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# SPECIAL ISSUE: NINETEENTH-CENTURY FRENCH PHILOSOPHY OF SCIENCE: POSITIVISM AND ITS CONTINUATIONS

## SPECIAL ISSUE INTRODUCTION

Warren Schmaus and Olivier Rey

### 1. Introduction

Today we talk about postpositivism. But which positivism is it that postpositivism would leave behind? It would appear to be the neopositivism or logical positivism of the Vienna Circle more than the positivism of Auguste Comte. This way of considering positivism is emblematic of a certain bias: the history of French philosophy of science has been relatively neglected compared to that of Central Europe. Some great figures, such as Pierre Duhem or Henri Poincaré, are taken into consideration, but they are most often treated as if their philosophy were entirely their own creation, much like Athena springing from the head of Zeus. The reality is different: Duhem's and Poincaré's thought, each in their own way, has historical roots in the original positivism of Auguste Comte.

There is a certain irony to this neglect of the Comtean tradition. While the Vienna Circle logical positivists borrowed half of their name from it, they were hardly interested in studying the source of this philosophy. This relative lack of interest in the development of positivist ideas in France is somewhat paradoxical if we consider, for example, the political dimension that scholars of Vienna Circle have claimed in the thought of Rudolf Carnap, Otto Neurath, Hans Hahn, and Philip Frank. Such allegations are controversial: even though logical positivists may have had a political agenda, its connection with their philosophy of science is

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not clear. Indeed, their emphasis on testability as a criterion of meaning would have even undermined their political philosophies. On the other hand, when one turns to nineteenth-century France, one can only be struck by the intimate link between philosophy of science and political philosophy.

Such a link is particularly evident in Auguste Comte. His historical sense made him believe that “in the final analysis, instead of seeing in the past a web of monstrosities, one must be inclined, as a general thesis, to look upon society as having been, most often, as well led, in all respects, as the nature of things permitted” (Comte 1822/1970, 131). Eighteenth-century France, however, was one of the exceptions to this rule: society had evolved too much for the claims of the Catholic Church to spiritual magisterium, and of absolute monarchy to political authority, to be justified. Comte credited Enlightenment thought with having contributed powerfully to the overthrow of an outmoded order. But according to him, the difficulties of Europe in general, and of France in particular, in the nineteenth century came from the fact that Enlightenment thought, by its essentially critical character, was unsuitable for the proper reorganization of society: “Machines of war cannot, by a strange metamorphosis, suddenly become instruments of foundation” (59). Hence Comte’s efforts to elaborate a positive philosophy, as set out in his *Cours de philosophie positive* (1830–42). It is a question of laying the foundations of the new order that, at the stage of development it has reached, society demands. Comte’s philosophy of science is in no way subordinated to a political agenda. For all that, it is part of his vocation to found such an agenda. If some of his followers refused to follow Comte in this direction, others assumed this dimension of Comtean thought, while criticizing its overly dogmatic aspects and insisting, for example, on freedom of thought and expression.

Today’s postpositivism is essentially, as already stated, a post-neopositivism—which, far from burying positivism definitively, is reviving some of its original aspects. Many logical positivists tried to keep politics at arm’s length, be it because of the historical context—the convulsions that tore the European continent and the experience of the Holocaust or, in a different way, McCarthyism in the United States—or for philosophical reasons, their noncognitivism, according to which a political philosophy is merely an expression of attitudes and not a candidate for truth. But in the last generation, we have seen philosophers of science such as Philip Kitcher and Helen Longino turning once again to political issues, concerning the organization of science itself and the relations between the scientific community and society at large.

The same goes for the relationship to history. In their contribution to this issue, Fons Dewulf and Massimiliano Simons evoke Neurath’s and Rougier’s efforts in the 1930s to find allies, among French philosophers of science, for the international Unity of Science (*Einheit der Wissenschaft*) movement, promoted

by logical empiricists. Dewulf and Simons mention in this regard the correspondence Neurath had with Hélène Metzger. But Metzger, one of the rare ones to give an account of the translations in French of texts emanating from the Vienna Circle, “complained that the logical empiricists lacked an eye for the history of philosophy and science” and would have liked Carnap to study the history of philosophy before publishing new works.

