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# Ernst Cassirer's Legacy: History of Philosophy and History of Science

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**Abstract:** The paper is devoted to an overview of Cassirer's work both as historian of philosophy and historian of science. Indeed, the “intellectual cooperation” between history of philosophy and history of science represents an essential feature of Cassirer's style of philosophizing: while the roots of a wide exploration stretching from Renaissance thought to modern physics go back to the Neo-Kantianism of the Marburg School, the results of a similar cross-fertilization of research fields have deeply contributed to shaping new standards of inquiry. Cassirer's relationship with the Warburg milieu in Hamburg and late in his life with the American intellectual scenario (for instance, with the “Journal of History of Ideas”) are surely worthy of closer investigation. Distinguished scholars such as Meyerson, Brunschvicg, Burt, Koyré, Metzger, Lovejoy, Kristeller, have discussed, appreciated, criticized Cassirer's still today fascinating studies devoted to Pico della Mirandola, Galileo, Newton, Leibniz, to mention but a few. To explore some of these aspects focusing both on affinities and differences within a cosmopolitan intellectual community can provide a better understanding of philosophy and history of science in the first half of 20th century. Cassirer's legacy requires, therefore, a new assessment.

**Keywords:** history of science, philosophy of science, history of ideas

## 1 History of Philosophy and History of Science: An “Intellectual Cooperation”

In 1936, introducing a collection of essays presented to Ernst Cassirer on the occasion of his 60th birthday, Raymond Klibansky and Herbert James Paton wrote:

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Philosophy and history are the two main activities to which Professor Cassirer has devoted his life. In his work the union of these activities is achieved, not merely postulated as an ideal; and this union is to be found alike when, as an historian of philosophy, he is retracing the development of the theory of knowledge and when, as a creative and systematic thinker, he offers us his doctrine of civilization in “The Philosophy of Symbolic Forms” (Klibansky and Paton 1936, p. VII).

These remarks clearly summarize Cassirer’s style of philosophizing. Throughout his intellectual life Cassirer was a great historian of philosophy as well as of science, still remaining, however, a philosopher engaged in the systematic inquiry into the structure of both knowledge and human cultural forms. More precisely, the peculiarity of Cassirer’s conception of philosophy rests, first of all, on the intimate link he established from the early days of his career between the history of science and the history of philosophy, which Cassirer considered as illuminating each other in a sort of hermeneutical circle. Such a presupposition was the permanent framework of Cassirer’s whole historical work, since the very beginnings until the later activity at the time of his exile.

Already in his juvenile book on Leibniz (published in 1902) Cassirer had investigated the “systems” of Descartes and Leibniz in their close connection with the rise of modern geometry, natural philosophy, infinitesimal calculus and dynamics, which represent the very roots of the metaphysics both had built up on “scientific foundations”.<sup>1</sup> Later on, in his monumental work on the *Problem of Knowledge* in modern science and philosophy (first edition 1906–1907), Cassirer carried out a comprehensive reconstruction of the problem of knowledge in modern times founded, broadly speaking, on a theoretical point of view. To be sure, this was the result of Cassirer’s Neo-Kantian apprenticeship and, at the same time, the highest proof of his very original approach to epistemological reflection on the scientific *Faktum* (according to the terminology of the Marburg School). Indeed, the transcendental method deals with this *Faktum* in order to find out the conditions of possibility of scientific experience in a Kantian sense, albeit in an unorthodox way. This is the major assumption lying at the core of Hermann Cohen’s own reading of Kant’s theory of knowledge, first carried out in his seminal 1871 book *Kant’s Theory of Experience*.<sup>2</sup> In Cohen’s view Kant’s transcendental inquiry into the *a priori* structure of knowledge rests just on the *Faktum* of the mathematical science of nature; and this “fact”, as Cohen suggests, is both historically determined and steadily changing, requiring therefore an ongoing analysis which uncovers the conditions of its possibility (Cohen 1987a, p. 208). As

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1 Cassirer’s interpretation of Leibniz (cf. Cassirer 1902) has been recently analyzed by (Moynahan 2013, pp. 85–119). See also (Ferrari 1988, pp. 181–251).

2 (Beiser 2014, p. 465) speaks of Cohen’s book as “revolutionary in its days”.

Cohen would later say, the articulation of *a priori* synthetic principles refers thus to the “developing fact (*Werdefaktum*) of mathematical natural science” (Cohen 1977, p. 76), although Cohen actually only deals with infinitesimal calculus, but refers rather in a very general, not to say metaphorical, way, to Newtonian physics as a starting-point of Kant’s theory of scientific knowledge (Cohen 1987b, p. 94).

For his part, Cassirer goes beyond Cohen by transforming Cohen’s account of *factum* of science in a radically *dynamic* way, due to his careful reconstruction of mathematics and mathematical science of nature from its very beginning in 17th century up to contemporary theories of both relativity and quantum mechanics.<sup>3</sup> Within the tradition of Marburg Neo-Kantianism, it was also Cassirer who first adequately tackled the historical and mutable dimension of the historical dynamics of science in depth, giving at the same time an original account of *relativized a priori* functions of scientific knowledge as a set of “invariants of experience” (Cassirer 1923, p. 269). For Cassirer the “fact” of science is a “historically developing ‘fact’” (Cassirer 1995, vol. 1, p. 14), never concluded nor bound to a definitive stage of scientific knowledge. Unlike Kant’s account of human reason, categories are no longer “fixed ‘core concepts of reason’ in both number and content” (Cassirer 1995, vol. 1, p. 15), but rather represent the ‘open’ system of *a priori* conditions founding science in its ongoing development. Accordingly, Cassirer deals with a kind of ‘history of pure reason’ in the Kantian sense, which – as he emphasizes – is based on the strict collaboration between epistemological standpoint and historical investigation (Cassirer 1995, vol. 1, p. VII). Above all, however, Cassirer continued the ambitious project laid out by a young Natorp in his early book on Descartes’ theory of knowledge (Natorp 1882a), namely to outline the prehistory (*Vorgeschichte*) of Kant’s critical philosophy through a philosophical and historical examination of its sources in the philosophy and scientific thought of Descartes, Galileo, Kepler, and Leibniz, the founders of the idealistic tradition (in the sense of the ‘logical idealism’ of the Marburg school), whose origins Cohen, and later Natorp himself, saw in Plato’s theory of ideas. Insofar as it is plausible to speak of a Neo-Kantian tradition in the history of science in the first decades of the 20th century, Cassirer is surely both its most representative interpreter and its first promoter.

