Preface

In the first volume of my book *Ideas for a Hermeneutic Phenomenology of the Natural Sciences,*[1] I have explained why, and in what sense in my view the natural sciences, too, are inherently hermeneutic enterprises, and thus that the scientists in their work as scientists give us "legitimate" *interpretations* of what there is in nature. I have also made it clear there in what sense these interpretations can be called true in that they indeed state what is; yet this is to be understood constantly under the assumptions or pre-judgments that the scientists make, and must make, in order to be able to do their scientific work. This is the reason why scientific claims do not reveal the all-encompassing, exhaustive, and definitive truth of what is.

In the first volume of *Ideas* my reflections were mainly ontological in nature and written from the perspective of Heidegger's early works. Since in *Being and Time* and related works, Heidegger himself was not concerned with methodological issues, one might have thought that his ontological approach even might be critical and in conflict with methodical hermeneutics, as this was developed in the nineteenth century mainly by Boeckh, Birt, Dilthey, and others. That this view is incorrect can easily be shown. In the reflections contained in this second volume I hope to indicate and explain why methodical hermeneutics will throw light on the most important methodological problems with which the ontologico-hermeneutical approach to the natural sciences confront us, once one turns to concrete issues.[2]

In so doing I also hope to show how the ontological approach makes it possible to reinterpret Kuhn's conception of the historical development of the natural sciences and to explain why I had to take distance from several

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[1] *Ideas for a Hermeneutic Phenomenology of the Natural* Sciences [Vol. I] (Dordrecht: Kluwer, 1993).

[2] As for *ontological* problems connected with the *methodological* issues raised in this second volume, I must refer the reader to Volume I of this work, cited above. I am aware of the fact that hermeneutical philosophers, who do not agree with Heidegger's early philosophy, presented in *Being and Time* and other works of the same period, have raised important problems with respect to my effort to make use of hermeneutic methods, once I rejected the *philosophical* views of both Boeckh and Dilthey; yet even though I admit that I have not been able to refute all the objections raised to the satisfaction of these philosophers, I am still convinced that in Volume I of these *Ideas*, I have responded adequately to the issues which in my view are essential in this regard, namely Heidegger's criticism of the ontological foundations of Husserl's phenomenology and Dilthey's philosophy of life, and all the essential problems pertaining to issues of meaning and truth.

dimensions of Kuhn's position, because they appear to conflict with basic theses of my ontological conception of the natural sciences.[3]

In the elaboration of my basic position I shall make an effort once more to explain that I do not see the hermeneutic nature of the natural sciences as primarily located in the processes of observation, experiment, or verification, but rather that the scientific enterprise is hermeneutic through and through, from beginning to end and in every respect.

This is the reason why a hermeneutic ontology of the natural sciences which is concerned mainly with issues of meaning and truth, should concentrate on science as it is actually being done by research teams and individual scientists in concrete historical situations and under historical conditions.[4]

In view of the fact that this claim is easily misunderstood and taken to imply a criticism of ideas proposed by other hermeneutic philosophers working in the same field, I have decided once more to address the basic issues in an effort to eliminate possible misunderstandings. It will gradually become clear, I hope, that my position would be critical of other hermeneutic approaches only, if the other positions were to reject the main theses I have developed in my *Ideas*, as well as the ideas to be presented in this new book.

In an effort to achieve my goal, I have decided in this new book to go about it by employing ideas and principles of *methodical* hermeneutics. In so doing I would like again to focus not so much on some important *aspects* of the natural sciences, but rather on the scientific enterprise as a whole in its continually developing form, on scientific research as it actually was, and still is, being done, rather than, for example, on a particular scientific theory, in which the scientific development temporarily seems to have come to a halt. I shall try to show why the scientific process as a whole is a never ending happening that is hermeneutic in nature, through and through. In part II of this new book I shall use chapters of the "history" of astronomy, dynamics, and mechanics. I shall make a special effort to explain why in this part of my investigation I am not acting as an historian of science, but rather as a critical philosopher who tries to show that scientists working in the natural sciences use interpretive methods in their efforts to discover and explain the phenomena of nature observed. For reasons which I hope to state as we move along, I have decided also to dwell on *some* issues and on the work of *some* of the leading scientists, only. Furthermore, in order to avoid that my "stories" would become much too long for the purposes at hand, I have decided in each case to focus mainly on the origin of the relevant conception in its close relationship to the most important events that eventually did lead up to it. I hope that in so doing it will be possible

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[3] I shall return to the conceptions of Kuhn throughout this second volume, but particularly in my *Concluding Observations*, pp. 175.

[4] Cf. *Ideas*, vol. I, chapters 2 and 3, pp. 60ff. and pp. 99ff.

to show that discovering, experimenting, observing, as well as the searching for explanations of what has been so observed, are always going hand in hand, that all of them are inherently hermeneutical, and that one effort is scientifically impossible without the others.

