

Transversal: International Journal for the Historiography of Science 2019 (8): 125-133
ISSN 2526-2270
Belo Horizonte – MG / Brazil
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Article

Science in History: Why Ernest Coumet [did not] Free us from Alexandre Koyré's Heritage

Hallhane Machado¹

Abstract:

In 1987, Ernest Coumet highlighted the presence of a “scientific revolution” in Alexandre Koyré’s works. When and where did the destruction of the Cosmos and the geometrization of space materialize in the authors she studied? In what work do we find the “revolution” for which Koyré is so well known? From unknown texts, at least in 1987, Coumet pointed out concordances between Koyré’s philosophy of historical knowledge and that of Raymond Aron – of Weberian inspiration – affirming Koyré’s famous concept of Scientific Revolution as “ideal type”. Which means to say that, in the works of the author of *From the Closed World to the Infinite Universe*, “revolution” is not a historical reality, but an interpretative horizon. However, a letter from Koyré to Aron discovered by us in the archives of this author, deposited in the *Bibliothèque Nationale* de France, shows us the unsustainability of Coumet’s hypothesis. Nevertheless, it seems to us that the great lesson of his singular hypothesis remains, that of the importance of not neglecting the conception of the history of those who focus on the past of the sciences.

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Keywords: Alexandre Koyré; Scientific revolution; Conception of history; Ernest Coumet; German theory of history

Received: 2 February 2020. Reviewed: 16 April 2020. Accepted: 24 May 2020.

DOI: <http://dx.doi.org/10.24117/2526-2270.2020.i8.10>



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We would have started this article, certainly, stating an axiom if we were to state that the historian’s object, whatever it may be, is not disconnected from his conception of history; it is not possible to think of one without involuntarily thinking of the other; that the way we conceive history shows how we conceive an object that we believe is inserted in it. In fact, it is an idea that is part of historians’ *topoi*. However, when we apply them to the work of those who are interested or were interested in the history of science, of those who, more latently, thought of science in history, this commonplace becomes more obscure. In 1987, Alexandre Koyré, the most innovative historian of the sciences of the 20th century, according to Pietro Redondi, was the theme of a reflection. In pursuing unknown texts, Ernest Coumet

¹ Hallhane Machado [Orcid: 0000-0001-7120-8384] is a Ph.D. Candidate in the Faculty of History at the Federal University of Goiás. Address: Av. Esperança, s/n, Campus Samambaia – Goiânia – GO, 74.690-90, Brazil. Email: hallhane@gmail.com

pointed out concordances between Koyré's philosophy of historical knowledge and that of Raymond Aron – of Weberian inspiration – affirming Koyré's touted concept of the scientific revolution as “ideal type”. It means, then, affirming that there is no, in the works of the author of *From the Closed World to the Infinite Universe*, “revolution” as a historical reality, but as an interpretive horizon. Meanwhile, a letter from Koyré to Aron discovered by us in the archives of this author, collected in the *Bibliothèque Nationale de France*, points to the unsustainability of the hypothesis that resulted in *La révolution scientifique, les révolutions et l'histoire des sciences : Comment Ernest Coumet nous a libérés de l'héritage d'Alexandre Koyré* [*The Scientific Revolution, Revolutions and History of Sciences: How Ernest Coumet Freed us from Alexandre Koyré's Heritage*] (Panza 2001). In this letter, Koyré exposes his disapproval of “Weber's nominalism”. However, much more than showing why we were not freed – or better, why we could not be freed – from the Koyrean heritage of scientific turnaround, it seems relevant to highlight the important lesson given by Coumet's singular hypothesis: the importance of not neglecting the conception of the history of those who dedicate themselves to studying the past of science.

Coumet's Controversy:

Alexandre Koyré: La Révolution Scientifique Introuvable?

In a conference organized by Pietro Redondi, in 1986, addressed to Alexandre Koyré, the historian of the “scientific revolution” of the 16th and 17th centuries, professor and source of inspiration for Thomas Kuhn, Coumet was ready to make an exhibition under the title *Alexandre Koyré : La révolution scientifique introuvable ?* “The more I read and reread Alexandre Koyré, the more I came across seemingly irreconcilable statements” (Coumet 1987, 497). After all, how is the scientific revolution characterized in your work? Any reader a little familiar with this classic in the history of science would answer that question deftly. These are two related points: the destruction of the Cosmos and the geometry of space. Here is a formula that has been reproduced countless times, consecrated by the professionalization of this field of history. It is, therefore, necessary, says Coumet, to adhere to Koyré's method and question the evidence. Effectively, “when and where does the Characterization take place in the scientific revolution?” (Coumet 1987, 499).