According to Cassirer, the traditional history of philosophy has rather neglected, for the most part, the essential ways in which the rise of modern science contributed to the deep changes that occurred in philosophy. Indeed, in the early modern age, scientists and philosophers worked together in shaping a new image

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<sup>3</sup> To notice is, for instance, that Cassirer introduces his wide discussion of quantum mechanics providing an historical survey both of determinism in its conceptual evolution and, specifically, of Laplace’s legacy (Cassirer 1956, pp. 1–25).

of nature, which also entailed a radical distance from the previous conception of both man and culture dominating medieval thought. Cassirer's main methodological assumption is that science and philosophy must be mutually connected: modern philosophy and modern science constitute a unique whole and, as a consequence, the understanding of the problem of knowledge must consider on the same level both philosophers, such as Descartes or Leibniz, and scientists, such as Galileo, Kepler or Newton. It is impossible – Cassirer argues – to grasp the intellectual progress of modern philosophy without any reference to contemporary development of science (Cassirer 1995, vol. 1, p. 10). Only exact science provides a reliable account of the concept of knowledge, upon which philosophy has to rest if it intends to go beyond the pure “rhyme of opinions” Hegel spoke of (Cassirer 1995, vol. 1, pp. 17–18). The relationship between science and philosophy is an intimated one, in no way a purely exterior *liaison*.

Now it is important here is to stress that Cassirer again and again based his historical work on these both methodological and systematic presuppositions. One of the clearer reflections about this crucial aspect can be found in the lecture Cassirer held in 1935 at the Bedford College in London, whose manuscript has been published very recently.<sup>4</sup> By opening his lecture, Cassirer made a plea to the “intellectual cooperation” between science and philosophy (Cassirer 2020, p. 90). He believed that it would be a failure for our modern culture to separate “the field of philosophical, of merely speculative thought from the field of scientific thought” (Cassirer 2020, p. 89). By contrast, their “indissoluble unity” is a very postulate of both modern philosophy and “universal history of ideas”. As Cassirer clearly suggests:

In this field we cannot draw any sharp line of demarcation between what is contained in philosophical and in scientific thought, between what is brought to light by philosophical reflection and by scientific observation and deduction [...] Thinkers of very different schools agree with each other in admitting the truth and the necessity of this postulate. Hence, it becomes obvious that the study of the relations between philosophical and scientific thought in the first centuries of modern philosophy has in itself not only an historical but also a systematic importance (Cassirer 2020, p. 89)

Cassirer's “postulate” has, indeed, two faces. On the one hand, the “systematic importance” Cassirer spoke of is the main point of his conception of modern science insofar as it always involves “theoretical presuppositions”. For according to Cassirer, Galilei's Dynamics already shows very well the “interdependence” subsisting between facts and theories, or – broadly speaking – between science

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<sup>4</sup> See (Cassirer 2020, pp. 294–298) for the description of the manuscript carefully edited by Christian Möckel.

and philosophical insights (for instance, regarding the idea of natural law) (Cassirer 2020, p. 60). Furthermore, we can say that the “revolution” in the way of thinking announced by Kant is confirmed by scrutinizing the history of science, which testifies the radical change that occurred with the rise of modern science, to say the passage from the “general form of a teleological science of Nature”, basically supported by Aristotle and Aristotelianism, to the “general form of a mathematical science of nature” (Cassirer 2020, p. 102). In our contemporary language, Cassirer’s statement seems to recall the shift of paradigms that Thomas Kuhn would famously describe in his major book on the structure of scientific revolutions (Kuhn 1970). Yet, no less ‘modern’ is what Cassirer claims in the following, as he emphasizes the very task, and the ultimate goal, of historical inquiry in this field:

Both the historians of modern philosophy and the historians of science have often fallen short of a thorough description and explanation of the problems they were concerned with by restricting themselves in a too narrow sense to such limits as seemed to be prescribed by the traditional division of their labours. Helpful and indispensable as this division may be in many respects, it must not prevent us from recognizing the manifold and very subtle connections between the different branches of knowledge (Cassirer 2020, p. 113).

In order to overcome a similar “traditional division”, Cassirer calls attention to a core methodological question he defined as the “triple method of investigation” (Cassirer 2020, p. 171). Historian of philosophy, he affirms, can take into account three modalities in carrying out the history of thought. First, they can apply a purely empirical, pragmatical method aiming to collect ‘facts’ and organize them in chronological order (a kind of ‘antiquarian history’, as Nietzsche would say). Major historians of philosophy in the 18th century such as Brucker or Tenneman offered this very type of detailed descriptions. Secondly, a radical change occurred as Hegel proposed a new model of the history of philosophy, based on the “intersection” between the pragmatical method and the logical-dialectic method. Despite the great merits Hegel has acquired and the “undeniable fertility” of his work, it seems doubtless, for Cassirer, that Hegel’s conception of history of philosophy “is exposed to grave objections” and even leads to a “disfigurement” of it (Cassirer 2020, p. 177). Finally, the very solution to this dilemma consists of adopting a new method in both the history of philosophy and the history of science, namely by providing a “bilateral not a unilateral relation”, a “mutual dependence” between “facts and concepts” (Cassirer 2020, p. 178). This kind of “dependence” involves that we certainly have to employ conceptual frameworks in order to give account of what seems, at first glance, to pertain only to ‘historical’ level. But conceptual assumptions or epistemological views (for instance, what characterizes scientific theories compared to mythical or religious beliefs?) are at

once the result of the development of science, in particular since the scientific revolution in 17th century. In Cassirer's mind it is thus important to maintain that "concepts and principles are not a ready-made mould of thought", established beforehand and to which historical reality has to be adapted: "The facts must be understood according to principles; but the principles themselves must be formed in accordance with the fact" (Cassirer 2020, p. 178). This methodological stance is valid, for Cassirer, in the case of the history of science too. Given the fact that the history of science similarly needs such a similar "mutual dependence", the crucial question is here just the "accordance" between two different "ways of thinking" carried out by science and philosophy respectively. In his London lecture Cassirer spells out his basic methodological assumption in a passage worth quoting at length because of its significance for all the work Cassirer has done in this field for many decades of intellectual activity:

We never come to a full understanding of the reciprocal influence of Science and Philosophy if we persist in including ourselves in the latter domain; if, for instance, for the period of the seventeenth century we follow the way from Descartes to Spinoza, from Spinoza to Leibniz, and so on. To grasp *the real movement of thought*, in this sphere of problems, we must, as it were, add *a new dimension* to this immanent description of the development of speculative philosophy. Instead of regarding the thought of Hobbes as a simple continuation of the thought of Bacon, we have to refer and attach it to the thought of Galileo; instead of comparing Leibniz with Descartes or Spinoza we have to compare him with Newton (Cassirer 2020, p. 180, italics added).

