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CONCEPTS OF UNCERTAINTY AND UTILITY IN THE PHILOSOPHY OF TECHNOLOGY

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Abstract

This article is dedicated to the analysis of the phenomenon of uncertainty set against the background of the concept of utility in the context of philosophy of technology. The ways of understanding uncertainty, its ontological and epistemological bases within the technical worldview are presented. The form of connection between the concepts of "uncertainty" and "utility" is clarified. Based on the analysis of scientific sources in the fields of quantum physics and cybernetics, modern research and the concepts of representatives within the philosophy of technology, the author proceeds from the fact that the phenomenon of uncertainty must be understood as the discrepancy between provided technical solutions and the actual state of affairs. It is noted that the advantages of such a definition lie in the designation of the baseline boundaries and the action plan aimed at consistently eliminating the disparity and bringing it into a state of the most complete balance, i.e. proportionality, implying "adaptation" to the needs and requirements of a person, without which life as a form of adaptation of internal relations to the external ones seems impossible. If the phenomenon of "uncertainty" activates the modality of possibilities inherent in the creative act, but does not set a specific direction for it due to lack of meaningful goals, then the concept of "utility" focuses on a way of regulating the relationship between the goal and the means, which is aimed at minimizing mental activity through fixating the attitudes of readiness and expectations of action in the preconscious sphere.

Keywords: Uncertainty, utility, philosophy of technology

1. Introduction

The ways in which the concept of uncertainty is defined in science and philosophy are closely related to their practical application and usage. The present situation testifies to the tautological nature of many definitions, which obscure the essence of the concept of uncertainty, rather than clarify it. Speaking of uncertainty as an ambiguity, ambivalence, inaccuracy, etc., the researcher resorts to a spontaneous and trivial interpretation of the concept. After all, in such cases it is simultaneously endowed with the status of problematic, hypothetical, and contradictory. Through semantic substitution, the researcher plunges into the abyss of methodological inconsistencies. The final phase of the research is plagued by aporias, which make the procedure of choosing in favour of a particular thesis impossible. However, this state of affairs is peculiar only to the philosophical (speculative-metaphysical) approach to definition of the concept, which was most common in the Antiquity, the Middle Ages and the Modern times. Science (quantum mechanics, cybernetics, mathematics) bypasses all these inconsistencies, thanks to the criteria for the applicability of the concept of uncertainty, which makes it purely relative and instrumental (for specific purposes). So, for quantum mechanics, uncertainty is represented by the recognition of the objectivity of randomness, and for cybernetics the initial basis is the concept of information as the amount of unknown information about a particular phenomenon. Such approaches do not claim to be complete, as they are preoccupied with their own subject of research. But due to the fact that, according to B. Russell, "but between theology and science there is a No Man's Land, exposed to attack from both sides; this No Man's Land is philosophy" (Russel, 1946, p. 10), then its task should be the absolutization and relativisation of the meanings inherent in the sciences. We see this approach in one of the directions – in the philosophy of technology. In it the uncertainty reflects the degree of approximation to the instrumental performance through the arrangement of tasks set by the designer, engineer or other technical specialist. The designation of the "maximum" and "minimum" boundary points indicates the context of both the applicability of the technical invention and the identification of its flaws. After all, an ideal device due to its inherent faults does not correspond to the actual prototype. To resolve technical uncertainty as the discrepancy between the ideal device and the real state of things we have to resort to the concept of utility, which, being a form of rational connection between the goal and the means (tasks), allows us to clarify the direction of this study. But how significant the relationship between the two terms – utility and uncertainty – is can only be shown through research in the field of the philosophy of technology and creativity.

2. Problem Statement

The research problem is conditioned by the variety of interpretations of the concept of uncertainty. Many of them are obviously false and tautological. They do not reflect the essence and structure of this concept, while seeking to find a replacement for it or apply it to a specific situation. The reason for the above approach is the lack of general principles and methodology that indicate the limits of the applicability of the concept of uncertainty, since the context is mostly not taken into account.

