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**PHILOSOPHY IN THE FORMATION OF THE MODERN  
HUMANITARIAN PARADIGM OF ENGINEERING EDUCATION**

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***Abstract***

The purpose of the study is to uncover the methodological and ideological role of philosophy in changing the paradigm of engineering education in the modern world. In their study, the authors rely (in solving ontological problems) on the position of metaphysical realism of the greatest Spanish philosopher of the 20th century, Zubiri (1898-1983). The strategic goal of modern education is the formation of the creative nature of human activity in a network society and the institutionalization of the information industry. Their concept is based on the accumulated during the teaching data about the main object and subject of the educational process - students, as they systematically met with students not only in the learning process, but also conducted student surveys, both at the stage of initial acquaintance with philosophical disciplines, and at the end studying philosophical courses. The result of reflection on various theoretical models of education and our own rich experience was the following conclusion. The key points of philosophical education - *knowledge, communication, worldviews* - focusing on the problem of values, allow you to use the full potential of the historical and philosophical tradition to implement the humanitarian model of engineering education. Cognitive technologies of outstanding philosophers of the past and present, describing their *subjective* experience in the application of the mind, reveal *objective* meanings in the knowledge of nature, the technosphere, sociosphere and consciousness. And they allow you to master the conceptual language of philosophy in order to answer the main question - what humans live for?

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**Keywords:** Creativity, cognitive technology, education, intelligence, philosophy.



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## 1. Introduction

Modern society is in the process of fundamental social transformations. In economics, they are associated with the need to transition to a “new industrial society” (J. Galbraith, S. Bodrunov), in education, with the creation of third-generation universities (J. Wissem), which will integrate scientific knowledge into artificial intelligence systems and create university programs entrepreneurship development (Bodrunov, 2016; Bowen, 2015). A common feature expressing the command of the times is the formation of the creative nature of human activity.

In these conditions, there are increasing requirements for the formation of flexible competencies in the educational process, which require mastery of communication skills, knowledge of the psychology of people, the ability to work in a team, the ability to learn throughout life, be sensitive to the ethical standards of any professional activity, and take responsibility for the choice of grounds their worldview (Alexankov et al., 2018; Cottafava et al., 2019; Madigosky et al., 2019; Trostinskaia et al., 2018).

In modern culture, there is also a rethinking of the nature of philosophy, which is seen as creating a space for the discovery of truth in the ontological, rather than purely epistemological, sense of this concept. The questions of justice, being, good, beauty, love, freedom, meaning that philosophers have dealt with from the first steps of philosophizing are posed and considered today in the wide cultural context of the reflexive understanding of economics, politics, morality, art and the transformations that they have undergone in the modern world. Since the beginning of the 20th century of all types of self-determination of philosophy, the leading is the existential understanding of philosophy as a creative clarification by the spirit of the meaning of its existence.

The philosophy of consciousness and ethics come to the fore in modern philosophical studies. Interest in these problems is associated with an ever-widening gap between the rapid and endless technological progress and the slow pace of the cultural evolution of the human race. Increasingly, students in response to the question of philosophical problems of interest to them indicate the problem of the meaning of life, love, fear, and humanity in the modern world. The questionnaire, which has been conducted by Professor Yakovleva L.E. for 10 years at the Institute of Design and the Institute of Social Engineering of the RSU named after A.N. Kosygin, testifies to the increased interest of students in the search for the ideological foundations of their activities, the discussion of such problems as the meaning of the life of an individual person and humanity as a whole, the problem of finding harmony with oneself and the world, the problem of the social dimension of creativity, equality and justice. More and more often, students are asking questions: “why is the essence of man so contradictory”, “what needs to be done in life to experience real happiness”, “what is justice”, “love - kills or inspires” “is an alliance between science and religion possible”, “ is intelligence inherent in neural networks? The list of questions of students from different faculties could be continued for a rather long time, but the essence is the same - an obvious request from students for these problems is obvious.

The publication of modern philosophical literature also shows a tendency to actualize various types of worldview created in antiquity. The books published in 2019 by Massimo Pilyucci “Ancient Philosophy and Modern Life. How to be a Stoic” and the book of the professor of King's College London Edith Hall “Happiness for Aristotle. How ancient philosophy can change your life.” Hypertrophy of the means of achieving goals and the absence of an end goal that gives meaning to human life, which was

written by such thinkers of the 20th century as E. Fromm, V. Frankl, P. Ricoeur, is the contradiction that is the core of the global problems of the 21st century in non-linear society (Nazaretyan, 2018).