What I discuss here under the heading of "interpretive methods" is discussed by others under different headings, such as "the logic of scientific discovery." We know already that Kuhn discusses similar issues in terms of paradigms, paradigm changes or scientific revolutions.[5] In his book *The Limits of Interpretation,*[6] Umberto Eco wrote in a section on Abduction[7] that Peirce once observed that the reasoning of Abduction is typical of all "revolutionary" scientific discoveries.[8] Eco explained the point he tried to make there with the help of Kepler's reasoning in favor of elliptic orbits for planets, instead of circular ones. Eco also compared Kepler's way of reasoning with that used by detectives in many contemporary detective stories, and observed that a detective does not proceed any differently than many scientists do. He continued by saying that many of the great scientific discoveries proceed in this fashion, but so also do many discoveries of investigators, and many of the hypotheses made by medical doctors, to understand the nature or origin of an illness, [not to mention the many hypotheses of philologists, in their efforts to understand what could be in a text, where the original manuscript is unclear or contains blanks].[9] Eco refers here to a series of studies on the relationship between Peirce's abduction, Sherlock Holmes's method, and literary hermeneutics.[10] Finally, Eco makes the point that abduction somehow appears to combine the reasoning of deduction and induction in a form of argumentation that reasons on the basis of a rule or a law, accepted provisionally under one or more assumptions or hypotheses.

Note in this context also, that the idea that the sciences are sophisticated forms of interpretation, is found already in several philosophers of life, notably in Nietzsche and Dilthey. Nietzsche often alludes to this idea in *Beyond Good and Evil*;[11] he praises the metaphysician of the real world there as the artist above the physicists who claim to know reality as it is and then refutes

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[5] Kuhn, Thomas, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970), and the reactions this important book has provoked, mainly in the works of Popper, Lakatos, Stegmüller, and many others.
[6] Indiana University Press, Bloomington, 1990.
[7] Ibid., pp. 152–162.
[8] Ibid., p. 158.
[9] Ibid., pp. 158–159.
[10] See also U. Eco and T.A. Sebeok, eds., *The Sign of Three* (Bloomington: Indiana University Press, 1984).
[11] Section 322.

physics as not being [real] knowledge of the physical "text," "the matter of fact," but only an interpretation and does so from the standpoint of another [possible] interpretation.[12]

Be this as it may, in my *Ideas*, I explained in detail in what sense and why I myself defend the hermeneutic nature of the natural sciences. Yet, as I have said already, by basing my conception of hermeneutic *ontology* on Heidegger's hermeneutic phenomenology, I may have given the impression that the *methodical hermeneutics* of Boeckh, Dilthey, and others even is not really relevant to my conception. This may be true in one sense, but it is certainly not true in another.

For I am most certainly critical of Dilthey's philosophy of life in favor of Heidegger's phenomenological ontology; yet to the degree that even for the natural sciences a historical dimension is essential, much of the work of Dilthey becomes of the greatest importance, as I hope to show in what follows.[13] For even in the domain of the natural sciences, the fact that each science has its history has enormous implications for the manner in which one understands the scientificity of that science as well as the true meaning of its claims. In my view Kuhn has correctly shown that a natural science such as physics or chemistry, in its historical development goes through phases, which one can distinguish from one another through their "scientific paradigms," and that these periods follow one another by "scientific revolutions," which bring about "paradigm changes." Even though I have some basic problems with Kuhn's ideas, as I have explained in *Ideas*, I nonetheless agree with Seebohm, that it is important to apply what Dilthey has to say about text traditions to the phases in the history of each natural science.[14] This is what I hope to show concretely in this work.

To substantiate and explain what I have just stated, it will be necessary to say something about the origin and development of the hermeneutic method by Boeckh, Dilthey, and others. Yet in these observations I shall try to be as brief as the subject matter allows for. Thus, I shall say very little about the work of Boeckh, Birt, and other hermeneuticists; as for Dilthey, I shall dwell mainly on what he has to say about eminent texts and text traditions, but I shall again be very brief about the various ways in which these ideas have been interpreted in the twentieth century by Gadamer, Ricoeur, and others. The relevance of what I hope to describe there briefly will become clear in the rest of this volume, where I will apply these ideas to the science "physics," with the intention of clarifying further what I understand by the hermeneutic nature of physics and where I also hope to clarify what, in this context, I understand by "texts," "eminent texts" or

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[12] Cf. Paul van Tongeren, *An Introduction to Nietzsche's Philosophy* (Purdue University Press, 2000), p. 129.
[13] Cf. Part I of this book. See also note 2, above, p. vii.
[14] Vol. I, pp. 200–230.

"texts of genius," and "text traditions." In so doing I hope to avoid two great dangers, which as the Scylla and the Charybdis lurk here everywhere. On the one hand, I hope to defend the thesis of Kuhn, that the fact that physics, too, has a history of its own is essential for our understanding of this science. Yet, on the other hand, I still hope to show, also, that notwithstanding the changes and the periods in its historical development, it is still possible to state what the essence of physics really is, and connected with this, the thesis that physics can state the truth about what there is in nature.

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