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ASPECTS OF CURRENT HISTORY OF PHILOSOPHY OF SCIENCE
IN THE FRENCH TRADITION

FRENCH PHILOSOPHY OF SCIENCE AND
'MAINSTREAM' PHILOSOPHY OF SCIENCE

When Thomas Uebel invited me to write a paper on the current situation of history of French philosophy of science, I must admit that I found the task a little daunting. I do not think that it is possible to do justice to the diverse research programmes that scholars in different countries are developing, or to present them as a coherent whole. I would like, however, to make some remarks on the state of this particular field of study, with two provisos: one is that my perspective is somewhat centred in my experience in Great Britain, although it is not limited to it, the other is that I do not aim at an overall presentation of the current state of the study of history of French philosophy of science. Inevitably, my remarks will mainly refer to that part of French philosophy of science that is the object of my own research. I am confident, however, that Anastasios Brenner in his commentary will correct my necessarily partial presentation.

Especially from the point of view of somebody working in the English-speaking world, French philosophy of science appears to be an area of study with clearer boundaries than other national traditions. There seems to be a general understanding that French philosophy of science is different from 'mainstream' philosophy of science: this difference has been made official, as it were, in reference works and Encyclopaedias. In this, the *Routledge Encyclopedia of Philosophy* is paradigmatic: it has two entries, one for 'Philosophy of Science', and another, contributed by Gary Gutting, for 'French philosophy of science'.

French philosophy of science is not perceived as autonomous only by English-speaking philosophers. Indeed, the same distinction as that of the *Routledge Encyclopedia of Philosophy* has been proposed by French-language scholars. Dominique Lecourt, for instance, in his overview of the philosophy of the sciences, has presented this discipline first as a largely Austrian and Anglo-American affair (although Auguste Comte is present as a founder father), and then has introduced the 'French tradition of philosophical reflection on the sciences' as autonomous from the tradition of logical positivism and its legacy. Lecourt has explained that the distinctive identity of this tradition mainly rests on its constant link between

history and philosophy of science, and on the rejection of empiricism and of a ‘certain logical formalism’.¹

In fact, there is little difference between Gutting’s and Lecourt’s choices of illustrious names for the pantheon of French philosophy of science, and both place Gaston Bachelard and Georges Canguilhem at the centre of their presentations. Unsurprisingly for a philosopher who has promoted Bachelard’s ideas arguably like no other, Lecourt has declared the former to be the ‘emblematic figure’ of the ‘French tradition of philosophy of science’, and has presented Georges Canguilhem as developing Bachelard’s philosophy. In Lecourt’s account, François Dagognet is the direct inheritor of this tradition, which for him has also produced thinkers who do not sit completely comfortably under the heading of philosophy of science: Michel Foucault and Louis Althusser.² Like Lecourt, Gutting has dedicated in-depth analyses not only to Bachelard and Canguilhem, but also to Michel Foucault and Michel Serres.³ The presence of Foucault is particularly important for an English-speaking readership, who is much more likely to be familiar with his writings than with those of either Bachelard or Canguilhem, to this day not all translated into English.⁴ Indeed, some readers would have heard of them because of Foucault, not least due to Gutting himself: his book on Foucault opens with a chapter dedicated to these two philosophers.⁵

Both Lecourt and Gutting provide backgrounds for the major philosophers of the ‘French tradition’ in philosophy of science: the former presents as the ‘fathers’ of this tradition Condorcet, Augustin Cournot and Auguste Comte, but mainly focuses on Pierre Duhem, Henri Poincaré, Emile Meyerson, Abel Rey, Léon Brunschvicg and Alexandre Koyré. Gutting introduces the main part of his article by sketching a history of French philosophy of science in which the main characters are Descartes, the Enlightenment, Auguste Comte, Pierre Duhem, Emile Meyerson and Henri Poincaré. However, the centrality of Bachelard and

1 Dominique Lecourt, *La philosophie des sciences*. Paris: Presses Universitaires de France 2001, p. 90.

2 Ibid, pp. 113-4.

3 Gary Gutting, “French philosophy of science,” in Craig (Ed), *Routledge Encyclopedia of Philosophy*. London: Routledge, Retrieved March 09, 2009, from <http://www.rep.routledge.com/article/Q038> 1998.

4 Canguilhem’s works that have not as yet been translated into English include Georges Canguilhem, *La formation du concept de réflexe aux XVII^e et XVIII^e siècles*. Paris: Presses Universitaires de France 1955; Bachelard’s books not available in English include: Gaston Bachelard, *L’activité rationaliste de la physique contemporaine*. Paris: Presses Universitaires de France 1951; Gaston Bachelard, *Le matérialisme rationnel*. Paris: Presses Universitaires de France 1972 [1953]; Gaston Bachelard, *Le rationalisme appliqué*. Paris: Presses Universitaires de France 1986 [1949]; Gaston Bachelard, *Le pluralisme cohérent de la chimie moderne*. Paris: Vrin 1973 [1932]; Gaston Bachelard, *L’intuition de l’instant*. Paris: Stock 1992 [1931].

5 Gary Gutting, *Michel Foucault’s Archaeology of Scientific Reason*. Cambridge: Cambridge University Press 1989.

Canguilhem is hard to miss in these as in other presentations of French philosophy of science. Indeed, Bachelard and Canguilhem's 'historical epistemology' has come to be synonymous with French philosophy of science.