## 2 Cassirer's Pioneering Work and the Question of Scientific Revolution

Cassirer's contribution to the development of the history of science in the first half of 20th century is surely worth closer exploration, especially since his role was not adequately acknowledged until recent times. Today the historical narrative should be, by contrast, quite different, urging a new assessment of Cassirer's immense work beyond some commonplaces still accepted by scholarship. Even influential students have sometimes reduced his historical works to standard handbooks providing a general account of turning points in history of philosophy, from the Renaissance to the Enlightenment. Furthermore, many interpreters of Cassirer have mainly overlooked the Neo-Kantian framework constituting the permanent backdrop against which Cassirer as a historian has to be located. Along his whole career, Cassirer was oriented by a systematic point of view in doing history of thought, in a way quite similar to the *Problemgeschichte* constituting one of the

most influential approach to history of philosophy in Germany in the age of Neo-Kantianism. Once this essential aspect is missed, one cannot wonder whether Cassirer's fortune (or misfortune) has been in great part conditioned by reading him in terms of a brilliant historian of ideas meritoriously close, to a great extent, to recent results and methodological suggestions of contemporary scholarship (especially in the United States), but unfortunately still committed to German "systematic" philosophy imbued with Kantian Apriorism. To quote a major protagonist of the history and philosophy of science after the Second World War, one could recall here what Thomas Kuhn said very briefly about Cassirer, as he noted that Cassirer had exerted a significant influence on the subsequent history of science in spite of his "profound [...] limitations" (Kuhn 1977, pp. 108, 149). No wonder, either, if Kuhn, in the preface to his *magnum opus*, recalled gratefully as his teachers Meyerson, Koyré, Anneliese Maier, Hélène Metzger, and Arthur O. Lovejoy, namely historians who, as Kuhn indicates, were not influenced by Kantianism or Neo-Kantianism as in the case of Cassirer (who is not actually remembered by Kuhn in this passage) (Kuhn 1970, p. vi).

At any rate, it would be difficult to deny that Cassirer has offered a pioneering work in matters of the history of science and the history of scientific ideas. Already Edwin Arthur Burt recognized, in the introduction to his ground-breaking 1924 book *The Metaphysical Foundations of Modern Physical Science*, the great outcome of Cassirer's contribution to recent history of science: "Professor Cassirer [...] has done work on modern epistemology which will long remain a monumental achievement", although – as Burt added – "a much more radical historical analysis needs to be made" (Burt 1954, p. 29). This kind of appreciation, enthusiastic but partly negative, mainly characterizes the reception of Cassirer's "monumental" studies among contemporary scholars. This aspect is particularly evident as we regard the French *milieu*, where Cassirer was early on acknowledged for having presented the inseparable connection between the history of philosophy and the history of scientific thought, especially as it was exhibited in the first two volumes of the *Problem of Knowledge*.

The review Émile Meyerson published thereof in 1911 testifies to such a reception of Cassirer. Meyerson praised the enormous achievement of Cassirer's masterful work as a large, careful historical reconstruction of modern science. Moreover, Meyerson remarked that Cassirer's excellent book was the outcome of an "immense knowledge" (*immense savoir*), which included not only the history of philosophy, but also the history of science with its many different aspects and topics. So, in Meyerson's opinion, Cassirer's contribution represented both a great novelty and a veritable model for scholarship devoted to analyzing scientific thought from a historical standpoint, a standpoint – we might add – which at the time was not so familiar to philosophers or historians of philosophy as it is today.

Nonetheless, Meyerson stressed that Cassirer's own way to carry out a similar great project rested, despite the impressive historical analysis he had performed, on the primacy attributed to the "systematic point of view". According to Meyerson, Cassirer's book was a historical one only at first sight, being rather a "systematic", all-encompassing reconstruction resting on a "theory that the author attempts to substantiate through the inquiry into the scientific and philosophical development in modern times" (Meyerson 1911, p. 100). Moreover, Meyerson contended, quite differently from Cassirer, the independence of "objective reality" from any epistemological framework; in his mind the permanent connection between epistemology and ontology was the missing aspect of Cassirer's conception of science and represented, in full opposition to Cassirer, the essential assumption on which science relies (Meyerson 1911, p. 129; see also Meyerson 1951, pp. 439, 491).

We have to add that at the same time as his review of Cassirer's book Meyerson gave in Paris a lecture devoted to contemporary philosophy of science in Germany. Here he referred again to Cassirer's *Problem of Knowledge*, remarking some affinities with Friedrich Albert Lange's *History of Materialism* as well as with Kurd Lasswitz's *History of Atomic Theories*. Echoing Cassirer's orientation, Meyerson argued that

the prior condition [of philosophy of science] is, obviously beside the unavoidable philosophical culture, a proper knowledge of contemporary science. But that knowledge is by no means enough. It must rather be connected with an investigation of the science of the past [...]. *The basis of philosophy of science is the history of science* (Meyerson 2011, p. 193, italics added).

Meyerson's stance testifies therefore that at the beginning of 20th century French philosophy of science – only recently acknowledged as a very original kind of "historical philosophy of science" (Bitbol and Gayon 2006; Chimisso 2008) – was seduced by Cassirer's work. This also the case of Léon Brunschvicg, who manifested in that period a great interest in Cassirer's both theoretical and historical work. In particular, in his unmatched history of mathematical philosophy published in 1912, Léon Brunschvicg repeatedly referred to Cassirer's *Problem of Knowledge*, while also endorsing his plea for a historical analysis of mathematical and scientific thought based on what Brunschvicg called "the historical method" (Brunschvicg 1912, p. 3). According to Brunschvicg at issue is a view of scientific knowledge resting, precisely as in Cassirer's view, on its intrinsic historical dynamics. Sharing a perspective not different from Cassirer's, and to some extent converging with the Neo-Kantianism of the Marburg School, Brunschvicg was convinced that science represents an historical given (a *factum*, as the Neo-Kantians would say), which has to be inquired in order to discover its conditions of possibility. Science – Brunschvicg argued – "is given (*donnée*) to the philosophical

reflection" (Brunschvicg 1905, p. 109). Following this assumption, Brunschvicg would affirm that history offers to the philosopher "a double service": on the one hand, it permits to explain the present situation of science through the past; on the other hand, the historical perspective allows epistemological inquiry to go beyond "the crystalized forms of the past", assuring thereby that scientific innovation should not be imprisoned in an unchangeable set of universal categories (Brunschvicg 1922, p. 458).

