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Explanation and Understanding in the History of Philosophy from Hermeneutics to Ricoeur

ABSTRACT

In this article I will present the main ideas of those thinkers who argue that natural sciences are receptive to a hermeneutical method of understanding. I will examine to what degree understanding used as a method in natural sciences differs from understanding used as a method in humanities and point out the universality of hermeneutical experience. At the beginning, I will state the authors who set sharp borders between the methods used in natural sciences and methods used in humanities. They regard hermeneutics exclusively as a method used in social sciences that is not capable of reaching the cognitive objectivity innate to natural sciences. However, by means of several examples from contemporary philosophy of science it can be proved that this classification is not valid.

BIOGRAPHY

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EXPLANATION AND UNDERSTANDING IN THE HISTORY OF PHILOSOPHY FROM HERMENEUTICS TO RICOEUR

INTRODUCTION

The purpose of this inquiry is to show that the distinction between natural sciences and humanities in the history of science was based on the distinction between explanation (Erklären) and understanding (Verstehen). The relationship between explanation and understanding often reflected the relationship between natural sciences and humanities in the history of science. These distinctions emphasize the difference between natural and social phenomena and imply the existence of binary oppositions in science: explanation/understanding, natural/social, objective/subjective, etc. In the following lines I will analyze the relation between explanation and understanding in the history of philosophy and science and show the dichotomies these two methods create in science. I will try to show on which dichotomies these two methods are founded as well.

EXPLANATION AND UNDERSTANDING IN THE HISTORY OF SCIENCE AND PHILOSOPHY

In the history of philosophy there are three approaches to the relation between natural sciences and humanities.

METHODOLOGICAL MONISM

The first approach to the relation between natural sciences and humanities is methodological monism. It is based on the idea that method employed in natural sciences (mathematical exactitude) is an ideal which should be applied to all sciences, even humanities. The proponents of methodological monism, emphasize the unity of the scientific method. Those were the ideas of the proponents of positivismⁱ and logical positivismⁱⁱ.

Positivism was found by Auguste Comteⁱⁱⁱ in the first half of the XIX century. Its main characteristics is methodological monism. The proponents of positivism argue about the universality of the method employed in natural sciences. Consequently, they claim that this method should be applied to humanities as well. The philosophers and historians who accept this idea^{iv} argue about the unity of scientific method. They ignore the subjective experience and argue that scientific explanation is "causal" explanation.

Logical positivism of 1920's and 1930's (or analytical philosophy), advocates different ideas than positivism. However, logical positivism has been in the spirit of positivism. The contributors of analytical philosophy^v argue that the whole human knowledge can be reduced to logical or scientific explanations. They argue about the elimination of metaphysics and subjective experience and advocate methodological monism.

ANTI-POSITIVISM

The second approach to the relation between natural sciences and humanities is anti-positivism. It is founded on the idea that natural and human sciences represent two spheres of reality, and, thus, employ different methods in exploring reality^{vi}. Those thinkers^{vii} emphasize the difference between natural and human sciences and reject the idea of methodological monism.

Wilhelm Dilthey makes a distinction between the methods employed in natural sciences and humanities.^{viii} He argues that explanation is the fundamental method used in natural sciences, while understanding is the basic method used in human sciences.^{ix} Dilthey argues that scientist explains a particular event by causal relations, whereas a historian attempts to understand the meaning of the particular event. Dilthey states that human sciences are founded on experience and understanding.

Dilthey argues that understanding^x transcends into unfamiliar life expressions through a transposition emerging from fullness of one's own experiences. On the other hand, the method employed in natural sciences consists of hypothetical draft of theories and experimental confirmation.

According to Dilthey, the difference between natural and human sciences is not only based on the method, but also on the object of knowledge itself. The object of knowledge in natural sciences are the facts emerging from the outside world, while the object of knowledge in human sciences is based on inner experience. Therefore, the basic method of natural sciences is explanation based on the process of finding the relation between the cause and effect, whereas the basic method of human sciences is understanding.