The trademark of these philosophers, and what arguably most sharply distinguishes them from their Anglo-American counterparts, is the importance of history for their philosophy – and indeed of philosophy for their history. In fact, Lecourt also calls French philosophy of science 'philosophical history of the sciences'.⁶ As a consequence, often its practitioners have been variously designated as philosophers or historians: Pierre Duhem and Alexandre Koyré have been considered sometimes historians and sometimes philosophers; Abel Rey published both philosophical and historical works;⁷ Hélène Metzger may be chiefly known for her works on seventeenth and eighteenth-century chemistry, but she also wrote a philosophical book on scientific concepts, and many historiographical papers;⁸ Léon Brunschvicg considered himself a philosopher, but this did not stop him being regarded by some, including George Sarton, as a historian of science, such was his interest in history of science and his attention to the historical detail.⁹ Indeed, Bachelard's and Canguilhem's doctrines have not only been called 'historical epistemology', but also 'epistemological history', notably by Michel Foucault;¹⁰ Dominique Lecourt has distinguished between Bachelard's 'historical epistemology' and Canguilhem's 'epistemological history', a distinction further developed

6 Lecourt, *La philosophie des sciences*, p. 90.

7 Abel Rey's philosophical works comprise monographs (e.g. Abel Rey, *Le retour éternel et la philosophie de la physique*. Paris: Flammarion 1927), textbooks (Abel Rey, *Éléments de philosophie scientifique et morale*. Paris: Cornely 1903) and articles (e.g. Abel Rey, "Sur le positivisme absolu", in *Revue philosophique* 34, no. 68 1909, Abel Rey, "Vers le positivisme absolu", in *Revue philosophique* 34, no. 67 1909, Abel Rey, "Pour le réalisme de la science et de la raison", in *Revue de métaphysique et de morale* 19, no. 4 1911); his historical works include a five-volume history of ancient science: Abel Rey, *La science dans l'antiquité, vol.1: La science orientale avant le grecs*. Paris: La Renaissance du livre 1930; Abel Rey, *La science dans l'antiquité, vol. 2: La jeunesse de la science grecque*. Paris: La Renaissance du livre 1933; Abel Rey, *La science dans l'antiquité, vol. 3: La maturité de la pensée scientifique en Grèce*. Paris: La Renaissance du livre 1939, Abel Rey, *La science dans l'antiquité, vol. 4: L'apogée de la science technique grecque: Les sciences de la nature et de l'homme, les mathématiques d'Hippocrate à Platon*. Paris: La Renaissance du livre 1946, Abel Rey, *La science dans l'antiquité, vol. 5: L'apogée de la science technique grecque: L'essor de la mathématique*. Paris: La Renaissance du livre 1948.

8 Hélène Metzger, *Les concepts scientifiques*. Paris: Alcan 1926; her historiographical papers have been re-published in: Hélène Metzger, *La méthode philosophique en histoire des sciences. Textes 1914-1939, réunis par Gad Freudenthal*. Paris: Fayard 1987.

9 See Brunschvicg, letter to Sarton of 2 February 1923 (Houghton Library, Sarton Papers, bMS Am 1803/1803.1).

10 Michel Foucault, *The Archaeology of Knowledge*. London: Tavistock 1972 [1969], p. 190.

by Jean Gayon and Hans-Jörg Rheinberger.¹¹ Along with history, another research focus of extreme importance for many leading French philosophers of science has been the study of the mind.

UNDERSTANDING SCIENCE AND UNDERSTANDING THE MIND IN HISTORY

The integration of history and philosophy did not start with Bachelard or Canguilhem, although these two philosophers have often been presented, or perceived, as initiators of a tradition, especially in English-language criticism.¹² From the point of view of pure intellectual history, the philosophical tradition of interpreting historical development was obviously not new to French philosophy. More specifically, there existed a tradition that was aimed at sketching the history of the mind, which included such classic models of the progress of the mind in history as Condorcet's, Cournot's and Comte's. Twentieth-century projects of studying the mind in history, which were central to French philosophy of science, certainly did not ignore those illustrious models (Bachelard even recalled the law of the three stages at the beginning of *La formation de l'esprit scientifique*,¹³ without needing to mention Comte). However, twentieth-century scholars at the centre of the reflection on science took history more seriously, in some cases extremely more seriously. Moreover, most of them opposed positivistic and mechanicistic views of historical progress. In this respect, Hélène Metzger's remarks on Comte are emblematic: she argued that his numerous examples from the history of science inevitably 'prove' his law of the three stages of the development of the mind, but only because he postulates this law as an 'inviolable dogma'.¹⁴ For her, in such philosophical representations of history as Comte's, historical events are chosen and interpreted to illustrate a theory, rather than being the basis for the theory. Not only the historian Metzger, but also philosophers, notably Brunschvicg, insisted that the mind should rather be studied *a posteriori*. Twentieth-century scholars did carefully consider previous models of the history of the mind, but often in a polemical way.

11 Dominique Lecourt, *Pour une critique de l'épistémologie*. Paris: Maspero 1972 ; Jean Gayon, "The Concept of Individuality in Canguilhem's Philosophy of Biology", in *Journal of the History of Biology* 31 1998.; Hans-Jörg Rheinberger, "Reassessing the Historical Epistemology of Georges Canguilhem," in Gutting (Ed), *Continental Philosophy of Science*. Oxford: Blackwell 2005.

12 The reception of Bachelard and Canguilhem in English-language criticism presented them as the beginning of a tradition that continued with Althusser and Foucault, as I shall discuss below in this article. An example of this is Gutting's book on Foucault cited above (note 5).

13 Gaston Bachelard, *La formation de l'esprit scientifique: contribution à une psychanalyse de la connaissance objective*. Paris: Vrin 1993 [1938], p. 8.

14 Hélène Metzger, "Tribunal de l'histoire et théorie de la connaissance scientifique," in Gad Freudenthal (Ed), *La méthode philosophique en histoire des sciences, textes 1914–1939*. Paris: Fayard 1987[1935], p. 27.