No wonder, thus, that in 1936 Brunschvicg contributed to the *Festschrift* in honour of Cassirer delivering a paper highlighting the necessary relationship between history and philosophy. The major issue of this essay is the new consciousness, emerging in particular during the 20th century, that science has assumed a "historical form", going beyond the knowledge of eternal laws considered for a long time as the veritable and only possible form of knowledge. Essential changes in exact sciences (probability calculus, thermodynamics, theory of relativity) took, at the turn of the 20th century, "the form of a history" (Brunschvicg 1936, p. 32). At stake here is not a vague historicism, but the pivotal role assumed by time (irreversibility processes in thermodynamics, space-time in Einstein's theory of relativity) in shaping what Brunschvicg calls "a revolution in the very manner in which the problem of time is presented to us" (Brunschvicg 1936, p. 29). As a consequence of this "scientific revolution achieved in our times", the "superstition" of *a priori* firmly embodied in human reason has "threatened to reduce to impotence the admirable work of Kantian philosophy" (Brunschvicg 1936, p. 33). History, therefore, is no longer a mere appendix to knowledge, but rather an intrinsic, immanent feature of scientific thought; for Brunschvicg, very similarly to Cassirer, this perspective is essentially tied to a "philosophy of the human mind" that opens the domain of reason to continual historical development which philosophy, in turn, can grasp according to its resources (Brunschvicg 1936, p. 34).

In the 1920s both Meyerson and Brunschvicg were at the crossroads of a new phase in the history and philosophy of science in France. A long story had led to this important turning point. Historians such as Paul Tannery, Gaston Milhaud and, first of all, Pierre Duhem, had opened the path to a new phase in history of science. All these scholars were well known to Cassirer, who would discuss, in particular, Duhem's account of the evolution of both cosmology and physics from ancient to modern ages (as we shall see below). Quite an interesting case is, in this context, Helène Metzger, whose activity in this field is characterized by a kind of, as it were, new professionalization in scrutinizing sources, documents, fringe contributions, experiments and rudimentary laboratories (for instance concerning the rise of modern chemistry), without abandoning, nonetheless, the philosophical framework enabling one to order such different material according to some rules of

interpretation. Metzger spoke thus of “multiple *a priori*” enlarging and modifying a supposed unique *a priori* as the universal condition of scientific knowledge (Metzger 1987, p. 46), and she posed thereby the question concerning the role of philosophical method in practicing the history of science (Metzger 1987, pp. 57–73). Whereas the former aspect signalizes a methodological approach quite different from Cassirer’s one, the latter testifies to a converging agenda regarding the philosophical horizon within which, and unlike the attitude of most historians of positivistic orientation, the history of science ought to find its epistemological justification (Chimisso 2019, pp. 92–112).

Yet the most important point of intersection between Cassirer and his French colleagues engaged in the history of science is Alexandre Koyré, who was, for his part, an admirer of Cassirer’s *Problem of knowledge*. Even though there are significant differences between them concerning in particular the question of Galileo’s Platonism, in his *Études galiléennes* Koyré recognized Cassirer’s great accomplishment in having acknowledged (along with Brunschvicg and Meyerson, among others) both the extraordinary importance of the modern Scientific Revolution and its relevance for philosophy (Koyré 1966, p. 11). Cassirer’s and Koyré’s parallel adventures in promoting new standards and innovative conceptions in the history of science surely deserve a closer investigation. The point to stress here is, at least, that of their diverging strategies in performing the history of modern science or, put in more precise words, of the scientific revolution. According to Koyré, this decisive break in the history of Western civilization occurred when the “scientific and philosophical revolution” destroyed the Greek and Medieval image of the cosmos, to say of a finite and qualitatively ordered universe, replacing it with both an infinite world and the homogenous space of geometry (“geometrization of space”, as Koyré famously stated) (Koyré 1943, p. 404; Koyré 1957, pp. 2–3). This “complicated story”, as Koyré calls it, is the very origin of his extraordinary work in exploring Galileian and Newtonian science too, though starting from quite a different point from Cassirer’s one, Cassirer being not very interested in the cosmological problems, grounding by contrast the veritable modern scientific revolution in Koyré’s account.<sup>5</sup> This difference, which would require a more in-depth, specific analysis, is not the only one. On the one hand, and unlike Cassirer, Koyré tries to capture the inner process of the growth of scientific thought “by comprehending its development – as he said in 1951 – in the course of its own creative activity”, employing thereby a method of scrupulous reading of the texts aiming at ‘deconstructing’ them in search of conceptual tensions, unconscious

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<sup>5</sup> This circumstance is underscored by Ewin A. Burtt, as he points out that Cassirer considers the rise of modern science from the point of view of the method adopted by physical science, overlooking “the pervasive influence” of the cosmological thinking (Burtt 1954, p. 28).

premises or misleading hypotheses (Koyré 1973, p. 14). On the other hand, Koyré is not committed to a Kantian way of thinking and it is not by chance that he was deeply influenced by Meyerson, as has been rightly suggested by recent scholarship (see Bensaude-Vincent 2016). For Koyré, scientific thought must be illuminated by considering, on the one hand, its intrinsic conceptual instrumentation and, on the other hand, physical reality as it is given in itself, without assuming a kind of transcendental subject that constitutes it according to his *a priori* forms. This explains why Koyré refuses Cassirer's interpretation of Galilean Platonism, since Cassirer considers Plato – this is the questionable objection Koyré addressed to Cassirer – as if he were Kant. But to this point we shall come back later, since this confrontation would be developed more in depth in the years of the American exile of both.

Immediately before his emigration to the USA Cassirer was already acquainted, for his part, with the *Études galiléennes*, to which he refers explicitly in the article *Mathematical Mystique and Mathematical Science of Nature*. Here it is relevant that Cassirer, echoing likewise Koyré's use of the term, deals with the concept *revolution* in science. In Cassirer's own words:

The history of human knowledge repeatedly shows us new, particular ages (the more important ones, to be sure), in the course of which knowledge does not simply increase its extent as much as change both its overall conceptual tools and its sense. Instead of a mere quantitative growth, there suddenly appears a qualitative “change” (*Umschlag*). Rather than dealing with an evolution, we are dealing with an unexpected *revolution*. The very ideal of exact knowledge of nature arises from just such a revolution (Cassirer 1940, p. 285).

To be sure, “scientific revolution” had for many years been a concept already used by historians of science, at least by scholars with whom Cassirer was acquainted. For instance, Brunschvicg himself had spoken, in his contribution to the volume in homage to Cassirer, of the “scientific revolution achieved in our times” thanks to Einstein's theory of relativity (see above). Furthermore, a clear definition (long before Kuhn's celebrated formulation) of what a scientific revolution signifies can be found for instance in a passage by Helène Metzger suggesting that “[a] science undergoes a sudden revolution when, due to the discovery of a new and fertile point of view, the scientist's mentality suddenly changes” (Metzger 1987, p. 38; Chimisso 2019, p. 190).

