS

S G E M 2 0 1 7

ANCIENCE SCIENCE

CONFERENCE PROCEEDINGS

VOLUME II

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ANTHROPOLOGY, ARCHAEOLOGY

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MEDIEVAL & RENAISSANCE STUDIES

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24 – 30 August, 2017

Albena Co., Bulgaria

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Published by STEF92 Technology Ltd., 51 "Alexander Malinov" Blvd., 1712 Sofia, Bulgaria
Total print: 5000

ISBN 978-619-7408-18-8

ISSN 2367-5659

DOI: 10.5593/sgemsocial2017/22

SGEM INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC CONFERENCE ON SOCIAL SCIENCES AND ARTS
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NETWORK TECHNOLOGIES: RISKS, OPPORTUNITIES, MODELS

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ABSTRACT.

This article presents major properties and features of network technologies from the social, management, and riskological point of view. Network technologies are considered an important aspect of convergent NBICS technologies and are primarily determined by their informative and social direction.

The author has developed a system of parameters and indicators (including input and output parameters) for a social network project of network technologies risk management and analyzed their development opportunities. The specification of the network technologies' innovative properties served as the basis for the model of the interaction between social network components (actors) and risk-generating factors for the social space of the network technologies. The model is based on the convergence between the risks and development opportunities of the network technologies, which thus are considered an integral self-organizing field with all the actors arranged on the network basis.

Practical results and applications of the research include the classification of the risk management strategies based on the social and humanitarian review of the particular social network project application cases in the process of the problem solution in the social, educational, scientific, and occupational sphere. The study demonstrated that the successful management of complicated social objects and systems depends on the active introduction of the WEB 3.0 informational and communication technologies into the socio-economic, civil, political, and other practices. The author concludes that the problems of the management and development of network technologies under the new technological wave formation are associated with the immaturity of social, ethical, and moral response, and legal evaluation of this aspect.

Keywords: network technologies, convergent technologies, management, risks, model.

INTRODUCTION.

The study of network technologies is comparatively young and is to a large extent based on classical research of the post-industrial and network society [4]. The system-wide basis of NBICS convergence as well as the methodology of their application analysis can be found in the works of V. Budanov, I. Aseeva, N. Volokhova, E. Kamensky, V. Zotov, E. Boev [1-2, 12].

Speaking of network technologies as an object of studying we point out that in this work we classify as network technologies not only information technologies but also social ones. While studying network technologies we are going to take into account their features common with other convergent technologies and the general network morphology of NBICS technologies which allows to apply network framework while studying them, because in fact we can define them as network ones.

In this work we use such general scientific methods as abstraction, analyses, synthesis and idealization. Useful ideas for studying network technologies can be found in the works of actor-network theory (ANT) representatives - J. Law, B. Latour [8-9], sociology of risk researcher U. Beck [3]. The general-methodological base of this research is formed by the fundamental ideas of synergetics and the self-organization of complex (including sociotechnologic) systems that were introduced in the works of G. Haken [7].

A complex network of dispersed agency in the framework of the development and implication of NBICS technologies creates multiple variants of defining normative in the sphere of network technologies. Suchlike allowability frames will be further called affordance. Affordance in this case is a total of links, practices and relations alternatives as well as the meaningful absence of other links etc. that are specified by networking structural morphology(building a physical-semiotic network) on a corresponding level.

Normatives and patterns defined by affordance are sorted in accordance to different subjectivity levels, which creates the phenomenon of multiple heteronormativity. Heteronormativity is understood as a compound phenomenon of network technologies social space specified by multiple distribution of various socially designed and convectional activity patterns, practices and possible threshold levels(which can refer not only to social objects, but also to technical, biological, information systems and actors etc.) By possible threshold levels we assume some transformation points, reaching which leads to catastrophe and network breakage. Here it is topical to refer to U. Beck's sociology of risk. He pointed out that on condition of minor but multiple (in combination of various parameters) under run of possible threshold level there is no formal ground to view the condition as a critical one, at the same time such state of system is an extremely risky one. [3]. From this we can conclude that the conventionality of possible threshold level measuring norms makes them conventional. The diversity of these norms builds in specific risk structure in the network technologies social space.