As I have discussed at length in my book *Writing the History of the Mind*,¹⁵ there is a much more historically-situated story to tell in order to understand the twentieth-century projects that are seen as the core of French philosophy of science, and that made possible the development of historical epistemology. These projects developed in an intellectual and institutional context that made a meaningful dialogue between history and philosophy possible. The importance that history of philosophy came to acquire in the first half of the twentieth century, especially at the Sorbonne, created the ideal environment for the development of historical epistemology. The analysis of professorships, courses, doctoral dissertations and publications, as well as the views of contemporaries, all demonstrate the strong development of history of philosophy in higher education in the first half of the twentieth century, in particular after the First World War.¹⁶ Not only did history of philosophy come to be regarded as an important subject, but it was also regarded as a philosophical subject. Many scholars, far from considering history as irrelevant to philosophy, believed that history was, in a fortunate expression, ‘the laboratory of philosophy’, that is to say the discipline that provides the empirical data to philosophy, and that allows philosophical doctrines to be tested. This is particularly true of the specific research programmes, which were elaborated during the Third Republic, whose questions Bachelard and Canguilhem inherited. The historians of philosophy Lucien Lévy-Bruhl and Léon Brunschvicg were central to these research programmes.

Lucien Lévy-Bruhl and Léon Brunschvicg, who between them occupied the Sorbonne chair of history of modern philosophy for almost the whole first half of the twentieth century,¹⁷ both aimed to study the mind. They both believed that the mind was not fixed, but rather changed in different times and places. As a consequence, it was not possible for them to study it *a priori*, without recourse to

15 Cristina Chimisso, *Writing the History of the Mind : Philosophy and Science in France, 1900 to 1960s*. Aldershot: Ashgate 2008.

16 For an analysis of this development in the early twentieth century, see *Ibid.*, Ch.1 and Jean-Louis Fabiani, *Les philosophes de la République*. Paris: Editions de Minuit 1988. Nineteenth-century history was rather different (about it see John I. Brooks, *The Eclectic Legacy: Academic Philosophy and the Human Sciences in Nineteenth-Century France*. Newark and London: University of Delaware Press and Associated University Press 1998), and it is important not to confuse the two periods.

17 Lévy-Bruhl was appointed to the Sorbonne chair of history of modern philosophy in 1908 and retired in 1927 (his chair was of ‘histoire de la philosophie moderne’, which includes what in English is generally called history of early modern philosophy. There was, however, disagreement about the exact chronological limits of ‘philosophie moderne’). Brunschvicg replaced Lévy-Bruhl in 1927 and retired in 1940. Lévy-Bruhl had been appointed *maître de conférences* at the Sorbonne in 1899, and was active after his retirement. Brunschvicg was made professor Emeritus at his retirement, but had to go into hiding, where he died in 1944, as the Germans were occupying France. For the details of their appointments, see Albert Guigue, *La Faculté des Lettres de l’Université de Paris depuis sa fondation (17 mars 1808) jusqu’au 1^{er} Janvier 1935*. Paris: Alcan 1935.

empirical research. Indeed, they intended to study the mind *a posteriori*, that is to say through documents that would show the way it works. They however elected to employ different sources. Brunschvicg chose to analyse intellectual history, in particular history of philosophy and history of science, whereas Lévy-Bruhl turned to the study of ethnologists' reports on the way of thinking of peoples in Papua New Guinea, Africa and South America. However, he had already developed his research aims and methods in his works on history of philosophy and ethics. Moreover, as he explicitly explained, even his work on primitive mentality was not meant to be a contribution to ethnology but rather to the study of human nature; his aim was to investigate the truth of Hume's and Comte's claims that human nature is universal.¹⁸

The importance of Brunschvicg's and Lévy-Bruhl's doctrines for the French tradition in philosophy of science cannot be overstated. Brunschvicg was Bachelard's mentor and supervisor on one of his doctoral dissertations,¹⁹ and supported him in his career. When Bachelard's dissertations were published, Brunschvicg, who had just been appointed to the prestigious chair of history of modern philosophy at the Sorbonne, immediately reviewed them in one of the two major philosophy journal, the *Revue de métaphysique et de morale*. In one of his reviews, he saluted his former student as a 'thinker of the first order';²⁰ his validation could not fail to produce a profound impression on the philosophical establishment. More importantly, many aspects of Brunschvicg's philosophy were the starting point of Bachelard's philosophy, including the aim to understand the mind by examining intellectual history, the view that the mind changes through history, and the idea that the objects of knowledge are not mind-independent. It is hardly surprising that Bachelard's philosophy has been presented as an original development of Brunschvicg's.²¹

18 Jean Duvignaud, *Le langage perdu. Essai sur la différence anthropologique*. Paris: Presses Universitaires de France 1973, p. 126; Lucien Lévy-Bruhl and al., "La mentalité primitive. Séance du 15 février 1923." in *Bulletin de la Société française de Philosophie* 23 1923.

19 Gaston Bachelard, *Etude sur l'évolution d'un problème de physique: la propagation thermique dans les solides*. Paris: Vrin 1973 [1927].

20 Léon Brunschvicg, "Etude sur l'évolution d'un problème de physique. La propagation thermique dans les solides, par Gaston Bachelard", in *Revue philosophique* 54 1929, p. 94; Léon Brunschvicg, "Essai sur la connaissance approchée, par Gaston Bachelard", in *Revue philosophique* 54 1929.

21 Jean Wahl, *Tableau de la philosophie française*. Paris: Gallimard 1962, p. 114; Gary Gutting, *French Philosophy in the Twentieth Century*. Cambridge: Cambridge University Press 2001, pp. 85-6; François Dagognet, "M. Brunschvicg et Bachelard", in *Revue de métaphysique et de morale* 70 1965, pp. 43-54; Gary Gutting, "Introduction: What is Continental Philosophy of Science?," in Gutting (Ed), *Continental Philosophy of Science*. Oxford: Blackwell 2005, p. 14.; Jacques Gagey, *Gaston Bachelard ou la conversion à l'imaginaire*. Paris: Rivière 1969, pp. 30, 54; Carlo Vinti, *Il soggetto qualunque: Gaston Bachelard fenomenologo della soggettività epistemica*. Napoli: Edizioni scientifiche italiane 1997, p. 168, 427-52; Teresa Castelão-Lawless, "Gas-

