4th INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC CONFERENCE ON SOCIAL SCIENCES AND ARTS

S G E M 2 0 1 7

ANCIENCE SCIENCE

CONFERENCE PROCEEDINGS

VOLUME II

- - - - - - - - - - - - - - - - - - -

ANTHROPOLOGY, ARCHAEOLOGY

HISTORY, PHILOSOPHY

MEDIEVAL & RENAISSANCE STUDIES

- - - - - - - - - - - - - - - - - - -

24 – 30 August, 2017

Albena Co., Bulgaria

DISCLAIMER

This book contains abstracts and complete papers approved by the Conference Review Committee. Authors are responsible for the content and accuracy.

Opinions expressed may not necessarily reflect the position of the International Scientific Council of SGEM.

Information in the SGEM 2017 Conference Proceedings is subject to change without notice. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of the International Scientific Council of SGEM.

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
Secretariat Bureau

E-mails: **sgem@sgemsocial.org**
URL: **www.sgemsocial.org**

SECTION MEDIEVAL AND RENAISSANCE STUDIES

TECHNO-SCIENCE AS A SOCIAL PROJECT: PROBLEMS AND RISKS OF PUBLIC PARTICIPATION

Dr. S. (Phjlosophy) Irina A. Aseeva [1]

C. S. (Sociology) Evgeny G. Kamensky[2]

[1] Southwest State University, **Russia**

[2] Southwest State University, **Russia**

ABSTRACT

Today an active attempts of understanding the anthropological and social dimensions of modern technoscience are made. The most important way of technoscience is the NBICS convergence. In the article special attention is paid to the understanding of technoscience as anthroposocial project, including the public in a number of factors that can affect decision-making in the field of innovation management. However, this effect is recursive and requires an understanding of the possible consequences and risks of technoscience development for the society. For example, instability and deformation of modern form and content of social subjectivity cause concerns. These trends can be traced, for example, in a unified digital environment of global projects such as industry 4.0. Are formed not only areas of social activity in new "converging" habitat. Life strategies based on simplification of perception of the world to manage their own biography in a complex technosocial massively observed. The General meaning of these strategies is to form instrumental skills of social activity as a response to the rash of techno-socio-cultural environment. Natural process of the formation and maintenance of values and norms of the matrices of culture is broken. For example, the establishment of digital (not just virtual, augmented, and hybrid) reality requires skill of the "operator", "user", without which existence in this reality is simply impossible. The instrumental value becomes more relevant to the society than terminal values. So tradition and innovation clash in the sociocultural environment. Therefore awareness of the unprecedented opportunities and potential risks of the emergence of technoscience, cyber-physical reality, digital economy requires urgent measures for the development of the institute of socio-humanitarian expertise of technologies, taking into account its results in the forecast and project activities.

Keywords: philosophy and sociology of science, technoscience, NBICS convergence, socio-humanitarian expertise of technologies, social risks, cyber-physical reality, digital economy

1. INTRODUCTION

Since the phenomenon of technology has attracted the attention of philosophers, there has been a lot of attempts to clarify and formulate human interaction models. These searches often lead to appearance of quite opposite points of view: from arobdurateopposition in the Renaissance era to the idea of deep inner unity in modern philosophy.

One of the founders of the philosophy of technology, E. Kapp defines technology in the direction of the mechanistic model which is common in modern age, as the "organ projections" of humans, which continue natural possibilities of human body and serve to alleviate it. Ontologically, human being is a primary thing, whereas technology is only a way to achieve the aims of the vital activity. This approach is called instrumentalism nowadays.

In the 20th century, under the influence of antiscientism, technology ceased to be interpreted as a neutral means of realizing human intentions. In their works, J. Ellull and M. Heidegger considered the so-called substantivist approach, in which technology is understood as a way of self-disclosure of existence, even as a special force that enslaves humanity. "Technology is then ontologized, moves to a level that was previously has been assigned to human beings. The threat emanating from technology becomes immeasurably greater. Man can no longer be taken for granted, he finds himself in a defensive position, reinterpreted as something that requires special protection and care " [1].