In Galileo and Descartes? For Coumet, Koyré is very concerned about demonstrating his mistakes and failures. In *Galilean Studies*, he seems to be mainly concerned to point the Galileo's embarrassments, his relationship with powerful commonsense, with the idea of Cosmos, to prove that he did not formulate the law of inertia, to point, in the second book of these *Studies*, Descartes' excesses and failures and why he was unable to formulate the law of falling bodies. Where is victory, the key to the Revolution? It was certainly not consummated by them, says Coumet.

Really, as Koyré claims in the preface to his *From the Closed World to the Infinite Universe*, in *Galilean Studies*, he built the “prehistory of the great revolution” (Koyré 1986 [1957], 9), that occurs with Newton, and not with Galileo and Descartes, considering that it has its end with the elaboration of the Newtonian system. Thus, Coumet uses a Koyré conference held in Boston, in 1954, in which he affirms the instability and precariousness of the Newtonian world, the strange alliance between Euclid and Atomism, the need for a God to support him. It is necessary, therefore, to add to the list of failures, in which the names of Galileo and Descartes, were already found, the name of Newton. “The scientific revolution, far from adjusting to any historical work, does not appear clearly, but retreats as a poorly accessible horizon; in this first sense, would not the Revolution be something impossible to find?” (Coumet 1987, 502).

It is not the objective here to answer the questions presented by Coumet, certainly more numerous and complex than our brief analysis. They imply texts and distinct aspects of

Koyré's work that were only brought together due to simplification, which has required us to separate exposure. At the moment, we would just like to state that, in Koyré's, the scientific revolution is a process that cannot coincide with any specific work. "The spiritual change I described did not, of course, occur in a sudden mutation" (Koyré 1986 [1957], 8). The mathematization of nature and the geometrization of space, that is, the revolution, can be seen in the formulation of the law of falling bodies, elaborated by Galileo. They can also be identified in Descartes's errors that properly indicate an "excess" geometry in the explicit formulation of the law of inertia, developed by Descartes and in Newton's "laws". However, they do not absolutely coincide with any of these "laws" or scientific theories. Koyré's interest, since his historical studies on religious and mystical thought, has always been directed towards a "movement of ideas", another pertinent synonym for "revolution". But we do not want to construct another objection to Coumet's controversial discussion. Those that have already been made conceal the originality of the next steps he took in an attempt to explain the absence of the "Revolution" in Koyré.

"We assume that the Characterization sets a program of historical investigation; well, is it really that? What is the statute of the Characterization?" (Coumet 1987, 503) For Koyré, is it truly a framework of ideas, an underlying axiomatic ontology, as Gérard Jorland argues? Does Koyré actually indicate the existence, in the XVI and XVII centuries, of a new philosophical substructure in which Galileo, Descartes and Newton were seated and pointed at it? In questioning the statute of characterization, Coumet sought to understand a fundamental aspect of Koyré's work; the way in which he understood the historian's work, the construction and the role of the concepts he employed in his analyzes, his way of conceiving the past and historical knowledge. It was not, in Coumet, just a question of method, but also of content. And what was at stake was the concept for which Koyré was, and still is, best known: the concept of the scientific revolution. If Coumet was right, much of what has already been published about Koyré should be reviewed and reworked.

Coumet's Sources

If Coumet regrets the lack of studies that privileges the historical theory and methodology admitted and practiced by Koyré, if he seeks to advance in this direction, it is because there are unknown texts, at least in 1987, very suggestive, as witnessed by more recent works published in Brazil, in France, and in Italy. Those are two reviews written by Koyré, in 1930 and 1932, respectively, on Dilthey, and the article "Philosophy of History", 1946, translated and published in Brazil, in 2010. Those are the texts that Coumet refers to and he works on.

