

In 1946, Carl Friedrich von Weizsäcker said that “The deepest rift that goes through the world of science is the split between the natural sciences and the arts.”<sup>1</sup> This split is a consequence of the modern separation of subject and object. Just as these two branches of science went off in different directions, they will, in all probability, converge again, once this division is overcome. We can already see a movement toward such convergence by their present, more radical understanding of the temporality of their respective objects.

Scientific work requires, as a first step, the identification of an object that can be isolated, at least approximately, and is continual through time. That such an identification is at all possible is astonishing rather than self-evident. How can there be any science if every event in time is unique? What happens or happened once in time, resists, in its very uniqueness, the claim of science that it can obtain the knowledge necessary to it. In this respect, physics does not have a basic advantage over classical hermeneutics.

In order to overcome this seemingly hopeless situation, a method is required, allowing us to bridge the time-gap that separates events from each other, a method of objectification. Timeless concepts must be found for temporal phenomena, by means of which one can discern, in those phenomena, a time-bridging permanence, namely the permanence that is required for an object. A main characteristic of any object is the possibility of inter-subjective communication regarding it, the possibility of language. Unless we only use deictic expressions or the physical action of pointing to express our subjective impressions, we converse by means of general concepts having a determinate content, and which can be understood by another subject and assigned objectively to an actual thing or fact.

The strategies for objectification that are used in physics and in hermeneutics, in order to ascertain the objective core of historically unique events, are different but do not completely diverge from each other. A closer look will show, surprisingly, that in the end, both branches of science made a somewhat analogous discovery: there are limits to the possibility of objectification. In their beginnings, however, both started out from the idea that the object can be isolated from all subjective conditions and thus quasi-timelessly fixed.

In physics, the uniqueness of any single event in time is eliminated by the idea of a general law that rules over everything material; time itself functions as a variable, with respect to which all other quantities are derived and thus put into a necessary context. Time is thus conceived as a symmetrical quantity like space, i.e., without direction and without an absolute distinction of a certain point in, or period of, time.

Hermeneutics constitutes its object by investigating the communicable sense of historical documents. This sense is mediated through language and expressed in concepts that can be understood. Whereas the events underlying any document are irretrievably lost and therefore hidden from sight and direct scientific consideration, the document as such endures; its linguistic symbols, being accessible to the present because of the relative durability of the material, represent a mental content, the sense of which can be investigated. Of course, the sense is not as accessible as the material itself; its disclosure requires a wide knowledge of the meaning of the symbols used, the context of the genesis of the document, and many other things. This knowledge, in turn, is disclosed by means of further documents, representing a research that has been in process for generations and

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<sup>1</sup> Carl Friedrich von Weizsäcker, *Die Geschichte der Natur. Zwölf Vorlesungen*, 6th ed. (Göttingen: Vandenhoeck & Ruprecht, 1964), 8.

will continue to give an ever more precise picture of the historical facts that are required for understanding documents.

## The Discovery of the Limits of Objectivism

The discovery that the process of understanding will never be completed led to the realization that it moves in a circle. But before being able to recognize that it was naive to look for the objective content of a text, a further step was required, namely the realization that the subject, i.e., the scientist, is influenced in his understanding by the conditions appertaining to his epoch, so that the separation of subject and object is not strictly ensured. The supposedly separated object turns out to have always been placed within the horizons of the respective subject, so that it is acquired anew every time, and in a different way every time, which is reflected in the history of its reception. Some of the conclusions drawn from this realization are far-reaching and even bizarre. In order to judge their legitimacy and their limits, we will describe in this essay the analogous process in the history of physics. The analogy is based on the fact that nothing reveals itself definitely and completely: Just as a historical text is always open to new possibilities of understanding, in quantum physics too, some objects are not completely objectified but open to different reactions. There is, so to speak, some scope for alternatives, both in hermeneutics and in physics, which is essentially derived from an openness toward the future. These -- admittedly limited -- alternatives occur at different levels of being; what is, when seen from a merely physical perspective, an already fixed objective fact, can still show itself open to further development, when seen from the point of view of hermeneutics.<sup>2</sup>

### *The Extent and the Limits of Objectifying in Physics*

#### *a) The Program of Classical Physics*

So-called “classical” physics essentially claims to be able to fully represent reality through mathematical formulas without needing the concept of probability, or, in other words, to be able to describe future possibilities as facts.<sup>3</sup> In three steps it eliminates time, and, consequently, the uniqueness of single events, as it stands in the way of being able to form general concepts: (1) First, the events are put into temporal order; in order to do this, time is viewed as a one-dimensional parameter, the values of which can be represented by simple numbers. This removes the relevance of any specific point along this time line; the physicist need only look at intervals.<sup>4</sup> (2) Second, different state quantities are put into a relation to relative periods of time in order to find a continuous function for

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<sup>2</sup> Analogy has its limits, in that human creations in history originate from free self-determination, whereas physical events are characterized by a lack of determination. For this reason, the physicist can explain any physical event (statistically) by asking for its causes, whereas the historian can only understand a historical event by re-conceiving the sense that a free subject gave to it, and expressed earlier on.

<sup>3</sup> Cf. Carl Friedrich von Weizsäcker, *Aufbau der Physik*, 3d ed. (München: dtv, 1994), 289; Axel Schmidt, *Natur und Geheimnis. Kritik des Naturalismus durch moderne Physik und scotische Metaphysik* (Freiburg-München: Alber, 2003), 93-100.