Whereas the logical positivists gave little attention to history, the attitude of the nineteenth-century French positivists was quite different: the history of science often provided them with the battlefield on which epistemological battles were fought. From the start, philosophers such as Antoine-Augustin Cournot and Charles Renouvier often turned to historical counterexamples in their critiques of Comte’s philosophy of science. In so doing, they corrected Comte, but in a spirit consistent with Comte’s own philosophy, one that gave the history of science an essential place. Comte can be reproached for a deficient or superficial knowledge of the history of science, but not for having neglected the importance of this history in his philosophy. Comtean positivism played a role in the constitution of a “French style” in history and philosophy of science, which includes, in various ways, Abel Rey, Gaston Bachelard, George Canguilhem, and even Michel Foucault. But its influence goes beyond. Over the last decades, philosophers of science from Thomas Kuhn to Ian Hacking have taken a historical turn. Kuhn and Hacking both recognized the French tradition of historical epistemology, to which Comtean positivism gave rise, as a source of inspiration. It is appreciable in the constitution of a “new school” of historical epistemology, illustrated by works of Lorraine Daston, Hans-Jörg Rheinberger, Peter Galison, and others. It is in analyzing the points on which this new school is indebted to its predecessor, and those on which it stands out, that one would be able to clarify the meaning of the often blurred expression of “historical epistemology.”

A perhaps related way in which postpositivism is a post-neopositivism has to do with Comte’s concern with distinguishing each of the sciences with respect to their objects and methods of study. On the one hand, in a century in which the division of labor and specialization were developing rapidly, we must mention the fact that Comte considered it necessary to “constantly bring back to the general point of view spirits always disposed by themselves to divergence, and to bring back into the line of the common interest activities that tend unceasingly to depart from it” (1826/1954, 199–200). In his *Cours*, he remarks:

If one has often rightly deplored, in the material order, the worker exclusively occupied, during his whole life, with the manufacture of knife handles or pinheads, sound philosophy should perhaps not, basically, make one regret less, in the intellectual order, the exclusive and continuous

employment of a human brain to the resolution of a few equations or to the classification of a few insects: the moral effect, in both cases, is unfortunately very similar; it is always to tend essentially to inspire a disastrous indifference for the general course of human affairs, provided that there are unceasingly equations to solve and pins to make. (Comte 1839, 604–5)

In his contribution to this issue, Anastasios Brenner recalls that Comte chose the expression “positive philosophy” rather than “natural philosophy” or “philosophy of science” to designate his program “because neither the one nor the other cover yet all orders of phenomena, whereas positive philosophy, by which I include the study of social phenomena as well as all the others, designates a uniform manner of reasoning applicable to all subjects on which the human mind can exert itself” (Comte 1830, VIII). One might add that at the beginning of the nineteenth century, Louis de Bonald had spotted “symptoms of misunderstanding between the republic of sciences and that of letters”: “These two neighboring powers, long allied, and even confederated, as long as they had to fight their common enemy, ignorance, are beginning to divide” (1807/1819, 305). In the universities, philosophy would be joined to the faculty of arts, not to the faculty of science. Nothing could be more foreign to the spirit of Comte, who both wanted a philosophy fully informed by the sciences and built on them, and called for an aesthetic crowning of positivism by a poem of humanity, an epic composed in Italian “by virtue of its poetic and musical pre-eminence” (1854, 482).

This being said, the uniformity of positive reasoning does not result in anything like a monolithic system of thought, and Brenner also underlines to what extent, for Comte, this uniformity went hand in hand with the fact of approaching each domain of knowledge with methods adapted to their object. “Comte was careful to distinguish the sciences with respect to method and object. In the *Cours* he frequently uses the term philosophy with a defining adjective, speaking of mathematical philosophy, astronomical philosophy, physical philosophy, chemical philosophy and biological philosophy. He even comes to employ sociological philosophy. Philosophical considerations are to be formulated with respect to specific contexts; such a concern gives rise to what is now named regional epistemologies.” Let’s also mention the debt that Hacking acknowledged to Comte, among others, for his notion of the history of science as the history of the development of “styles of reasoning.” With the development of new styles of reasoning, new kinds of propositions become candidates for truth. Neopositivism, on the other hand, sought a single demarcation criterion that would distinguish all of science from nonscience. Comte regarded the reduction of all the sciences to mathematics and physics a chimerical goal and placed little importance

on the reform of scientific language, whereas the logical positivists hoped to establish the unity of science through a reduction of all the sciences to either a physicalist or phenomenalist language. In contrast, philosophy of science in the last generation has taken a pluralist turn among thinkers such as Galison, Hacking, Longino, and John Dupré, allowing for differences in method not only among the sciences but even among different research programs within the same or closely related sciences.