At the end of the 20th century, there appear some philosophical trends that understand man and technology as something so interconnected thatmay merge into one techno-anthropo-social beingin the future. The developmentof technology leads to criticism of anthropocentrism. The "Manifesto of Cyborgs" by D. Harawey (1991) caused a great social resonance. There is an idea of "symmetry" between people and non-people in sociology of science [2]. Cognitivism offers the concept of embodied and distributed consciousness as an alternative model of the brain or emphasizes the defining importance of information technology in the formation of human subjectivity (Look: Varela F.J., Thompson E., Rosch E. The embodied mind: Cognitive science and human experience. Cambridge, MA: MIT Press, 1991; Turkle Sh. Life on the screen: Identity in the age of the Internet. N.Y.: Simon & Schuster, 1995). Radically oriented ontology asserts that people are no different from other "things" (Harman G. Tool-being: Heidegger and the metaphysics of objects. Chicago, IL: Open court, 2002; Bogost I. Alien phenomenology, or What it's like to be a thing. Minneapolis: Univ. of Minnesota press, 2012). Scientists recollectold philosophical questions: What is a human being? How to define humanity? Is there a limit to intervention into human nature? The successes of NBIC technologies have significantly exacerbated the debate around the idea of "improving" and "expanding" a man. If there were discussions about the use of dopingthe transplantation of tissues and organs used under the supervision of the doctors of smart tabletsat the beginning of the debate, and these actions were not directed and did not lead to the emergence of new superhuman abilities, now we have reached the "stage two" (in terminology of George Khashf [3]. It can lead to a radical change in human nature [4]. And if it is so, there arises a question: who should determine the boundaries of these changes and whether should society accept them unconditionally and passively?

Modern philosophers of science and technology do not doubt the answer to this question: any project of techno-science should be a social project open to public discussion and evaluation by experts researching different fields [3; 5; 6; 7]. V.I. Arshinov and A.L. Andreev, in particular, find the need to introduce the foundations of socio-technical design into engineering activities. This will significantly expand the engineering competencies required at the current stage of the development of the technology, "for it is precisely social science that is called upon to clarify and

bring to the consciousness of men the values, motives and images that are implicitly laid in the foundation of various programs, projects and directions of technological science, and also to model future "social worlds" that will arise during the evolution of techno-sphere created due to human activity" [3, 116].

2. Society as a factor of influence on techno-science

Since the second half of the XX century, in connection with the introduction of new technologies into medical practice and the formation of a mechanism of ethical and legal reflection of these innovations - bioethics - there is a tendency to change the model of the relationship between science and society from the paradigm of unconditional acceptance to the idea of scientific literacy, and then - to the paradigm of understanding science by the community. The sociology of science studies levels of public involvement in making any decisions about new technologies. In 1969 S. Arnstein presented the "ladder of citizens' participation" [8], where she singled out 8 steps: in the first two steps (1) manipulation and (2) therapy there is no real public participation, only a slight increase of the educational level.

The next three steps S. Arnstein calls "levels of symbolic gestures": (3) information, (4) consultation, (5) appeasement. The purpose of informing is to unilaterally notify citizens about the decision of experts. This approach is also called the "scarce model" in the relationship [16], the purpose of which is to inform (the completeness of the information is determined by decision-makers) in order to make the society accept new achievements in science and technology. The problem of the capacity of information aroused energeticarguments, for example, in connection with the formation of the rule of "informed consent" in bioethics.

At the consultation stage citizens can inform the experts about the necessary information, at the level of appeasement - advise the experts on the solutions options without the possibility to insist on their preferences.

The next three steps - (6) partnerships, (7) the delegation of power, (8) civil control - are, according to S. Arnstein, the levels of civil authority. Here the public has a decisive voice or completely controls the process. This contributes to the formation of a dialogical (or collegial) relationship model.

