

Immanuel Kant as the first epistemological constructivist

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Abstract. According to constructivism-theory, the object of a cognition process is a question which the subject has not answered yet. The subject is not able to retrieve the answer from his memory through direct observations, by reading books or by asking specialists. However, it forms an objective field through reasoning. It is a relatively narrow circle of phenomena, relating to the search for an answer to a cognitively significant question. Cognition serves to organise the subject's experimental activity, but it does not discover any ontological reality. Here the question of correspondence of the knowledge received by the subject to an object is immediately raised. Kant tried to answer it, having separated the spheres of theoretical and practical mind applications. The sphere of the rational was thus moved to the subject and human activity. Kant's argumentation contains two steps: 1) previous attempts to coordinate knowledge and the object were in vain; 2) many scientists of early modern Europe took into consideration the correspondence of the object to the knowledge gained. Kant concludes that subjective perceptual and empirical contemplation fill a cognised object with sense and meaning. The subject of cognition transcends experimental limits and lies on the ulterior side of knowledge. Concerning the cognition process, Kant defines a demand for the reality of the knowledge obtained as a stipulated consequence resulting from a number of evidences. This article illustrates these ideas in relation to epistemological constructivism from the position of modern scientific and technological progress as they play a leading part in it.

Keywords: constructivism, reality, subject, object, cognitive activity, actor-network theory

1 Introduction

Today, constructivist ideas have become popular among philosophers and representatives of various humanitarian sciences. Their considerations and theories have led to a number of important methodological results with respect to the theory of constructivism, including its applicability and the possible conclusions. Mainly, the thoughts and concepts of today's philosophers are connected to and aligned with the premise that it is impossible to predict

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exactly both the future of science and the future of civilisation that science determines. In this regard, the various versions of cognition from the constructivist perspective are significantly popular among contemporary philosophical and methodological reflections with respect to science since they confirm many of the intuitive insights of science and contain a powerful reserve of the future development and unknown possibilities of the structural organisation of science. Moreover, they are founded upon epistemological principles and methods that, as yet, have not been part of philosophical reflection.

Stated briefly, epistemological constructivism is an approach that supposes the construction of the surrounding world by human beings within the limits of their perceptions and mentality. While the presence of the outer world is not denied, cognition ceases to be defined by the statement of its objective existence. In other words, the subject's mind does not process outside information or resolve specific problems.

When studying the process of receiving reliable knowledge, according to the constructivist theory, it is possible to conclude that knowledge generation is a complex system of interconnected ideals and regulative principles that results in knowledge production and translation. Following the search method of thought, the object of a cognition process is *a question*, which the subject has not yet answered. Furthermore, the subject is not able to retrieve the answer from his memory, through direct observations, by reading textbooks and reference books or by asking specialists. Through reasoning, however, the subject forms an objective field. This objective field is a relatively narrow circle of phenomena, which is related to the search for an answer to the cognitively significant question. Ernst von Glasersfeld in his work *Radical Constructivism: A Way of Knowing and Learning* first published in 1995, writes about an educational experiment that does not use any common teaching methods or curricula. Students follow the model, based on two fundamental principles: i) knowledge has been received actively, i.e. constructed by a subject of cognition; ii) the function of cognition is an adaptive one and it serves to organise the subject's experimental activity, but it does not discover any ontological reality (Glaserfeld, 1996, p. 51).

However, there are many problems here. First of all, a question concerning the correspondence of the knowledge received to the object arises. Piama P. Gaidenko (1991, p. 7) points out that at the end of the eighteenth century "Kant saw a threat to human morality and freedom in the mechanical approach to man, and he tried to save the latter having separated the spheres of theoretical and practical mind application, i.e. science and ethics".

Thus, the sphere of the rational moves to the subject and human activity.

2 Kant's constructivism

The roots of mind experiments might be found in Kant's idea of the transcendental subject of cognition. After separating the theoretical and practical spheres of mind application, i.e. science and morality, he influenced the shifting of the understanding of rational behaviour to the concept of the subject and its activity.

The transcendental subject began to be perceived as an extreme abstraction which went beyond empirical limits, for it was "on the other side of knowledge". Kant's argumentation contains two steps: 1) according to him, previous attempts to coordinate knowledge and the object were in vain; 2) many scientists of early modern Europe took the correspondence of the object to the knowledge gained into consideration. Kant writes: "[...] *a priori* sources of cognition determine their own boundaries by that very fact (that they are merely conditions of sensibility), namely that they apply to objects only so far as they are considered as appearances, but do not present things in themselves (*KrV*, A 39 / B 56; Kant, 1998, p. 166). Further, criticising John Locke for his application of rational notions, concluded from experience, he outlines the absence of any coordination between a deductive result, obtained

empirically in relation to the object, and “the reality of the scientific cognition a priori that we possess” (*KrV*, A 95 / B 128; Kant, 1998, p. 226).