Philosophy in any historical era was a met language of culture, “the spiritual quintessence of an era captured in thought,” but in the modern world it plays another crucial role - to be a mediator and translator from one language of culture to another (R. Rorty) and the main builder of possible scenarios future human civilization. One of the latest works by R. Bart published in Russian is an attempt to answer the question “how to live together” in the modern world, characterized by poly-identity and diversity, associated with decentralization of philosophical discourse and personalization of education, on the one hand, and anonymity of decision-making in networked society, on the other hand. The problem of human responsibility grows in proportion to increasing degrees of freedom, the anonymity of a significant part of the information content available to him in modern digital society, and the increasing volume of information. It is noted that 90% of the data in the world of Big Data was created in the last 2-3 years (Zhuravleva, 2018) The quantitative increase in the speed of information processing in modern computers has not brought about qualitative changes in the development of human abilities. Namely, this was originally the goal of creating information technology. The fact is that neural networks operate in a manner different from human intellect. The relations between the symbols used in computers and their objects are undefined and changing; they cannot be entered into a specific algorithm of actions. Such connections can only be created by the human intellect, the unique feature of which is the ability to perceive things as realities, in which a person grasps not only the content of impressions, but also the way they are formalized (Zubiri, 1999).

One of the most significant philosophers of the 20th century, Zubiri (1999), as a result of his study of cognitive abilities, comes to the conclusion that only the human intellect is able to “feel reality” and, at the same time, understand the “formality of reality”, that is, only man is capable of creative interaction with reality. In this sense, technical devices, no matter how complex they are, however, like animals, do not possess intellect.

Under these conditions, the requirements for the formation of critical and creative thinking both in the educational system and in society as a whole are increasing. Any person cannot argue with artificial intelligence in the speed of processing the information received, but in the ability to produce and comprehend independent goals and objectives, rather than reproduce existing knowledge, primacy remains with the person (Shipunova & Berezovskaya, 2018). Codes of a person’s spiritual motivation in getting an education differ from the purely pragmatic tasks that are posed to the higher education system of the 3 ++ generation: they are rooted in the individual’s ability to live in the depths of human culture, and not on its everyday surface, in the desire to understand and discover meanings, create your own unique inner world, take into account your national identity (Belgorodskiy et al., 2019).

## **2. Problem Statement**

Commercialization of education is the practical realization of the expansion of the ideology of market fundamentalism, the concept of society as a market society, the rejection of the cultural-historical, axiological dimension of education. According to the principles of humanistic philosophy, education is a fundamental achievement in the process of development of civilization, the right of every person as a

public good, a person's property, and the resource of his familiarization with culture. The instrumental-pragmatic model of education leads to craftsmanship, adaptation to the immediate needs of society, without orientation to the future (Rozin, 2018).

And at the heart of such a model of education, undoubtedly the dominant role belongs to philosophical disciplines. The key points of philosophical education - knowledge, communication, and worldview – are formed around the problem of values. Knowledge acts as a “cultural phenomenon”, and not just as a cognitive product, therefore a philosophically minded person evaluates scientific theories from the point of view of harm / benefit to a person as an integral being, morality / immorality of the results of their practical application. Accordingly, educational technologies can be built in no other way than relying on basic values that, in their entirety, define a system of existential coordinates.

Let us see what resources philosophical knowledge possesses for implementing this model, and what are the real conditions for studying philosophical disciplines in Russian education? It should be noted that despite maintaining universal competence in the higher education system and the possibility of connecting to the formation of flexible competencies, the real number of hours devoted to studying philosophical disciplines is steadily decreasing, while the need for a practice-oriented education and increasing the number of hours allocated are justified to practice. This displacement of fundamental theoretical knowledge from the program takes place not only in the field of philosophical disciplines, but also in the field of mathematics, physics and other sciences.