In their concept of progressive levels of public involvement in decision making J. Row and L. Frewer singled out: public communication, public consultation and public participation [9]. Scientists should pay attention to the use of two related terms in academic texts and political documents: the terms are "public participation" (PP) and "public engagement (PE). Norwegian scientists Delgado A., Lölberg K.G., Wickson F. note that "from the linguistic point of view, the word "engagement" suggests something closer to the one giving birth to interest, and the word "participation"- to active participation, but it is not clear, whether such a distinction is maintained in the literature. It can be supposed that today the term PE has become more preferable due to the appearance of a term "upstream engagement", which is increasingly used in connection with nanotechnology. Therefore, PE can be attributed to the need of generating interest in the early stages, and to more intense forms of participation" [10]. On the other hand, we suggest that these concepts should be distinguished in terms of the degree of emotional interest in the results of the process of interaction between science and society. To this extent, the "participation" of citizens can be organized "from above" in formal consensus conferences, focus groups, civil jury, public

consultations, whereas "involvement" is notable for great immersion into the problem and can manifest itself in the form of protests, lobbying or mass campaigns.

The next problem, which we should place a great deal of focus on is the stage of involving public in solving the problem. The participants of a very popular direction "Science and Technology Studies" (STS) consider the most effective inclusion of citizens in the process at an early stage of technological development, as if "against the flow", when it is possible to identify and discuss social values before the start of project financing and irreparable consequences arising. This approach allows us to abandon the vicious practice of the UFAIL approach (use-first-and-investigate-later: first, application, and investigation of consequences later) (Agler D.), characteristic of military technologies of the mid-20th century.

Another issue that should be discussed is who should be involved in adopting a decision in the sphere of application of new technologies. There is an opinion that public will be minded to participate whenever any opportunity arises. However, most studies of sociologists of science show that this point of view is not entirely true, and the use of public is not controversial.

In June of 2006 Jeff Howe published a story in the magazine "Wired", where he first named the phenomenon of attracting non-professionals to solve interesting problems, conduct fascinating observations or build predictions as crowdsourcing ("crowd", "sourcing" - the use of resources). The main idea of crowdsourcing is that any interested person of any age, education or residence can take part in a scientific or creative project, that was made public via the Internet. In our era of high rates of information exchange therearises a worldwide base of skilled workers, whose collective intellectual potential exceeds the capabilities of one, even an extremely intelligent person, or a team of professionals. Mechanisms of crowdsourcing work demonstrate its correctness. A huge number of users of such Internet resources as VKontakte, YouTube, Wikipedia, Digg.com enjoy determining assortment, building ratings, evaluating news, adding facts, etc. That is, in fact, forming a structure of virtual reality. "Even the Peer-to-Patent project aimed at the public evaluation of patents applies the rating system to highlight the most useful and significant comments on the patent application," adds J. Howe to a number of other examples. "An ordinary employee will never be able to analyze and evaluate millions of songs, videos, poems, video games, product designs, models and scientific formulas that flood the Web. Only collective attention of the "crowd", enthusiastically grading on a five-star scale, is able to create an effective filter due to a large number of human resources. Without this resource, YouTube would turn into a showcase of silly, homegrown pranks – with this resource, it has become the greatest threat to Hollywood since the invention of the television " (Howe J. The Rise of Crowdsourcing, 2006).

However, forecast markets and other crowdsourcing projects are not free of some flaws. As it is noted by A.V. Kretov and V.A. Tegin, such projects are poorly controlled, are subject to the danger of being directed not by intelligent but active, "noisy" and "littered" with completely useless information. In addition, the energy of people who trust each other within the community can easily be redirected to destructive goals, for example, when "color" revolutions mongering or any controlled chaos, the organization of terrorist acts or the fall of the financial market. Further we understand that scientific debate within the crowdsourcing community is quite

problematic, it is possible with a limited number of participants who are able to hear each other and react in on-line mode. That is, there should exist a person or a group, carefully filtering the ideas, and it is also not very easy to organize.

