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Reflections on Chimisso: French Philosophy of Science and the historical Method

Introduction

Over the past several years there has emerged a collective and conscious effort aiming to understand the history of philosophy of science. This has led to the renewed examination of the Vienna Circle and logical positivism, which is considered as one of the main sources of philosophy of science in the English-speaking world. Yet there have also been attempts to explore the development of other schools of thought. A study of the French tradition raises several questions, in particular the reception of this tradition and its salient recourse to a historical approach. Attention has turned from the well-known Bachelardian school to earlier philosophers.

Cristina Chimisso has provided us with a broad and stimulating picture of French philosophy of science. She can draw on her recent book *Writing the history of the mind: philosophy and science in France, 1900 to 1960s*. Chimisso takes us back prior to those doctrines that continue to pervade current views, that is postpositivism in English-speaking lands and historical espistemology in French-speaking countries. The 1960s mark a shift, and what lies before is now part of history. Chimisso's interests are not merely antiquarian; she leads us to philosophical issues. In particular, she draws our attention to Lucien Lévy-Bruhl and Léon Brunschvicg, who, although prominent in their time, have long been neglected. Chimisso thereby points to works that are beginning to receive interest again. She includes several other thinkers who played a role in the development of philosophy of science, including Henri Berr, Abel Rey, Hélène Metzger and Alexandre Koyré. A whole community makes its re-appearance. By taking us back before World War Two, Chimisso directs us to a time of intense philosophical debate. Philosophy of science as carried out at this time appears however quite different from what we practice today under the same heading. This has the effect of making us sensitive to the historical dimension: we may measure the distance covered, evaluate the persistent core of our discipline and scrutinized the background with respect to which new methods and theses arose.

How to justify historical study? I believe that returning to the primary sources already provides an answer. The picture of earlier philosophy of science as it was handed down to us by way of retrospective testimony or in the general surveys or introductions to philosophy of science does not correspond to the historical record. Chimisso's study, I believe, translates a new sensitivity: the need to push further as

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regards our methods, our situation as observers and the evolution of the constitutive notions of our discipline. Such a sensitivity has been termed variously: history of philosophy of science, historical semantics and meta-epistemology.

My aim here is to reflect upon Chimisso's results and to bring in further material. How did Lévy-Bruhl and Brunschvicg contribute to philosophy of science? What were their relations with other scholars working in the field? How to understand their markedly historical approach with respect to the application of logic to philosophy that came to dominate English-language philosophy? I wish also to inquire into the nature of historical method as put to philosophical use as well as the difference between the philosophical traditions.

1. Lévy-Bruhl, Brunschvicg and the *a posteriori* exploration of the mind

Chimisso devotes herself to philosophical reflection on science produced during the first half of the 20th century. One could of course extend her inquiry further back in time to the founding fathers of the French tradition. A complete history would certainly include Auguste Comte. His *Cours de philosophy positive* provided an impressive picture of the entire spectrum of the sciences and initiated several major topics of this new field of studies, such as the classification of scientific disciplines, the role of hypotheses and the empirical criteria of meaning.[1] Comte set the agenda in several respects for philosophy of science in France. Positivism, in one form or another, dominated here the philosophical scene until World War One, and even later thinkers who had relinquished positivism continued to pay tribute to him, most notably Canguilhem. First and foremost is Comte's decision to favor a historical approach over a logical one. Philosophy of science, he continually asserts, must be grounded on history of science. This trend was to characterize French philosophy of science generally. As an attempt to direct philosophical reflection toward science and to make scientific knowledge a model, positivism, in its various forms has been intimately bound up with a large portion of philosophy of science either as a source of inspiration or as a target for criticism: from Comtian positivism to logical positivism and even to postpositivism. It is thus important to come to grips with the significance and role of this doctrine. There were other significant figures of the time: André-Marie Ampère, Antoine-Augustin Cournot, Claude Bernard and Charles Renouvier. They all made significant contributions to the philosophy of science and helped to shape the early stage of the field.

My space is however strictly measured, and I shall keep to Chimisso's main focus. Lévy-Bruhl came of age in 1875 and Brunschvicg a decade later. They both died around the time of the second World War. Their active life spans what I shall characterize as the second stage in the development of philosophy of science. The

1 This six-volume work was published between 1830 and 1842.

Franco-Prussian War in 1870 not only signaled a change of political system – the end of the Second Empire and the beginning of the Third Republic – but led a whole generation to reflect on French science and to seek to emulate the German university system. We may mark out here a fifty-year period running until the end of the first World War in 1918. It is characterized by the early institutionalization of the discipline. Thereafter followed the interwar period, which represents a new phase, that of expansion of the discipline and development of a reflection on the latest scientific discoveries. I shall thus take the story back to the formative years of Lévy-Bruhl and the factors that explain the new departures of the early 20th century. Bachelard and Koyré, who started their carriers during the interwar period, will be considered here only in so far as they were influenced by the theories of their predecessors; their work has indeed received a good deal of attention.