In this regard the author of this study believes that the most complete is the technical way of understanding the phenomenon of uncertainty, the rationale for which is in the concept of utility, considered in the context of the rational correspondence of the goal to the means. The relationship between uncertainty

and utility becomes essential, since the first of the concepts sets the types of inconsistency between the idea and its prototype, and the second sets the vector for eliminating this disparity by applying the methodology of minimizing mental activity, which is reduced to the potentialization of efforts within the description of the sequence of processes and stages of technical creativity (the realization of goals through available auxiliary means) in the teachings of Ernst Kapp, Friedrich Dessauer and Petr Engelmeyer and on this basis the general representation of the concept of uncertainty.

3. Research Questions

The subject of the research is the concepts of the philosophy of technology of Ernst Kapp, Friedrich Dessauer and Petr Engelmeyer allowing us to clarify the essence and structure of the conceptual relationship between uncertainty and utility.

4. Purpose of the Study

The purpose is to perform a systematic analysis of the technical method of defining the concept of uncertainty against the background of the concept of utility, as well as their relationship based on the concepts of the philosophy of technology of Ernst Kapp, Friedrich Dessauer and Petr Engelmeyer.

5. Research Methods

The methodological bases of the research are general scientific methods: analysis and synthesis, induction and deduction; and special scientific methods of logical and comparative analysis. Their totality allows us to determine the characteristic features of the phenomenon of uncertainty against the background of the concept of utility and their interdependence on the basis of the concepts of Ernst Kapp, Friedrich Dessauer and Petr Engelmeyer to identify the main forms of the relationship of concepts in the context of the projective semiosis represented by the triad of the creative process – "design", "plan", "execution".

6. Findings

The concept of "uncertainty" is represented by a variety of interpretations in science and philosophy. In quantum mechanics it is considered as a category that characterizes the transformation of a variety of possibilities into reality, the presence of a connection between the properties and states of phenomena and the absence of distinct boundaries between them (Pechenkin, 2018). In cybernetics, uncertainty is understood as the limited information or knowledge, i.e. information about a phenomenon. In mathematical science, this concept is actively used in game theories, each of them (combinatorial, gambling, strategic) is understood as uncertainty: 1) the inability to present a preliminary conclusion due to lack of uniformity; 2) a set of situations in which the acting subject does not know the present state of affairs, but is aware of the a priori conditions (of each of the solutions); 3) a number of situations in which the subject does not have knowledge of the a priori probabilities of each of the possible conditions.

In philosophy the ways of defining the concept are addressed in the research studies of modern Russian and Western European thinkers of the XX-XXI centuries. Among the Russian thinkers, the works

of Gott and Ursul (1971), and Dubrovsky (2002) addressing this problem are well-known. But the most complete are the research studies by contemporary thinkers Nesterov (2017), Sokolova (2020), Gerasimova (2019), Prokofiev (2019) and many others. Nesterov (2020) identifies 18 types of uncertainty and takes the method of transcendental semiotics as the initial basis. He believes that "each stage of cognition or action is a semiotic rule-like process, fixed by means of its own inherent meanings, connotations and interpretations" (p. 31). The concept of uncertainty is analysed based on the framework of the receptive and projective spheres of semiosis, and is understood by it situationally-epistemologically, hermeneutically and praxiologically. In contrast to the semiotic approach, Sokolova (2020) in her dissertation "The concept of uncertainty in non-classical science and philosophy" takes as the basis of classification the forms of interaction between the categories of subject and object, deducing from them the epistemological and ontological understanding of uncertainty. Gnosiological uncertainty is understood as "the process of increasing knowledge, at the stage of solving a problem as well as at the stage of articulating a problem" (p. 11) or "ignorance of ignorance" (according to Dubrovsky), i.e. a problematic situation in which, through the formulation of a question a certain ignorance is detected, as a result of which a new goal or object of research activity is generated. Ontological uncertainty is understood as a category (starting from the concept of quantum physics) that expresses "certain properties of an object" (Sokolova, 2020, p. 145) as a situation of "knowledge of ignorance" (Dubrovsky, 2002), the attributes of which are statistical character and probability, or following the understanding of Gott and Ursul (1971), "transformation of a variety of possibilities into reality, presence of a connection, interaction between the properties and states of phenomena, and as a result, absence of distinct boundaries between them" (p. 56).