Sociologists of science, having interviewed several social groups, found out the degree of public awareness about the successes of new technologies and the level of readiness to participate in making decisions regarding their use. In 2006/2007, the professional marketing agency of the Netherlands asked 1,056 people aged 18 to 65, ordinary citizens, patients with celiac disease, and experts to describe their involvement in genomic research in terms such as "reading about them", "talking about them", "searching for information about them", "visiting public events" and "actively participating in discussions on genomics." The results of the research showed that young people, mostly men, showed the greatest awareness and social activity. The general public was more passive than experts and patients. Therefore, the authors of the study recommended that the government "take into account the pluralistic models of the relationship between public and science, and when organizing actions for public participation, take into account the diversity of groups and interests" (Public participation in genomic research in the Netherlands: Validating a measurement scale / Dijkstra A. Gutteling J. swart J. Wieringa N., van der Windt H., Seydel E. // Public understanding of science / OnlineFirst. November 15, 2010).

There was conducted a similar study on the basis of the Department of Philosophy and Sociology of the Southwest State University in 2014 [11]. The survey involved students of Kursk universities and a group of experts, leading Russian scientists. Sociologists have revealed a high level of awareness and interest in NBIC. The analysis of the answers showed that both young people and experts consider it possible to use the technologies only for humanistic purposes. It is noteworthy that none of the respondents consider full fusion of a human being with a "machine" or technical inventions possible. At the same time, the overwhelming majority of respondents (90%) believe that the development of NBIC-technologies should be preceded by social and humanitarian understanding, accompanied and regulated by social technologies, which are mentioned more and more often today. Young people believe that the social and humanitarian initiative will allow foreseeing the changes that NBIC-technologies bear and control these changes as it was stated by 77.8% of the respondents. In addition, according to the respondents, this guiding will allow to control the use of convergent technologies (44.4%), which is quite logical, considering that the majority of respondents are afraid of the uncontrolled use of the technologies of interest. Also among the positive functions of the social and humanitarian expertise there were highlighted the following: the diversified education of the general population about these technologies, directing them to the humanistic direction, providing NBIC with innovative forms of social, legal, economic and international coordination and cooperation. By virtue of these data, we can conclude that the active part of the Russian society is ready to participate in various forms of discussion, understanding and controlling new technologies.

3. Values. Subjectivity. Risks

However, it is necessary to understand that the problem is not only in shaping the directions of the influence of society on the development of the technology. No less important is the question of what type of social subject is formed by a modern techno-

environment. It is the socially active subject who, in the aggregate of all actors, acts as a mass force that influences the development of technology. That is, the very problem of subjectivity, its transformation in the modern anthropo-techno-sphere is a logical consequence of studying the socio-cultural contexts of the development of new technologies.

For example, one of the global technogenic phenomena of our time is the so-called Industry 4.0. The creation and development of components of such an industry organization involves the creation of complex adaptive multitasking protocols and interfaces, without which it cannot be realized. These interfaces and protocols must be sufficiently universal, unified for the entire system. But what place does the social subject occupy in such a technological environment and by whom typologically can he be represented?

We suppose that in modern technogenic society the subject-operator should be the basic type of personality-subject. We will try to justify our hypothesis.

In order to be able to communicate and interact with emerging "smart environments", a person must master the user's operational skills. This kind of communication is provided by the interfaces and protocols. Here, we suppose, the very instrumental values are relevant. They are reduced to the skills of a meta-subject as an operator interacting with the technological environment within the framework of uniform protocols. In the conditions of the modern stage of the fourth industrial revolution, the problem of reconciling communication protocols in a heterogeneous cultural environment can be eliminated precisely through such interfaces. The very content of new categories, such as "Innovative Society", "Information Society" and the similar, confirms an unprecedented growth of socio-cultural significance of technical and technological instruments of socio-economic development. Here the problem of the "semiotic seam" (Marks-Tarlow T.) of cultural contexts in the global technologically defined communication is reduced to the problem of constructing an artificial protocol of such communication. This thing is possible at this stage only on the basis and by analogy of the meta-language of interaction of high-tech machines.

What does it mean in the valuable-normative aspect of socio-cultural development? It means the introduction into the established links of a national, cultural and economic system of unified regulators. They integrate this local cultural environment establishing new global norms and values of the world techno-system on a new technological platform in it. The very mechanism of the formation of social values and norms is changing. Naturally, social values arise first, and then they form norms. The latter serve as their protective mechanism, and are initialized by the subject in the process of socialization. In our case, the expansion of the global techno-sphere assumes the reverse process. Formalized standards of protocols of social life are established. They act as a new order of the society functioning, and then it forms the relevant values.