"One of the most characteristic and most important features – at least for us – of the present moment in German philosophy is the growing influence of Dilthey's work and thought" (Koyré 1930, 316). Koyré does not hide his appreciation for the spread of the "fine and deep analyzes of the great philosopher historian", for the "beautiful and penetrating" studies of Dilthey, attentive author and "passionate about the nuances", possessor of the *esprit de finesse*. For Coumet, it is a self-portrait. We could not say that he is wrong. Is it not for the nuances that Koyré gives in to his studies due to the subtle changes in the meaning of the concepts and terms used by the authors that he addresses? Is this not the movement, the "cheminement" of thought that he presents in his works? In fact, does he not call himself a little later, when he published his famous *Galilean Studies*, as a "philosopher historian", as he did with Dilthey, in 1930?

The 1932 review is even more suggestive.

Regarding his work, we use the expression, used by himself, "critical of historical reason". We, therefore, wanted to highlight historical affiliation and link Dilthey to the Kantian or Neokantian movement. Not without reason, without a doubt: is it not for

Kant that all attempts at reflective analysis of the spirit finally lead us? And yet, it is not so much a “critique of historical reason” – despite his fine works on the *a priori* of the moral sciences (*Einleitung in die Geisteswissenschaften*, Berlin 1868, *Der Aufbau der Geschichtlichen Welt in den Geisteswissenschaften*, Berlin 1910) – as well as a comprehensive analysis of man, his nature and his spirit, as he manifests himself and reveals himself in history, which Dilthey had tried to constitute. In history: it is not an *a priori* analysis. It is not a question of analyzing, based on given spiritual phenomena (such as science, morals, art) its condition of possibility. It is about taking the man in his totality; it is about understanding it in your real being. Now, what is a man, says Dilthey, we only know from history, from experience. We only know what we are for what we were, we only know our possibilities for our achievements. (Koyré 1932, 489)

The Koyré's works, especially those cited by Coumet, in which he discusses the changes in scientific thought perceptible in the theories of Copernicus, Galileo, Descartes, and Newton, always implies the refusal of an *a priori*, of a reason like Kant, static, unable to change, immobile. Koyré does not fixate on the description of a theory from which he affirms what thought is. It is not linked to a “victory” of reason, to achievement, to the elaboration of a formula. Even looking at the constantly proclaimed “mathematical realism”, the mathematization of nature, and the geometry of space, Koyré spends more than three hundred pages in his *Galilean Studies* to describe this philosophical posture of Galileo and Descartes. He describes in detail each change in the works of the authors he studies, each change in the meaning of the concepts at stake. This is the change, these are the changes that interest you most, not a “given spiritual phenomenon”.

And what defines this interest in change? From a historical point of view, there is a notable reason: his interest in change is because he was living one. Koyré looked at the Copernican revolution stimulated by the revolutions of his century, brought about by new theories like those of Einstein and Heisenberg. At the beginning of the 20th century, the world had again, as in the period of the 17th-century scientific revolution, become uncertain (Koyré 1937). For this reason, the importance of the history of science, of studies on a period as critical as the one he experienced, and what happened after the crisis. Like Dilthey, Koyré believed, in this sense, in the need for history, the ground of achievements, to understand the possibilities in the face of the crisis of the 20th century. In other words, Koyré believed that reason was only understood for the – and in – the historical development.

It is not just this conviction about the importance of history for the understanding of man, nor the privilege of historical nuance over an *a priori* extracted from a particular scientific theory, that makes us understand Coumet's interest in this text by Koyré. The author of *Galilean Studies* also asserts about Dilthey that

he thought that the human soul only revealed itself in and through its manifestations; that it was these manifestations of his life and activity that are called art, science, philosophy, which partially revealed to us the dark and fruitful background from which they came; he also knew that the “human soul” is only an abstraction and that it is only by analyzing and seeking to understand, implying a historical study, the objectified manifestations, and, for this very reason, the objective of his life, reviving in us the meaning of his historical incarnations that we can – by interpreting this sense – apprehend and understand certain aspects, certain attitudes and certain fundamental structures of the soul, which we can rediscover, starting from the real, some of its possibilities. Possibilities, attitudes and soul structures, rather than the spirit, because Dilthey, reacting against the excessive and one-sided spiritualization of a man, caused by rationalism, wanted to rediscover the concrete man, his concrete soul, soul that confusion, passion, “*élan*”, as much – and even more – as spirit. He knew the

importance of the vital, the dark feelings; he knew that they formed the fund that nourished the highest productions of the spirit, a fund that was expressed in and by them, but that could never be completely spiritualized. This is also why the spirit could never fully penetrate it. He could not let go of his own background. That is why history, and only history, [...] could allow us to arrive at this knowledge of ourselves. (Koyré 1932, 490)

It is difficult to specify all the elements of this statement that make us think of Koyré's work, and, consequently, in his connection with Dilthey, as pointed out by the book *Alexandre Koyré in incognito*, published in 2016, by Paola Zambelli, in which several excerpts and points of his work are taken up, suggesting the relationship at stake.