Lévy-Bruhl's impact on a variety of disciplines was remarkable; here it is sufficient to notice the important role that the reception of his work played in the doctrines of philosophers and historians of science. Just to mention a few, Hélène Metzger developed her concepts of mental *a priori* and expansive thought, as well as her theory of active analogy, with direct reference to Lévy-Bruhl's theory of primitive mentality;²² Abel Rey extensively cited Lévy-Bruhl in his discussion of the *outillage mental*, or mental tool, in the first article of the *Encyclopédie française*;²³ both Léon Brunschvicg and Gaston Bachelard referred to Lévy-Bruhl's theory, accepting some aspects and rejecting others, in order to define their own views of past intellectual history and their conceptions of the mind.²⁴

The use of history in order to answer philosophical questions, and in particular questions about the functioning of the mind, was what characterized the work not only of philosophers, but also of historians – first of all the historians of *mentalités*, including Lucien Febvre, and the historians of science, including Alexandre Koyré. However, the present disciplinary distinctions did not hold in the inter-war period in France. New disciplines, including ethnology,²⁵ sociology, experimental psychology and general history of the sciences had strong links with philosophy, from which they originated. Their practitioners, to different degrees, did aim to differentiate their disciplines from philosophy, but they kept their institutional and intellectual links with it very well alive. Philosophers, sociologists, ethnologists, psychologists, historians of science and others discussed the mind, history, society and science together at the Société française de philosophie, the Centre de synthèse, and international conferences, and shared students and projects. This does not mean that they necessarily agreed with one other's perspectives and methods, but even when they disagreed, they did so reflectively, referring to the other scholars' approaches.

ton Bachelard et le milieu scientifique et intellectuel français," in Pascal Nouvel (Ed), *Actualité et postérités de Gaston Bachelard*. Paris: Presses Universitaires de France 1997, pp. 101-15.

- 22 Hélène Metzger, „Lucien Lévy-Bruhl, *L'âme primitive*”, in *Isis* 9 1927, p. 486, n. 1.; Hélène Metzger, “*L'a priori* dans la doctrine scientifique et l'histoire des sciences”, in *Archeion* 18 1936, p. 37.; Hélène Metzger, “La philosophie de Lévy-Bruhl et l'histoire des sciences”, in *Archeion* 12 1930; Hélène Metzger, *Attraction universelle et religion naturelle chez quelques commentateurs anglais de Newton. Première partie. Introduction Philosophique*. Paris: Hermann 1938.
- 23 Abel Rey, “L'évolution de la pensée: De la pensée primitive à la pensée actuelle,” in Febvre (Ed), *Encyclopédie française*. Paris: 1937.
- 24 Léon Brunschvicg, *Les étapes de la philosophie mathématique*. Paris: Alcan 1912; Ch. 1; Léon Brunschvicg, “Nouvelles études sur l'anime primitive”, in *Revue des deux mondes* 52 1932; Gaston Bachelard, *La psychanalyse du feu*. Paris: Gallimard 1949 [1938].
- 25 For the sake of simplicity, I translate *ethnologie* with ‘ethnology’; however, *ethnologie* is more correctly translated as ‘cultural anthropology’.

It would be far too long here to discuss the disciplinary, institutional and personal networks of French academia, but it may be interesting to recall Abel Rey's career as an example of the disciplinary fluidity that was standard at that time in France. Abel Rey was Bachelard's other supervisor, and was also his predecessor in the Sorbonne chair of history and philosophy of the sciences. Before his Sorbonne appointment, he had been professor of philosophy at Dijon where he founded the laboratory of experimental psychology. At the Sorbonne he founded the Institut d'histoire des sciences et techniques, and, outside academia, closely collaborated with the historians of the Centre de synthèse. Lucien Febvre, who generally speaking did not particularly like philosophers, had nevertheless a close collaboration with Rey; indeed he entrusted the latter with the first volume of the *Encyclopédie française*, dedicated to the *outillage mental*. Once again, the study of the mind through history was what linked many of these scholars. French intellectual and institutional history created a fertile soil for the development of a distinctive tradition in philosophy of science, that produced historical epistemology.

HAS HISTORICAL EPISTEMOLOGY STOLEN THE SHOW? OTHER ASPECTS OF FRENCH PHILOSOPHY OF SCIENCE

The centrality accorded by Dominique Lecourt and Gary Gutting to historical epistemology in their presentation of French philosophy of science is shared by the large majority of representations of this tradition, both inside and outside France. There is little doubt that historical epistemology has been the dominant image of French philosophy of science. Indeed, for a long time in France Bachelard's philosophy has represented a sort of orthodoxy. As Claude Debru has put it, the central concept of Bachelard's philosophy of science became the 'catechism' of the philosophy of science 'made in France'.²⁶ This image is now being challenged as partial. Moreover, historians of philosophy of science are presenting works that show that it is not correct to see a complete separation, indeed an opposition, between French philosophy of science on the one hand, and logical positivism, its legacy, and current mainstream philosophy of science, on the other. An excellent example of these attempts is Anastasios Brenner's *Les origines françaises de la philosophie des sciences*.²⁷ Brenner explicitly points out two assumptions that are often made concerning French philosophy of science: one is that its starting point is the philosophy of Gaston Bachelard, and the second is that the French tradition in philosophy of science is autonomous and irremediably different from mainstream philosophy of science, logical positivism and post-positivism. He has shown that

26 Claude Debru, *Georges Canguilhem, science et non-science*. Paris: Editions rue d'Ulm/Presses de l'École normale supérieure 2004, p. 67.

27 Anastasios Brenner, *Les origines françaises de la philosophie des sciences*. Paris: Presses Universitaires de France 2003.

French conventionalism, especially in Poincaré's and Duhem's versions, but also in those of Edouard Le Roy and Gaston Milhaud, played an important role in the formation of current philosophy of science. In so doing, Brenner aims to revise the widespread view that current (one could add analytical-oriented) philosophy of science has its roots only in Austria and in logical positivism.