In his essay “On the different methods of translation”^{xi}, Friedrich Schleiermacher presents a concept of “paraphrase” as a specific method employed in natural sciences, and the concept of “reproduction” as a specific method employed in humanities. By means of relation between these two translation methods and their relation to the text itself, Schleiermacher explains his view about the relation between natural sciences and humanities. According to Schleiermacher a paraphrase tends to overcome the irrationality of language, but only in a “mechanical way”. A paraphrase relates to elements of language as to mathematical signs. Natural sciences explain nature in the same manner, i.e. mechanically, by means of the causal relations. Reproduction emerges as a method of translation diverging from the original text in regard to differences between various languages, customs and cultures. Here an opportunity for various interpretations and understanding of the text emerges, as no strict regulation on interpretation and comprehension exists. This is the characteristic of the hermeneutic method employed in human sciences. Therefore, Schleiermacher indirectly sets the distinction between the method of natural sciences and method of human sciences.

Windelband also emphasizes the fact that historical sciences should not employ the method of natural sciences. According to Windelband, the fundamental difference between them follows from the fact that natural scientists tend to establish general laws, whereas the historians attempt to comprehend a unique and unrepeatable fact.

UNIVERSALITY OF HERMENEUTICS

The third approach is based on the emphasis on the universality of hermeneutics. The representatives of this point of view argue that it can be applied to both, human and natural sciences. Proponents of this point of view reject the idea that natural sciences are “objective”.^{xii} Habermas and Gadamer, although they advocate the universality of hermeneutic experience still emphasize that there are some fundamental differences between natural and human sciences. Other representatives from this group reject the idea that the distinction between the methods of human and natural sciences exist.

Gadamer and Habermas emphasize the universality of the hermeneutic method, although they argue that there are some fundamental differences between natural and human sciences.

According to Habermas, cognitive interest determines scientific objectivity and different interests set borders to natural sciences (i.e. “empirical” and “analytical” sciences) and humanities (i.e. “hermeneutic” and “comprehensive” sciences^{xiii}). The empirical and analytical procedures are directed towards the comprehension of reality or grounds of possible technical disposition, whereas hermeneutic procedures aim to achieve intersubjectivity in comprehension during the language communication. Therefore, the first mode of scientific knowledge is directed towards technical disposition, and the second towards practice in the sense of communication.

On the other hand, Habermas emphasizes the problem of crossing empirical and analytical methods with the hermeneutic method, which is of the main importance of the human sciences. In his later works, Habermas emphasizes the universality of hermeneutic method.^{xiv} According to Habermas, the choice of research models, construction of theories, and sometimes even the development of science depends on decisions and discussions of scientific community. Habermas argues that hermeneutic method is also employed in translating the scientific information into the everyday language.

Gadamer in his *Truth and Method* argues that the structure of hermeneutic experience contradicts basically the methodical thinking of science and is founded on the “occurring character of language”. Gadamer argues that the ideal of science has always been the single-meaning language, which has been proved as unachievable in the hermeneutic conception of language. Gadamer claims that single-meaning mathematical-sign language of natural sciences could have never been imagined without the language introducing conventions of this language. Gadamer emphasizes universality of hermeneutic phenomenon that can be employed not only in human sciences, but also in the natural ones. Nevertheless, Gadamer is not prepared to eliminate the difference between the two scientific methods. Gadamer sets up sharp borders between the types of experience included in natural and human sciences. He emphasizes that moments of tradition are active in human sciences, contrary to the natural ones. Application used in hermeneutic interpretation is opposite to the objectivity the natural sciences aspire to. This is because natural sciences impose to request to exist out of all subjective applications. On the other hand, Gadamer argues that hermeneutic interpretation owns scientific relevance as it discovers the forms of truth preceding the logic of scientific research by means of reflection. Gadamer also argues that an experiment receives its authorization only in relation to the research context, thus, sciences include hermeneutic component. According to Gadamer, hermeneutics is also significant for translating scientific knowledge into everyday language.

BINARY OPPOSITIONS IN SCIENCE

Apparently, the proponents of these perspectives have different point of views. The first group of authors argue about the universality of the scientific explanation. However, this argument is based on the idea about the fundamental difference between natural sciences and humanities and their methods. It implies binary oppositions: objective/subjective, nature/culture, repeatable/unique, true/constructed, natural/mental etc, where the first term designates natural sciences, while the second designates humanities.