We highlight, in a way, that Koyré's work which always valued and clarified this dark background that underlies the highest productions of the spirit. Koyré's work has always sought to clarify a background that is not rational, an area that logical thinking does not touch. Therefore, it is only up to the historical description devoid of explanatory claims, but comprehensive, ready not to analyze it following the rules of a *canon*, but to embrace it in its intrinsic strangeness. This theoretical and methodological perspective of Koyré is well known and is present in the principle of "unity of thought", formulated by him in 1951. The theoretical-methodological perspective seems to indicate the "trans-scientific ideas" that underlie theories apparently based on the domain of sciences. It, therefore, indicates the communion between science, philosophy and religion. However, in addition to the collaboration between these domains of specific knowledge (collaboration affirmed and reaffirmed by historiography), this passage extracted from his review of Dilthey makes us think of Koyré's insistence in underlining, in his works, "attitudes of the soul" or "aesthetic attitudes" – as opposed to attitudes of "spirit" – as synonyms of reason, logic. The greatest example of Koyré's insistence occurs when he endorses the work of Erwin Panofsky, in 1955, on Galileo's artistic tastes and the agreement with his position concerning the shape of the planets' trajectories.

From the book of that art historian, entitled *Galileo as a Critic of the Arts*, Koyré writes a text, *Esthetic attitude and scientific thinking*, guaranteeing the influence of the Galilean taste for the Renaissance, for the purity and perfection of the circular shape, as a cause of Galileo's rejection of Kepler's ellipses. In this text, Koyré criticizes historians for "excessive spiritualization". He considers them defenders of pure rationalism, who ignored passages in which Galileo was clearly haunted by the idea of circularity. When they believed that the man was just a spirit, logical reason, they did not perceive something that, for Koyré, was before their eyes: Galileo rejected the keplerian theory – which would help him in his battle for the defense of the Copernican system – because he did not like the ellipse, rejected form by the Renaissance. His artistic taste influenced the scientific theories he adopted, because "the ways of human thought are curious, unpredictable and illogical" (Koyré 1973 [1955], 287). And similar to the way he describes Dilthey, he concluded his text by stating that "purism is a dangerous thing. Galileo's example – by no means unique – shows that there is no need to exaggerate" (Koyré 1973 [1955], 287).

From this positioning of Koyré, it is clear why Coumet – like Zambelli – paid attention to his texts on Dilthey. However, the reviews in question represent only one of Coumet's sources, as another text is used in an attempt to explain Koyré's conception and historical method. This is the article "Philosophy of History". In this rich text, Koyré emphasizes the historian's work. Succinct and clear, it gives the impression that he is talking more about his convictions than exposing other works on the subject, that is, the Robert Lenoble, Louis Halphen, Raymond Aron, and Eric Dardel's works. One of the most discussed elements is the construction process used by the historian.

It is the historian, or at least, the historian's outlook, that determines the order of the facts that are interesting or important to him. History presents itself to us as if it had been cut into slices. History is divided into stories. A division that is undoubtedly not arbitrary, or at least not completely, but which still remains subject to the security. Indeed, no cut is necessary. It is very clear that it could be cut in another way. [...] How could it be different? The past is no longer. We are the ones who, in the continuous plot of time and space, remember the objects of our research. As Aron rightly states; "The decisive moment of research in history is the definition of terms and the definition of concepts". (Koyré 2010 [1947], 51-52)

Still, on the fragility of knowledge about "what is not", in another passage, he states:

The knowledge, to reach the purpose that it wants, must adopt the structure of the domain of being that it seeks to apprehend. Now, if the ontological structure of physical reality seems to start to be apprehended [...], something completely different occurs in what concerns the domain, much more complex, of life. And what about the realms of social and spiritual reality. The Newton – or Einstein – of history is yet to be born. [...] In addition, we ignore not only the ontological status of historical realities, which is why we often find ourselves faced with the impossibility of distinguishing them from abstractions or fictions, but we even ignore the natural cleavages of the discoveries where Duhem saw precisely one of the tasks – and one of the main achievements – of science. (Koyré 2010 [1947], 58-59)