These trends are important not on their own, but as an illustration of the integration of national socio-cultural environments in the communication space, which are specific for highly developed industrial countries. It offers a complex system of communicative exchange and information circulation. The platforms of international meta-communication are being formed on the basis of unified technological standards of participation in such information exchange, possession of protocols of this participation.

"Innovation" takes on the status of ideologeme for people in this environment. It is a cross-cultural trend that emerges from the process, but not from the content of communication. Such an environment has a request for the formation of impersonal high-tech information and communication products. First of all, in the form of networks. Any highly organized transnational, and even national, industrial system operates with information and functions in the interactions of depersonalized types of social actors. In their form there are more and more network operators who are acting without any subject-personal identification and are increasingly represented by artificial subsystems according to the "machine-machine" communication principle. Today it is noted that "there are a lot of situations in which it is impossible to control the interaction of powerful supercomputers, for example, when merging two corporations and combining two super-system of document circulation, a person practically does not understand the meaning of what is happening, and the subjectivity of the machine world arises this way" [12].

Speaking about the characteristics of the modern socio-anthropo-technical system, that are defined as "complexity," we come to the problem of NBICS-convergence. This problem goes beyond the boundaries of the concepts of Industry 4.0 and all similar projects. Being actively seized of this matter, it offers tools for influencing the socio-anthropic object itself in all its complexity. It also assumes convergent results of such influence.

The mass social subject does not realize the need of reconciliation for the outlook of the valuable reduced atmosphere of consumer society, the mechanistic standard environment of protocols and interfaces of new techno world and cyber physical reality of the Industry 4.0. The choice of the vital strategy in objective complexity of new techno society which movement to the following phases (Society 2.0, the Nature 2.0 and further) is stimulated with NBICS convergence is complicated. But a person is existentially involved in society and feels such need. He perceives impulses of the sociocultural environment, but is not able to objectify them.

To some extent the mentioned systems of bioethics and socio-humanistic examination of the development of the techno-sphere are supposed to correct a situation. But, as we specified, there are objective restrictions of such expert approach. If the approach assumes broad participation of society and personality in regulation of tendencies of technical and technological progress, then there is a question: how "the cognitive gap" between the expert and the non-professional is actually surmountable [13]? It is especially urgent if we take into account that freedom of creativity of the scientist is directly connected with the moral risk which is going beyond its personal responsibility. In this foreshortening scientists often consider the works of H.M. Collins and R. Evans who claimed that expert positions of social actors (non-professionals) are obviously vulnerable [14]. That is, "participation of society has to be limited only to adoption of political decisions while those who have necessary competence have to make "technical" decisions. There is a point of view claiming that inclusion of the public in certain cases is not reasonable and even not desirable, and real involvement of all members of society in decision-making processes in the sphere of scientific and technical policy is impossible" [15].

It is highly important that under the conditions of short life projects and the projected way of organization, both public and individual life, that are exaggerated

today, preserve the resources actual only for the project under development. Fundamental-strategic values are leveled and fall out of the circle of reference values. Accordingly, instrumental, not terminal, values are in demand. Under such conditions, technological complexity, convergence of sciences, knowledge and technology in the context of consumer's technocraticism is in an inverse relationship to the spiritual sphere. It is simplified in the actual postmodernist tradition of delusions and false sense of involvement of the mass subject in the growing complexity of the technical environment.

4. CONCLUSION

Everything that has been stated above allows us to establish a reduction in the complexity of the social subject in the technogenic "complex society." In a uniformly organized environment, we can trace the obvious vital strategies of the subject, based on the simplification of the perception of the world for the purposes of managing one's own biography. The general sense of such strategy consists in formation of skills of rapid response to mosaicity of a set of difficult contexts. These strategies, despite the different behavioral forms, are built on unified principles. They are reduced in relation to the matrix of the possibilities of the world perception.