<sup>4</sup> It has to be pointed out that the abstraction from absolute points in time is a necessity for physics, as it is for most ordinary concepts in everyday life. Relative periods of time are repeatable, absolute points in time are not; the repeatability guarantees the equivalence of cases that is necessary for any identifying concept. Kant, for instance, was well aware of this requirement [see KrV B 245 (AA III 174)], whereas today's thoughtless term “absolute time” basically means the same as what Newton called “relative time.” Cf. Isaac Newton, *Mathematische Grundlagen der Naturphilosophie*, ed. and trans. Ed Dellian (Hamburg: Meiner, 1988), 44: Scholium to Definition VIII.

each of these quantities. (3) Third, the knowledge of the respective function is used to calculate the values of the state quantities at any point in time, so that every temporal event can be adequately determined, and thus seems to be deprived of its uniqueness.

This three-step procedure is based on two essential preconditions: for one thing, all natural phenomena must occur with strict regularity, the rules of which can be made comprehensible through functional concepts, and thus be put in the form of a law. For another, there can be no physical relevance to the difference between past and future points in time and, consequentially, no distinction of any present moment, as the representation of time by a continuous parameter ( $t$ ) removes the difference between past and future, between fact and possibility. Wherever both preconditions are met, the claim of classical physics is correct, in principle, in describing reality in a causal-deterministic way,<sup>5</sup> as characterized by Martin Heidegger: “Hence procedure must represent the changeable in its changing, must bring it to a stand and let the motion be a motion nevertheless. . . . The constancy of change in the necessity of its course is ‘law.’”<sup>6</sup>

### *b) The Quantum Theoretical Critique of Classical Physics*

This “classical” way of thinking, however, has been proven to be unsustainable. Quantum physics has discovered that the same experiment, under identical conditions,<sup>7</sup> does not necessarily yield the same results, as classical physics would indeed have assumed. There is here a scope for possible results, which, in extreme cases, do not even end in the result expected by classical physics. This astonishing fact was not discovered until the beginning of the 20th century, because its range is extremely small compared to the objects of the macro- and mesocosmos, e.g., planets or stones, as its effect actually decreases with the size of the object. This reciprocal relation is governed by the *quantum of action*. According to Heisenberg, the quantum of action is also the minimum of uncertainty of two canonically conjugate variables, e.g., position and momentum: the more precisely one variable is determined, the more the other becomes fuzzy or uncertain. Some basic calculations can show that due to the small value of the constant ‘ $h$ ’ ( $6.626 \times 10^{-34}$  Js), the resulting differences can only become noticeable where micro-objects are concerned. Yet however small the range may be, whether it be measurable or not, the very existence of latitude in this matter excludes the classical, deterministic way of thinking. But what will take its place?

Two alternative solutions have come to the fore: Either the processes are not ruled by exact laws at all, or the semantic structure of the language of classical theory contains a naïveté that was not noticed; and the latter is connected with the unjustified equal treatment of past facts and future possibilities. The development of quantum physics has shown that we can maintain that the processes are in fact ruled by laws, but only provided that the laws refer to possible and not actual events. In this way we have to interpret the concept of possibility not only modally, but also quantitatively, i.e., as a *probability*. According to this interpretation, particular readings of properties are indeterminate within the scope of statistical deviations, i.e., not determined by a law, but rather ruled by a law af-

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<sup>5</sup> Cf. Gregor Nickel, “Perspectives on Scientific Determinism,” in Harald Atmanspacher and Robert Bishop, ed., *Between Chance and Choice. Interdisciplinary Perspectives on Determinism* (Thorverton: Imprint Academic, 2002), 35-48.

<sup>6</sup> Martin Heidegger, “The Age of the World Picture,” in *The Question Concerning Technology and Other Essays*, trans. William Lovitt (New York: Harper & Row, 1977), 120.

<sup>7</sup> For our purpose, we can leave the problem concerning the preparation of identical experimental conditions out of consideration. Cf. Carl Friedrich von Weizsäcker, *Wahrnehmung der Neuzeit*, 5th ed. (München-Wien: Hanser, 1984), 103: “Realizing that there are no identical cases, I am astonished how incredibly successful a procedure can be that nevertheless makes this assumption.” (Own translation)

fecting them within an ensemble or grouping. According to the law of large numbers, it is possible to determine the *probability* of particular readings. This interpretation, however, can only be consistent if the acquired concept of probability is based upon a real possibility that lies within the object and is not the result of ignorance.<sup>8</sup> In consequence, the laws of quantum physics have the following semantic structure: they refer directly to the probability of future events, and in this way to their actual reality. Thus, the range of events with identical initial conditions, as mentioned above, becomes comprehensible: it is the expression of the totality of all possible events with a non-insignificant probability. Taken to the extreme, by setting the probability to 1, we asymptotically obtain classical physics.