Coumet points out that the most important parts of this text refer directly or indirectly to Raymond Aron, a scholar of Dilthey, Simmel, Rickert and Weber, as noted in *La philosophie critique de l'histoire: Essai sur une théorie allemande de l'histoire*. They also indicate a concordance between his philosophy of historical knowledge and that of Koyré. For Coumet, that points to yet another agreement between the authors and what would be the main source of their perspectives: Max Weber. It is at this point that all his walk through the theory of German history admitted by Koyré. For Coumet, Weber was the historian who most inspired our author's historical theory and methodology, launching his hypothesis: the "Characterization", or the "scientific Revolution", would not it be a concept referring to a "historical real", and for this, without an ontological basis and impossible to be discerned from abstractions or fictions? Would not it be an "ideal type" of Weber, a limit concept, understood as an abstraction, an interpretive horizon (Coumet 1987, 513), and not as something that can be found in the 17th and 18th centuries as a historical reality?

In that case, it would be in vain to look for the "where" and "when" of the scientific revolution described by Koyré. The affiliation to Weber would explain, for Coumet, the apparent contradictions in the author's works and the absence of a work in which the mentioned Revolution would materialize. The Weber's theory would be, therefore, the main direction of his work – considering the importance of this concept in all his work from the 1930s onwards – essential for a coherent appreciation of his studies. For Coumet, it is in German historical theory, which, unfortunately, the author outlines in a single block, which should be linked to the construction of all Koyré's work as a historian of the sciences.

Koyré and *La Philosophie Critique de l'Histoire*

In a letter from Koyré written to Raymond Aron, probably in 1938, deposited in the *Fonds Aron* of the *Bibliothèque nationale de France*, it is possible to identify that Koyré was more than an author who set out to address Aron's complementary thesis, *La Philosophie critique de l'histoire*. Koyré was one of the authors to whom Aron made a point of showing his work.

The letter is a critical review, it is a response from Koyré, in which he describes his opinion on each chapter of this thesis, therefore speaking on Dilthey, Rickert, Simmel, and Weber respectively.

[...] I want to tell you the impression I had reading your book: it is good, very good indeed. [...] I reread your chapter on Dilthey – it's good, and the systematization you give it does not go beyond the limits of what Dilthey could have done. [...] Your "Rickert" seems to me to give you too much importance. [...] Your "Simmel" is good. Your "Weber", very good. And yet, should I tell you? Reading your book, I felt my admiration for Weber dissolve. And the one that I still kept for Dilthey definitely disappear. [...] It is certainly not your fault, on the contrary. [...] separated from the concrete historical context, Dilthey and Weber's considerations seem vague and, let's say clearly, obscure! In Dilthey, *Verstehen's* notion of life, of expression – all this is so obscure! [...] And yet, contrary to what you say, it is Dilthey who seems to me to be right, and not Weber. Weber's nominalism seems very easy to me and it does not match his practice at all, which, by the way, you indicate. Now, it is in practice that a method is judged [...] in fact, ideal type concepts are only valid – and provide something for the research and interpretation of history – when they are not arbitrarily placed concepts. (Koyré, 1938)²

As noted in this letter written by Koyré, Coumet's hypothesis is untenable. Although Koyré did, in fact, show interest and focus on German theorists in history, he was obviously not influenced by them. Koyré criticized them, tried to position himself in relation to them. Koyré showed respect for some more than others, two above all, Weber and Dilthey, but he clearly differentiated them. As much as he respected him, Koyré did not agree with Weber's "nominalist" stance, his renunciation of the attempt to apprehend historical reality, present in the "ideal type" concept. Between Weber and Dilthey, it was the latter he preferred, his "historical realism", a realism that, in fact, Aron underlines in his book (Aron 2018 [1969], 23-109). Therefore, it is not possible to perceive the union suggested by Coumet, between Dilthey and Weber, nor in Koyré, also in Aron. Koyré claims that Weber's problem was linked to an "initial error": he believed that Kant was "the Newton of history" (Koyré 1938);³ the refusal of metaphysics, the departure from the search for essence, the way of conceiving concepts not by generalization, but by "utopian rationalization" (Aron 2018 [1969], 232), resulting in the shift of the focus from the historical object to the work of the historian. However, although Koyré deeply believed in the theoretical – metaphysical – fragility of history, he believed in the historian's possibility of apprehending the reality of the past thanks to the "enrichment of historical experience" provided by time, by change. "Each time the discovery in the present [...] provokes the discovery, in the past, of things that until now had gone unnoticed" (Koyré 2010 [1947], 60). Koyré was an "epistemological optimist", an optimism that he also observed in Dilthey, as in his reviews of 1930 and 1932. Therefore, when he spoke about a "scientific revolution", he intended to speak of a historical reality that could be known, of a movement of ideas that we find in the authors of the 17th and 18th centuries, a movement marked by "additions of small singularities", a reality revealed by the "enrichment of the historical experience" concerning the scientific upheavals, thanks to