In the arguments of the second group of thinkers these dichotomies are even more obvious because they argue about the necessity of making the distinction between natural and human sphere (i.e. explanation and understanding).

The third group of thinkers emphasizes the universality of the method of understanding (i.e. hermeneutics). However, these authors emphasize the differences between natural and human sphere of reality and emphasize binary oppositions: natural/historical, empirical/hermeneutic, technical disposition/language communication, etc.

As it is shown, these three perspectives are based on the distinction between natural sciences and humanities and the difference between explanation and understanding. Even the philosophers who argue about universality of hermeneutics make a distinction between the methods employed in natural sciences and humanities. For example, Gadamer and Feyerabend argue about the possibility to apply the method of understanding to natural sciences. However, these authors don't argue that explanation can be applied to humanities. This was argued by Levi-Strauss, Propp, Greimas and Barthes. They apply structural analysis based on explanation to different kinds of narratives.^{xv} They attempt to explain their inner logic, and argue that structural analyses seeks for objectivity. Propp makes the structural analyses of folk-tales and argues that they can be explained by 31 narrative functions. However, they do not try to prove that distinction between the method of explanation and the method of understanding must be rejected.^{xvi} These authors do not employ the method of understanding. They don't analyze its relevance neither to natural sciences nor humanities.

Mary Hesse attempts to resolve binary dichotomies present in the history of science in her article "In defense of objectivity". She argues that the distinction between the natural and human sciences that has been made in philosophy since Dilthey is not valid. She argues that:

- 1) Experience in natural science is not objective and independent from theoretical explanation: "In natural science data is not detachable from theory, for what counts as data are determined in the light of some theoretical interpretation."^{xvii} Thus, the dichotomy objective/subjective, whose first term designates natural sciences and the second term humanities, is not valid.
- 2) "In natural science theories are not models externally compared to nature in hypothetico-deductive schema, they are the way the facts themselves are seen."^{xviii} Consequently, the binary dichotomy analytical/comprehensive whose first term refers to natural sciences and the second one to humanities is flawed.
- 3) "In natural science the law-like relations asserted to the experience are internal, because what counts as facts are constituted in what the theory says about their interrelations with one another."^{xix} Therefore, the dichotomy external/internal cannot describe the difference between natural sciences and humanities.
- 4) "The language of natural science is irreducibly metaphorical and inexact, and formalizable only at the cost of distortion of the historical dynamics of scientific development and of the imaginative constructions in terms of which nature is interpreted by science."^{xx} Thus, dichotomy true/metaphorical, where the first term refers to the language of natural sciences and the second term refers to the language of humanities is not valid.
- 5) "Meanings in natural sciences are determined by a theory; they are understood by theoretical coherence rather than by correspondence with facts..."^{xxi} Subsequently, the dichotomy logical/hermeneutic cannot describe the difference between natural sciences and humanities.

Hesse concludes: "It follows so it is held that the logic of science is necessarily circular: data are interpreted and sometimes corrected by coherence with theory, and, at least, in less extreme versions of the account, theory is also somehow constrained by empirical data."^{xxii}

Mary Hesse argues that hermeneutic method plays an important role in natural sciences. Subsequently, hermeneutics represents a universal method. Hesse points to two reasons for placing hermeneutics as a more important factor in relation to natural sciences than it has previously seemed to be. First, it indicates that it is impossible to make a distinction between the mode of knowledge connected to man's self-understanding in studying the theory of evolution, ecology, or genetics. This means that human values shall be included into

applications of such theories, and also that categories of these theories such as functionality, selection, and survival have been conditioned by a man's comprehension of himself. Secondly, theories have always represented a part of internal communication system in a particular society. In this case, even the comprehension of nature has been formulated by human meanings.

Kuhn and Feyerabend also contributed to the development of the broader perspective of the natural sciences and humanities.