This new concept of probability reveals its seemingly paradoxical consequences in an experiment that is “absolutely impossible to explain in a classical way,” as Richard Feynman noted.<sup>9</sup> Quantum objects behave differently from classical objects, like tennis balls, in principle: a quantum object can pass through two holes at the same time, whereas a tennis ball can only pass through one, and precisely one, hole. Furthermore, quantum objects behave differently depending on whether they are observed while passing through, or not. If they are not observed, then the possibility of the object passing through two different holes has to be considered as real, i.e., it is not objectively determined as to which of the alternatives is taking place; it remains undecided or undetermined. However, if the objects are observed, the very observation decides the alternative, and the experiment yields a totally different result. In the first, unobserved case, we see an interference phenomenon that is analogous to water waves. In the second, observed case, we get a result similar to the moving of tennis balls. This behavior of quantum objects forces us to restrict the validity of the logical principle of the *tertium non datur* (which excludes a third possibility between two contradictory ones): it is valid only for facts, not for possibilities. If the objects are not observed while passing through the holes, then it is not a fact that they pass through either the one or the other hole; a single object may pass through both, both possibilities overlap and are not decided, and this leads to the interference pattern that is being observed.

The indeterminacy of undecided alternatives that becomes apparent in this experiment can also be considered from a different point of view, namely as the impossibility of strictly isolating objects from the observing subject. Only a past fact possesses an objectivity strictly independent of any subject. But all that has not (yet) been turned into fact is connected with the subject or with the apparatus of observation, so it is inevitable that this

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<sup>8</sup> This conclusion was corroborated by an experiment that proved that the so-called Bell inequations are violated, which however must first be satisfied before the theory of local hidden parameters can be seen as correct. Experiments intended for testing the Bell inequations were first carried out (in 1982) by A. Aspect und P. Grangier. Cf. Max Jammer, *The Philosophy of Quantum Mechanics. The Interpretations of Quantum Mechanics in Historical Perspective* (New York: John Wiley & Sons, Inc., 1974), 302-339; Jürgen Audretsch: “Die Unvermeidbarkeit der Quantenmechanik,” in Klaus Mainzer and Walter Schirmacher, ed., *Quanten, Chaos und Dämonen. Erkenntnistheoretische Aspekte der modernen Physik* (Mannheim: Brockhaus, 1994), 97-100.

<sup>9</sup> Richard P. Feynman, Robert B. Leighton, and Matthew Sands, *Feynman Vorlesungen*, vol. 3, *Quantenmechanik*, 3d ed. (München; Wien: Oldenburg, 1996), 17. Cf. the following literature to the experiment of the double hole: Richard P. Feynman, *Vom Wesen physikalischer Gesetze*, trans. Siglinde Summerer and Gerda Kurz, 4th ed. (München-Zürich: Piper, 2000), 160ff.; Werner Heisenberg, *Physik und Philosophie*, 6th ed. (Stuttgart: Hirzel, 2000), 76ff.; Jürgen Audretsch, “Eine andere Wirklichkeit: Zur Struktur der Quantenmechanik und ihrer Interpretation,” in Jürgen Audretsch and Klaus Mainzer, ed., *Wieviele Leben hat Schrödingers Katze? Zur Physik und Philosophie der Quantenmechanik* (Heidelberg; Berlin; Oxford: Spektrum Akademischer Verlag, 1996), 17-61, at 19-34; Weizsäcker, *Aufbau*, 528-531; Dieter Hattrup, *Einstein und der würfelnde Gott. An den Grenzen des Wissens in Naturwissenschaft und Theologie* (Freiburg i.Br.: Herder, 2000), 21-25.

connection influences the outcome of the event. In a famous 1935 essay, Einstein showed the consequences concerning this understanding of reality, declaring them paradoxical.<sup>10</sup> His thought-experiment, known as the Einstein-Podolsky-Rosen-paradox (EPR paradox), or as the “experiment of delayed choice,”<sup>11</sup> may turn out to be the most drastic example of the inextricable subject / object combination in nature itself.<sup>12</sup>

The difference between possibility and actual reality, forced upon us by the quantum theory, is constituted by the progress of time. The future opens possibilities, the present puts them into effect, the past is the epitome of all that once was present and now has been fixed as a fact. With this in mind, time reveals, even physically, an asymmetry that it did not possess in classical physics. The classical parametric time is, therefore, not applicable generally, but is restricted to the continuous development of its possible properties, a process which is interrupted whenever one of the alternative possibilities has been definitely decided and thereby fixed as a fact.

### c) Complementarity

Niels Bohr tried to grasp the characteristics of quantum theory by means of the concept of complementarity.<sup>13</sup> To express this in simpler terms: Two aspects of a thing are complementary when they limit one another almost to the extent of excluding one another, while still at the same time completing and therefore needing one another. According to Bohr, justice and love for instance are complementary, as are the biological and the physical way of looking at nature.<sup>14</sup> In physics, the aspects of objects -- body or wave -- are complementary, and the same applies especially to the space-time description and the postulate of causality. Classical thinking, on the other hand, either does not notice that these complementary aspects exclude each other, or it endeavors to isolate one from the other in those cases in which the contradiction cannot be overlooked. The relationship between freedom and causality provides an excellent example for this. Strictly speaking, one excludes the other, but they still require one another, as a subject can only initiate an ac-

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<sup>10</sup> Cf. Albert Einstein, Boris Podolsky, and Nathan Rosen, “Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?” *Physical Review* 47 (1935): 777-780.

<sup>11</sup> The expression “experiment with delayed choice,” comes from John A. Wheeler. Cf. Weizsäcker: *Aufbau*, 544-560.

