

HERMENEUTICS, MATHEMATICS AND ITS HISTORY

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Abstract

This article discusses the conditions for the emergence of hermeneutics, its object, types, its structural structure, categories, stages of formation as a theory, different views on it, hermeneutic views on the history of mathematics.

Hermeneutics (Greek hermeneutics - explanation, interpretation) is a theory and methodology of studying society, personality, culture, which is promoted as the main method of interpreting and understanding the semantic content of various social and humanitarian phenomena.

Hermeneutics is considered as a kind of socio-humanistic way of knowing, because it shows the method of understanding as the main one, confirms the specific characteristics of objects such as society, man, culture, and shows that they are special objects - objects with "meaning".

The main meanings of the term "hermeneutics" in modern socio-humanitarian discourse can be equated to: the art of determining the meanings of signs, the theory and general rules of text interpretation, the ontology of understanding philosophical doctrines, and the epistemology of interpretation.

Hermeneutics is not homogeneous. It is usually divided into special hermeneutics - legal, religious, historical, etc., that is, hermeneutics, which develops the rules of interpretation of texts belonging to a certain field of knowledge, and universal hermeneutics, which systematizes the methodology of interpretation and understanding of any texts, regardless of the field they belong to. Representatives of the hermeneutic tradition G. Gadamer and P. Ricoeur believed that the interpretative principles of hermeneutics could not be formalized.

The main processes of hermeneutic analysis are: understanding and interpretation. Interpretation (lat. interpretatio - interpretation) is the process of uncovering the meanings contained in the text as a subject of study. Interpretation is a very free creative activity, and as a result, the hermeneutic paradigm is characterized by tolerance of the diversity of interpretive results.

In hermeneutics, there are two points of view regarding the nature of the interpretation process: according to the first, interpretation is the reconstruction of the author's meanings, revealing them in the studied object; according to the second, interpretation is the construction of one's own meaning as a result of applying the immanent logic of the text, which is considered to be given independently of its creator. Interpretation can be objective - grammatical, aimed at knowing the meaning from the point of view of a certain tradition, and subjective - psychological, aimed at understanding the thought process of the author of the text.

Interpretation is a means of achieving understanding, which reflects the acquisition of the meaning of the text. There are two types of understanding: intuitive and discursive. The first corresponds to a complete understanding of the meaning through prediction - a guess. The second involves achieving an understanding of the text as a whole as a result of consistent semantic analysis of its parts, comparison of personal and general meanings.

A distinctive feature of the hermeneutic method is its dialogic nature. Understanding involves a dialogue between the author and the interpreter. Interpretation is inseparable from the process of empathy, and its essence is that the researcher puts himself in the place of the creator of the studied object - the author, gets used to the studied object, and thereby tries to understand the meanings contained in the object. Understanding the text is achieved by entering the spiritual world of the author and repeating the act of his creation.

The etymology of the word "hermeneutics" goes back to the name of the ancient god Hermes. Hermes communicates and explains the wishes of the Olympian gods to the people. Hermeneutics arose from the practice of the sophists, who are considered the first Greek philologists, to interpret the sacred texts of Homer's poems "Iliad" and "Odyssey". We can say with some conditionality that the first form of hermeneutics in history can be literary hermeneutics.

In the Middle Ages, religious hermeneutics was formed as the art of interpreting sacred texts based on church traditions. This art is also called exegesis. Augustine Aurelius is the founder of the first generalizing theory of hermeneutics.

Augustine Aurelius (354-430), a representative of the Latin patristics, in his work "Christian science or the foundations of sacred hermeneutics and the art of ecclesiastical oratory" establishes some basic concepts and principles of hermeneutics. The idea of prioritizing the definition of the category "understanding" belongs to him. Understanding, in Augustine's interpretation, is the transition from the sign to the meaning, which is based on the interrelationship of human souls, as well as the ease - the proportionality of the creative possibilities of the interpreter of the text and its creator. According to Augustine Aurelius, the meaning of Scripture can only be understood by an interpreter who has "divine inspiration" equal to the "divine inspiration" of its author. In addition, Augustine formulates the most important principle of hermeneutics - the principle of the contextual approach - which states that passages of Scripture can be understood only when they are adapted to the environment.

Another type of hermeneutics - legal hermeneutics - appears in the Middle Ages. It was associated with the development of jurisprudence and the formation of the class of lawyers. During the period of Enlightenment, new types of special hermeneutics appeared - historical and linguistic hermeneutics. So one of the creators F.D.E. Conditions are created for the formation of Schleermacher's hermeneutics as a methodological paradigm of social and humanistic sciences.