Among Western thinkers we must note Edmund Husserl's research in the field of phenomenology and the psychoanalysis of Carl Jung, as well as representatives of philosophical anthropology (Max Scheler, Helmuth Plessner, Arnold Gehlen) and many others. The most significant are Husserl's works dedicated to the analysis of intersubjectivity and the mechanisms of relaying values. For the construction of a fundamental phenomenological science (following the elementary philosophy of Carl Reinhold), he introduces the concept of the transcendental "self", the a priori scheme that exists before the appearance of the concrete "self". In this regard there is a problem of the effectiveness of the concept's impact on the other "self". After all, what is given in the framework of phenomenological analysis to my "self" may not be completely identical for another "self". To correct this misunderstanding Husserl introduces the concept of intersubjectivity. On this basis, he consistently unfolds the process of 'epoché' (bracketing), which begins with the primordial reduction and ends with the intersubjective nature and a community of monads. The concept of uncertainty inherent in intersubjectivity is understood as a situation of lack of experience in recognizing another (Husserliana, 1973). For Husserl, this "situation" is hopeless, because it conceals the existence of other selves and the transcendental structures inherent in them. The overcoming of uncertainty is seen in the appresentative transfer, which is possible due to the phenomena of pairness (Paarung) and co-perception (Mitwahrnehmung). In contrast to Husserl, Carl Jung redefines the concept of uncertainty in a psychoanalytic sense.

The rational a priori structures underlying Husserl's transcendental self are replaced by the exact opposite,

as long as concepts are identical with mere words, the variation is almost imperceptible and plays no practical role. But when an exact definition or a careful explanation is needed, one can occasionally discover the most amazing variations, not only in the purely intellectual understanding of the term, but particularly in its emotional tone and its application. (Jung, 1964, p. 40)

In this regard, uncertainty is formed where the unconscious comes into its own, leading a person through the conscious processing of data (the unconscious) to the new knowledge, and opening up "the limit of understanding, which characterizes the range of knowledge that can be obtained in relation to the known phenomenon. (Mikhina, 2018, p. 142)

The problem is that the information is given in an incoherent form, it is contradictory and seemingly meaningless. Main objectives of Jung's psychoanalysis: 1) search for borderline places where communication with the unconscious is possible; 2) through the interaction of the consciousness of the psychoanalyst and the unconscious patient to arrive at the synthesis of a relatively new knowledge.

All of the above-mentioned approaches are rich in definitions, but have the same flaw - they do not specify ways of eliminating uncertainty. For this reason, Carnap (1034) is quite right in noting the meaninglessness of metaphysical claims that the actual state of affairs can be proven. For the propositions of philosophy do not serve to express a state of affairs, either existing (then they would be true propositions) or not existing (then they would be at least false propositions); they serve to express a sense of life. This approach was typical of the first half of the XX century due to the crisis in philosophy and science. It is clear that decades later, under the influence of certain trends in phenomenology, existentialism, and philosophical anthropology, the attitude to philosophy has changed significantly. The philosophy of technology played a special role in this. If we compare its perspectives and trends in Kapp's time with those that appeared when Engelmeyer and Dessauer were active, the former are at a disadvantage due to their adherence to the classical type of rationality, in which there was no room for uncertainty (Smirnova & Shtykov, 2020). If they existed, it was due to unawareness of the phenomena of nature and society. In that regards Kapp's organoprojection was a stumbling block for those who saw only contradictions and incongruities in complex technical inventions. The reason was to define organoprojection as an unconscious process "in which organic formations, actions, and mechanical adaptations are related as a model and a copy, and the mechanism is used only as a means to reveal and understand the organism" (Kapp, 1877, p. 151). It follows that for Kapp there was no gap between the natural and the artificial. It was overcome not for the sake of the utility of the invention, but through intuition, which helps you to make an extremely fast transition from one to the other (projection and introjection). There is a feeling that complex artificial machines do not fit into the concept of a human organism. And there are good reasons for this. Since the technical projection reflects the statics of human thinking, the unconscious will is reflected in the organism as a constant reproduction of organic forms that have no end (Kapp et al., 1925). The synthesis of the interaction of the technical projection with the organism is the reinterpretation of the concept of the body, which now turns into a tool, and the person - into its obedient servant. As a result, it turns out that it is impossible to give a rational explanation for phenomena that go beyond the process of organoprojection,

as the unconscious way of understanding (the historical prototype of which is mythological thinking) is absent or repressed.

