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Blockchain as a means of transforming the subject's cognitive attitudes

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***Abstract*—The paper is devoted to the problem of transforming the structure of subject's cognitive attitudes under the influence of the introduction of blockchain technology. It is shown that they are based on the attitude to truth, which determines faith in the attainability of truth, the choice of practices and criteria for verifying knowledge, strategies for managing truth and falsehood. Blockchain as a technology that makes it impossible to change information and the history of transactions destroys the traditional practices of managing the truth and creates a new cognitive situation for the subject in which falsehood, deception, and manipulation are almost impossible and ideology do not work. The result of its implementation is the devaluation of traditional institutions of trust, and, in the long term,—systems for the realization of power accepted by society through the spread of distributed systems.**

Keywords—cognitive attitudes, episteme, blockchain, algorithmic trust.

I. INTRODUCTION

The cognitive activity of the subject is always based on explicit and implicit attitudes and principles that determine the statement of the problem, the choice of methods and ways of argumentation, attitude to truth and ways of correlating the knowledge gained with reality. A study of cognitive attitudes in the 20th century by the classics of the philosophy of science T. Kuhn [1], R. Merton [2], M. Polanyi [3], and the sociology of scientific knowledge—by B. Latour [4] made it possible to confirm this thesis and show the influence of subjective factors on the results scientific knowledge. Traditional practices of obtaining and transmitting knowledge involve a wide range of possibilities for controlling the truth and attitude to it. By changing the context, the form of representation, partially or completely hiding its content, indicating the ethical, ideological, and value aspects of the functioning of knowledge, it is possible to radically transform the perception of information by the subject. Moreover, the subject himself/herself always has internal attitudes and beliefs that allow him/her to adapt the information received to his/her ideas.

Modern information technologies, having first changed the form of coding and transfer of knowledge, are now beginning to exert a more fundamental impact on the cognitive process, affecting the cognitive attitudes and beliefs of a person. In this regard, it seems relevant philosophical and epistemological analysis of the impact of modern computing tools on the internal settings of the subject of knowledge.

Perhaps one of the most significant challenges in the field of modern technology is the blockchain—a new system of storage and transfer of values, a technology that changes the world of finance and protected databases. Appearing in 2008 as a combination of mathematics, cryptography, computer technology, and game theory, the work, published under the pseudonym Satoshi Nakamoto, without exaggeration, turned the world of the digital economy. Blockchain technology makes it possible to accurately copy digital objects and transfer them almost without marginal cost to many people at the same time; it provides data transparency, verifiability, and invariance, without requiring participants to trust a single centralized third party and makes transactions possible without human intervention.

In recent years, a number of socio-philosophical and anthropological studies of the blockchain have appeared, the authors of which are united by the recognition of the significant potential of this technology in relation to changes in the social structure [5, 6, 7]. However, in our opinion, the study of the influence of the blockchain on the cognitive attitudes of the subject also deserves close attention.

II. RELATION TO TRUTH AS THE BASIS OF COGNITIVE ATTITUDES OF THE SUBJECT

M. Foucault, describing the structure and significance of discursive practices that create the apparatus for the production of knowledge, introduces the concept of "episteme", which he understands as a historically determined system of cultural and cognitive attitudes, rules, and relationships, which determines the cognitive, and, at the same time, cultural specificity of one or another era [8]. Different historical periods were characterized by their own concepts of knowledge, which determined the vision of the connection of things and their ordering [9]. Since knowledge is always a matter of formulating truths about things, inside the episteme it is the relation to truth that is the determining attitude of the subject of knowledge. This attitude itself, in fact, is a set of different beliefs regarding the issues of attainability of truth, practices, and the criterion of verification of knowledge, ethical aspects of truth and falsehood management.

If a person is within the framework of classical rationality, then he/she sees as his/her goal the achievement of absolute truth and believes in the possibility of its implementation. He/she proceeds from the fact that everything in the world is subject to strict unambiguous laws, and the existence of different points of view on one problem is simply the result of the incompleteness of the cognitive process. Beginning with the ancient sophists and skeptics, the opposite attitude is formed, according to which absolute truth is practically unattainable, so you need to refrain from categorical judgments.