Friedrich Daniel Ernst Schleermacher (1768-1834) is a German philologist, methodologist, who historically carried out the first systematic clarification of the theoretical foundations of the hermeneutic method. He divided understanding into three main levels: understanding in everyday life, understanding in particular sciences, and understanding as a method - an art that is carried out according to rules. Schleermacher defined the range of problems of universal hermeneutics and proposed ways to solve these problems. He revealed the interpretative structure of understanding, founded the basic principles of hermeneutic analysis. For example: the principle of access to the content of the text, the principle of dialogue, the principle of the unity of grammatical and psychological interpretations, the hermeneutic circle, the principle of better understanding.

According to Schleermacher, the text appears to the researcher as "frozen speech", as a result of which the method of its research is formed as a dialogue between the interpreter and the text. Gadamer interprets Schleermacher's dialogic approach as follows: "It is necessary to understand not only the literal text and its objective meaning, but also the individuality of the speaker or writer [1]. According

to Schleermacher, the method of understanding should be taken into account both general (by comparison) and specific (by inference). Therefore, it should be comparative (comparative) and divinatory (predictive). Divination is a method of identifying the interpreter by comparing him with the author of the text.

Schleermacher's ideas were deepened and developed by Wilhelm Dilthey (1833-1911), a German philosopher, methodologist, author of methodical works: "The Life of Schleermacher", "Introduction to the Sciences of the Spirit", "Essays on the Grounding of the Spirit". The work "Spiritual Sciences" considered hermeneutics to be the logic of the sciences that study history and culture. Dilthey, a representative of the "philosophy of life", introduces the concept of "life" into hermeneutics as an organic unity of material and spiritual principles. It expands the possibilities of using hermeneutics - it is used not only to study the culture of the past, but to understand any "views of life". The expansion of the field of hermeneutics has opened up the possibility of turning it into a paradigm of social sciences and humanities. Dilthey acts as one of the creators of this paradigm: he expresses the idea of the autonomy of the sciences about the soul, defines the philosophical foundations of this approach, defines the subject of this group of sciences and develops their methodology.

Hans Georg Gadamer (1900 - 2002) - German philosopher, methodologist. In the work "Truth and method", he critically reflects on previous hermeneutic traditions, defines the main directions in it, offers a unique interpretation of the methodology of understanding.

Gadamer sees hermeneutics as a classical science dealing with the art of understanding texts. He considers understanding "the meaning of all statements - part of the semantic achievement in which the meaning of art and all other traditions is formed and realized." [4]. Gadamer defines language as the world that surrounds a person, a way for a person to exist, without which there would be no life, no consciousness, no thinking, no feelings, no history, no society. Gadamer believes that understanding is a moment of human life, so understanding becomes a form of being from a form of knowing.

Heidegger's student Gadamer explains Heidegger's interpretation of the hermeneutic circle as follows: "Anyone who wants to understand a text always considers the different meanings of a sign or a word. When some meaning begins to emerge in the text, it forms the initial content of the meaning of the entire text. But this first meaning, in turn, becomes clear only because we read the text from the beginning and expect to find this or that specific meaning in it. Understanding the content contained in the text, without a doubt, constant revision of the initial sketch is reflected in a deeper understanding of the meaning of the text" [2].

The most important principle advanced by Gadamer is the principle of understanding the text based on itself.

The process of understanding is described by Gadamer using such categories as "pre-understanding", "assumption", "horizon of understanding", "tradition", "experience".

Understanding is a prerequisite for understanding imposed by previous traditions. According to Gadamer, the interpreter of the text enters its semantic space not with pure reason, but with preliminary understanding. This pre-understanding category is superstitious in nature.

Superstitions are a double phenomenon: on the one hand, they slow down the process of historical development; on the other hand, they are necessary, objectively embedded in the language and methods of mental activity of people, they are components that affect the understanding activity of the

individual and must be taken into account in hermeneutic methods. Prejudice is a complex spiritual complex of "tendencies" woven from historical reality in relation to any object, work, event, person, on which the interpreter makes any judgment. Gadamer rejects the tradition of unequivocal negativity towards superstition that emerged during the Enlightenment; superstition appears to him as a condition of understanding, as a historical fact of human existence. Gadamer considers the Enlightenment's idea of overcoming all idols as a panacea for all ills. He emphasizes that it is not necessary to exorcise "idols", but to get rid of false superstitions through revision - dialogue with tradition. In fact, as Gadamer points out, superstitions are ideas woven into cultural traditions.

He sees the preservation of tradition as something within every historical change. Gadamer restores the authority of tradition, which has been questioned by science. He insists that there is no contradiction between tradition and reason. At the same time, Gadamer believes that the preservation of tradition is effective only when it is a voluntary act, not a compulsory one. Gadamer calls the totality of prejudices conditioned by tradition the horizon of understanding.