In his *Structure of Scientific Revolutions*^{xxiii}, Kuhn argues that during different development phases for any science, scientists differently describe phenomena and interpret them in different ways. In the absence of a paradigm^{xxiv}, all facts that might be related to development of any particular science are seen as equally relevant. According to Kuhn, science does not own an objective method that is independent from various interpretations and evaluations of the scientific community, and he regards the character of sciences as hermeneutic. Kuhn maintains that the existence of paradigm does not necessarily entail the existence of a group of rules. Scientists may be in accord when identifying a paradigm, and in discord in relation to its interpretation and rationalization. Acceptance of a new paradigm often entails different definitions of a particular science. Thus, when the paradigm changes, significant changes that determine the authorization of the problem, as well as of the solutions proposed, occur. Having in mind that no paradigm ever solves all the problems defined thereby, and that there are no two paradigms, which leave unsolved all identical problems, dissertations on paradigm include the following question: "What problems are more important to solve?" Kuhn emphasizes that this question points to the fact that evaluation and interpretation system cannot be excluded from science and that science claims no right to objectivity.

According to Kuhn, scientific community influences the majority of the members in a group to finally accept that a particular group of arguments is prevailing in articulation to another. According to Kuhn, this process may be called "persuasion", and this represents the hermeneutics' field of action.

In his *Against Method*^{xxv} Paul Feyerabend argues that several traditions in research ("paradigms") may co-exist simultaneously, and that none of them might be regarded as definitely rejected. This makes various interpretations possible and points to the application of the hermeneutic method in the scientific field as well. Therefore, strict objectivity of science that exclude all interpretation and evaluation is not possible.

As it is argued, Hesse, Kuhn and Feyerabend, develop a broader picture of science in which science and life, external and internal, true and metaphorical, natural and cultural are not divided. These authors argue about the universality of the method of understanding and its relevance to natural sciences. They overcome the traditional dualism natural/humane. However, they still do not analyze the distinction between explanation and understanding, which is crucial for both natural science and humanities.

RICOEUR'S THEORY OF DIALECTICS BETWEEN EXPLANATION AND UNDERSTANDING

The significance of Ricoeur's hermeneutics is that he showed that the method of explanation cannot be divided from the method of understanding. He opened new perspective to natural sciences and humanities and the distinction between them which was made in the history of science.

Although there are different theories of scientific explanation and different methods of understanding, it is argued that explanation is objective, while understanding is subjective.

There are different theories of explanation in science. Hempel argues about three models which scientific explanation consists: deductive-nomological, deductive-statistical and inductive-statistical model.^{xxvi} On the other hand, there are theorists who defend theory of explanation based on statistical-relevance. They criticize Hempel's theory that scientific explanations must be founded on the argument. Salmon argues that the main criteria for scientific explanations "must be objective, independent of personal, psychological considerations".^{xxvii} There are many other theories of explanation and they are based on different methodologies.

There are also different theories about method of understanding in the history of philosophy. Ricoeur's theory of text is an attempt to overcome "romantic hermeneutics" which dominated since Schleiermacher and Dilthey. It is often argued that Schleiermacher and Dilthey equate the method of understanding with understanding author's intention. However, Ricoeur and many other authors make partly incorrect remarks on romantic hermeneutics. In *Hermeneutics and Criticism* (1838), Schleiermacher argues that interpretation is a twofold process, which includes both author and the text as objects of interpretation. He makes distinction between

psychological understanding (which aims to reproduce author's intention and his creation of meaning) and grammatical understanding (which is based on the meaning of the text itself). In his essay "The understanding of others and their manifestations of life" (1910), Dilthey introduces a broadened concept of hermeneutics which is not based on empathy and reconstruction of the author's intention. He introduces the type of understanding, which is based on the articulating the meaning of the text itself.

Ricoeur argues that he cannot accept "the irrationalism of immediate understanding"^{xxxviii} based on empathy. However, he also cannot accept "a rationalistic explanation that would extend the structural analysis of the sign systems to the text".^{xxxix} Thus, Ricoeur rejects on the one hand, romanticist point of view about the congeniality between the author and the reader, and on the other hand positivist point of view of textual objectivity "independent of the subjectivity of both author and reader".^{xxx} Ricoeur states that to understand the text means to extend one's experience and one's picture of the world through the comprehension of possible worlds and world-propositions opened by the text.