<sup>12</sup> It is all too understandable that Albert Einstein fought against the implications of the quantum theory, as they are, in his view, paradoxical. After first trying to prove them to be inconsistent, for the last time at the Solvay Congress in 1930, but without success, because Niels Bohr refuted his arguments in each case, Einstein later on resorted to the opinion that the quantum theory's description of states must be incomplete and needs to be completed by (up to now) hidden parameters; then, the correlation of the objects would be only appearances, namely an expression of our incomplete knowledge. Cf. Niels Bohr, “Discussion with Einstein on Epistemological Problems in Atomic Physics,” in Paul Arthur Schilpp, ed., *Albert Einstein: Philosopher – Scientist*, The Library of Living Philosophers, vol. 7, 3d ed. (La Salle, Ill.: Open Court, 1969), 201-241, 225ff.; Weizsäcker: *Aufbau*, 513; Jammer, *The Philosophy of Quantum Mechanics*, 109-158, at 254. With regard to Einstein see also Hatrup, *Einstein und der würfelnnde Gott*.

<sup>13</sup> Cf. the lecture by Niels Bohr dated 1927, “The Quantum Postulate and the Recent Development of Atomic Theory,” in idem, *Collected Works*, vol. 6, ed. Jørgen Kalckar (Amsterdam: Elsevier, 1996), 113-136. Cf. also Carl Friedrich von Weizsäcker: “Komplementarität und Logik,” in idem, *Zum Weltbild der Physik*, 13th ed. (Stuttgart: S. Hirzel, 1990), 281-331; Klaus Michael Meyer-Abich, *Korrespondenz, Individualität und Komplementarität. Eine Studie zur Geistesgeschichte der Quantentheorie in den Beiträgen Niels Bohrs* (Wiesbaden: Franz Steiner, 1965), 150-159.

<sup>14</sup> Cf. Niels Bohr, “Introductory Survey,” in Bohr, *Collected Works* 6:279-302, at 300.

tion in space and time in true freedom if it is able to overlook the causal effect of that very action. Freedom without causality is ineffective, causality without freedom is boundless.<sup>15</sup>

For Bohr, the complementarity of the classical space-time description and of the postulate of causality is fundamental: “The very nature of the quantum theory thus forces us to regard the space-time co-ordination and the claim of causality, the union of which characterizes the classical theories, as complementary but exclusive features of the description, symbolizing the idealization of observation and definition respectively.”<sup>16</sup> From this, the “golden Copenhagen rule” can be inferred: experiments or measurements cannot be described other than in the terms of classical physics.<sup>17</sup> The reason: “Quantum theory is a theory of probabilistically connecting formally possible facts. Facts have to be described classically. Wherever a classical description is impossible, there is no fact. We mean the irreversibility of facts when we speak of classical description.”<sup>18</sup>

Bohr and, following his lead, Carl Friedrich von Weizsäcker developed the idea of complementarity starting out from the circularity of cognition and interpreting it as an expression of the “old truth that we are both onlookers and actors in the great drama of existence.”<sup>19</sup> The subject itself is part of the world of its objects, and, on the other hand, there are no objects which are not for a subject. The complementarity is unavoidable insofar as the transcendental condition of the object, viz. the possibility of its being objective to a subject in space and time, includes at the same time, and as a real condition, its interaction with the subject which, consequently, is no longer completely isolated from the object.<sup>20</sup> Whereas the transcendental condition expresses the classical division of subject and object, the real condition brings to bear the quantum theoretical union of subject and object. Both conditions are equally necessary for human cognition, but strictly speaking, they exclude one another; in other words, they are complementary. The quantum theoretical union of subject and object gives us knowledge of possibilities only, not of facts. But if we want to “pursue not an empty game of formulas, but physics,”<sup>21</sup> we must refer to empirical events that can only be described classically, which means that we do not have access to any real event except through the classical semantic reference to something that is not just possible, but real.

Complementarity seems to be a structural principle that is valid not only, and not even primarily, in the material world, but in the intellectual world as well. If we can find a complementarity of subject and object in physics, it is not surprising that the arts have discovered something analogous. We even go so far as to assume that many other metaphysical and epistemological pairs of opposites can also be understood as complementary, e.g., the individual and the general, essence and existence, vision and concept, part and whole, law and freedom, causality and finality, and so on.

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<sup>15</sup> Cf. Niels Bohr: “The Atomic Theory and the Fundamental Principles underlying the Description of Nature,” in Bohr, *Collected Works* 6:236-253, at 250.

<sup>16</sup> Bohr, “The Quantum Postulate,” 115.

<sup>17</sup> Bohr, “Discussion with Einstein,” 209. Cf. Weizsäcker, *Zum Weltbild der Physik*, 291-294, 329-331; idem, *Aufbau*, 510, 520-523.

<sup>18</sup> Weizsäcker, *Aufbau der Physik*, 371.

<sup>19</sup> Cf. Bohr: “The Atomic Theory,” 253.

<sup>20</sup> Bohr, “The Quantum Postulate,” 114: “Indeed, our usual description of physical phenomena is based entirely on the idea that the phenomena concerned may be observed without disturbing them appreciably. . . . Now the quantum postulate implies that any observation of atomic phenomena will involve an interaction with the agency of observation not to be neglected. Accordingly, an independent reality in ordinary physical sense can neither be ascribed to the phenomena nor to the agencies of observation.”

<sup>21</sup> Weizsäcker, *Zum Weltbild der Physik*, 293.