Concluding our work, we would like to note that the fundamental paradox of the present lies in the fact that the technological sophistication of the society by the forces of techno-science is objective concerning the mass "simple" subject. The phenomenon of NBICS-convergence brings the problem out of the limits of post-non-classical rationality from pure epistemology in the sphere of sociocultural reality, existentiality of a person, social subjectivity. But the reducing principle at the heart of such subjectivity is possibly urgent only for the modern stage of the anthropological transition, characterized by the state of socio-cultural anomie. As a result, there is once again a fundamental question of controlling the complexity, the synergy of techno-social convergence. "Semiotic seam" should be created not only on the quantum level of NBICS-convergence, but also in the valuable sphere of its social component, the formation of subjectivity in hybrid reality.

ACKNOWLEDGES

The research is financed by Russian Science Foundation, project No 15-18-10013.

REFERENCES

[1] Van Den Eede Y. Where is the human? Beyond the enhancement debate // Science, technology and human values // OnlineFirst, 21 September, 2014.

[2] Gorokhov V. G. Ernst Kapp, P. K. Engelmeyer and P. Florensky — the principle of "organoprotective" and "anthropological criterion" as the fundamentals of the philosophy of technology // Gorokhov V. G. technology and culture: the emergence of philosophy of technology and theory of technical creativity in Russia and Germany in the late XIX – early XX century / URL:

http://modernlib.ru/books/vitaliy_georgievich_gorohov/tehnika_i_kultura_voznoknovenie_filosofii_tehniki_i_teorii_tehnicheskogo_tvorchestva_v_rossii_i_germanii_v_konce_xix__nachale_xx_stoletiya/read/

[3] Arshinov V. I., Andreev A. L. Technoscience and human problems // Herald of MEI. Vol. 4, 110-116, 2011.

[4] Alekseeva I. Y., Arshinov V. I., Chekletsov V.V. "Technopeople" against the "postpeople": NBICS-revolution and the future of the human // Voprosy filosofii. Vol. 3, 12-21, 2013.

[5] Macnaghten P., Kearnes M., Wynne B. Nanotechnology, Governance and Public Deliberation: What Role for the Social Sciences? // Science Communication. Vol. 27, 5, 2005.

[6] Macnaghten P. Animals and Their Nature / A Case Study of Public Attitudes on Animals, Genetic Modification and Nature // Sociology, 38, 2004.

[7] Wynne B. Public Engagement as Means of Restoring Public Trust in Science // Community Genetics, 9, 2006.

[8] Arnstein S.R. A ladder of citizen participation // Jornal of the American institute of planners. Vol. 35, 4, 216-224, 1969.

[9] Rowe G., Frewer L.J. A typology of public engagement mechanisms // Science technology & human values. Cambridge (Mass.), Vol. 30, № 2, 251-290, 2005.

[10] Delgado A., Kjolberg K.L., Wickson F. Public engagement coming of age: From theory to practice in STS encounters with nanotechnology // Public understanding of science. Vol. 19, № 1, 1-20, 2010.

[11] Aseeva I.A., Pashchenko E.N. To the question of human measurement of biomedical innovation // Proceedings of the Southwest State University, № 4 (55), 91-99, 2014.

[12] Budanov V.G. A conceptual model of a socio-anthropological projections converging of NBICS-technologies // Socio-anthropological resources transdisciplinary research in the context of innovative civilization collected papers of international scientific webinar. Ed. Aseeva I. Kursk, 24-34, 2015.

[13] Arshinov V.I., Aseeva I.A., Budanov V.G., Grebenshchikova E.G. Kamensky E.G., etc. Socio-antropological dimension of the converging technologies // Philosophical Sciences11, 135-147, 2015.

[14] Collins H. M., Evans R. The third wave of science studies: Studies of expertise and experience // Social studies of science. Vol. 32, № 2, 235–296, 2002.

[15] Socio-antropological dimension of the converging technologies. Methodological aspects / Collective monograph / Arshinov V.I., Aseeva I.A., Budanov V.G., Grebenshchikova E.G. Kamensky E.G., etc. Ed. Aseeva I., Budanov V. Kursk, 2015.