Empirical epistemology, the automation of database interpretations by artificial intelligence, sets, in terms of D. Brooks, the fourth paradigm in the development of science (as cited in Zhuravleva, 2018), which means an attempt to collect all possible data, but not process it creatively, not to offer new hypotheses and trial theories, that is, the empirical dominates over the theoretical in the process of scientific knowledge. At is why, in modern science, no new fundamental discoveries have been made, although a large amount of data has been accumulated and a huge number of scientific disciplines have been created.

At the publishing house of the RSU named after A.N. Kosygin (then this university had another name Moscow State University of Design and Technology) by Professor Yakovleva L.E. in collaboration with A.E. Kolomeitsev published monographs describing rational cognitive technologies as the methodological basis for the scientific search for modern students. In these works, the authors showed that:

*The scientific reflection of reality ... is organically interwoven with the aesthetic omission of grace and simplicity, perfection and integrity, completeness, coherence and harmony of objects and natural phenomena addressed by cognitive scientific thought. Philosophical and scientific ... complement each other in the close unity of internal and external, essential and being, hidden and expressed, formal and substantial, local and global, and the synthetic organization of this unity is as natural as the integrity of the human consciousness, due to the unity of the material world and reflectively looking at the analysis of its abstract structures, in the organization of which the outstanding role again belongs to the principles of symmetry and its constituent components.* (Yakovleva & Kolomeytsev, 2016, p. 4)

A man of science should become a homo intellectus, able to turn information into knowledge, and realize knowledge in business, having an ethical, aesthetic and social meaning.

The intellectual side of human consciousness is associated with expedient and focused skills – the ability to act, think, design, predict, calculate, solve. The future of human civilization is connected with the possibility of creating such a social institution of social relations, which will not be based on physical coercion to work, not on administrative violence, not on the market discipline of productive activity, but on the effect of self-discipline of the mind and will, self-organization of consciousness and activity. Public consciousness without a cult of intelligence is prone to degeneration into an ideology of insane faith and fanaticism, and in a state of decay it necessarily produces a relationship of contradiction and contention, denial and destruction, intolerance and hatred.

An important role in the formation of the society of "intellect-capital" is played by humanitarian education. A common distinguishing feature of humanitarian education, according to Gadamer (2013), is his openness to everything else, to other, more generalized points of view, the ability to look at oneself from the side, which is formed in an educated person.

One of the ways to limit the subjectivity of a cognizing subject in the field of humanitarian knowledge is to deepen into history and, first of all, deepen into the history of philosophy. Self-understanding within a tradition is the criterion for a good subjectivity of the humanitarian. Naturally, this knowledge cannot be formalized, algorithmized, and therefore expresses to the greatest extent the creative component of scientific work (Zorina & Yakovleva, 2015).

### **3. Research Questions**

- What caused the inevitability of the transition to the humanitarian paradigm of education?
- What methods can be used to solve this problem?
- How to persevere the continuity of traditions for creating innovation?
- What role does the study of philosophy play in the formation of a new educational paradigm?
- What role does distance education play in training technology specialists?
- Why is the study of philosophy important in the training of modern technology specialists?

### **4. Purpose of the Study**

The purpose of the study is to uncover the methodological and ideological role of philosophy in changing the paradigm of engineering education in the modern world. The authors see the strategic goal of modern education in the formation of the creative nature of human activity in a network society and the institutionalization of the information industry. For a long time, the authors combined scientific work with the teaching of philosophy not only in technical universities in Russia, but also in the Moscow State University named after M.V. Lomonosov. Their concept is based on data accumulated during the teaching about the main object and subject of the educational process – students, as they not only systematically met with students during the learning process, but have also conducted student surveys at the beginning and end of courses.

## 5. Research Methods

In solving ontological problems, the authors rely on the position of metaphysical realism of the great Spanish philosopher of the 20th century, X. Zubiri (1898–1983), who created a new system-structural vision of reality. The analysis of the importance of the humanitarian education paradigm for modern society of increasing complexity and fundamental social transformations, both in the economy and in culture, developed under the influence of digital technologies, is based on the hermeneutical-phenomenological branch of modern philosophy (G. Gadamer, P. Ricoeur). The theoretical basis of their discussions on the methodological role of philosophy in the process of integrating the natural, technical and social sciences, and the increasing share of interdisciplinary research are the work of the largest representatives of Russian philosophy of technology V.G. Gorokhov, V.M. Rozin.

