Transversal
International Journal for the Historiography of Science

Transversal: International Journal for the Historiography of Science 2018 (5): 204-206
ISSN 2526-2270
www.historiographyofscience.org

Book review

Pierre Duhem, a Hundred Years Later

Pierre Duhem, cent ans plus tard (1916 – 2016). Actes de la journée d'étude internationale tenue à Tunis le 10 mars 2016, suivis de l'édition française de l'Histoire de la physique (1911). [*Pierre Duhem, a hundred years later (1916 - 2016). Proceedings of the International Study Day held in Tunis on March 10, 2016, followed by the French edition of the History of Physics (1911)*]. Edited by Jean-François Stoffel, with the collaboration of Souad Ben Ali. Tunis: Université de Tunis, 2017. 412 p. ISBN: 978-9973-06-968-9.

Godofredo Iommi Amunátegui[1]

Received: 10 October 2018. Accepted: 5 November 2018.
DOI: http://dx.doi.org/10.24117/2526-2270.2018.i5.15

The studies on Pierre Duhem's work has come of age. After a number of publications laying out the ground, we encounter now a series of texts that are in a position to take such a "tradition" for granted. The essays presented at Tunis, some of them at least, open up new areas of investigation and they do so with enough historical care and intelligent analysis to broaden the horizon of the scholarship dedicated to the French author.

The themes of "moving tensions" and "unresolved conflicts" seem to characterize all of them. The present review outlines very succinctly the content of each article and, occasionally, indulges in a brief remark.

For Duhem epistemology is a "simple logical analysis of the method by which science progresses". However, his researches into the history of physical theory allow his epistemology to exceed the limits of a simple methodology. S. Ben Ali carefully discerns in Duhem a deep relationship between science, history of science and philosophy of science. Consequently, the history of sciences becomes a search for those theoretical categories which best represent the various scientific notions.

In a very pertinent manner, S. Bordoni points out that Duhem may be considered as the end point of a tradition forged in francophone countries in the 1860s, and whose relevant trait – a subtle alliance between the history and the philosophy of science – appears in authors such as C. Bernard, Cournot, Comte and É. Boutroux. In this context, Bordoni signalizes the special importance of Ernest Naville. In "La physique moderne: études historiques et philosophiques" (1883), Naville wrote "Les théories passent, la science demeure". This short sentence condenses a concept which lies at the core of the scientific

[1] Godofredo Iommi Amunátegui [Orcid: 0000-0001-6063-7810] is a Professor at the Pontifical Catholic University of Valparaíso – PUCV – Institute of Physics. Faculty of Sciences. Address: 2 Poniente 232. Depto. 63. Viña del Mar 2520234 – Chile. E-mail: godofredo.iommi@pucv.cl

activity. (As a marginal note, let me recall that, unexpectedly, Lautréamont in his "Poésies" refers to Naville's "Le Problème du Mal") (Lautréamont 1970, 278).

M. Fortino supports the idea that Duhemian symbolism is neither an expression of rationality which is nominalist, pragmatic and instrumentalist nor is it a negation of falsificationism and scientific progress. She thinks that, all in all, it is possible to refute the traditional interpretation and that Duhem, in a way, initiates a crusade against the conception that science can discover the "reality" of Nature. Since the 1980s a significant portion of specialized literature deals with the non-conventionalist aspect of the philosophical work of Duhem.

Fábio R. Leite questions the structural realism attributed to the French scholar and he argues that in Duhem one finds evidence of the realism of entities for to believe that the truth of the theory is a relative one implies the belief that the theoretical entities exist as well. He analyses a relatively unexplored opus entitled "Le mouvement absolu et le mouvement relatif" in order to state that Duhem is realistic in a traditional way.

L. Roumengous tries to formulate with due clarity the continuity that we glimpse between Duhemian phenomenalism and the notion of natural classification, in other words, to reveal the link between the physical and the metaphysical which would serve to maintain the coherence of his work. Roumengous' argument might be integrated into the debate surrounding Duhemian neo-Thomism.

Jean Seidengart examines with remarkable lucidity Duhem's main epistemological proposition: the principal task of physical theory should be "saving the phenomena". A theory provides an accurate description of the appearances and does not pretend to understand what lies behind the sensible world's skin. In principle any model which allows a geometrical interpretation of the phenomena is possible. According to Duhem, the course of history sustains this perspective i.e., a scientific hypothesis is a well-told tale whose subject is "reality". However, "salvare apparentias" is a necessary but not a sufficient condition to establish the truth of a theory. Seidengart analyses, from a logical point of view, Duhem's statement which implies that a true theory must be able to save all the phenomena. The theory, besides, gradually, becomes "the reflection of an ontological order". And this is the critical point of Duhem's "fictionalism". Nowadays "fictionalism" indicates a rather clearcut conceptual domain.

H. Field, for instance, claims that "a mathematical realist believes in the existence of mathematical entities and believe them to be mind-independent and language-independent. The fictionalist can say that the sense in which "2+2=4" is true is pretty much the same as the sense in which "Oliver Twist lived in London" is true: the latter is true only in the sense that it is true according to a certain well-known story, and the former is true only in that is true according to standard mathematics (Field 1989, 2-3). For Alexander Koyré "to save the phenomena" means "to explain the phenomena" and he agrees with Copernicus, Descartes, Galileo and all the rational realists. I think that Duhem's "fictionalism" is not quite of "the Field kind" but has a different ontological meaning, closer to Leibniz's "fiction bien fondée".

J.-F. Stoffel pursues two intertwined objectives (1) to establish the historical significance of Duhemian phenomenalism by positioning it within a millenary tradition and by examining the consequences that arose from the various ways of comprehending the idea of physical theory and (2) to provide a new setting for the Galileo Affair which takes into account its epistemological and historical aspects. In a kind of a final turn of the screw, Stoffel proposes an open question: whether or not Duhem himself believed that he had put phenomenalism in solid ground. Perhaps the key to solving the puzzle may be found in the title of Stoffel's book "Le phénoménalisme problématique de Pierre Duhem". I mean that the answer to the question is a problem in its own right.

At the end of the Proceedings, the reader discovers a beautiful gift: a history of physics written by Duhem for an American Audience and published in 1911. Two texts composed by Stoffel and Bordoni underlines some features of this work. Stoffel indicates the first

appearance of the word "revolution" and develops a terminological research of the use of this term within Duhem's opus. Bordoni displays the principal issues which Duhem treats all over this history: his attribution of a vital role of the so-called "École de Paris" in the emergence of a new natural philosophy at the beginning of the fourteenth century and to the bishop Étienne Tempier in the condemnation of Aristotelian theories. Interestingly enough Duhem regarded Newtonian physics as the ultimate realization of a research program that had been initiated four hundred years before.

In fine, let me add that all these essays engage us in subtler and more complicated questions that we even know how to ask: that is a measure of their true achievement.

References

Field, Hartry. 1989. *Realism, Mathematics and Modality*. New York: Basil Blackwell.

Lautréamont. 1970. *Oeuvres complètes*. Paris: Gallimard, Collection "Bibliothèque de la Pléiade"