Ricoeur attempts to show that methods of explaining and understanding may not easily be divided as Dilthey has thought. For Dilthey, this distinction means that these two concepts are mutually excluded – either we make explanations of facts as scientist or we interpret them as a historian. These two terms for Dilthey divide two spheres of reality. Ricoeur argues that even the ordinary language undermines Dilthey's dichotomy, because when something is not understood – explanation is requested, and when something is understood, it may be explained.

Heidegger perceives understanding as an ontological category, while Gadamer argues that understanding is determined by tradition. Ricoeur attempts to overcome all one-sided conceptions, not only romanticist and positivist, but ontological and existential as well. He gives new a perspective on the interpretation and defines it as a dialectics between explanation and understanding.

In his essay "What is text?", Ricoeur states that both terms, explanation and understanding, have undergone changes. The term "explanation" is no longer taken from natural sciences, but also from the linguistic model. The term "understanding" has in contemporary hermeneutics undergone alterations that estranged it from the psychological term of comprehension in Dilthey's meaning.

Ricoeur argues that "understanding is not the subjective side and explanation the objective one. Subjectivity is not a prison and objectivity is not our liberation from this prison. Far from conflicting, subjectivity and objectivity reinforce each other."^{xxxi}

Ricoeur advocates complementary characteristics of explanation and understanding. He argues that explanation cannot be excluded from human sciences. He gives an example of the myth that can be explained through structural analysis. However, this does not mean that we have interpreted it, or understood it. Ricoeur argues that by means of structural analyses, myth can be explained. But this does not mean that it is understood as well. Levi Strauss divides the myth into its basic units, which he names "mythemes". However, these basic units are part of the sentences which bear the meaning and, thus, require understanding. According to Ricoeur interpretation of the myth consists of explanation which leads to "surface semantics" (mostly consisted of oppositions, such as life/death) and understanding, which leads to "depth semantics" which leads to the "real reference" of the myth. Ricoeur argues "Whereas semiotic units are systems of inner dependencies, and for that reason constitute closed and finite sets, the sentence as the first semantic unit is related to extralinguistic reality; it is open to the world."^{xxxii}

In his "Metaphor and the central problem of hermeneutics", Ricoeur asserts that he connects the problem of explanation to the dimension of "sense", "or the immanent pattern of discourse"^{xxxiii}, and, on the other hand, he connects the problem of interpretation to the dimension of "reference", which represents the power of discourse to apply itself to an extralinguistic reality. Ricoeur argues that the "sense" is "what" and the "reference" the "about what" of discourse.^{xxxiv}

Ricoeur's equation of the explanation with "sense" and understanding with "reference"^{xxxv} is contrary to the examples in the history of philosophy and science. It is argued that scientific texts can be explained and that they have a reference, because they truly describe and explain our reality. On the other hand, it is argued that literary texts to which the method of understanding can be applied don't have a reference, because they are fictional.

According to Frege, striving for the truth moves us from sense to reference. But the desire for the truth is often ascribed only to scientific statements. Therefore, literary and poetic texts have no reference, only sense. This approach to literary texts can also be found in the history of literature of theories of Russian formalists and French structuralists.^{xxxvi} Russian formalists and French structuralists denied the referential nature of the literary and poetic texts.^{xxxvii} They denied any kind of exterior motivation of the literary text. French structuralists excluded anything that was outside the discourse itself in their analyses of the narrative texts. According to Ricoeur, structural analyses is only the starting point of an interpretation of literary works. He argues that meaning is produced at the level of sentences – not at the level of words. According to Ricoeur, reference cannot only be ascribed to scientific statements and texts. He argues that literary and poetic texts have a reference. In his article “What is text?”, Ricoeur argues that the nature of reference in literary texts brings a different approach to the concept of interpretation. “It implies that the meaning of a text lies not behind the text, but in front of it. The meaning is not something hidden, but something disclosed. What gives rise to understanding is what points towards a possible world by means of the non-ostensive references of the text. (...) Disclosure plays the equivalent role in written texts as ostensive references play in spoken language. Interpretation thus becomes the apprehension of the proposed worlds that are opened up by the non-ostensive references of the text.”^{xxxviii}

Ricoeur maintains that interpretation is not a “third term” of the dialectic between explanation and understanding – “it is understanding applied to the written expressions of life.”^{xxxix} Ricoeur’s theory of interpretation is the project which includes the close connection between the text and the reader. This engagement is a process of redescribing the world. Ricoeur’s theory of interpretation includes both explanation – and its analytic power, on the one hand, and unitary power of understanding, on the other hand. Consequently, all texts, not only scientific, but historical and fictional, have both sense and reference. Both methods, explanation and understanding can be applied to all these kinds of texts, as parts of the process of interpretation which is universal.