Nevertheless, it is worth noting that for Cassirer a conceptual “revolution” does not signify a sudden break from the previous scientific age. On the contrary, Cassirer argues that it would be “misleading” to consider the rise of modern natural science as being totally independent from its medieval roots, since “we are never truly dealing with an interruption in the continuity” (Cassirer 1940, p. 285). Hence, both continuity and discontinuity are the two faces of scientific progress,

although Cassirer does underline that the “jump” accomplished by scientific thought in the modern age would not have been possible in *vacuo*. In other words, Cassirer emphasizes that the only ‘great’ scientific revolution is the birth of mathematical science in 17th century. The divide between medieval science and modern science emerges through the systematic recourse to the mathematical language in order to decipher, as Galileo would say, the “book of nature”. More generally, this revolutionary aspect is strictly bound to the new “form of thinking” upon which modern science since Galileo rests (Cassirer 2020, p. 39). But, on the other hand, for Cassirer the origins of the scientific revolution are also rooted in the past, being no sudden break (or change of paradigms in a Kuhnian strict sense) actually conceivable.

Like Koyré, Cassirer puts consequently into question the usefulness of the concept of continuity as featured in Duhem’s historical account of the development of science from the Middle Ages to Galileo. While in his history of mechanics before Galilean science, Duhem meritoriously points out the undeniable importance of the theory of *impetus*, in Cassirer’s judgement it is “audacious and doubtful” to place the prehistory Duhem is dealing with on the same level as the rise of the new science which represents, in Cassirer’s mind, an enormous change from a mathematical and empirical standpoint as well as the birth of a very different image of the universe (Cassirer 1940, p. 286). Cassirer’s way of contrasting Duhem’s thesis is also spelt out in his 1935 lecture in London, which we have already referred to. Cassirer has indeed no doubt that Duhem “has rendered a great service on behalf of the history of natural philosophy” offering thereby an indispensable contribution to the study of modern scientific thought (Cassirer 2020, p. 38). But Cassirer puts into question both the result of Duhem’s inquiry and the general assumption on which they rest. In Cassirer’s words:

[W]hat is no longer to be overlooked is the fact that the real distinction between medieval and modern thought, in the field of natural philosophy, is not to be sought in the subject-matter alone – which to a large extent is common to both – but in the form of thinking, in the categories used for the investigation of natural problems. It is a well-known phenomenon in the history of Physics that even the most original conceptions and theories do not owe their originality to the fact that they arise, as ready-made ideas, from the minds of individual thinkers in the same sense as Athena arose from the head of Jove. There is always a very long and a very intricate preparation of these ideas which precludes our regarding them as inventions in the strict sense of the word (Cassirer 2020, p. 39).

One example Cassirer mentions in this regard is Newton’s discovery of the universal law of gravitation as it depends on the laws of Kepler’s astronomy. In order to reach the final formulation of Newton’s law an intricate path had to be taken; namely it was necessary to assume a whole “system of presuppositions and

inferences” further developing what had already been in the making since Galilei and Kepler: in other words, the emerging “intellectual revolution” thanks to which, as Kant would say, Physics has for the first time entered “on the secure path of science” (Cassirer 2020, p. 40; see also Cassirer 2020, p. 14).

In short, it seems that Cassirer in the 1930s became more and more sensitive to contemporary topics in the history of science, though he still maintained that peculiar kind of Kantianism (or Neo-Kantianism) which permitted to him an understanding of modern science conciliating continuity and revolution, historical reconstructions and philosophical insights *sub specie* relativized *a priori* or, to quote Helène Metzger, multiple *a priori*. This was the conceptual baggage Cassirer brought along as he moved to United States.

### 3 The Late Cassirer: Between Germany and the United States

Because of his acknowledged reputation as a historian of scientific changes, in the early 1940s Cassirer was indeed welcomed by the American community of historians of science and scientific ideas, which manifested a great regard for the several studies on the Renaissance, as well as on Leibniz, Newton, and Galileo, which Cassirer published in the years of his exile in the United States. More precisely, Cassirer's own understanding of the history of philosophy in its connection with history of scientific ideas was highly appreciated by scholars plainly belonging to a different tradition, but very sensitive to the history of ideas as “cross-fertilization – according to Arthur O. Lovejoy's claim – among the several fields of intellectual history” (Lovejoy 1940, p. 7). This was precisely the kind of historiography practiced by the *Journal for the History of Ideas* with which Cassirer intensively collaborated, nourishing in this way both the fruitful legacy and the influence of his own conception of historical inquiry. Nevertheless, it would be misleading to affirm that Cassirer in this late phase of his work has abandoned or strongly modified his previous approach to history of philosophy and science; but he was certainly deeply interested in the history of idea as “cross-fertilization” pivoting on the “unit-ideas” Lovejoy had spoked of (Lovejoy 1936, pp. 3–23).

Before investigating this aspect of Cassirer's late intellectual life, it still seems suitable to go back to the last days of his activity in Germany, namely to the golden years he spent in Hamburg. At that point he was engaging with the transformation – to quote his celebrated maxim – of the “critique of reason” into a “critique of culture”. Cassirer's early influence on the history of science and philosophy had indeed increased in the 1920s, as he extended his former inquiry

concerning the problem of knowledge into a wider cultural context, according to the perspective of his philosophy of culture focusing on the whole of symbolic forms. To be sure, a turning point is represented by *Individuum und Kosmos in der Philosophie der Renaissance* (1927), certainly one of Cassirer's most influential books. *Individuum und Kosmos* is a splendid work composed in connection with the *milieu* of the Warburg Library and influenced by the image of the Renaissance which Aby Warburg himself had elaborated in his fascinating analysis both of the rebirth of Paganism and of ancient astrological beliefs in the early 15th century. At the core of this celebrated book lies the wide context of symbolic forms (religion, art, mythical thought), which constitutes the cultural background enabling the rise of the modern scientific image of the universe, from Nicholas Cusano to Giordano Bruno. For Cassirer, a new sentiment of life as well as the increasing emancipation of natural science from the dark power of magic and astrology made it possible to conceive of nature in a new light, namely, as the object of mathematical measurement rather than something which could enjoy a purely qualitative approach. Accordingly, it is due to the rebirth of Platonism that Galilei's new science could arise, being precisely Plato's theory of knowledge as it is presented in the doctrine of anamnesis that represents "a red thread" throughout his work: the crucial point for mathematical science is indeed, and in a broader Platonic sense, the independence and spontaneity of the mind in organizing natural phenomena (Cassirer 2000, pp. 168–169). But at stake here is a peculiar reading of Platonism, for Galilei conceives of motion itself as an idea: "Taken as an object of knowledge – Cassirer argues – movement and even the material mass itself possess ideality. For in both, certain immutable characteristics can be shown which behave in the same way; and in both purely mathematical laws are demonstrable" (Cassirer 2000, p. 173). Such an interpretation still rests on the Neo-Kantian paradigm first established by Paul Natorp in his seminal essay on *Galilei as philosopher*, which surely constitutes the very origin of the Marburg history of modern science outlined under the signs of both mathematical Platonism and the Kantian "critique of knowledge" (Natorp 1882b). But Cassirer's own appropriation of a similar epistemological line involves, beyond the epistemological aspects taken into account by Natorp, the placement of Galilei's science within the history of modern culture as well. As Cassirer would affirm in a lecture delivered in 1932, Galilei's revolution in science is the result of a more general turn in the "form of thinking" (*Denkform*), that can briefly defined as the quest for autonomy and independence of reason: this is properly the new impulse nourishing not only the rise of modern science, but the "whole history of European spirit" (Cassirer 2020, p. 33).