The practice of verifying the truth of knowledge also varies depending on the era or cognitive tradition in which the subject works. In everyday knowledge, the main factors in testing knowledge are personal experience, compliance with tradition, and, most importantly, consistency with the beliefs of the subject. If knowledge contradicts the picture of the world, then ordinary consciousness ignores it. In the framework of religious knowledge, the determining criterion is the appeal to sacred texts, divine revelation, or authoritative evidence, and faith is the key factor in recognizing the truth of knowledge. Scientific knowledge, it would seem, is focused on a thorough empirical verification and logical verification of knowledge. However, within the framework of different traditions, the practice of substantiating the truth of knowledge may vary. Acting within the framework of a specific paradigm, the researcher relies on explicit and implicit standards for posing and researching problems. So, for example, a difference in research in genetics by scientists who are biologists and doctors in basic education was revealed [10]. Examining the same object, biologists pay attention to its fundamental features, structure, and functioning, and doctors—to the causes of health disorders. At the same time, work on medical genetics is usually population-based and reveals the relationship of a certain passage of the genetic code with a phenotypic trait, and the genetic code itself is examined in medical genetics.

A separate problem is the system of ethical aspects of truth control, which the subject shares. This system determines what needs to be given priority—the truth, which is not always consistent with the beliefs of a person, or the truth, which is not always true. In order to understand a person's social relations, it is important to understand whether his/her belief system allows lies or hiding information, and in which situations. Also of great importance is how the subject and society relate to their own and others' mistakes, whether the right to error and its overcoming is allowed.

It should be noted that cognitive attitudes as a whole and attitudes towards truth in particular have a significant impact on the formation of social practices and institutions, value systems, and human ideological beliefs. And if over the millennia of the society development, their content was determined by myth, religion, science, and philosophy, then at the present stage, mankind is dealing with technical tools that can radically change the practices of production and application of knowledge. The prerequisite was the spread of computers, but the computers themselves, having repeatedly increased the amount of processed information and changing the forms of its presentation, still did not significantly change the subject's attitude to the truth.

III. BLOCKCHAIN EPISTEMOLOGICAL IMPLICATIONS

The blockchain emergence and the development of technologies similar to it can potentially radically change the existing system of values and rules of behavior in society. The key factor here is the inability to rewrite, change information, in particular, the history of operations. As V.V. Chekletsov points out, "blockchain is not just a distributed registry, but also some rudiments of a new level of digital eternity" [7, p. 145]. In a situation where it is impossible to rewrite the report, adjust the data, hide or add information, a person will have to get used to the openness and irreversibility of his/her actions on the network. Falsehood, deception, secrecy, and other forms of information management become inaccessible in the conditions of technologies that ensure the accuracy and transparency of stored and transmitted information.

All our ideas about the truth and the procedures for its establishment are untenable. The completeness of the preservation and the impossibility of changing the history of operations does not require evidence, the involvement of a third party, interpretation, and interpretation. What is written is saved forever. Blockchain can make us rethink the concepts of freedom, trust, honesty, duty, truth. On the other hand, activity actors are changing. Already, not only human subjects can perform operations, but also algorithms begin to make decisions and conduct transactions without human intervention.

The scope of blockchain technology is not limited to cash transactions. Awarding personal digital identifiers to material objects will make it possible to control with the help of such technologies the entire process of production and distribution of material resources, including quality control and risk management, which can radically transform the existing material production system. The introduction of new ways of storing and managing data can radically change the education system, making it possible at any time to track the learning path and its success. Such technologies can lead both to the protection of a person from fraud and manipulation of information, and to trap him/her in transparency, inability to correct errors, and, at the global level,—to forget.

IV. THE INFLUENCE OF BLOCKCHAIN ON THE INSTITUTIONS OF POWER AND SOCIAL TRUST

The inevitable result of the spread of distributed trust technologies, which include the blockchain, is the decentralization of power, and not only in the banking sector [10]. The traditional hierarchical structures of power are based on trust, growing out of the authority of the appointment itself, reputation, position, and ability to convince. These tools for gaining power are being questioned, which can be interpreted as a threat of replacing organization with chaos.