For all of these reasons, it appears to be particularly appropriate to examine the ways in which positivist philosophy of science developed in the wake of Auguste Comte, evolving and diversifying into different phyla.

## 2. The History

Positivism is anything but one philosophy: in the 1870s, Renouvier distinguished no less than six distinct species of positivist thought in France and England: Comte's *Cours de philosophie positive*; the "second" Comte of the *Système de politique positive*, including his religion of humanity; Herbert Spencer's synthesis of evolutionary and thermodynamic speculation; John Stuart Mill and Alexander Bain's psychological positivism, with its roots in David Hume; the general notion that there is no such thing as religion or morality, a notion that was picked up in literary circles and can be found, for instance, in Émile Zola's preface to *Thérèse Raquin*; and a general antiphilosophical, antimetaphysical attitude among those who claim to be interested only in the facts. These six distinct and sometimes contradictory species are sufficient to show the error to which all discourse on positivism that fails to take into account the many facets of this current of thought is condemned.

By the end of the nineteenth century, there were certainly many more species of positivism. We must add to the list the liberal, Kantian positivism of Renouvier himself, whose thought, while refuting in certain points the position of Comte, nonetheless validates and reinforces some founding principles of positivism. The list must also include the "new positivism" of Édouard Le Roy as explained by María de Paz in her essay here; the "absolute positivism" of Abel Rey; as discussed by Brenner in his contribution; and the antimetaphysical philosophies of Ernst Mach and Duhem—even though the latter was suspected of having elaborated "the scientific philosophy of a believer," to which Duhem retorted that his system was positive both in its origins and in its conclusions.

Through philosophers such as Renouvier and Le Roy, positivism gave rise to what will be labeled conventionalism, which itself can be distinguished into

different species, including the conventionalism of Poincaré. De Paz's contribution shows the role played by Le Roy in the development of Poincaré's positions. Although Le Roy was a recognized actor in the intellectual debates of his time, he has been somewhat forgotten by posterity—an example of what Robert K. Merton has called the “Matthew effect,” which refers to the fact that the most prominent figures tend to focus all the attention on themselves, to the detriment of figures of somewhat lesser magnitude whose role and contributions tend to be neglected. Thus Hacking, remarks Brenner, recognizes the pioneering role of Bachelard in the elaboration of an “applied rationalism and technical materialism”: “No other philosopher or historian so assiduously studied the realities of experimental life, nor was anyone less inclined than he to suppose that the mind is unimportant” (Hacking 2002, 44–45). But what Hacking overlooks is Bachelard's debt to Le Roy and the debates that agitated French philosophy at the end of the nineteenth and the beginning of the twentieth centuries. If Le Roy appealed to Poincaré's authority to support his conception of science oriented not towards knowledge but towards action, nonetheless Le Roy was an important enough author that, as De Paz shows, Poincaré found it necessary to deny what he considered a misinterpretation of his thought. We owe to Le Roy the care that Poincaré took to clarify his positions—an epistemological clarification that Poincaré considered all the more necessary since he intended to defend the value of science in a context where it was being questioned in important parts of the intellectual world.

In a recent book, *When Historiography Met Epistemology: Sophisticated Histories and Philosophies of Science in French-Speaking Countries in the Second Half of the Nineteenth Century*, a review of which is published in the present issue, Stefano Bordoni provides an interesting historical account of the views of some relatively neglected philosophers and scientists, such as Cournot, and the way they relate to the conceptions of more well-known figures. For his part, Anastasios Brenner reminds us that the wealth of discourse and debate about science around the turn of the twentieth century in France, and the reformulations of positivism that followed, “attracted in turn the attention of scholars in Austria and Germany who would propose logical positivism. French thought thus played a decisive role in the development of the Vienna Circle, in shaping the philosophical attitude toward science.” Brenner also points out the profound differences between logical positivism and the conceptions that were current on the French scene, characterized by an historical approach, a regional epistemology and a practical turn. In this sense, the French neopositivism of the period constitutes an anticipation of Viennese positivism as well as an alternative to it, close to Anglo-American positivism and, even more, to a new historical epistemology. The French philosophy of science that developed in the wake of Comtean positivism deserves careful

attention, both for its historical importance and for the resources it offers for a better understanding of the current state of thinking concerning the relationships among philosophy of science, the history of science, and political philosophy, as well as to the relationships among the various sciences and their methods.

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