The importance of Lévy-Bruhl and Brunschvicg in the constitution of philosophy of science in France is due to several facts. The former paved the way for the latter: Lévy-Bruhl had started teaching at the Sorbonne in 1902 and was elected to the chair of history of modern philosophy in 1908; he gave a new direction to the discipline, studying philosophers of the past in relation to the context of their epoch in its various aspects, with particular emphasis on the scientific background. To be sure, Émile Boutroux had already initiated a change with respect to the literary approach characteristic of the school of Victor Cousin, which have been influential until then.[2] But the arrival at the Sorbonne of Lévy-Bruhl followed by Brunschvicg and Milhaud, all of whom insisted on bringing science to bear on philosophy, marked a decisive shift.

Lévy-Bruhl is responsible for having forged the modern notion of mentality.[3] This notion was to play a central role not only in philosophy but also in history; the French historical school in the 20th can be characterized in the main by its recourse to mentalities. This provides the interpretative thread of Chimisso's study, centered on the "history of the mind". Shunning logic, French philosophy of science made extensive use in its investigations of the social sciences (sociology, anthropology and psychology), often combined with history. Anti-psychologism did not have a strong hold in France, excepting phenomenologists. This leads to several differences with respect to philosophy of science in German-speaking countries. Chimisso singles out several endeavors that are closely related methodologically:

> The underlying assumptions that united these projects were that the mind could not be studied *a priori*, and that ways of thinking were different in different civilizations. As a consequence, history was as a rule an essential component of research. Past philosophy and past science were expected to reveal worldviews and mental processes that differed from current ones.[4]

2 Boutroux replaced Paul Janet, a disciple of Victor Cousin, in 1888.

3 This is not unrelated to Auguste Comte's notion of mind or *esprit*, which corresponds to the three states of humanity: theological, metaphysical and positive.

4 Chimisso, 2008, p. 3. Cf. p. 73, 168.

Indeed, Lévy-Bruhl and Brunschvicg elaborated an *a posteriori* method of exploration of the mind, based on the historical documents that it yielded in its aim to understand the world.

Let us now turn to Brunschvicg. He had been teaching at the Sorbonne since 1905, and in 1927 he replaced Lévy-Bruhl in the chair of history of modern philosophy. As he came to elaborate his philosophical position, he acknowledged his debt to his predecessor.[5] There are many connections between the two thinkers; they were associated in many networks, and together they represent a strong line of development. Brunschvicg was to exert an ascendancy over French philosophy, establishing a particular brand of rationalism and idealism as well as forming many students. In particular he was Bachelard's doctoral supervisor, and Chimisso stresses the many similarities of their philosophies.[6]

2. The moment 1900, scientific revolutions and philosophical reflection

I have suggested that several factors explain "the moment 1900".[7] We should not forget that Lévy-Bruhl belongs to the same generation as a number of other important figures for the philosophy of science: Poincaré, Duhem, Milhaud and Meyerson. It seems that Lévy-Bruhl's shift from a rather traditional history of philosophy to a new approach occurred at a time when he was working on his book on Comte.[8] The originality of this book is to depart from the hagiographic writings of Comte's disciples and to provide a more distanced reading, by setting his doctrine more precisely within its historical context. One should not forget, however, a synchronous attempt by Milhaud to evaluate Comte's legacy: *Le positivisme et le progrès de l'esprit: études critiques sur Auguste Comte*.[9] Milhaud likewise was proposing a critical evaluation of this thinker. Both Lévy-Bruhl and Milhaud nevertheless retained something of the attitude that Comte had initiated. Furthermore, Lévy-Bruhl's ethnology or anthropology is not wholly unrelated to Comte's sociology, which aims to develop a "positive" study of humankind drawing largely on history. In a sense Comte's positivism gave rise to several parallel developments: sociology, anthropology and history of science. These were to replace metaphysics. Paul Tannery's history of science was one such outcome. Brunschvicg could call on both anthropology and history of science.

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5 See "L'idée de la vérité mathématique", in Brunschvicg, 1958, vol. 3.