Kapp's 'Organoprojection' which assumes the fusion between the tool and the human "self" is open to criticism. Engelmeyer criticizes Kapp not for the dissimilarity of many mechanisms with organs (one of the popular points of view), but for the inconsistency of his approach. Being a prominent figure of classical rationalism and progressivism, the German thinker ventures into mysticism, as evidenced by the process of merging man with technology, which departs from the fulfilment of human needs and requirements. The most striking example of clarification of the confrontation between different viewpoints is the spacecraft "HAL 9000" incident from the "2001: A Space Odyssey" (Clarke, 2014) movie, where technical tasks and human goals collided. A spaceship that made it to Jupiter, having concealed the true purpose of the expedition, comes into conflict with the members of his expedition, who, having disobeyed "HAL 9000" basic commands, considered it to be out of order. However, the ship, pursuing long-term goals (studying the behaviour of the monolith near Jupiter), refuses to give in to momentary human needs and requirements, as a result all are dead except for David Bowman. AI (artificial intelligence) "HAL 9000" becomes an area that falls under the phenomenon of uncertainty, because its actions are unpredictable, despite the fact that it has an anthropomorphic nervous system. Therefore Kapp's concept should be considered unclarified. After all, "only a limited number of prehistoric tools, such as the hammer and axe, can perhaps be considered projections of our limbs" (Jengelmejer, 1912, p. 120). Everything else has its beginning in the murky processes of the psychic apparatus. According to Jengelmejer (1912), in spite of the fact that technology is the extension of human organs, in fact it becomes the product of the unconscious, not of man, but of spirit, the mechanisms of which are conditioned by the reassembly of experience. Uncertainty in Engelmeyer's theory arises from: 1) the process of creating an idea (reassembling of experience); and 2) the disparity between the idea and its material implementation. Ethics and aesthetics are obviously at a disadvantage, because for them the gap cannot be eliminated. In the philosophy of technology, on the contrary, it is overcome by taking into account the joint activity of the three faculties: reason, mind and sensuality and considering the aspects that are out of reach for humans. What goes beyond the limits of attention refers to the interaction between reason and mind, reason and sensuality, and appears as something new, which "generally is determined through the negation or through the shift of the boundaries of the knowable, the conceivable, the possible" (Nesterov & Demina, 2019, p. 44). Correlation of the uncertainty with the new becomes significant, as the first makes the reassembly possible in principle, while the second enables transformation of an experience. The transition from one to the other is regulated by the concept of utility, which acts as a criterion of the creative process, implying that: 1) the proportionality of the means (tasks) to the goals; 2) "something that makes it easier to achieve the assigned goal (regardless of the goal itself)"; 3) "something that increases the productivity of our work" (Jengelmejer, 2010, pp. 17-18). Having accepted this stance, Engelmeyer approaches the relativity of uncertainty and the degrees of its gradation, which depend on utility as a certainty of application of the invention, and characterize this teaching as instrumental. This aspect, as Rozin (2006) emphasizes, "is indicated not only by the idea of creative persons who design the tools necessary for their lives, but also by the way Engelmeyer interprets the purpose of technology: it is mainly the satisfaction of human needs" (p. 48). In this regard, the more a technical

invention fulfils the tasks and functions corresponding to its essence, the more its uncertainty decreases, and vice versa.