The result of reflection on various theoretical models of education and our own rich experience was the following conclusion. The key points of philosophical education – knowledge, communication, world outlook – focusing on the problem of values, allow one to use the full potential of the historical and philosophical tradition to implement the humanitarian model of engineering education. Cognitive technologies of outstanding philosophers of the past and present, describing their subjective experience in the application of the mind, reveal objective meanings in the knowledge of nature, the technosphere, sociosphere and consciousness; they allow one to master the conceptual language of philosophy in order to answer the main question: what do we live for?

## 6. Findings

The teaching of philosophy plays a special role in the formation of students' personality. Dialogue, disagreement, equality of free cognizing subjects, criticality and reflexivity are an original way of philosophizing, starting from the time of Socrates. And it is precisely these features of philosophical thinking that are in demand in the modern world. It seems that in modern conditions one of the most important functions of philosophy is the expansion of universally significant world outlook dialogue and the intellectual, logical processing of empirical knowledge.

At the Russian State University named after A.N. Kosygin we use various forms of lectures and practical classes in philosophical disciplines: the method of “expert groups” (patented by Professor G.V. Sorina), the role-playing method as a form of conducting an interactive lesson in philosophical disciplines (Professor L.E. Yakovleva), scenarios of business games on professional ethics (associate Professor V.M. Pukhir), information technologies used at seminars on cultural studies and aesthetics with international students for searching and analytical information processing on international educational and scientific sites (associate Professor N.Yu. Tashlykova), the projective nature of students' scientific activities encouraged in the framework of the annual All-Russian Scientific Conference of Young Researchers “Social Engineer” and the intra-university scientific conference “Peace”.

The space of extracurricular activities is also actively used. In 2019, within the framework of the “Socioengineering of the Future” educational center organized by the Institute of Social Engineering, which includes the Department of Philosophy, a philosophy club “Apeiron” has started operating, which is visited not only by bachelors, masters and graduate students of all faculties of our university, but also by students of other Moscow universities.

Of particular interest were club meetings devoted to two topics: “Science and Religion: Is a Union Possible?” and “The Future of Humanity: Possible Scenarios and Projects.” As part of the second topic, we have discussed a report by journalist I.A. Shnurenko about the threat of total digital control and management of human behavior in the context of the institutionalization of the information industry, when the only real social experts are employees of such platforms as Amazon, Facebook, Google and others, making it impossible to verify their research (Zhuravleva, 2018).

The use of digital technologies makes discussion of philosophical issues such as freedom, personal dignity, creativity and the meaning of human existence and society even more relevant. Direct contact of the teacher and the student, the transfer of knowledge beyond the formal channels of their communication and the socialization of students are no less significant aspect of education than the transfer of highly specialized knowledge. The illusion of creative freedom within the framework of Internet reality arises because the user is not involved in compiling blocks of information and is often unable to distinguish between freedom of life and freedom of Internet use. Most likely, a similar process takes place in education – Internet learning cannot replace “living knowledge” with virtual. If we replace the original approach to the growth of the human mind – thinking over books and tasks, engaging the whole complex of small motoric activity, discussion and dialogue – with a vector of communication with the Internet, then most often not creative, but addictive (deviant) behavior is formed. That is why the students of RSU and VSUT are involved in various types of volunteering, public discussions of municipal projects, eco-movement, WW2 grave search movement and other activities.

The research laboratory “Philosophical problems of engineering and technical knowledge” established jointly by the Volga State University of Technology and the Institute of Philosophy of the Russian Academy of Sciences is engaged in the issues of technical knowledge methodology, engineering ethics, and social and humanitarian expertise of technical projects (Gorokhov, 2012).

The engineering community has developed detailed epistemological models of knowledge of technical sciences and is reconstructing the history of the formation of individual technical sciences. This knowledge is oriented towards the maintenance of design and engineering activities “to learn in order to do” (the cognitive goals in the technical sciences are subordinate to project goals). An engineer studies samples, methods for solving technical problems, techniques and experience of older generations. The art of engineering consists of the selection and precise implementation of solutions that are adequate to the task. However, the “epistemological space” in technical knowledge seems limited. And not so much because of the shallow understanding of interdisciplinary connections in technical knowledge at the classical and modern stage of scientific and technological development, but rather because of the actual exclusion of a person as a subject of knowledge and activity, which is the “crossroads” of all sciences, including technical (Klochkova et al., 2016). In the future, it is planned to be replaced with artificial intelligence.