No doubt can subsist that, in spite of (or thanks to) its Neo-Kantian background, *Individuum und Kosmos* represents – as Kristeller and Randall Jr. would later emphasize – the most significant result of "the interest in Renaissance

thought” since Wilhelm Dilthey’s pioneering work (Kristeller and Randall 1941, p. 455; see also Baron 1930/1931, p. 113). Actually, the book rapidly became an ideal center of intellectual exchanges, first and foremost in Germany, but in the following years also abroad, for instance in Italy where Eugenio Garin was emerging as a scholar to some extent close to Cassirer, not to say of a cosmopolitan scholar such as Paul Oskar Kristeller living at the cross-road between Germany, Italy and the United States.<sup>6</sup> Along with some other scholars of Renaissance thought and arts, such as for instance Gertrud Bing, Edgard Wind and Maurice de Gandillac, it is particularly worth mentioning Klibansky because of his fundamental studies on the Platonic tradition in the Middle Ages, where one can still detect traces of Cassirer’s influence.<sup>7</sup> Klibansky had been, on the other hand, the editor of Carolus Bovillus’s *Liber de sapientte* published in the Appendix to *Individuum und Kosmos* along with the Cusano’s *Liber de Mente* edited by Joachim Ritter.<sup>8</sup> To be sure, Klibansky remained all his life indebted to Cassirer, as clearly emerges from his recollections (Klibansky 1998, pp. 32–43) and, in particular, from his contribution to the volume in homage to Cassirer clearly influenced by Cassirer’s conception of historical knowledge as interpretation of meanings that are not simply ‘given’ (Klibansky 1936). But, above all, Klibansky would be later the co-author of *Saturn and Melancholy*, the famous and widely read book which is the outcome of a new, very enlarged edition of Fritz Saxl’s and Erwin Panofsky’s Dürers „*Melancholia*, first appeared in 1923 (Klibansky 1998, pp. 149–165). This paramount contribution summarizes the main tenets of the Circle around Aby Warburg and can be considered, to a certain extent, an ideal complement of Cassirer’s *Individuum und Kosmos*: put in other words, a sort of “German way” in opening new paths to history of prescientific and scientific thought in the wide context of intellectual history.

That was, after all, a time of extraordinary intellectual excitement. The young generation of Cassirer’s scholars in Hamburg enjoyed a unique experience, not only in the field of history of philosophy, science, culture and arts. As Maurice de Gandillac later emphasized, the famous debate in Davos between Cassirer and Martin Heidegger in the spring of 1929 witnessed to a philosophical and a political climate deeply permeated by the opposition between Cassirer’s (and Brunschvicg’s) humanistic Enlightenment and Heidegger’s announcement of the final

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<sup>6</sup> For more details on this web of relations see (Ricci 2009) and (Rubini 2014, pp. 228–354).

<sup>7</sup> Concerning a reading of Cusano as ‘modern’ philosopher patently close to Cassirer’s interpretation see (Klibansky 1939, p. 25).

<sup>8</sup> This highly important appendix (Cassirer 1927, pp. 299–412), which documents very well Cassirer’s way of doing history of thought through a wide investigation of original sources, has not been published nor in the English version of *Individuum und Kosmos*, nor in the new German edition of Cassirer’s complete works.

decline of Western metaphysics. For the young scholars that attended the dispute Cassirer was, despite some limits in his interpretation, the author of a magnificent book on Renaissance philosophy embodying full opposition to Heidegger's anti-humanistic stance (De Gandillac 1990, pp. 17–19). As Klibansky would retrospectively suggest, the meeting in Davos was decisive for “the fate of German philosophy” (Klibansky 1998, p. 33–34); and this circumstance can also explain why the volume dedicated to Cassirer in 1936 could be considered as an “international document” testifying to a kind of “European solidarity” toward the exiled Cassirer (Klibansky 1999, p. 288). At that moment, the “world of yesterday” was tragically over.

In fact, Cassirer's wide cultural influence in the last period of the Weimar Republic was brutally interrupted by the rise of Nazism. The question of his legacy in the aftermath of the escape from Germany is very intriguing, in particular with regard to Cassirer's assimilation in non-German speaking countries. For this reason, it would be highly praiseworthy to undertake a closer investigation of Cassirer's impact on the American *milieu*, in particular concerning his influential contributions about both the Renaissance and early modern science. A premise is still necessary: Cassirer never abandoned either his method of investigation, or the general philosophical standpoint from which he continued to explore the history of philosophy as well as of science from the 16th century onwards. Nonetheless, attention should be paid to the way in which Cassirer translates, so to speak, his own conception of the history of thought into the idiom of American scholarship, which was apparently less interested in systematic frameworks as well as in the Neo-Kantian background. This sort of translation mostly concerns Cassirer's style of narrative but also reveals, as a consequence, a modified way of dealing with systematic questions, which do appear rather implicitly assumed than highlighted as in his previous German works.

Even in 1941 outstanding scholars such Paul Oskar Kristeller and John Radall jr. pointed out that the Neo-Kantianism lying at the core, in particular, of the *Problem of Knowledge* was surely “sometimes intrusive”, but it did not imply casting a shadow over “[Cassirer's] contribution to intellectual history [which] is undoubtedly the most substantial made by any German in this generation” (Kristeller and Randall 1941, p. 456). Both fortune and misfortune of Cassirer in the last years of his life and thereafter are strictly tied to the reception of his more oriented historical works, although an encompassing view of his philosophy of culture was also available in the *Essay on Man*, the last systematic book published by Cassirer in his life (Jürgens 2012).<sup>9</sup> After his death in April 1945 Cassirer was not,

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<sup>9</sup> Not to forget is however that already in 1923 Cassirer's most important systematic contributions to philosophy of science, namely *Substance and Function* as well as the book on Einstein's theory of relativity had been translated into English (see Cassirer 1923).