Whereas classical natural science isolated its respective object in order to place it, by means of timeless concepts, under the unity of reason, modern philosophy isolates the subject from all natural determinations so that it can be in charge, in perfect autonomy and freedom, of itself and its future. For all that, we should be able to call upon some knowledge of this subject -- inasmuch as it occurs in our history and is instrumental in establishing history itself -- i.e., a knowledge of history or of the humanities in general. The paradoxical task of gaining objective knowledge of an historical subject, while at the same time allowing it to remain as subject, led to Hegel's "*Geschichtsdiagnostik*" (history as dialectics), and from there to the entanglements of historicism.

### *a) The Basic Ideas of Classical hermeneutics*

Hegel sought to comprehend history as the self-objectification of the mind. "Whoever looks at the world with reason, it will look back at him with reason; one is connected to the other."<sup>22</sup> If there is such a thing as an objective knowledge of history, then it must show its provenance as being formed by reason: "The only concept philosophy conveys is the simple concept of *reason*, the realization that reason governs the universe, and that, consequently, the ways of the world have (always) been reasonable."<sup>23</sup> Hegel knew, of course, that throughout history things have manifestly often been anything but reasonable, but, in his view, this results from the fact that movements of mind can only come to fruition in and through time: "Time, therefore, appears to be the destiny and necessity of the mind that is not complete in itself."<sup>24</sup> That is why the mind is present "in time as long as it does not *grasp* its own pure concept, i.e., as long as it does not remove time."<sup>25</sup> The primacy of the general and necessary over the particular and contingent that is thus expressed, has provoked opposition by historians who, on their part, stress above all the singular and individual event that, in their opinion, cannot be deduced from any timeless concept or system.<sup>26</sup> The basic idea of historicism, they say, needs to be understood "in the sense of a fundamental historification of all our thinking about man, his culture and his values."<sup>27</sup>

This *historification* includes, at least by trend, the conviction that everything that was ever created by the human mind in the past, including philosophical insights, can be unambiguously determined and therefore relativized, because, they argue, the historian is surely able to ascertain their interdependence and other mutual relations. The historian thus takes on the role of an uninvolved spectator and judge, displaying a position we would

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<sup>22</sup> Georg Wilhelm Friedrich Hegel, *Vorlesungen über die Philosophie der Geschichte*, vol. 12, ed. Eva Moldenhauer and Karl Markus Michel (Frankfurt a.M.: Suhrkamp, 1986), 23: "Wer die Welt vernünftig ansieht, den sieht sie auch vernünftig an, beides ist in Wechselbestimmung."

<sup>23</sup> Ibid., 20: "Der einzige Gedanke, den die Philosophie mitbringt, ist aber der einfache Gedanke der *Vernunft*, daß die Vernunft die Welt beherrsche, daß es also auch in der Weltgeschichte vernünftig zugegangen sei."

<sup>24</sup> Georg Wilhelm Friedrich Hegel: *Phänomenologie des Geistes*, vol. 3, 6th ed. (Frankfurt a.M.: Suhrkamp, 1998), 584ff.: "Die Zeit erscheint daher als das Schicksal und die Notwendigkeit des Geistes, der nicht in sich vollendet ist."

<sup>25</sup> Ibid., 584.

<sup>26</sup> Cf. e.g., Friedrich Meinecke, "Die Entstehung des Historismus," in idem, *Werke*, vol. 3, ed. Carl Hinrichs, 2d ed. (München: Oldenbourg, 1965), 2.

<sup>27</sup> Ernst Troeltsch, "Der Historismus und seine Probleme. Das logische Problem der Geschichtsphilosophie," in *Gesammelte Schriften*, vol. 3, 1 (Aalen: Scientia, 1961), 102.

call “metaphysical relativism.”<sup>28</sup> On the other hand, by emphasizing the individuality and singularity of historical events in order to oppose Hegel's view, those historians made the study of history appear to be not truly scientific. In fact, in their own view, the scientific nature of history ought to be limited to stating facts by verifying their sources, thus providing some objective knowledge. But it seems impossible to deduce those facts with any reliability if no general principles are called upon, and no necessary links can be established in the course of events.

The deficiency becomes apparent by comparison with classical physics: although also starting with singular data, most of which are the results of measuring, physics nevertheless holds -- by the concept of the law of nature -- a means of putting these data into a causal context so that they can be recognized as necessary consequences within an objectively determined, necessary course of events, the contingency of which has its roots solely in the variability of the initial conditions.

There were three ways of dealing with the realization of this deficiency: (1) by retreating in a positivist manner to merely establishing the neutral historical facts, thus making a virtue out of a necessity; (2) by looking for the missing historical causality following the methods used by the natural sciences; (3) by claiming that there must be an interconnection between historical events which is not of a causal nature, but can be discerned by understanding how any particular event may be an expression of an inner essence or an intellectual idea.<sup>29</sup> “To understand is to understand an expression. What is expressed is present in the expression in a different way than the cause is present in the effect.”<sup>30</sup>

This fundamental thought, which is actually quite true, was then developed further, so that it could be used to establish a dichotomy of scientific explanation on the one hand and academic understanding on the other, Droysen and especially Dilthey being its main advocates. As they put it, nature, being mindless, allows only for a causal explanation, whereas history, being touched by an intellectual subject, calls for an understanding of its sense. But what about the understanding subject? Is it able to differentiate itself from the stream of history by making it his or her own in understanding?