It is very welcome that scholars have been working towards showing that the French tradition in philosophy of science has been far richer, and more complex than the standard image would allow. For example, the philosophy of one of Bachelard's critical targets, Emile Meyerson – the 'forgotten philosopher' as both Jean Largeault and Eva Telkès-Klein have called him²⁸ – is being brought to the attention of scholars again, for instance in the project of Bernadette Bensaude-Vincent and Frédéric Fruteau de Laclos.²⁹ Some scholars have also turned their attention to Meyerson outside France: among the latter group they have been intellectual historians and historians of philosophy, such as Mario Biagioli and Michael Heidelberger respectively, but also philosophers of science in the analytical tradition, such as Elie Zahar and Peter Lipton.³⁰

The epistemology of other scholars, for instance of Hélène Metzger, has been re-discovered; Gad Freudenthal has given a tremendous impulse to the study of her work; many other critics have analyzed her philosophical work, including two members of our Team E, Michael Heidelberger and I, and many others, such as Ian Golinski, John Christie, Ilana Löwy, Michel Blay, Christine Blondel, Pietro Redondi, Lucia Tosi and Bernadette Bensaude-Vincent.³¹ Metzger had not been forgotten, but she had been mainly remembered as a historian of chemistry.

28 Jean Largeault, "Emile Meyerson, philosophe oublié", in *Revue philosophique*, no. 3 1992; Eva Telkès-Klein, "Emile Meyerson: A Great Forgotten Figure", in *Iyyun* 52 2003; see also Eva Telkès-Klein, "Emile Meyerson, d'après sa correspondance. Une première ébauche", in *Revue de synthèse* 5^e série 2004.

29 See Bernadette Bensaude-Vincent, "Chemistry in the French Tradition of Philosophy of Science: Duhem, Meyerson, Metzger and Bachelard", in *Studies in History and Philosophy of Science* 36 2005; Frédéric Fruteau de Laclos, 'La philosophie de l'intellect d'Emile Meyerson. De l'épistémologie à la psychologie' (thesis: Université de Paris-X Nanterre 2004). Fruteau de Laclos' dissertation has now been partly turned into a book: Frédéric Fruteau de Laclos, *L'épistémologie d'Emile Meyerson. Une anthropologie de la connaissance* Paris: Vrin 2009. See also Anastasios Brenner, "Le statut de l'épistémologie selon Meyerson", in *Archives de philosophie* 70, no. 3 2007. I understand that a number of publications on Meyerson, including of volume of unpublished primary sources, is coming out in 2009, and a conference is being organized to mark the event.

30 Elie Zahar, "Meyerson's 'Relativistic Deduction': Einstein Versus Hegel", in *The British Journal for the History of Science* 38 1987; P. Lipton, "Explanation in the Sciences – Meyerson, E", in *Annals of Science* 51, no. 2 1994.

31 See for instance the articles in Gad Freudenthal (Ed.), *Etudes sur/Studies on Hélène Metzger*. Leiden: Brill 1990: J.R.R. Christie, "Narrative and Rhetoric in Hélène Metzger's Historiography of Eighteenth Century Chemistry"; Jan Golinski, "Hélène Metzger et l'historiographie de la chimie du XVIII^e siècle; Bernadette Bensaude-

Because of the established tradition of studying the history of philosophy, the study of the history of philosophy of science has also been lively, and we can say mainstream in France. Moreover, although in France the reception of French philosophy of science has gone well beyond philosophy – it would be enough to recall how central many concepts of historical epistemology have been to the sociology of Pierre Bourdieu – the study of its history is a perfectly standard field of study for philosophers. A number of distinguished philosophers have worked on it, including Dominique Lecourt, François Dagognet, Jean Gayon, Etienne Balibar, Bernadette Bensaude-Vincent, Jean-Francois Braunstein, Michel Fichant, Anastasios Brenner, Claude Debru, Guillaume Le Blanc and Didier Gil, just to mention a few, in no particular order.³² In Italy too several philosophers have worked on

Vincent, “Un essai de vulgarisation: *La chimie dans l’Histoire du monde*”; Gad Freudenthal, “Epistémologie des sciences de la nature et herméneutique de l’histoire des sciences selon Hélène Metzger”; Gad Freudenthal, “Hélène Metzger: Eléments de biographie”; Gad Freudenthal, “Epistémologie des sciences de la nature et herméneutique de l’histoire des sciences selon Hélène Metzger”; Ilana Löwy, “Constructivist epistemologies: Metzger and Fleck”; Michel Blay, “Léon Bloch et Hélène Metzger: La quête de la pensée newtonienne”; Christine Blondel, “Hélène Metzger et la cristallographie: de la pratique d’une science à son histoire”; Martin Carrier, “Some aspects of Hélène Metzger’s philosophy of science”; Pietro Redondi, “Henri Berr, Hélène Metzger et Alexandre Koyré: la religion d’Henri Berr”; in Agnès Biard, Dominique Bourel and Eric Brian (Eds.), *Henri Berr et la culture du XX^e siècle. Histoire, science et philosophie*. Paris: Albin Michel/Centre international de synthèse 1997; Lucia Tosi, “Hélène Metzger y la historia de la química”, in *Saber y Tiempo* 9 2000; Cristina Chimisso, “Hélène Metzger: the history of science between the study of mentalities and total history”, in *Studies in History and Philosophy of Science Part A* 32, no. 2 200; Cristina Chimisso and Gad Freudenthal, “A Mind of Her Own: Hélène Metzger to Emile Meyerson, 1933”, in *Isis* 94, no. 3 2003; Bensaude-Vincent, “Chemistry in the French Tradition of Philosophy of Science: Duhem, Meyerson, Metzger and Bachelard”, in *Studies in History and Philosophy of Science* 36 2005; Gad Freudenthal, “Hélène Metzger (1888–1944)”, in Bitbol and Gayon (Ed.), *L’épistémologie française, 1830–1970*. Paris: Presses Universitaires de France 2006.