however, an intellectual destined to remain for many years exiled from philosophical landscape, as unfortunately happened in postwar Europe. When Cassirer abandoned his last European country, escaping from Sweden, he left there the German manuscript of the fourth volume of the *Erkenntnisproblem* (subtitled *Von Hegels Tod bis zur Gegenwart*), which would be translated into English in 1950 by William Hoglom and Charles Hendel as *The Problem of Knowledge. Philosophy, Science and History since Hegel* (Cassirer 1950). Hendel prefaced the volume using touching words, remarking at the same time on the importance of such an unachieved work for a proper understanding of Cassirer's recent development of thought (Hendel 1950, p. XIV). In this way, another side of Cassirer's legacy was acknowledged and transmitted to further scholarship in the United States. A balanced assessment of this work is due to a scholar as influential as Ernst Nagel, who deemed Cassirer's book worthy of high appreciation, being "a splendid testimonial to his extraordinary learning, and to his ability for handling a great variety of concrete materials without losing philosophical perspective" (Nagel 1951, p. 147). Nagel emphasized the merits of Cassirer for having composed "the best history of modern philosophy in any language" (Nagel 1951, p. 151), but stressed several missing elements in his reconstruction such as Marx and Max Weber, not to say of American philosophy, which was for Cassirer still a "practically undiscovered territory" (Nagel 1951 p. 150). And finally, grasping an essential feature of Cassirer's philosophical style, Nagel complained that his immense erudition seemed to "serve as a substitute for forthright systematic analysis" (Nagel 1951, p. 151). More evidence of a similar critical approach to Cassirer's last part of the *Problem of Knowledge* may be found in the review that Philip P. Wiener published in the *Journal of History of Ideas*. Among several criticisms, Wiener too stressed that Cassirer had totally ignored American philosophy and, in particular, the classic representatives of Pragmatism; furthermore, Wiener was highly skeptical toward the "most puzzling lacuna in the volume", namely "the complete silence of Cassirer on the Marxian philosophy of history" (Wiener 1951, p. 308).

Although these are nothing but a few documents of Cassirer's reception in the American post-war years, it is through them that one can gain a first overview of Cassirer's placement within the *milieu* who had welcomed him in 1941. To begin with, it seems worth remarking on some affinities with Arthur. O. Lovejoy's methodological assumptions about the "history of ideas", which can explain Cassirer's collaboration with the *Journal of History of Ideas* from 1942. Lovejoy's main tenet was that the history of human mind "do[es] not run in enclosed channels corresponding to the officially established divisions of university faculties"; on the contrary, Lovejoy argued, "ideas are the most migratory things in the world" (Lovejoy 1940, p. 4), so that they cannot be scattered in "separate departments" or unrelated "provinces" (Lovejoy 1948, p. 2). Lovejoy's

historiographical practice, as he had implemented it in his superb book *The Great Chain of Being*, pivoted around the “unit-ideas”, or types of categories, enabling the reading of history of philosophy “with more attention to the repercussions of philosophic ideas outside the great technical systems, and to be presented in a manner rather different from the usual one“ (Lovejoy 1948, p. 8; see also Lovejoy 1936, pp. 7–20). Having experienced the fascination of the Warburg Library, Cassirer was thus very sensitive to Lovejoy’s purpose to consider the history of ideas as a whole or, in the terms of Cassirer’s philosophy of culture, as an in-between of quite different symbolic forms. Not accidentally, in his essay on Pico della Mirandola (originally written in German and composed in Sweden in 1938, and then translated into English by Paul Oskar Kristeller), Cassirer affirmed in a footnote that at the time of the completion of his paper he “unfortunately” was not yet acquainted with Lovejoy’s book (Cassirer 1942a, p. 134 footnote 17). Likewise, this statement was something more than mere courtesy toward the Editor of the *Journal of the History of Ideas*.<sup>10</sup>

No wonder, either, that Cassirer published several essays in the *Journal*, dealing with some of his favorite issues, such as Pico della Mirandola, Ficino, or the philosophical relevance of Renaissance. But this does not mean at all that Cassirer was ready to modify the essential features of his reconstruction of both Renaissance philosophy and scientific revolution. At the same time, Cassirer gave to his American readers exhaustive proof of his way to highlight the history of philosophy and the history of science, discussing in detail the controversy between Leibniz and Newton (Cassirer 1943). Cassirer’s paper was part of a special issue of the *Philosophical Review* celebrating the “Tercentenary of the Death of Galileo and the Birth of Newton”, having as contributors, beside Cassirer himself, no less than Alexandre Koyré and Leonardo Olschki. Fascinating here is how Cassirer investigates an intriguing history, developing both a careful reference to texts and a steady attention to the conceptual scenario. It is not difficult, in short, to perceive the ability of the great historian of philosophical ideas and scientific theories, who directs however his attention to contemporary implications of a dispute not purely belonging to the archives of history. Cassirer suggests indeed, at the bottom of his reconstruction, that Leibniz was, so to speak, still alive. As Cassirer tells us:

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**10** On Cassirer and Lovejoy see Meyer 2006, pp. 234f. In his *opus magnum* Lovejoy never refers to Cassirer’s *Problem of Knowledge* or to some other works by him, though Lovejoy quotes the two volumes of Leibniz’s writings edited between 1904 and 1906 by Cassirer and Arthur Buchenau (see Lovejoy 1936, p. 349, footnote 1). Moreover, Lovejoy had published a review of this Leibniz’s edition (Lovejoy 1906). Yet, the question whether Lovejoy was indeed influenced in some way by Cassirer’s reading of Leibniz remains an open question.

What he [the modern reader] seeks and finds in the documents of the dispute between Leibniz and Newton is something quite different. It is a logical and epistemological, not a metaphysical, problem. As has been shown, it is the logical structure of space and time which was seen in a new light in the philosophy of Leibniz. Instead of propounding a theory of the absolute "essence" of space and time, Leibniz began with a critical study of the "meaning" of these terms. It was this critical tendency of thought which proved to be pregnant with far-reaching consequences for both science and philosophy. When Einstein, two centuries later, developed his special theory of relativity he found it necessary, first and foremost, to analyse the "meaning" of time. This seems to me to be the real point of contact between the views of Leibniz and those of modern science (Cassirer 1943, pp. 389–390).<sup>11</sup>

But another, most revealing proof of Cassirer's late activity in the 1940s is surely the controversy about Galileo's Platonism that led Cassirer to discuss in particular the interpretation Koyré had just developed in his "excellent article" for the *Journal of History of Ideas* (Koyré 1943; see Cassirer 1946). Koyré had criticized Burt's interpretation of Platonism as the fundamental premise of modern mathematical science by distinguishing between two kinds of Platonism: the first being a purely mathematical Platonism, the second closely connected to the mystical-speculative tradition that flourished within the Florence Academy, to which Galileo was entirely foreign.<sup>12</sup> According to Koyré, Galileo was rather involved in the founding of exact science through a straightforwardly oriented mathematical Platonism, a circumstance which Koyré provocatively summarized by stressing that "the new science is for him [Galileo] an experimental proof of Platonism" (Koyré 1943, p. 428). In answering Koyré, Cassirer emphasizes a modified account of this story or, at the very least, a more sophisticated point of view. To his mind, Galileo's Platonism represents a *third* kind of Platonism, one that is neither metaphysical nor mystical or even simply a mathematical Platonism. Quite differently from Koyré, Cassirer begins with a stimulating historical reconstruction, through which he attempts to describe the *physical* Platonism underlying Galileo's scientific revolution. His main point is exactly the significance of this new kind of Platonism, sharply distinguished from the metaphysical or mystical Neoplatonism.