Further we are going to refer to concrete practical cases of applying network technologies in such sphere as management.

One of the major network technologies characteristics is their transparency, orientation on innovations. For example, H. Chesbrough points out that many corporations refer to the system of open innovations, when the organization and its departments aim at finding innovational recourses in external sources engaging public etc. One of the reasons is the fact that the percentage of patents got by single inventors and small firms from their whole amount has grown from 5% to 20% from 1970 till 1992 [5]. For instance, a company called Threadless.com offers its clients an unusual way of financial encouragement. The site of the company suggests that the users offer their own variants of design for the T-shirts that are produced by the firm and send it via e-mail. The company chooses the best design and promotes them while the authors get their dividends. However, the use of external innovational sources can bring along many problems for the company, including the difficulty of defining the copyright holder of intellectual property, the problem of motivating the users of the network project, the necessity of working out the management mechanism of creative collaboration [10].

The most desired WEB 3.0. network internet technologies include crowd sourcing, which is an open network technology that implies using ICT for involving volunteers in order to solve a public interest problem that traditional structures appear to

be unable to solve. The potential of social network crowd sourcing technologies when solving such problems as prevention and/or emergency or natural disaster response and recovery. For example in February 2010 when the Hawaii (the USA) were hit by a tsunami the staff of the local emergency management office were able to use the mobilization potential of social nets by posting in «Twitter» and «Facebook» the information about the coming disaster and detailed instructions which then triggered citizens' massive network activity, their information exchange and as a result quick and well-coordinated evacuation of most people [11].

Managerial strategies and network projects based on the principles of WEB 3.0. are based on the idea of creating and using expert knowledge, which leads to their vast use in science and education. An example of such a network project is Polidoxa, which works on the platform of a social net called Twitter, that was created (as one of its authors. Manuel Mazarra, notices) with the purpose to exchange only credible information within a small amount of users [13]. As a matter of fact, in such communities an expert network is created. The main purpose of such services in academic community is speeding up the information interchange between scientists which encourages broadening managerial options in scientific sphere. Note, for example, a portal called SciPeople, which provides vast opportunities to exchange information and create online communities to implement and manage scientific projects, in other words, it is a social network for scientists [14].

We should as well notice that corporate enterprise networks can act as a distributed system for creating knowledge(in different forms of it, such as innovation, technology, etc.), as a research network, innovation site, educational media, marketing community, etc. Using network morphology when building a managerial structure is an important tool of a modern prosperous company. For instance Jhonson&Jhonson corporation, that has decentralized and sub allocated organization in 50 countries, is working on creating practical communities for different marketing lines, which allows the staff to successfully exchange their knowledge, cooperate for common project implementation, etc [15].

Basing on the network technologies innovative characteristics specification, to which we refer the extension of social organization forms, developing new forms of subjectivity, aiming to the creation of new knowledge, using modern information communication recourses we further suggest a rough model of social network interaction in the framework of network technologies social space. This model is based on the convergence of risks and perspectives of network technologies development which in this case are viewed as an integral self-organizing sphere all actors of which are organized according to a network principle. The model is specified by a total of single parameters, such as the markers of social action/interaction, the markers of technological action/interaction, the main points of the structural stability of network technologies social space.

The key markers of social action are: the state of involvement, intention on result, subjectivity distribution in the network formed. Primarily social action belongs to the physical level of social space, where interaction does not necessarily require the participation of other people. In this case crucial is the state of the user's involvement into a dialogue with the gadget, his commitment to result, his activating purposes, the social aspects of content.

Social interaction as is begins on the level of social space as such and assumes the participation of other actors as well as gadgets. The markers of social interaction are dialogueness/ polylogueness of the communication, the products of common communication practices, the mediated nature of communication, social opportunities and risks.