- 32 Some of these scholars have extensively published on the history of French philosophy of the sciences, and I will not attempt to give a full list of their publications here. Elsewhere in this article I cite some of the works on this subject by Lecourt, Debru, Bensaude-Vincent and Brenner; I have also cited an article by Dagognet on Brunschvicg and Bachelard, but I would like to add here at least two other works: François Dagognet, *Gaston Bachelard: sa vie, son œuvre*. Paris: Presses Universitaires de France 1965, and François Dagognet, *Georges Canguilhem: Philosophe de la vie*. Le Plessis-Robinson: Institut Synthélabo 1997. Balibar is better known for his works on Althusser, but he has also published on Canguilhem: see Etienne Balibar, “Science et vérité dans la philosophie de Georges Canguilhem,” in E. Balibar et al. (Ed.), *Georges Canguilhem: Philosophe, historien des sciences. Actes du colloque (6-7-8 décembre 1990)*. Paris: Albin Michel 1993. See also Guillaume Le Blanc, *Canguilhem et les normes*. Paris: Presses Universitaires de France 1998, Guillaume Le Blanc, *La vie humaine: anthropologies et biologie chez Georges Canguilhem*. Paris: Presses Universitaires de France 2002. Didier Gil, *Bachelard et la culture scientifique*. Paris: Presses Universitaires de

the history of French philosophy of science, including Francesca Bonicalzi, Pietro Redondi, Gaspare Polizzi and Carlo Vinti.³³

The present discussion about the identity of French philosophy of science is possible thanks to traditions that value the study of the history of philosophy, including as a tool to stimulate further philosophical research. In this context, this discussion has both historical and philosophical meanings.

THE CURIOUS FATE OF FRENCH PHILOSOPHY OF SCIENCE IN THE ENGLISH-SPEAKING LANDS

The fortunes of French philosophy of science in English-speaking countries have been uneven to say the least. In the 1970s, Anglophone readerships did show a considerable interest in Bachelard's and Canguilhem's ideas, which they received mainly by reading Dominique Lecourt's works.³⁴ Through Lecourt, Bachelard's

France 1993; Michel Fichant, "L'épistémologie en France," in Chatelet (Ed), *Histoire de la philosophie: le 20^e siècle*. Paris: Hachette 1973; J.-F. Braunstein, "Canguilhem avant Canguilhem", in *Revue d'histoire des sciences* 53, no. 1 2000, and Jean-François Braunstein, "Abel Rey et les débuts de l'Institut d'histoire des sciences et techniques (1932–1940)," in M. Bitbol and J. Gayon (Ed.), *L'épistémologie française, 1830–1970*. Paris: Presses Universitaires de France 2006. Articles on Canguilhem by Braunstein, Lecourt, Debru and Delaporte (and Ian Hacking and Arild Utaker) are collected in Jean-François Braunstein, (Ed.), *Canguilhem: Histoire des sciences et politique du vivant*. Paris: Presses Universitaires de France 2007; in fact, some of these authors have published on French philosophy of science in other edited volumes, including François Bing, Jean-François Braunstein and Elisabeth Roudinesco, (Eds.), *Actualité de Georges Canguilhem. Le normale et le pathologique*. Paris: Synthélabo 1998. and Jean Gayon and Jean-Jacques Wunenburger, (Eds.), *Bachelard dans le monde*. Paris: Presses Universitaires de France 2000.

33 Francesca Bonicalzi, *Leggere Bachelard: le ragioni del sapere*. Milano: Jaca Book 2007; Gaspare Polizzi, *Forme di sapere e ipotesi di traduzione; materiali per una storia dell'epistemologia francese*. Milano: Angeli 1984; Gaspare Polizzi, *Tra Bachelard e Serres: aspetti dell'epistemologia francese del Novecento*. Messina: Armando Siciliano 2003; Pietro Redondi, *Epistemologia e storia della scienza. Le svolte teoretiche da Duhem a Bachelard*. Milano: Feltrinelli 1978, Pietro Redondi, "Science moderne et histoire des mentalités. La rencontre de Lucien Febvre, Robert Lenoble et Alexandre Koyré", in *Revue de synthèse* 104 1983; Pietro Redondi and P.V. Pillai, (Eds.), *The History of Science: The French Debate*. London: Sangam Books 1989; Pietro Redondi, "Henri Berr, Hélène Metzger et Alexandre Koyré: la religion d'Henri Berr," in Agnès Biard, Dominique Bourrel, Eric Brian, (Eds), *Henri Berr et la culture du XX^e siècle. Histoire, science et philosophie*, Paris, Albin Michel/Centre international de synthèse 1997; Sabyasachi Bhattacharya and Pietro Redondi, (Eds.), *Techniques to Technology: A French Historiography of Technology*. London: Sangam Books 1990; Carlo Vinti, *Il soggetto qualunque: Gaston Bachelard fenomenologo della soggettività epistemica*.

34 Dominique Lecourt, *Marxism and Epistemology. Bachelard, Canguilhem and Foucault*. London: NLB 1975. This book comprises the translation of two French books: Lecourt,

and Canguilhem's philosophies were read in relation to Althusser; with the lessening of the interest in Althusser, the attention to Bachelard's and Canguilhem's philosophies, and I daresay to French philosophy of science, also waned. In the 1980s, Mary Tiles made an exemplary effort to render Bachelard comprehensible and acceptable to Anglo-American philosophers of science.³⁵ Despite the quality of her work, her effort had a limited effect, apart from sporadic articles, like for instance one by Mary Tijiattas who attempted to reconcile Bachelard's ideas with a view of scientific realism common in the analytical tradition, and one by Dan McArthur, who nine years later responded to her,³⁶ or recent attempts to bring together analytic philosophy of science with 'Continental' philosophy of science, such as Christopher Norris'.³⁷ Whereas in France Bachelard's philosophy may have been a sort of 'orthodoxy', in English-language countries it has been regarded as a niche interest.