#### *b) The Overcoming of Time-Ignoring Metaphysics*

The above question arises from the Cartesian dichotomy of subject and object, unfolding the hidden springs of historicism. The program of historicism remains true to its aims, i.e., to ensure representation for “what is fixed and stable and [to make] history an object. . . . What is stable in what is past, that on the basis of which historical explanation reckons up the solitary and the diverse in the history, is the always-has-been-once-already, the comparable. Through the constant comparing of everything with everything, what is intelligible is found by calculation and is certified and established as the ground plan of history.”<sup>31</sup> Martin Heidegger sees the creation of objective certainty as a back-drop to the modern endeavor to secure the position of the subject. If, however, this results in the subject being characterized simply by its will to power, this will then condemns every-

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<sup>28</sup> We choose this expression following Hilary Putnam, who created the term of “metaphysical realism” for positions that could ideally be called a 'God's eye view,' an absolute representation of reality that is completely free of conventions and historical conditions. Cf. Hilary Putnam: *Representation and Reality* (Cambridge, Mass.: MIT Press, 1988).

<sup>29</sup> This is already thought by Wilhelm von Humboldt, and later, especially Johann Gustav Droysen and Wilhelm Dilthey.

<sup>30</sup> Hans-Georg Gadamer, *Truth and Method*, 2d rev. ed., trans. Joel Weinsheimer and Donald G. Marshall (New York: Continuum, 2000), 224.

<sup>31</sup> Martin Heidegger, “The Age of the World Picture,” 123.



thing to a state of 'nothing happening,' i.e., “into *das Geschicklose*. What follows is the non-historical. The characteristic of the unhistorical is the supremacy of historiology. The resulting perplexity leads to historicism.”<sup>32</sup> Heidegger expressed his diagnosis of the time thus, as early as 1927: “. . . the emergence of the problem of 'historicism' is the clearest sign” that “historiology endeavors to alienate Dasein from its authentic historicity.”<sup>33</sup> If “the possibility [of Dasein] which has been factually existent . . . becomes perverted into the colorlessness of a supratemporal model,”<sup>34</sup> historicism gives us a view of reality in which, by leveling the actual historical event, an ideal of objectivity is established, but which leaves no room for the subject that cannot help understanding itself through its future. This view of reality, characteristic of metaphysics (as well as physics), needs to be overcome. Hans-Georg Gadamer adds that the “object” of historical understanding is not “present-at-hand” in an ‘ontic’ way, but in a ‘historical’ one – i.e., they both have the *mode of being of historicity*.<sup>35</sup> Historicism is based on “the fundamental prejudice of the Enlightenment, the prejudice against prejudice itself, which denies tradition its power.”<sup>36</sup>

Heidegger is known to have accused metaphysics of forgetfulness of Being (*Seinsvergessenheit*).<sup>37</sup> What his critique intends to castigate could equally well have been expressed by *Zeitvergessenheit*, “ignoring time”: Where Hegel requires the mind to be present “in time until it is able to *grasp* its pure concept, i.e., remove time,”<sup>38</sup> Heidegger's opposition hardens at the very idea of removing time, as that abolishes the essential feature of being, which, in his opinion, is to be found in the historicity of Dasein, the “*Geschichtlichkeit des Daseins*.”<sup>39</sup> This concept of *Geschichtlichkeit*, which is open to what is absolutely new, presupposes that neither the human being nor its possibilities can be understood as substance or subject and therefore in the modus of sameness and presence-at-hand, which, according to Heidegger, had been the line of thought pursued in traditional metaphysics.<sup>40</sup> This tradition needs to be “deconstructed” and replaced by a hermeneutic interpretation of existence, “a circular interpretation of historical possibilities that have become realities.”<sup>41</sup> It goes without saying that the central concept of possibility, which, according to Heidegger, is the distinctive quality of existence, allowing a truly open future, cannot be understood in the Aristotelian sense as a fully structured *telos* that seeks realization, but rather as an “*existential*” that cannot be encompassed by any concept, as a truly creative power.<sup>42</sup>

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<sup>32</sup> Cf. Martin Heidegger, “Overcoming Metaphysics,” in idem *The End of Philosophy*, trans. Joan Stambaugh (New York: Harper and Row, 1973), 67-95: “. . . alles in das Geschicklose. Dessen Folge ist das Ungeschichtliche. Dessen Kennzeichen ist die Herrschaft der Historie. Deren Ratlosigkeit ist der Historismus.”

<sup>33</sup> Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (San Francisco: Harper & Row, 1962), 448.

<sup>34</sup> Ibid., 447.

<sup>35</sup> Gadamer, *Truth and Method*, 261.

<sup>36</sup> Ibid., 270.

<sup>37</sup> Martin Heidegger, “The Anaximander Fragment,” in idem *Early Greek Thinking*, trans. David F. Krell and Frank A. Capuzzi (New York: Harper & Row, 1975). Cf. Werner Marx, *Heidegger und die Tradition. Eine problemgeschichtliche Einführung in die Grundbestimmungen des Seins*, 2d ed. (Hamburg: Meiner, 1980), 125-127, 151, 166ff.; Gustav Siewerth, *Das Schicksal der Metaphysik von Thomas zu Heidegger*. Mit einer Einführung versehen von Alma von Stockhausen (Düsseldorf: Patmos, 1987), 58ff.

<sup>38</sup> See above, footnote 25.