Ricoeur’s conception of interpretation employed in his narrative theory embraces the dialectics between the explanation (which he equates with *mythos* - emplotment) and heuristic fiction (which he links to the problem of “sense”) and understanding (which he equates with *mimesis* and redescription and the problem of “reference”). Ricoeur’s theory of interpretation, unifies theory and praxis, method and life, science and human action. His theory of interpretation cannot only be applied to narratives, but to scientific theories as well. Meaning is a process of creation and discovery in both Ricoeur’s narrative theory and science.

EXPLANATION AND UNDERSTANDING IN THE CONTEMPORARY SCIENCE

Even those scientists and philosophers who reject Ricoeur’s theory about dialectics between explanation and understanding and the relevance of hermeneutics for sciences (especially natural sciences) cannot deny the changes the science had undergone after Einstein’s theory of relativity. Einstein’s theory emphasizes the position of the observer and relativity of measurements. On the other hand, Heisenberg argues that theories do not interpret themselves they are in need of the subject who interprets them. They are many authors who argue that hermeneutics can be applied to natural sciences^{xl} because it cannot only be linked to textuality. “...As Eger, Heelan, and Ihde say all insist, though in different ways, the working-out of a hermeneutical approach to science has become increasingly urgent. One reason is simply the growing complexity of science, and the need for conceptual tools adequate to the task of understanding things like the integrative changes brought about by advanced computational infrastructure, knowledge networks, and universal information flow, which promise to work important changes on social life.”^{xli}

The picture of contemporary science leaves room for hermeneutic approach.^{xlii} Recently, in the history of science there have been many debates between realists and antirealists. These debates between realists and antirealists show that science is in constant need for clarification and justification of its main concepts. Realists argue that science is a mimesis of reality. They argue that scientific knowledge is objective and that mind independent reality exists.^{xliii} However, although they argue about objectivity of science and knowledge, and relevance of hermeneutics (i.e. the method of understanding employed in science) they differently explain some basic concepts employed in science. Kukla defines the success of scientific theories as follows: “By the ‘success of science’ I mean that our scientific theories enable us to make significantly more correct predictions than we could make without them”^{xliiv} According to Kukla, the success of science is irrelevant for truth. On the other hand, Psillos emphasizes the importance of defining the meaning of the notion “success of science” for scientific realism. There is also no coherent version of “approximate truth” among realists. Consequently, realists did not solve the problem about relation between truth, success and reference of scientific theories.

The development of quantum mechanics requires revision of the great number of concepts and objects of Newton's physics. The necessity of the interpretation of the theory^{xlv} is emphasized.

In the debate between realists and antirealists^{xlvi} and antirealists about what reality is, what the success of science is, how concepts refer to reality, and what the link between reality and referent is, the hermeneutical approach is needed.

This brings us back to Ricoeur's theory about dialectics between explanation and understanding and impossibility to divide these two spheres of reality. The problems in the contemporary science and its history show that resolution of underlying binary oppositions is the main condition for the scientific progress.

CONCLUSION

The distinction between methods employed in natural sciences and humanities is based on binary oppositions that exist in science. There are different perspectives on methods that can be employed in natural sciences and humanities in the history of science and philosophy. However, all these perspectives are founded on binary oppositions which are reflected in the distinction between explanation and understanding. Ricoeur's hermeneutics is significant for science, because of his theory of dialectics between explanation and understanding. He resolves binary opposition explanation/understanding and shows the path how other binary dichotomies that exist in the contemporary science and its history can be resolved.