6 See Chimisso, 2008, p. 141.

7 I am referring here to the conceptualisation given by Frédéric Worms, *Le moment 1900 en philosophie*.

8 Lévy-Bruhl, *La philosophie d'Auguste Comte*, 1900.

9 This work was published in 1902, but Milhaud already criticizes Comte in his first book, 1893, p. 205.

It is worth to point out the underlying controversies; these helped to shape the movement we are interested in. One may note that all our authors developed their methods in opposition to the school of Victor Cousin. Milhaud brings this out clearly in speaking of Paul Tannery's contribution to the history of philosophy:

> You know what academic philosophy was like for a long time in France, I mean that kind of naïve and banal catechism which the school of Cousin had resulted in; and you know to what extent rhetoric, to which was given free rein, had inevitably divorced philosophy from science.[10]

One should not omit the scientific factors coming into play. A succession of revolutions in science had taken place that called for a reworking of the picture of knowledge, in succession: non-Euclidian geometry, the theory of evolution, thermodynamics and electromagnetism. One of the leading figures of the time was Henri Poincaré. His research in mathematics convinced him that non-Euclidian geometry was not a mere fiction but a fruitful conceptual construction. Meditating on the nature of geometrical hypotheses, Poincaré advanced the idea that they are conventions.

Pierre Duhem formulated a similar idea with respect to physics. Hypotheses are not directly derived from experience; they are founded on the free choice of the theorist. Experimental refutation is more complex than it was generally believed. This led to the holist thesis, which Neurath, followed by Quine, was to take up in the context of a logical analysis of science. These striking results were seized upon by several philosophers and scientists. Édouard Le Roy perceived here the rise of an intellectual movement that he labeled "a new positivism". Gaston Milhaud went so far as to speak of logical positivism or *positivisme logique* as early as 1905.[11] This reformulation of positivism attracted the attention of young Austrian scholars who were to found the Vienna Circle and provides us with a noteworthy connection between the philosophical traditions of France and Austria.

Le Roy emphasized the novelty of these reflections on science; he was one of the first to make use of the term *épistémologie* or epistemology. The term designates in French usage philosophy of science rather than theory of knowledge. What was being proposed was an investigation precisely centered on scientific activity. This carried an implicit criticism of earlier philosophy of science, as practiced by Comte, and signaled a shift in the discipline.

In connection with these debates over the nature of scientific theories early attempts were made to introduce philosophy of science into the university curriculum. In 1892 a chair of "General history of science" was instituted at the Collège de France. In 1909, a chair of "History of philosophy in its relation to science" was created for Milhaud at the Sorbonne. He thus came to work in the same university

10 Milhaud, 1911, p. 2. Similar criticism is voiced by Brunschvicg in the second edition of his thesis. A point also made by Bouglé as quoted by Chimisso, 2008, p. 73.

11 Milhaud, 1927, p. 55, reproducing an article published in 1905.

as Lévy-Bruhl and Brunschvicg. Milhaud's chair was to play a pivotal role in the future of the field, being held successively by Abel Rey, Bachelard and Canguilhem.[12]

Taking up Poincaré's ideas, Abel Rey was careful to emphasize the tendency toward realism. He was in particular struck by the recent discoveries of atomic theory, and was led to elaborate a historical approach employing techniques developed in the social sciences. His thesis, a synthetic presentation of the turn-of-the-century debates, was seized upon by the logical positivists. Abel Rey was furthermore included among Neurath's collaborators to the *Encyclopedia of Unified Science*. However, this promising connection between French conventionalism and Austrian positivism was cut short[13].

Bachelard, who succeeded to Rey in 1940, can be credited with having forcefully directed philosophical attention to the latest scientific theories. Along with Alexandre Koyré, he was convinced that the succession of revolutions that had shaken science since the discovery of non-Euclidian geometry called for a "philosophical revolution". Borrowing a phrase from Reichenbach, Bachelard spoke of a "conflict of generations", and he was quickly led to spell out the inadequacies of the philosophical conceptions of his predecessors. Thus was brought to a close a particular phase in the development of philosophy of science. However the historian may question this portrayal and seek deeper links and transmissions.

