The Philosophical Problems of High Technology Development

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Abstract. The authors consider the problems of the development of technological innovations using the example of convergent technologies, which, on the one hand, expand the possibilities of man, and on the other hand, threaten him. There are different research positions in the assessment of the prospects for the application of NBIC-convergence – from alarmist to overly optimistic. It is proposed to divide the consequences of technological innovation into several groups: 1) related to changes in the natural world and the technical environment; 2) leading to social transformations; 3) changing the theoretical-cognitive and methodological settings. It is concluded that the general direction of technological innovation should be analyzed not only within the framework of scientism, but must be supplemented with a humanistic approach.

1. Introduction
The future of mankind is inextricably linked with scientific and technological progress, changing not only the natural but also the social world. The level of development of modern technologies has reached such depth and scale that allows us to say that a person is on the verge of creating a new civilization with new values and ideals.

The problem of research of scientific and technological development is especially actualized in connection with the emergence of convergent technologies, which repeatedly exceed in their potential previous technological achievements. On the one hand, these technologies promise an incredible increase in human capabilities, on the other - fraught with difficult predictable dangers. Therefore, the study of this problem urgently requires a philosophical understanding, dealing not only with different kinds of consequences, but also the formation of the image of the desired future.

Today, the scale of technogenic influence has become unprecedented, the analysis of this phenomenon attracts more and more attention of researchers. Without going into a historical digression, we will single out those authors who analyze convergent technologies that represent a radically new stage in the development of science and technology. Among them, Gorokhov V.G., Vladlenova I.V., Kovalchuk M.V., Pride V., Medvedev D.A., Kutyrev V., Chernikova D.V. and etc. Alekseeva I.Yu., Horuzhy S.S., Yudin B.G., Tulchinsky G.L., Letov O.V., Maslov V.M., Chekletsov V.V. explore modern technologies in the context of transhumanism.

Authors such as A. Abramyan, V. Arshinov, V. Beklemyshev, R. Vartanov, D. Dubrovsky focus on the philosophical reflection of the sociocultural consequences of the development of nanotechnology. This involves "clarifying the specifics of nanotechnology, analyzing their impact on the design of social reality, the consideration of new cultural stereotypes, the search for a new approach to traditional humanism, predicting possible sociocultural consequences of the development of nanotechnology, identifying changes in social values and the meaning of human life" [1].
By convergent technologies we mean the mutual influence of information technologies, biotechnologies, nanotechnologies and cognitive science, called NBIC-convergence (according to the first letters of the spheres: N-nano, B-bio, I-info, C-cogno). The main feature of convergent technologies is their maximum proximity to natural processes, the ability will be incorporated into their unity and interrelationships. Distinctive features of NBIC-convergence are: intensive interaction between constituent areas; significant synergistic effect; the breadth of coverage of the subject areas under consideration - from the atomic level of matter to reasonable systems; revealing the prospects for a qualitative growth in the technological possibilities of individual and social development of man [11, p. 104].

In the future, NBIC-technologies are merged into a single scientific and technological area of knowledge, which will include almost all levels of organization of matter: from the molecular nature of the substance (nano), to the nature of life (bio), the nature of the mind (cogno) and information exchange processes (info) [11, p. 103].

The possibilities of convergent technologies amaze the imagination - with their help atomic-molecular construction of materials and devices with predetermined properties is available, reproduction of systems of living nature, management of biological processes at the molecular level, disclosure of the secrets of brain work, creation of artificial intelligence. The development of NBIC-technologies can be the beginning of a new stage in the evolution of man - the stage of directed conscious evolution [11], the feature of which is the existence of a goal. Artificial selection, carried out by man, is aimed at the formation and consolidation of the desired features. The first results of directed evolution already exist - genetically modified animals and plants, early diagnosis of hereditary diseases, artificial implants instead of human organs, etc. However, the final stage of development of this direction is difficult to imagine, although it is already obvious that science and technology, while expanding human capabilities, at the same time change the person and his relationship with the world. Man, striving to possess these opportunities, does not want to put up with the reverse effect on him. Hence the two extremes of scientific and technical progress - from the self-affirmation of man through science and technology to the self-denial of man in the technological world in the form of various cyborgs and biorobots. This duality makes us think about the prospects of man-made development.

Some authors talk about the absolute unpredictability and irreversibility of the consequences of artificial intrusion into the natural environment. In particular, A. Grunwald characterizes the ideas of convergent technologies as utopias, which, nevertheless, bring humanity to some border situation, where the results of such an impact become fundamentally stochastic [4, p.43-44].