According to Gadamer, the hermeneutic experience is born out of the collision of the previous understanding expressed in superstitions with negative and affirmative examples. For Gadamer, experience is something that retains its value until new experience proves otherwise. An experienced person is an adogmatic person, a person who is able to gain new experience.

According to Gadamer, the hermeneutic circle is a game between the interpretive and the historical text. The essence of the movement in the circle is the constant resolution of the opposition between the part and the whole, the particular and the general, the secondary and the primary. Gadamer's hermeneutic framework has a spiral structure: cultural memory, an interpretive semantic project based on tradition - implements pre-understanding. If the text resists, a second draft is produced, setting in motion a chain of interpretation that strives for more and clearer versions. The scientist claims that the desire to understand, not self-affirmation, is based on the willingness of the interpreter to admit his mistakes, which arise from unconfirmed expectations. True meaning is born in the process of interaction with the text, the development of conflicting content versions and the formation of a complex meaningful unit. According to Gadamer, hermeneutic sophistication is not self-forgetfulness, but awareness of one's own biases. Only getting rid of prejudices opens up the possibility of feeling the tone of the text. Gadamer is sure that: "... the original content of a text or a work of art can never be fully understood; approaching it is a never-ending process. In order for the true meaning to be distinguished from various ambiguities by means of filtering, it is necessary not only to constantly fight against new sources of error, but also to constantly open new sources of understanding that reveal unexpected meaningful connections" [3].

A unique copy of hermeneutics is a French philosopher, methodologist, "Clash of interpretations" on hermeneutics, "From text to action. Essays on Hermeneutics", "I Am Other", author of Paul Ricker (1913-2005) is presented in the teaching. Ricker understands interpretation as the work of uncovering hidden meaning and uncovering different levels of what is implied. Assuming that the person is the creator of cultural meanings and meanings, Riker argues that the task of philosophy is to create a method of analyzing human subjectivity as the source of the cultural world. Ricker promotes hermeneutics together with phenomenology as a way of analyzing human subjectivity. Ricker treats the dialectic of understanding and explanation as similar to the dialectic of understanding the meaning of a text while reading it.

According to Ricker, explanation is based on hypotheses, the validity of which is provided by the logic of probability. Hypotheses, in the first approximation, reconstruct the content of the text as a whole. Understanding always follows the explanation in time, it is based on the content obtained as a result of the explanation. In the interpretation of the text, according to Ricker, the correct way of formulating questions about it is of great importance. The questions should be very specific to facilitate learning the content of the text.

Reconstruction of the text as a whole has a circular nature - knowledge of the whole implies knowledge of its parts and all possible connections between them. Moreover, the ambiguity of the whole is an additional reason to raise hermeneutical questions.

In addition, Riker introduces the concept of direct and indirect meaning, which considers interpretation as the decoding of the deeper meaning behind the obvious literal meaning.

Various humanities and natural sciences have traditionally studied hermeneutics. First of all, hermeneutics separated the humanities from those whose working principle was the exclusion of the human factor. As for mathematics, it can be said with deep confidence that the human factor can be removed from it, it is so used to it that it is not even talked about.

However, among mathematical essences and relations, people have chosen a system of symbols necessary for their needs in such a way that the meaning of this system of symbols can be understood only by those who want to practice or apply mathematics.

As long as history operates on interpretations, and as long as in the history of mathematics we are always investigating the meaning of the texts we are interested in, the precise achievement of what we want to say is in question. An example of this is the idea of Isaac Newton's "non-mathematical" ideas. In it, the English mathematical establishment I. Newton overruled his philosophical and metaphysical ideas that "forces" could lead to concept formation. Therefore, the formula "" requires interpretation from the hermeneutic point of view.

As already mentioned, mathematics can appear in two ways depending on its relation to historical time. On the one hand, we can see in it a system of interrelated timeless facts. The task of mathematicians is to unravel these arguments and to explain the deductive relationship between them; accordingly, the history of mathematics is "evolutionary progress whereby mathematics gets better and better; at the same time, there is a gradual turning away from the mathematics of the past, which was inconvenient, uncertain and flawed" [5].

On the other hand, we can look at mathematics as a product of human activity dispersed throughout the cultural period. This perspective does not negate the first, but complements it by allowing a logical openness to constructive discussion of mathematization and modeling. And this means to us that there is something in common between the activities of teachers and students who work with already invented and well-known knowledge, and mathematical activities that create scientific innovation, as long as meaningful communication, innovation and creativity are very important elements in the activities of teachers and students.

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