² We thank Mrs. Dominique Schnapper, Raymond Aron's daughter, for authorizing us to publish significant parts of that letter.

³ The importance of this letter occurs given the possibility of identifying with whom Koyré dialogues in his 1946 text, "Philosophy of History". When referring to the beliefs of German history theorists, he states that "The Newton – or Einstein – of history is yet to be born" (Koyré 2010 [1946], 58). It is a criticism of these authors' strong connection to Kant.

the “two or three deep crises”, of the “revolutions” that his time saw (Koyré 1973 [1951], 14).⁴

A final consideration. However, Coumet's hypothesis was not the result of daydreams. There were reasons to affirm it, resulting in the publication of an article published in the *Revue de Synthèse*, in 2001, about the concept of revolution and the way “how Coumet freed us from Koyré's heritage”.⁵ The most recent publications testify to the richness and importance of the texts he used, Koyré's writings on German historians and philosophers. It is necessary to recognize the pertinent emphasis given to possible echoes of Koyré's texts on Dilthey concerning his article “Philosophy of History”. Truly Koyré was a profound expert on German theories in this field. And when we adopt Coumet's point of view, the importance of attention to the historical perspective of the authors we are interested in is evidenced, considering the deep implication in the object with which they work. According to Redondi, Koyré, the most influential and innovative science historian of his century, this certainly passes through the reception of the concept of “scientific revolution”. And if Coumet was right? The lesson of *uchronia* is that, in this case, by neglecting his conception of history and the way he understands the historian's work, we should review what we have written about Koyré. But Coumet was wrong. Among German theorists, it is not Weber, but Dilthey who seems to matter most. Among the chapters in Aron's book, the only one that Koyré claims to have “reread”, that is, seen for the second time, is that of the latter. So, for Aron – the great introducer in France of German theories of history – Koyré was an important reference on Dilthey. And what does that imply? Should we once again neglect Koyré's beliefs, historical Perspective, and his relationship with the “great philosopher historian”? This is a topic for another work.

Conclusion

Koyré's letter to Aron opens up a new possibility for us to understand a basic element of the author's work of “From the closed world to the infinite universe”, an element to which Coumet drew attention. Basilar, because, as we said at the beginning of this article, the authors' conception of history, the methodology they employ, the way they understand the concepts they use, all this is intrinsic to the objects they work on. That is what Coumet pointed out in 1987, based on extremely suggestive texts. Koyré's “scientific revolution” is not separated from his historical theory and methodology. We cannot say that, in this sense, Coumet made a mistake. This is what the aforementioned letter shows us, although it also indicates that he did not direct his gaze to the author to whom Koyré felt closest. Therefore, we see a path of investigation reinforced, but now marked by the figure of Dilthey, because the letter in question meets other texts by Koyré in which this figure is present in a peculiar way. As Zambelli recently indicated, and as Coumet himself expressly stated, when speaking about Dilthey, Koyré seems to give us a self-treatment. Thus, we do not see the path opened by the polemic of Coumet controversy, but gain new directions, whose consistency only new investigations can assert.

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⁴ For an approach to this aspect of Koyré's thinking, see Salomon, Marlon. “Current figures and forms of thought in Alexandre Koyré” (2015).

⁵ It is the work of Marco Panza: “The scientific revolution and the research and sciences: Comment Ernest Coumet nous a libérés de l'héritage d'Alexandre Koyré”, published in the *Revue de Synthèse* (2001).

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