REFERENCES

- ⁱ Comte, Mill, Buckle, etc.
- ⁱⁱ Shlick, Ayer, Russel, Wittgenstein, etc.
- ⁱⁱⁱ Comte, *Cours de Philosophie Positive*, 1830
- ^{iv} Mill, Buckle, etc.
- ^v Ayer, Russel, Shlick, Wittgenstein in his earlier works, etc.
- ^{vi} The proponents of anti-positivism are: Droysen, Schleiermacher, Dilthey, Weber, Rickert, Simmer, Windelband, etc.
- ^{vii} The proponents of this point of view are: Doyen, Dithery, Simmer, Max Weber, Windelband, Rickert, etc.
- ^{viii} Wilhelm Dilthey, *Selected Works*.
- ^{ix} Droysen was the first philosopher who introduced the difference between the methods employed in natural and human sciences. In his *Grundriss der Historik* he argues that the aim of the natural sciences is to explain, while the aim of humanities is to understand.
- ^x According to Dilthey, it represents the foundation of human sciences.
- ^{xi} Schleiermacher, "On the different methods of translation"
- ^{xii} Gadamer, Habermas, Hesse, Kuhn, Lakatos, Feyerabend, Ricoeur, etc.
- ^{xiii} Habermas, *Knowledge and Human Interest*
- ^{xiv} Habermas, "Hermeneutic request regarding importance"
- ^{xv} Levi-Strauss applied structural analyses to myth, Propp applied it to folk-tales, etc.
- ^{xvi} They do not employ the method of understanding., which is not part of the structural analysis. Consequently, they make distinction between explanation and understanding.
- ^{xvii} Hesse, "In defense of objectivity"
- ^{xviii} *Ibid*, p.8
- ^{xix} *Ibid*, p.8
- ^{xx} *Ibid*, p.8
- ^{xxi} *Ibid*, p.8
- ^{xxii} *Ibid*, p.8
- ^{xxiii} Kuhn, *The Structure of Scientific Revolutions*
- ^{xxiv} According to Kuhn, paradigms represent the source of methods, problem spheres and solution standards accepted by scientific community.
- ^{xxv} Feyerabend, *Against Method*
- ^{xxvi} Mulder, "Explanation, understanding and subjectivity", www.bu.edu/wcp/Papers/TKno/TKnoMuld.htm
- ^{xxvii} *Ibid*.
- ^{xxviii} Ricoeur, *Reflection and Imagination*, p. 19
- ^{xxix} *Ibid*, p. 19

^{xxx} Ibid, p. 19

^{xxxi} Ibid, p.98

^{xxxii} *A Ricoeur Reader : Reflection and Imagination* , p. 68

^{xxxiii} Ricoeur, "Metaphor and the central problem of hermeneutics", in *Hermeneutics and the Social Sciences*, p.168

^{xxxiv} Ibid, p.168

^{xxxv} Ricoeur does not equate reference with denotation. His conception of reference is called "refiguration", which represents a shift from the "epistemological dimension of reference to a hermeneutical dimension of refiguration" (Ricoeur, *Time and Narrative*, vol. 3, p. 5). In *Rule of Metaphor*, Ricoeur states that the concept of reference does not only include denotation (representation) but also expression (exemplification).

^{xxxvi} Ricoeur examines both approaches in *his Time and Narrative*, vol. 2.

^{xxxvii} However, they argue that these texts can be explained and rejected the method of understanding.

^{xxxviii} *A Ricoeur Reader: Reflection and Imagination*, p. 177

^{xxxix} Ibid, p.73

^{xl} Ihde, Heelan, Kockelmans, Kisiel

^{xli} Crease, "Hermeneutics and the natural sciences: Introduction", p. 268

^{xlii} It is widely accepted that the methods employed in natural sciences are used in psychology, sociology and other social science. However, it is still necessary to prove the relevance of hermeneutics to natural sciences.

^{xliii} There are different versions of scientific realism. There are many domains to which realism can be applied: metaphysical, epistemic, semantic, ethical, etc. There are also strong and weak versions of scientific realism. However, all these forms of scientific realism are united in their claim that mind-independent reality exists.

^{xliv} Kukla, *Studies in Scientific Realism*, p. 12

^{xlv} Because the theory cannot interpret itself.

^{xlvi} Antirealists argue that reality is not objectively given. However, this is a general representation of antirealism. There are different versions of antirealism: instrumentalism, phenomenalism, empiricism, constructivism, etc.