Others restrainedly, but quite positively assess the emerging perspectives: "The introduction of technologies will entail a significant improvement in quality and an increase in the overall life expectancy of people, re-distribution of resources, a reduction in social tension, the development of ecological systems. That is, there will be a qualitative change in the economic and political life of the world "[6].

Still others - run into unrestrained optimism about the "fantastic" future: "The changes caused by the convergence of technologies will be revolutionary and swift. Nature will be turned into an immediate productive force, resources will become virtually unlimited. Most people will improve themselves with the help of NBIC-technologies - from replacing parts of the body to artificial ones and direct interference with the genetic apparatus and metabolism. The human mind, including morality, is also being transformed. The question of the limits of humanity will arise, about the definition of the transition to a posthuman. The posthuman mind and artificial intelligence will reach the level of the supermind, qualitatively superior to the level of man "[11, p. 114].

The development of modern technologies "nourishes" the ideology of transhumanism, which justifies the transformation of the human body and spirit on the path to eternal life and the creation of a superman. Transhumanism "blesses" the absorption of man by the processes of further technological development, its transformation into a material of progress [8, p.10].

If the most frightening prospect was the idea of a posthuman, developed in transhumanism, then an intermediate version is the concept of a technologist offered by a number of researchers. "Technobio evolution is already a reality, but in the process it does not cease to be a human being, but becomes an
increasingly technological human being. When we talk about a techno-human as the result of such an evolution, we do not identify him with either the posthuman or the biorobot. A technician does not replace a reasonable person, but is a stage of his development - a technologically intelligent person 
"[2].

This kind of future can inspire and alarm at the same time. At the present stage of scientific and technological development, it has been found out that its effects are difficult to predict. The matter is complicated by the fact that all the changes, both positive and negative, can be irreversible.

Conventionally, the consequences of technological innovation can be divided into several groups, each of which needs to be studied:
1) associated with changes in the natural world and the technical environment;
2) leading to social transformations;
3) influencing the epistemological (methodological) attitudes in connection with the fact that subjective activity is included in the "body of knowledge".

The introduction into natural processes at a deep level along with huge prospects is fraught with "absolutely unpredictable, unreasonable and often irreversible consequences" [4, p.46].

The social consequences of the application of modern technologies are also difficult to assess unequivocally. On the one hand, consumers receive the maximum advantages of modern technologies: new products and services, reducing their cost, overcoming spatial and temporal barriers, etc. On the other hand, technological advances create problems in the sphere of production - the development of innovations causes unemployment. Already today there are major changes in the labor market: automation and reduction of jobs, the polarization of professions to low-income and high-yield, the expansion of forms of temporary and non-guaranteed employment. On a global scale, social transformations in today's competitive market conditions inevitably lead to increased inequality, increased instability and conflict in society, and, possibly, will breed new, more severe forms of such inequality [10]. To the group of social consequences can also be attributed anthropological consequences concerning the corporeality and mentality of man; sociocultural, affecting the social and cultural codes of society, cultural identity of the individual, taking into account its dependence on technical innovations, re-thinking moral values, religious attitudes.

Methodological and epistemological consequences are connected with the change of the scientific paradigm. Post-non-classical science changes the relationship between the scientist and nature, the cognizing subject and the cognizable object. "From the observer, the scientist turns into a demiurge - designer, creating fundamentally new objects of the material world with molecules with pre-defined parameters and necessary properties [12, p. 81]. It should be taken into account that in post-non-classical science the cognition (and construction!) of the world is related to the goals and values of the subject. The latter are determined by modern culture, combining both the values of self-realization and the market-based ones, determined by the logic of demand-supply. This is why the general direction of technical innovation is a serious problem. Where is technological progress moving? Who or what is it managed by? What is at least the most approximate image of the future? These questions are asked by many authors, and the answers offered are much less.

Some believe that the convergence of technologies will lead to the establishment of a new technoculture of hybrid quasi-objects [2]. Others believe that the evolution of man does not at all mean overcoming his "humanity." This means that at this stage of society's development, the scientistic approach must be supplemented with humanistic approaches. A human must defend himself as a person and a human being, resist the dominance of technique and technology, which requires a new level of development of consciousness. It can be about the control of a human over technology and their co-evolution. Science and technology should serve a human without disregarding his spirituality and corporeality [13, p.18].

2. Conclusion
In the conditions of increasing technology, it is worth turning to the ideas of humanism - meaningful, as long as there is a man. "The world without wars and violence, without exploitation and alienation,
without dividing people into masters and slaves, rich and poor, racially full and incomplete, is obviously more humane than the one in which all this is preserved in one form or another. From this point of view, humanism is a task that is constantly facing humanity, which it decides at every given moment of its existence, never reaching the final result”[9].

3. References
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