Considering D. Hume’s heritage, Kant points out that Hume had to get an objective knowledge experimentally, i.e. to use “a subjective necessity arisen from frequent association in experience, which is subsequently falsely held to be objective” (*KrV*, A 95 / B 127; Kant, 1998, p. 225). As a result, he concludes that subjective perceptual and empirical contemplation fill a cognised object with sense and meaning (*KrV*, A 129-130; Kant, 1998, pp. 243-244).

Here it is necessary to pay attention to the idea, that the subject constructs the object, but not vice versa. However, the subject of cognition in Kant’s theory is introduced as some extreme abstraction. Vladislav A. Lektorsky (2005, pp. 14-15) notices: “We should have some material to construct and someone to realise this process, i.e. a constructing subject. It could be only a transcendental subject, transcending empirical borders.” Thus, according to Kant, the subject transcends experimental limits and lies on the ulterior side of knowledge. Concerning the cognition process, he defines a demand for the reality of the knowledge obtained as a stipulated consequence resulting from a number of evidences (*KrV*, A 671 / B 699; Kant, 1998, pp. 605-606).

The constructed object is not a fictitious construct anymore. For example, any piece of furniture surrounding us has been constructed by a human being and it is a physical reality. All social institutions created by human beings are reality although they are ideal constructions in a certain sense. If we consider the subjective world of human beings following Kant’s ideas, we can see that it is also an ideal construct exposed to theoretical and experimental studies. Therefore, reality could be examined as something multilayered and multilevelled. Different levels are not reduced to one another, but there is some dependence among them. Their ways of existence are different, that is why it is permissible to suggest the idea of ‘different worlds’ existence. Each of these ‘worlds’ is real and connected with the others. In such a case, the subjective world is also the reality, though it is different from the physical world. Thus, an adequate cognition process is possible even when taking all these components into consideration.

This means that reality is not just the result of the subject’s construction. The cognition process is included in reality, rather than excluded from it, and it is this aspect in the theory of constructivism that promotes a rational knowledge about reality for the subject.

Let us illustrate these ideas in relation to epistemological constructivism from the position of modern scientific and technological progress. It is necessary to do this, because such ideas play a leading part in and for scientific progress.

3 Kant’s ideas and epistemological constructivism

We know that modern science is organised in disciplines. It consists of various fields of knowledge which interact with each other, but at the same time possess some independence. This allows us to consider science as a complex self-regulating system which gives rise to relatively autonomous new subsystems and relations but still controls their interaction. The historical nature of a complex system object and the variability of its behaviour suggest various possibilities of describing specific developments and predicting their status. One such possibility is the construction of scenarios of further possible system development at points of bifurcation. It becomes obvious that theoretical descriptions based on the application of approximation method, theoretical models using computer programs and many other methods compete more and more with the ideal of creating a theory as an axiomatic-deductive system. An experiment which is founded on energetic and power interaction with a system developing historically does not principally allow its reproduction at the same initial state. The act of primary preparation of the state changes the system and the direction of its

further development. At the same time, the irreversibility of the development processes does not give it an opportunity to reconstruct its initial state. That is why uniquely developing systems require a special strategy for their experimental research. Their empirical analysis is often performed by computing methods with the help of electronic machines. This helps to clarify a variety of potential structures that can be generated by the system itself.

In such conditions, a human being as a subject of rational and cognitive activity relies on the following data, which are necessary for making definite decisions while selecting proper types of activity in accordance with the current challenge: cumulative empirical data, the logical norms of a reasoning process, methodological rules and methods, existing theoretical schemes and models. As a result, the subject is responsible for choosing from a number of alternatives and spectra of abilities. Unlike classic science, which was directed to ascertaining a specific fact, modern science is oriented to an activity related to a project and constructive thinking which is then open to further criticism (Danielyan, 2014, p. 23).

The ideas of constructivism do not correspond to this conclusion completely. Let us pay attention to the main constructivism-thesis: knowledge constructed by the human being is not a reflection or a presentation of something external, some reality which is autonomous from the subject of cognition. To a large degree it answers Kant's ideas mentioned above. The external world is not rejected, but cognition cannot be defined by means of a representational statement concerning an objective existence of the world. According to this idea, "an opportunity of any positive ontology existence as a source of knowledge is denied, but the process of cognition is considered solely as constructing *de novo*. It is contrasted to a chance of transfer, discovery, reflection or representation of some external reality" (Sokolov, 2001, p. 39). It means that the subject's consciousness does not process outer information anymore or solve challenges, specified externally. Thus, a constructivism approach does not completely satisfy the demands which have been raised concerning the subject of cognition by scientific and technical progress nowadays.