The conceptual relationship between uncertainty and utility continues to be developed by Dessauer. Unlike Kapp and Engelmeyer, in his works dedicated to the study of the phenomena of technology and creativity, he draws attention to the sphere of cumulative experience, and related decision-making, i.e., the process of technical implementation (Shipovalova, 2020). Dessauer criticizes the approach of Kapp for excessive "biologizing". He is impressed by the concepts of Husserl and Alexius Meinong, therefore he believes that a technical object is not a projection of our body, but something self-sufficient, located outside of the world of the phenomena. The main goal of a human being is to grasp a technical object as it really is. However, this is possible only through the "associative mobility" of consciousness, which is characterized "as the ability of the soul in its entirety, where perceived patterns and complexes connected with each other have settled, to associate everything that has any connection with this or that interest, with this or that time-inspired direction on which we focus our attention" (Ropohl, 1983, pp. 95-96). Thanks to it, a human beings create, i.e. act as creators, inventors, designers. When investigating and studying a subject they act as "Homo Investigators", making plans for its creation and constructing as "Homo Inventors", and executing as "Homo Fabers". This projection takes on a spiritual character. But human beings create under the influence of the needs of society, so all their actions of a creative nature will have a social meaning. So Dessauer (1959) approaches the distinction between designation and purpose, and the ways in which they correspond best, i.e., utility. The technical object, according to the German thinker, is inanimate, unable to think or act reasonably. Being a derivative of the component of the world of phenomena, it fulfils its goals (under the control of an intelligent being) in an instrumental way, constantly reproducing them, and not moving towards new ones. In contrast to this mode of functioning, which is self-enclosed, a human being is able to go beyond the limits of this being. The asymmetry that exists between the goal and the designation (task) is the essence of human thinking, which is able to detach itself from the body, society, the surrounding world and join the transcendental forms that reside in the fourth kingdom. The kingdom, Dessauer repeats after Christ, "is not of this world", because it has the potential for reassembling experience. The experience concentrated in the world of the phenomena is cleared of all unnecessary layers and appears in its essence or "so-sein". It acts as a set of special qualities of being that define its integrity. The phenomenon of uncertainty in the fourth kingdom arises from the excessive clarity of an idea that conforms only to the criteria of reason. But because man imagines a way of connecting the sensuous, the rational, and the reasonable realities, he is unable to grasp the essence of the ideal. It presents itself to him in the form of dilemmas. Uncertainty is seen as a combination of the simultaneous existence of different solutions, both correlating with each other and contradicting themselves. The concept of utility may help to resolve this situation. It appears in the form of proportionality of all decisions and the choice of the one that is most preferable in a specific reality, the consequence of which is the integrity of the implemented solution (without contradiction) in the form of a technical object. The result of the decision made is usually represented by an excessive or negative incrementation, which reflects the presence of a number of opportunities to modify it in the future. Through the search for the destination of a technical object and its compliance with the laws of nature, persons create conditions that open the boundaries between the "self" and the environment; through inconsistency they are able to destroy themselves, as well

as all the living things around them. An example that reflects the Dessauer's approach to the relationship between uncertainty and utility is a novel by Arthur Clark "The City and the Stars" (Clarke, 1957). The fear of the phenomenon of uncertainty as the uncertainty of the decisions made and the consequences that follow them forced humans to create circumstances that allow them to lead an existence that is self-sufficient and does not dependent upon nature. Having recreated an artificial environment and entrusted mankind to the "Central Computer", man himself turned away from creative activity and plunged into a state of "social anabiosis", which involves the abandonment of all instincts and feelings that urged him to take risks. Their transfer to the sphere of the unconscious manifested itself millions of years later, when another failure occurred in the AI matrix and activated the reassembly of experience, which led to the creation of a human being with a "tabula rasa", allowing one to unify civilizations, previously separated by the galactic war on Earth.

7. Conclusion

This study has demonstrated that the conceptual relationship between utility and uncertainty is complex. On the one hand, it turns into a confrontation, which presents the principle of utility as a reasonable correspondence of means to goals and seeks to eliminate uncertainty as inadequacy of an idea in relation to its actual prototype (representation). On the other hand, the relationship between the concept of utility and uncertainty is marked by the fact that the first is derived from the second, and leads to a clash of scientific, ontological and epistemological meanings with generally accepted concepts and laws of language, categories, formal and mathematical logic. The disadvantages of both approaches are compensated by the technical approach, which implies that contradictions and derivation are an integral part of research process. Understanding the uncertainty as a form of ignorance, we face a lack of research methodology and come to the conclusion that the phenomenon exists in its pure essence, but not in the ways it can be eliminated. The technical understanding of uncertainty complements the fact that the gap existing between the ideal and the actual dimensions is eliminated if instrumental ways of transforming the idea are taken into account, allowing for a consistent solution to the problem of execution. It is clear that if such gaps must exist at the pre-reflexive (non-theoretical) or everyday level, then at the reflexive (thetical) level, their elimination is naturally embedded in the structure of the psyche. Therefore it is not important how persons will achieve the goal (non-thetically), but it is relevant which program or plan they will follow (thetically). One of these is the principle of usefulness/utility. It sets the vector according to which a technical object is integrated into the public environment if it 1) has a place (is timely), 2) fulfils its purpose; 3) complies with the laws of nature. Everything else that does not fit into the environment either turns out to be premature and is displaced by people due to lack of understanding and out of fear (pushed into the sphere of the unconscious), or begins to destroy the structure of the environment, requiring subsequent corrections and improvements.

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