The markers of technological actions are the forms and frames of interaction with technological devices, the program code used, the kind of activity carried out online.

The markers of technological interaction are the allocated cognitive network, information networks, application programming interface, software.

The major points of network technologies social space structural stability where the interaction and intercrossing of different actors takes place, has already been reviewed by us earlier [6].

The typology of actors, practices and recourses relation forms in the general structure of network technologies social space developed allows us to outline the solution for two vital practical problems:1) to specify socio-humanistic risks and perspectives of information technologies development; 2) to specify the key methods of optimizing the interaction and interinfluence of the main subjects of network technologies social space and risk generating factors.

The most vital socio-humanistic risks of network technologies development can be depicted as follows: human dependence on technology and replacing people by the latter, alienation, mosaic thinking formation, lowered level of information communication culture, simplification of cognitive activity.

The way of leveling risks lies in the points of subjectivity bends - the points of structural matching of two or more levels of subjectivity and the ontological status of the objects and things that are heterogeneous and form a network staying as the same time equal it their status. To such leveling risks directions we can attribute:

- minimizing anthropogenic and natural risks;
- forming a system of socio-humanistic evaluation of network technologies;
- reinforcing the ontological demarcation of the virtual/real categories in laws and regulations;
- active use of network communities self-management using the WEB 3.0 network technologies for forming, monitoring, social actualization and usage of new content.

The classification of risk management strategies implies classifying risks themselves. For instance, we point out such risks as[6]: natural, anthropogenic, informational, sociocultural, political and legal, ideological and risks of strategic development.

The strategies of risk management are defined by two parameters: the technology and the practice of overcoming network breakage. With that in mind we point out two types of strategies: constructive and destructive. Constructive strategies are connected with working out technologies that develop new forms of actors connection and that optimize the dynamic balance of the network. Destructive strategies are connected with elimination of some elements from the network, which leads to its simplification and

weakening. This is connected with growing homogeneity of the network and its rigidness towards the challenges of the environment.

CONCLUSION.

It should be pointed out that the problems of network technologies managing and development planning are connected with scarce study of social, ethical and moral reflection and legal evaluation of this aspect. Let us consider it further.

Firstly, despite its quite long history, the process of network technologies development has not yet fully become an object of social reflection. Most modern people are used to behave as consumers rather than experts or innovators in this sphere. While network technologies are out of the practical area of the majority and/or are limited to consumption, we cannot speak of the certainty in socio-humanistic evaluation of their perspectives.

Secondly, we can notice the escalation of risks and diversification of social accountability in the development of network technologies. The proliferation of network technologies and social accountability riskogenics is as well an uncertainty factor. Accountability splits up not on separate spheres (network technologies profiles) and individuals concerned, but on spheres of influence. Arising in one sphere and being connected with one subject only(political, social or technological one), the accountability spreads on the whole complex. involving more actors into the practices of network technologies development influences of the formation of a separated responsibility network, which is now not limited to the sphere of scientific or professional activity, but also spreads on the social space of its development practices.

Thirdly - this point directly arises from the previous one - underestimating(on any level, either on methodological of on practical one) and lack of referential samples of anthroposociotechnical hybridization, which can be interpreted in the terms of political, legal, gender and discursive post-subjectivity that erases barriers between the components of subject (over) organized by actors.

To a large extent the possibility of managing and planning the development of the anthropotechnosphere are connected with the solutions of mentioned above problems. To optimize the processes of managing convergent technologies development we need to attract various strata of society to the public assessment, increasing their role in it through their inclusion into the practices of socio-humanistic expertise. Vast opportunities are also created by broadening the methodology of socio-humanistic expertise and the study of actual and potential forms of hybrid subjectivity with modern political and gender theories that possess serious heuristic potential for understanding the future of ontological and functional status of network technologies.

ACKNOWLEDGMENTS.

The research is financed by Russian Science Foundation, project No 15-18-10013 «Social-anthropological dimensions of convergent technologies», Southwest State University (Kursk), Institute of Philosophy RAS (Moscow).

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