<sup>39</sup> Heidegger, *Being and Time*, 41ff. Regarding his critique of Hegel, cf. ibid., 484-486 (§ 82).

<sup>40</sup> Cf. Marx, *Heidegger und die Tradition*, 113.

<sup>41</sup> Ibid., 115.

<sup>42</sup> Cf. ibid., 118-120.

In the rediscovery of a possibility of this kind and extent we can see an obvious parallel to the quantum theoretical critique of classical physics, where possibility and factuality are treated equally.

Gadamer adopted Heidegger's analysis of existence for the problem of hermeneutics. Since understanding is always conveyed through language and is subject to historical conditions, the understanding subject and its respective object are connected and cannot be separated from each other:

Real historical thinking must take account of its own historicity. Only then will it cease to chase the phantom of a historical object that is the object of progressive research, and learn to view the object as the counterpart of itself and hence understand both. The true historical object is not an object at all, but the unity of the one and the other, a relationship that constitutes both the reality of history and the reality of historical understanding.<sup>43</sup>

Gadamer came to this new and revolutionary realization mainly through his observation that throughout the course of tradition and in every human creation, ever new layers of sense have been disclosed; a process that is truly unending.<sup>44</sup> Inasmuch as each age puts up new horizons for understanding and asks new questions, it discloses ever new possibilities of interpretation. If we thus acknowledge and take seriously the understanding subject as a historical being, it becomes apparent that we have always been "subject to the effects of the *Wirkungsgeschichte*," which predetermines "what seems to us worth inquiring about and we more or less forget half of what is really there . . . when we take its immediate appearance for the whole truth."<sup>45</sup>

We see here a remarkable analogy to the quantum theoretical critique of the concept of the object in classical physics. Bohr spoke of the "*impossibility of any sharp separation between the behavior of atomic objects and the interaction with the measuring instruments which serve to define the conditions under which the phenomena appear.*"<sup>46</sup> Therefore, in quantum theory as well as in Gadamer's hermeneutics, subject and object seem to be somehow blended as a result of their mutual interaction which makes it impossible to leave out of consideration the part of the observing or understanding subject in order to strictly isolate the object. Another analogy consists in the fact that both quantum theory and hermeneutics direct their attention especially to the future, as only the future holds new possibilities, whereas the past is characterized by definite facts. Classical physics, on the other hand, ignores this difference, as does classical hermeneutics, by treating past human creations as if they were definite and timeless and, therefore, objectively determinable -- without so much as considering their interaction with the respective historical subject.

However, even according to the quantum theory, subject and object are not entirely inseparable, their separability being limited (but not revoked) by the finite quantum of action. If this quantum of action equaled zero, we would have classical conditions; if, on the other hand, its magnitude were astronomical and quasi-infinite, there would not be any separable facts, any past, but only a future of interacting possibilities. The stronger the effect an object has on a subject, in proportion to the quantum of action, the more accurately a phenomenon can be seen as independent from the subject and objectively determinate, and therefore can be adequately represented by the means of classical physics. The

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<sup>43</sup> Gadamer, *Truth and Method*, 299.

<sup>44</sup> Cf. *ibid.*, 297.

<sup>45</sup> *Ibid.*, 300.

<sup>46</sup> Bohr, "Discussion with Einstein," 210.

concept of complementarity provides a means of mediation between the (classical) claim that the subject and the object are entirely separate, and the (quantum theoretical) discovery that, on the contrary, they have a mutual influence on each other. The finite quantum of action mediates between these complementary aspects insofar as it restricts in a quantitative measure the separability of an individual process. In the following paragraph, we shall venture to offer some conjectures as to how this concept of complementarity can help us with clarifying the corresponding problem in hermeneutics.

*c) Complementarity: Which Baby Is To Be Saved From the Bathwater of History?*

Gadamer was reproached again and again for constituting a subject that “functions only as a contingent element in the epochal disclosure of the meaning of being or of the game of language,” and thereby losing all criteria for judging the truth or untruth of ideas that emerge from the stream of history.<sup>47</sup> Indeed, in Gadamer's works we find remarks that intensify the temporality of understanding into a temporality of truth;<sup>48</sup> he also questions the argument from retorsion against relativism.<sup>49</sup> Undoubtedly, over the years many intellectuals have adopted hermeneutics in order to subscribe to a postmodern pluralistic relativism,<sup>50</sup> according to which everything is equally valid and a mere game of opinions. This position has its parallel in the dubious interpretation of the quantum theory by Fritjof Capra, who emphasized the holistic union of subject and object in such a one-sided way that he did not take seriously into account the fact that, in approximation, separated objects and, therefore, objective facts do indeed exist.<sup>51</sup>

It seems, however, that the truth is particularly endangered by the very isolation of two seemingly contradictory aspects, as historic relativism obtains its strength both from the supposedly fixed objectivity of human creations and the concept of absolute subjectivity. Therefore, it seems reasonable to suppose that, in hermeneutics, the relation between subject and object is complementary, as it is in quantum theory, where two opposite relations coexist with equal necessity: the transcendental subject-object relation which is presupposed in the classical semantic reference to actual events, and the real subject-object interaction that was discovered in quantum theory, as a result of which we can make only statistical statements about an object, which means that we can refer only to the possible and not directly to the actual. Although the abovementioned subject-object relations seem to exclude each other, they are nevertheless both indispensable and complementary.