The prevailing social practices and institutions are based on an understanding of the basic concepts for civilization, such as freedom and responsibility, trust and authority, truth and subject, etc. The very idea of a blockchain involves the revision of all this conceptual apparatus and the destruction of social relations based on its old content. As a result, the use of blockchain and a decentralized distributed database "casts doubt on some traditional forms of social interactions and serves as a catalyst for the constitution of social meanings that have no analogues in the social world" [6, p. 158].

In many ways, the reason for the rapid growth in popularity of blockchain tools is the need for reliability, credibility, as well as guarantees of the invariability of the terms of social contracts. Traditional institutions, including the State, were unable to guarantee the maintenance of agreements and the fulfillment of obligations. Examples include falsification of election results and the constant rewriting of

history textbooks depending on changes in political trends and ideological attitudes. In the formation of trust within the framework of traditional relations, the decisive role was played by authorities, beliefs, privileges, and manipulations of consciousness were actively used. The growth of social contradictions in the conditions of increasing information openness led to a crisis of confidence in existing social institutions and aroused interest in alternative ways of justifying it. Thus, we can conclude that the basis of the popularity of the new ideology of trust is "the helplessness of state institutions in relation to the challenges of total uncertainty and increasing risks" [6, p. 161].

Blockchain and "smart contracts" based on its principles make it possible to guarantee the transparency of transactions of any scale and the immutability of information about them. Such technologies transfer the function of a guarantor of verity from a person to machine algorithms and, in principle, do not accept traditional trust systems. In fact, it is a person's confidence in the reliability and objectivity of technology in comparison with the bias of traditional systems of social consensus that determines the essence of the phenomenon of algorithmic trust, which defines a new coordinate system in establishing relations. By providing unambiguous and identical information to all participants in the process, the blockchain "turns trust between individual legal entities into trust in decentralized technological systems with their quasi-entities" [12, p. 122–123].

However, one should not think that the blockchain completely removes the subject from the process of establishing trust and makes fraudulent actions with information impossible. Since the code itself is the guarantor of the reliability and credibility of information in the system of algorithmic trust, the code developer and anyone who can rewrite it can use their privileged status to manipulate information. So, the Ethereum cryptocurrency developers rewrote the contract code in order to return the money to investors, and formally they cannot even be blamed for violating the contract, because if the code itself is a contract, then any actions with it are carried out under the contract [13]. Thus, the blockchain, having shown the limitations of traditional institutions for building trust, is itself not without contradictions. It can be said that its guarantees operate at the level of a person's cognitive attitudes, convincing the reliability of algorithms in comparison with the subjectivity of social institutions, but in reality, the blockchain rather simulates reliability than provides it.

V. Conclusions

The basis of the subject's cognitive attitudes lies in his/her attitude to truth, which determines the practice of production, transmission, and interpretation of knowledge. It is these preferences and beliefs that can radically change in the context of the introduction of distributed trust systems, in particular, blockchain technology. The inability to correct, rewrite, delete, or interpret the history of operations in different ways forms a completely new cognitive situation in which traditional cognitive practices do not work. The State, legal institutes, and the system of authorities as confidence building systems contain an irreparable subjective factor and provide an opportunity for data manipulation, deception, and pressure. Moreover, the emergence of network forms of communication has made society as a whole more open, as a result of which intolerance to such forms is growing. Blockchain technology offers a completely new form of social contract based on systems of distributed trust and decentralization of power. This concept implements liberal-democratic ideas and devalues the importance of rigid vertically organized power, which is always based on authority, control over the dissemination of information, and the use of ideology to form people's beliefs. The decentralization of power, although it reduces the controllability of the system, makes it itself more flexible and adaptive in conditions of instability and everyday risks. Thus, we can conclude that a change in the subject's attitude to truth as a result of the introduction of blockchain technology can cause significant social consequences, up to a change in the type of state structure.

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