Galileo simply transferred – Cassirer contended – the method of "problematical analysis" that had stood its ground in the history of geometrical and astronomical thought [...] He had to deviate both from the principles of Platonism and Aristotelianism. He accepted Plato's hypothetical method but he gave this method a new *ontological* status; a status which it had never possessed before (Cassirer 1946, p. 351).

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<sup>11</sup> It is worth noticing that Cassirer refers here with high appreciation also to Hélène Metzger's study on Newton (see Metzger 1938). Cassirer's contribution to the scholarship on Newton would require a careful examination, being Cassirer adverse to the positivistic interpretation of Newtonian science and in agreement, therefore, with scholars such as Burt, Koyré, and Metzger herself.

<sup>12</sup> See (Koyré 1973, p. 212) and (Koyré 1943, p. 425, footnote 64). In this footnote Koyré refers to the distinction between two different traditions of Platonism that Brunschvicg had rightly proposed (Brunschvicg 1912, pp. 67–70). See by contrast (Burt 1954, p. 68).

At issue here was a crucial question for historians of science and modern philosophy (see also Cassirer 1942b). The very import of Galileo's Platonism had been put into question by a seminal essay by John H. Randall jr., published in 1940 in the *Journal of History of Ideas*. Randall attempted to underline the great influence of the Aristotelian tradition, in the particular of the School of Padua, on the origins and developments of Galileo's new physics. "History has fallen into error – Randall argued – in accepting uncritically the estimate the pioneer thinkers of the 16th and 17th century made of their own turning away from the heritage of the past" (Randall 1940, p. 178). This "error" was, to some extent, the same error upon which Cassirer's based his account of the relationship between Platonism and the origins of modern science. Cassirer was nevertheless still convinced – as one can easily see in his article *Some Remarks on the Question of Originality of Renaissance*, also published in the *Journal* – that the "historical evidence" of some influence of the Aristotelian tradition cannot «seriously shake our conviction of the incomparable scientific originality of Galileo» (Cassirer 1943, p. 50). But, excepting Koyré, Cassirer's assessment of Galilean science was quite isolated among the scholars. Perhaps the most interesting attempt to elaborate a mediated evaluation was due to Kristeller, who would suggest that eminent scientists such as Galileo and Kepler "borrowed much more from that tradition [i.e. from Aristotelian tradition] than one might expect" (Kristeller 1961, p. 67).<sup>13</sup>

In the late years of his intellectual biography Cassirer was nonetheless deeply engaged in this field of research and he had undertaken, together with Kristeller and Randall, the edition of a collection of texts by Petrarca, Valla, Ficino, Pico, Pomponazzi, and Vives. Unfortunately, *The Renaissance Philosophy of Man* came to light only in 1948. The editors complained that "the death of Ernst Cassirer will be a serious loss for the readers of this volume. Since he had promised to contribute a general introduction from his pen" (Kristeller and Randall 1948, p. V). Indeed, the loss was highly painful not only for scholars of Renaissance thought, but also for an intellectual community which had found in Cassirer both the last of the German Neo-Kantians and the major spokesman of a new alliance between the history of philosophy and the history of science.

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<sup>13</sup> Moreover, in 1948 both Kristeller and Randall had pointed out unambiguously: "we must not forget that [...] Galileo remained in method and in philosophy, if not in physics, close to tradition of Italian Aristotelianism" (Kristeller and Randall 1948, p. 13). The topic is widely discussed by Randall also in his contribution to the Schilpp volume in honor of Cassirer (Randall 1948).

## 4 Concluding Remark

The ongoing connection between a renewed Kantian theory of knowledge, the history of philosophy and the history of science is the essential feature of Cassirer's work, although the ways of such an investigation underwent many changes and significant transformations in the long way from Marburg to the American exile. In order to attempt an assessment of such a boundless work, we ought firstly to locate Cassirer's scholarly enterprise in his own time, namely when history of science was not yet professionalized as an academic discipline and was regarded, in a large part, as a field of inquiry not yet dominated by standard methods of research (if any do exist). All this is meant when we speak of Cassirer's "pioneering" work, which does not signify at all, however, that a similar way of performing the history of science is merely antiquated or, even worse, nowadays deprived of any interest. Cassirer offers, by contrast, a forward-looking answer to the endless disputed question first posed by Hans Reichenbach's as he suggested the classical distinction between "context of discovery" and "context of justification" in considering scientific theories (Reichenbach 1938, pp. 6f.). No doubt can subsist that Cassirer would have considered such a dispute as fundamentally erroneous or, at least, as meaningless. His entire life of philosophical and historical research was spent, as it were, between "discovery" and "context". Are Galilei's, Leibniz's, Newton's, Einstein's discoveries possible without their contexts, the latter also being conceptual contexts?

What happened in the aftermath of Cassirer's work between Europe and United States is surely a topic of amazing interest for scholars aiming at rediscovering the history of the history of science following paths not usually taken. Indeed, one of the more intriguing topics in contemporary debates on history and philosophy of science is the project of a strict integration of history of science and philosophy of science aiming at overcoming their mere "marriage of convenience", as Ronald N. Giere had defined it in 1973 (Mauskopf-Schmaltz 2012, p. 59; see also Stadler 2017). Thus, integrated history of science seems to reshape (albeit without any reference to Cassirer) a core issue that was since longtime tackled by Cassirer himself in his peculiar way of dealing with history of philosophy (as a kind of *Problemgeschichte*) and history of science (in its connection with both history of philosophy and epistemology). To be sure, no doubt can subsist that great differences emerge when we compare Cassirer's perspective with today's debates on this topic. Anyway, it seems still promising to put it within the wider framework of a field of research already featured before its professionalization in the second post-war period.

Since we witness today a veritable renaissance of Cassirer, the question of his legacy both as a historian of philosophy and as a historian of science is, as we have attempted to point out, a very intricate one; but the more we investigate it, the more it turns out that Cassirer's work has left its traces everywhere. Unfortunately, sometime those traces have been lost and we do not intend to claim that all Cassirer did is still valid today. However, one can say that we should not miss his lesson in considering our present.

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