As Vladimir P. Filatov (2009, p. 143) argues, "cognition is only a search for the proper course of action, the proper manner of thought. It performs an adaptive function and serves to organise the inner world of our experience, but it does not discover some reality by itself. Hence, knowledge cannot be gained passively as it is actively constructed by a cognising subject". In such a case, understanding this subjective human ability and its reasoning becomes problematic. According to Ilya T. Kasavin (2008, p. 71), "it hangs in mid-air".

It leads to the supposition that modern epistemological thinking particularises this thesis in two main directions. Firstly, there are initial principles and prerequisites that do not have a solely cognitive nature. They are determined by all motivation and semantic structures of subjects of scientific and cognitive activity, which must be understood in a broader way than in Kant's theory, seeing that they are able to include individual psychological features, various personal preferences, etc. Secondly, acknowledging the originality and specificity of attitudes for different subjects of scientific and cognitive activity in accordance with the principles of motivation and semantic spheres of their consciousness, this activity should be represented as a complex process of interaction among various positions, research programmes, etc.

4 Actor-network theory and constructivism approach

Applying the understanding of the transcendental subject to actor-network theory, we perceive that the subjectivity dissolves in the objectivity flow. It causes the grading of human cognitive abilities to a subject "allocated" in the social world. This subject is no more a researcher, a scientist or a scientific community separated from the social world. According to Michel Callon, an "allocated" subject of cognition does not reflect reality, but participates in its creation. Innovations are collective, not personal ones. "The cooperative does not

propose the alternative solution to a general problem but a particular solution to a series of very specific problems” (Callon, 2007, p. 334).

There is no sense placing in opposition those who make statements and those who realise them, i.e. the final knowledge turns out to be impersonal. It is spread further by social nets based on modern technologies. As Bruno Latour (2005, p. 131) suggests, technical nets are the nets thrown over reality, keeping only some scattered elements of this space. What is considered as the net elements in this concept?

According to John Law (2002), when a net object is created, the whole net world is created too. It has its own spatiality, its own definition of geomorphism and continuity of forms. The net in the actor-network theory is introduced as some order, a model of space orientation, formed with objects and possessing some liquidity. It is impossible to define identity and forms for an object as it turns into an ‘alternative’ with unfixed borders of changeability.

The borders between subjectivity and objectivity disappear in the actor-network theory, i.e. cognition as a process ceases to be because of the blurring of its epistemological foundations. It is impossible to make a difference between such fundamental concepts as nature – culture, material – non-material, human – non-human, theoretical – practical, science – morality. Such an approach eliminates any differences between natural and humanitarian, engineering and philosophical knowledge. There is no necessity in them as any actant (i.e. “involved in the activity”) of the network combines heterogeneous components and relations without any strict hierarchy, i.e. a hybrid reality appears. Its feature is an interaction of live objects, social and theoretical constructions, etc. on equal rights. A network appears that consists of a number of actants. Its main feature is a collective action. The coordination of functioning network elements is due to interelement connections that help all its components to interact.

5 Conclusion

According to the ideas of Kant described above, we can conclude that the cognition process organises the subject’s inner world, but it does not solve the problem of describing objective ontological reality. Since the subject constructs perception, the constructs he receives do not necessarily correspond to the ontological world from the position of its reproduction. They can correspond only to the general concept of his experience. It is possible to conclude that cognition is an active process of the subject’s constructive activity. First, cognition is the process of constructing reality, perceived by the subject by means of his cognitive operations. This explains why the knowledge the subject receives is, to a greater extent, a construct of reality than of its reflection. Second, the cognition process and its result (some knowledge) are equal because the subject is able to cognise only the objects which he created himself. Every subject has his own reality, i.e. obtaining rational knowledge cannot be achieved, as the truth is eluded since every subject has his own truth.

The subject interprets the events taking place and any event can be interpreted differently as the subject perceives the world through personal patterns or constructs. Thus, there is no single knowledge as the knowledge differs for each subject. Lektorsky (2005, pp. 18-19) states that “cognition should be understood as initially included in reality, but not opposing it. The reality exists actually. It is not only subject’s construction. Cognition with all its constructions deals with reality.”

Thus, following and widening Kant’s heritage of the transcendental subject, modern science presumes that a researcher and the researched (both subject and object) belong to a broader category of phenomena. Besides the reality where subject and object are separated, there is a wider reality where they are not opposed. Moreover, reality might be where subject and object turn out to be objects.

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