Analogously, the relation of a human creation to an understanding subject is also complementary. We cannot speak about a human creation without presupposing that it is separated from the subject and has its objective existence. On the other hand, we cannot deny that the historical conditions that surround us influence our way of understanding, and that

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<sup>47</sup> Hansjürgen Verweyen, *Gottes letztes Wort. Grundriß der Fundamentaltheologie* (Düsseldorf: Patmos, 1991), 79ff. Cf. also Josef Seifert, “Wahrheit – Philosophie – Geschichte. Zeitlose und Historische Dimensionen der Philosophie,” *Forum Katholische Theologie* 4 (1988): 180-202.

<sup>48</sup> Cf. e.g., Gadamer, *Truth and Method*, 296-298, and especially his “Hermeneutik und Historismus,” in idem, *Gesammelte Werke*, vol. 2 (Tübingen: Mohr-Siebeck, 1993), 411ff.

<sup>49</sup> Cf. Gadamer, *Truth and Method*, 344-346.

<sup>50</sup> Cf. Wolfgang Iser, *Unsere postmoderne Moderne*, 3d ed., Acta humaniora (Weinheim: VCH, 1991). Iser wants to accept the reproach of indifferentism only with regard to “diffuse postmodernism.”

<sup>51</sup> Cf. Fritjof Capra, *Das Tao der Physik. Die Konvergenz von westlicher Wissenschaft und östlicher Philosophie*. Vom Autor revidierte und erweiterte Neuauflage (München: Droemersch Verlagsgesellschaft, 1997), 138ff, 309ff. Cf. its critique by Winfried Schmidt, “Logische oder dialektische Interpretation der Quantenmechanik – eine Auseinandersetzung mit Fritjof Capra,” in Remigius Bäumer and Alma von Stockhausen, ed., *Verabschiedung oder naturphilosophische Weiterführung der Metaphysik?* (Frankfurt a.M.: Peter Lang, 1990), 59-77.

we, consequently, always put the supposedly separated object within our horizons, thereby virtually modifying it. The argument from retorsion which says that historic relativism claims truth for itself, while at the same time negating the very existence of truth, is based on the unavoidable transcendental subject-object separation, but it is nothing but an “attempt to take the opponent by surprise” as long as its advocates do not consider the fact that “with such a conception [we have missed] precisely the *a priori* character of that merely 'factual' subject, Dasein.”<sup>52</sup> In other words, inasmuch as we are finite subjects we cannot refer to historical events or objects other than by taking an objective point of view, but, as we are historical persons too, we are really and undeniably connected with, and therefore part of, history as a whole. It seems to be very difficult to see these conditions as complementary. That would explain the sentence which follows upon the abovementioned passage by Heidegger: “Is it not an attribute of the *a priori* character of the factual subject (that is, an attribute of Dasein's facticity) that it is in the truth and in untruth equiprimordially?”<sup>53</sup> But would it not be rather like throwing out the baby with the bathwater, if the realization that every subject is a historical being led us to completely denying the possibility of the subject recognizing the truth?

At this point, the analogous discussion in quantum physics demonstrates its fruitfulness by virtue of the rational precision of its results. Apart from ideologically prejudiced physicists like Capra, nobody has any doubts that the quantum theoretical description of reality is, at present, the most comprehensive and precise theory available, enabling us to understand the relevant physical phenomena and to make true statements about them. However, quantum theory did not prove the classical physical description of reality to be completely wrong, only to be an incomplete approximation, that is nevertheless still absolutely sufficient wherever the quantum of action can be disregarded. In fact, quantum theory on its own would be very much up in the air, as it cannot refer directly to actual facts and events; it deals only with possibilities, and what good would that be, unless those possibilities can become real and be recognized as such?

Similarly, Gadamer's hermeneutics cannot prove classical hermeneutics to be completely wrong: it only demonstrates the limits of its validity. Historicism fails to see the ever new possibilities of understanding that a human creation opens to the understanding subject; it is right, though, insofar as it refers to past realities, which are needed as a starting-point for all understanding. Only after having taken this first step can we take into account that all understanding, itself being deeply embedded in history, discloses ever new possibilities in those past realities.

To take the analogy one step further: Where historical effects weigh heavily in proportion to subtle alterations of sense, classical hermeneutics is still correct when it talks about objective facts in history. The Council of Chalcedon did meet in the year 451 and did dogmatize the twofold nature of Jesus – that is certainly a historical fact. However, the more any interpretation goes into details, the more it is to be expected that the historical horizon of each interpreter has an influence on his respective interpretation, even though he or she may indeed endeavor to interpret as accurately as possible. Since the arts do not have at their disposal a quantitative measure (like the quantum of action) to regulate the uncertainty relation of objectivity and temporality, this branch of science does have more difficulties than physics in evaluating the interplay of the complementary precisely. Still, when this difficulty first arose in the clash between classical and contemporary hermeneutics, it was not necessary to abandon the old understanding completely to make room for the new. Instead, contemporary hermeneutics should have followed the example of the

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<sup>52</sup> Heidegger, *Being and Time*, 272.

<sup>53</sup> Ibid.

great physicists of the twentieth century who, while most reluctant and unwilling to give up the classical ideal of objectivity, and after struggling for many years for the right concept of reality, finally found a way to understanding the classical point of view as a partial aspect of modern physics that is nevertheless complementary to it. Wherever a new line of thought successfully integrates a well-established one instead of simply replacing it, we see genuine progress.