The little attention that 'mainstream' philosophers of science have paid to the French tradition is largely due to its image, dominated by historical epistemology, which suggests an intimate integration of history and philosophy. In truth, this image on the whole is not misleading. Although not all philosophers of science in this tradition have put history at the core of their doctrines, it is undeniable that history has played a major role in French philosophy of science, and not only in historical epistemology, but also in other doctrines. Even critics who aim to show the rich tradition in philosophy of science outside historical epistemology, nevertheless stress the importance of history for other philosophers of science, as Brenner does in relation to Duhem.³⁸

This centrality of history has been an obstacle for the reception of French philosophy of science by analytical philosophers, who have been by and large little interested in history. I do not mean to ignore the impact that French philosophy of science has had in English-language philosophy of science. The use that philosophers of science writing in English have made of works in the French tradition has even prompted critics like Denis Vernant to include under the 'historical epistemology' heading not only Koyré, Bachelard and Canguilhem, but also Paul Feyer-

Pour une critique de l'épistémologie, Dominique Lecourt, *L'épistémologie historique de Gaston Bachelard*. Paris: Vrin 1969.

35 Mary Tiles, *Bachelard: Science and Objectivity*. Cambridge: Cambridge University Press 1984.

36 M. Tijiattas, "Bachelard and Scientific Realism", in *Philosophical Forum* 22 1991; Dan McArthur, "Why Bachelard is not a Scientific Realist", in *Philosophical Forum* 33, no. 2 2002.

37 Christopher Norris, *Minding the Gap: Epistemology and Philosophy of Science in the Two Traditions*. Amherst, Mass.: University of Massachusetts Press 2000, Christopher Norris, *Epistemology*. London: Continuum 2005.

38 Anastasios Brenner, "The French Connection: Conventionalism and the Vienna Circle," in Michael Heidelberger and Friedrich Stadler (Eds.), *History of Philosophy of Science: New Trends and Perspectives*. Dordrecht–Boston–London: Kluwer Academic Publishers 2002.

abend and Thomas Kuhn.³⁹ It is well-known that in the preface to his *The Structure of Scientific Revolutions*, Kuhn acknowledged the importance that the writings of Alexandre Koyré, Emile Meyerson and Hélène Metzger had for the development of his own view of science.⁴⁰ It is also true that from Kuhn onwards there has been a reception, although selective, of French philosophy of science into Anglo-American philosophy of science, and a keener attention to history, such as in the works of Ian Hacking and Gerald Holton.⁴¹ However, the reception of French philosophy of science has not become mainstream. If any proof were necessary, it would suffice to see the little space that the French tradition in philosophy of science finds in mainstream English-language publications dedicated to the philosophy of science. To mention an example, in the journal *Philosophy of Science* in the years between 1934 and 2008 I could only find one full article dedicated to Bachelard, Teresa Castelão-Lawless' piece on phenomenotechnique,⁴² and none about Canguilhem. Duhem fares better, relatively speaking, as he is mentioned in eleven articles, although often within the expression 'Duhem's problem', with little or no direct reference to Duhem himself. This of course does not mean that there are no academics who are members of philosophy departments in English-speaking countries and who at the same time work on French philosophy of science and its history: they do exist, and indeed I am one of them. However, there is no escaping the fact that we are in a small minority.

In fact, the reception and use of French philosophy of science in the English-speaking world seems to be stronger outside philosophy of science. For instance, after Canguilhem's death in 1995, several volumes and journals' special issues on this philosopher were published. In English, it was *Economy and Society*, a social sciences journal, that dedicated a double issue to him.⁴³ The guest editors, Nikolas Rose and Thomas Osborne, are sociologists, as are others among the English-language contributors to the volume, namely Monica Greco, Lorna Weir and

39 D. Vernant, "Epistémologie," in S. Auroux (Ed.), *Encyclopédie philosophique universelle. Vol. 2 : Les notions philosophiques*. Paris: Presses Universitaires de France 1990. On this theme, see also A. Brenner, "Which historical epistemology? Kuhn, Feysabend, Hacking and Bachelard's school", in *Revue de métaphysique et de morale*, no. 1 2006.

40 Thomas S. Kuhn, *The Structure of Scientific Revolutions*. Chicago: The University of Chicago Press 1996 [1962], pp. vii-viii.

41 See for instance Gerald Holton, *Thematic Origins of Scientific Thought: Kepler to Einstein*. Cambridge, Massachusetts: Harvard University Press 1973; Gerald Holton, "Einstein and the Cultural Roots of Modern Science", in *Science in Culture* 127, no. 1 1998; Ian Hacking, *The Emergence of Probability*. Cambridge: Cambridge University Press 1975; Ian Hacking, *The Taming of Chance*. Cambridge: Cambridge University Press 1990; Ian Hacking, *Historical Ontology*. Cambridge, Mass.: Harvard University Press 2002.

42 Teresa Castelão-Lawless, "Phenomenotechnique in Historical Perspective: Its Origins and Implications for Philosophy of Science", in *Philosophy of Science* 62 1995.

43 *Economy and Society* 27, 2/3 (1998).

Mike Gane; Paul Rabinow, who also contributed an article, is a cultural anthropologist.⁴⁴ The only contributor based in an English-language philosophy department appeared to be Ian Hacking, who later moved to the Collège de France. By contrast, the articles by Francophone authors, although comprising a paper by Pierre Bourdieu, were mainly by philosophers, including Dominique Lecourt, Alain Badiou and François Delaporte.⁴⁵ At least in Britain, the few scholars who work on French philosophy of science have a variety of backgrounds, including French, as in the case of Mary McAllester.⁴⁶ Social scientists have employed in particular the work of Michel Foucault, who, for the scholar of history of philoso-