3. On historical method

What characterizes a large portion of French philosophy of science is the importance allotted to history. This is apparent in the early formulation of the discipline by Comte as well as its later institutional establishment. Of course, a historical approach can be pursued in many ways. One direction consists in grounding philosophy of science upon the history of science. In the absence of empirical testing, history of science provides a means of assessing philosophical conceptions of science; it provides the analogue of the laboratory[14]. This is particularly clear in Duhem. His *Aim and Structure of Physical Theory* furnished an analysis of the stages involved in the construction of a scientific theory. But this "logical analysis"[15], as he termed it, was to be followed by a historical study, and the numerous volumes he devoted to the evolution of science since Antiquity bear witness to this preoccupation. Such a method was followed by many of his contemporaries, for example Meyerson. Postpositivists were later to call on this tradition in their effort

12 Concerning the filiation between Tannery, Milhaud and Rey, see Brenner, 2005.

13 Contingent historical factors enter here.

14 This metaphor used by Brunschvicg is quoted by Chimisso, 2008, p. 73. Cf. p. 168.

15 Duhem, 1906, p. XV. Cf. Duhem, 1913, p. 115.

to reassert the importance of history, and this was one of the trends of the French tradition that received the most sustained interest abroad.

"History of philosophy in its relation to the sciences", to use the title of the chair created for Milhaud, constitutes another significant line of research. In introducing philosophy of science within the university curriculum, Milhaud was careful to link this speciality with the history of philosophy, which occupied an important role in France. Brunschvicg and Rey fit well into this program[16]. Such an interdisciplinary approach allowed for various collaborations and many topics of inquiry. It characterizes the institutional situation in France and marks a difference with respect for example to philosophy in Great Britain.

In a sense Bachelard and Koyré built on these antecedent efforts, the former in the direction of a historical philosophy of science and the latter in the sense of a philosophical history of science. But they gave a new twist to this approach. Both had misgivings over earlier conceptions of scientific growth as a continuous process. They set about to elaborate what has been named a "historical epistemology". Study of past science still retained its importance. But it was to be placed within a clearly discontinuist conception, inspired by the recent discoveries in science. Scientific revolutions are accompanied by breaks between common knowledge and scientific knowledge. Bachelard especially made explicit the position from which the philosopher observes the past: reading is necessarily retrospective or *récurrent*.

One may call here on Ian Hacking, who throws light on this issue. He brings out clearly the difference between Bachelard and Foucault, in other words the evolution undergone by historical method. He himself takes Foucault's historical epistemology or historical ontology a step further and gives expression to a whole trend of research being done today. Although educated in the analytic tradition, Hacking does not hesitate to call on French history and philosophy of science. Foucault, enlarging on Bachelard's perspective, had made a broader and more systematic use of history, which he in due course named "archeology of knowledge" or "historical ontology". Hacking takes up this approach, applying it more specifically to philosophy of science. In particular he gives a concrete meaning to the attempt to relate discourse to its context of formulation. And Hacking offers a careful analysis of the sites of production of experimental science: the laboratories, the observatories and the research centers.

He claims that it is quite possible to recover thereby the concerns of analytic philosophy. Historical ontology is just another way of pursuing analysis: the conceptual usages are referred chronologically to their site of enunciation. This is how he presents his program:

16 Although Rey obtained the change of this chair to "History and philosophy of science", he nevertheless admitted to pursuing the path opened by Milhaud. For more, see Brenner, 2005.

> Historical ontology is about the ways in which the possibilities for choice, and for being, arise in history. It is not to be practiced in terms of grand abstractions, but in terms of the explicit formulations in which we can constitute ourselves, formulations whose trajectories can be plotted as clearly as those of trauma or child development, or, at one remove, that can be traced more obscurely by larger organizing concepts such as objectivity or even facts themselves[17].

One can then submit the constitutive notions of science to a historical analysis, recording the discursive formulations and mapping out their development.

Conclusion

The period 1870–1920 that I have singled out for examination is very different from the founding years of philosophy of science; many new objects of inquiry arose, and the analysis of scientific knowledge provided was rich, original and fruitful. It is worthwhile to return to this epoch in order to sharpen our tools and to enlarge our list of problems. Furthermore, a complete picture of philosophy of science requires us to understand the transformation that brought about the conceptions of the mid-twentieth century. I believe that one way to move ahead is to be clear as to the objects, methods and aims of our inquiry. It is essential that we plot the trajectories of the tools of our trade.

In the past twenty years several French philosophers of science of the period prior to the Second World War have become the object of a more thorough and systematic investigation: first Duhem and Poincaré, then Meyerson and Metzger. Chimisso has convincingly argued in favor of adding to our list Lévy-Bruhl and Brunschvicg. We now have a whole series of philosophers, among whom the connections are numerous. Historical research has not only focused on individuals; work is currently been directed toward the content of journals as well as societies and institutions. Networks of relations among scholars are being extensively explored. In consequence, our picture of the field and our understanding of the nature of philosophy of science is being deeply modified.

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17 Hacking, 2002, p. 23.

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