Futurologist Shnurenko (2020) notes in his article:

*For technocrats, however, a robot is better than humans. It is more predictable because its strategies are aimed at a specific goal, while a person experiences a mood phenomenon (die Befindlichkeit, to use Heidegger’s terminology), i.e. some strange intention aimed at the world as a whole. The very concept of “the world as a whole” for an algorithm controlling a robot is an*

*unnecessary and even dangerous thing, because the intentions of a creature experiencing it are unclear and unpredictable, which means they cannot be controlled. (p. 53)*

There are not enough philosophizing engineers in a modern university to attend to these problems. The bulk of techies are experiencing transformation of technical education in the “bachelor-master program”, which due to the undeveloped manufacturing base is characterized by a reduction in hours of production practice, and the introduction of fashionable courses, for example, “innovative management”, “technological entrepreneurship” and others, conditions for development of which are not secured in the country. For them, philosophy is often a hindrance, a loss of “golden learning time”. But a technical university will not be able to fulfill the task of training highly qualified personnel without the humanitarian environment that shapes a student’s personality and the civic engagement of a future engineer, and preserves the human in a human.

Technical thinking is a phenomenon that we are aware of and recognize when it is present or not. But how can we shape it without philosophy, especially in modern requirements, as it’s not just knowledge, but also activity – creative, constructive, one that requires collective efforts, co-creation, interaction, communication tools based on generally accepted meanings and values, live emotional cooperation (Rozin, 2016).

During the quarantine, universities have switched to online learning to support the learning process. When the Internet and distance learning courses were used as an additional resource, one could feel the effect of their introduction. But now the formalization of the processes of communication between the teacher and the student can lead to a decrease in the quality of education. The classes are held, transmitting information to the students’ environment (depending on technical support), however, it is unlikely that an effective transfer of knowledge will be provided. Students lack live communication with teachers and classmates and an atmosphere of discussion.

The process of transition to the new educational standards of GEF 3++ seems rather contradictory, the intellectual competence of philosophy as a means of developing thinking is formally present, but there are no mechanisms for its implementation. This provokes teachers of technical universities to survive (theoretically and methodologically) in the face of danger – emasculation (“cretinization”) of philosophical thinking, its bureaucratization through regulation and introduction of more and more technical solutions (when graduating departments dictate what and how to read).

## **7. Conclusion**

Philosophy is denied its cultural specificity and its own methods due to the supposed lack of former rigor in terminology, demands are made for the “professionalization” and “technologization” of training courses. If “specialization” as in natural and technical sciences substitutes a full-fledged philosophical course, it will lead students away from the basic foundations of philosophical culture. And the main feature of philosophical culture is the breadth of a person’s general culture. It is degrading in the masses of students, and we struggle to replenish it with philosophized courses: “Russian language and culture of speech”, “Ethics and culture of communication”, “Philosophy of management”, “Ethics of family-marriage relations”, etc.



Claims that it is necessary to meet the challenges of the times are not always indisputable. Information cannot replace knowledge, and a student is not always ready to distinguish them. During the introduction of interactive forms of work with young people, the content of the subject often suffers: the real content of philosophical topics is replaced by so-called philosophemes, jokes and humor. The most important attribute of philosophical culture is the ability of a person to identify, comprehend, perceive the connection of ideas and concepts found in things and events of reality.

In the process of teaching philosophical disciplines we focus on working with original philosophical theories. The students are impressed by the terminology, the everlastingness of the presented problems that are exciting successive generations, questions of life and death, the meaning of the existence of human and humanity as a whole. They react in a really emotional way and feel joy from their discoveries, finding objective meanings and the corresponding thinking process-experience. And that is precisely the process of forming a new dimension of reality – a philosophical attitude to the world.

The need for the love of wisdom is enormous in the environment of a fall in the general culture and a crisis of spirituality. In the information environment there is an appeal to parables, aphorisms, sayings of philosophers. Most often this is perceived as a psychological phantom, a desire to fill a spiritual void in the conditions of loss of meanings, ideals and faith in science, as a need for something meaningful. This simulation of the love of wisdom can also be interpreted as an attempt to move from the “high” of hedonistic culture to enlightenment. People in the modern world are in need of philosophical education.

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