44 As is often the case in English-speaking scholarship, here the interest in Canguilhem is linked to a previous interest in the work of Foucault; indeed several of the English-speaker contributors to the *Economy and Society's* special issue on Canguilhem have extensively worked on Foucault; see for instance: Hubert L. Dreyfus and Paul Rabinow, *Michel Foucault: Beyond structuralism and Hermeneutics*. Brighton: Harvester 1982; Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception*. trans. A.M. Sheridan, London: Routledge 2003 [1963]; Michel Foucault, *The Essential Works of Michel Foucault, 1954–1984. Vol. 2, Aesthetics*, edited by Paul Rabinow. London: Penguin 2000; Michel Foucault, *The Essential Works of Michel Foucault, 1954–1984. Vol. 3, Power*, edited by Paul Rabinow. London: Penguin 2002; Paul Rabinow, (Ed.), *The Foucault Reader*. London: Penguin, 1991 [1986]; Andrew Barry, Thomas Osborne and Nikolas Rose, (Eds.), *Foucault and Political Reason: Liberalism, Neo-liberalism and Rationalities of Government*. Chicago and London: Chicago University Press and UCL Press 1995. Rabinow also wrote the introduction of the English-language anthology of Canguilhem's work: Paul Rabinow, "Introduction: A Vital Rationalist," in F. Delaporte (Ed), *A Vital Rationalist: Selected Writings from Georges Canguilhem*. New York: Zone Books 1994.

45 See T. Osborne and N. Rose, "Introduction", in *Economy and Society* 27, no. 2-3 1998; and the articles in the same double issue: Alain Badiou, "Is there a Theory of the Subject in Canguilhem?"; Pierre Bourdieu, "Georges Canguilhem: An Obituary Notice"; Georges Canguilhem, "The Decline of the Idea of Progress"; François Delaporte, "Foucault, Epistemology and History"; Monica Greco, "Between Social and Organic Norms: Reading Canguilhem and 'Somatisation'"; Ian Hacking, "Canguilhem amid the Cyborgs"; Dominique Lecourt, "Georges Canguilhem on the Question of the Individual"; David Macey, "The Honour of Georges Canguilhem"; Paul Rabinow, "French Enlightenment: Truth and Life"; Nikolas Rose, "Life, Reason and History: Reading Georges Canguilhem"; M. Gane, "Canguilhem and the Problem of Pathology"; C. Gordon, "Canguilhem: Life, Health and Death"; L. Weir, "Cultural Intertexts and Scientific Rationality: The Case of Pregnancy Ultrasound".

46 Mary McAllester has worked on Bachelard's philosophy as a whole, rather than only on his philosophy of science (see for instance Mary McAllester Jones, *Gaston Bachelard, Subversive Humanist: Texts and Readings*. Madison, Wisc.: University of Wisconsin Press 1991; Mary McAllester Jones, "Bachelard's Metaphors of the Self", in *French Studies* 54, no. 1 2000; Mary McAllester Jones, "The Redemptive Instant – Bachelard on the Epistemological and Existential Value of Surprise", in *Philosophy Today* 47, no. 5 2003.); she has also worked on Canguilhem: Mary McAllester Jones, "Georges Canguilhem on science and culture: learning biology's lessons", in *French Cultural Studies* 11, no. 31, 2000.

phy of science, is the inheritor of the tradition of historical epistemology. Within the social sciences, Foucault's work has generally not been considered philosophy, but rather 'theory', that is the theoretical part of the sociologists' work. Foucault has also been vindicated for science studies, as Martin Kusch has done.⁴⁷ The large majority of 'Continental philosophers' do not focus on philosophy of science. However, there are exceptions; for instance David Webb, who mainly works on Michel Foucault and Michel Serres, and also on Bachelard and Cavailles.⁴⁸ I shall not go on with this list; my general point is that French philosophy of science has been received across several disciplines, but at the same time has played a minor role within philosophy of science.

In addition to the difficulties of the encounter between traditions that have regarded science from different perspectives, another obstacle has been the little attention that analytical philosophers, who are still very dominant in the English-speaking world, on the whole pay to the history of their own discipline. Not only history of French philosophy of science, but history of philosophy of science in general appears to be a minority interest; indeed there is a rather weak presence of history of philosophy, let alone of history of philosophy of science, in the universities of English-speaking countries, especially in the UK. This presence is particularly weak within philosophy. As I have discussed, history of philosophy, and intellectual history in general, played a crucial role in the philosophical debate in France, indeed in the debate across many disciplines. History of philosophy, not just history of philosophy of science, has not been as integral to philosophy in the English-speaking world as it has been in France, and, in a different way, in Italy. At least in Britain, it is not unusual for philosophy departments not to have even a single historian of philosophy. Moreover, history of philosophy has largely been history of early modern philosophy, as even a cursory glance at the publications in journals dedicated to the history of philosophy would show. This narrow focus has left out the bulk of philosophy of science. However, the situation is changing. The *British Journal for the History of Philosophy* has recently appointed two associated editors, one for ancient philosophy, and one for history of philosophy from Kant onwards, because it has now been recognized that history of philosophy does include these two periods. The creation, in the mid-1990s, of HOPOS, the learned society specifically dedicated to the study of the history of the philosophy of science, has also created an interesting international context for this subdiscipline.

I probably presented a rather divided image of the current situation in the history of French philosophy of science, or at least of that part of this field with which

47 Martin Kusch, *Foucault's Strata and Fields: An Investigation into Archaeological and Genealogical Science Studies*. Dordrecht: Kluwer 1991.

48 See for instance David Webb, "Microphysics – from Bachelard and Serres to Foucault", in *Angelaki-Journal of the Theoretical Humanities* 10, no. 2 2005; David Webb, "The Complexity of the Instant: Bachelard, Levinas, Lucretius," in R. Durie (Ed.), *Time and the Instant: Essays in the Physics and the Philosophy of Time*. Manchester: Clinamen Press 2000.

I am most familiar. I am afraid I have also presented a somewhat bleak image of the state of health of this subdiscipline in the English-speaking world. Many of us historians of philosophy of science think that the study of the history of philosophy of science should be part of philosophy of science, or at least very relevant to it, but this is not a universally shared view, to say the least. However, although I think that the history of French philosophy of science does not receive the attention it deserves within philosophy of science, I also think that the present situation is open to change, and indeed changing, and that programmes and initiatives like the present one will have a significant impact.

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