

Émile Boutroux (1845–1921)

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Abstract Henri Poincaré was close to his brother-in-law Émile Boutroux, with whom he shared an interest in epistemology. Ultimately, however, Boutroux's spiritualism was irreconcilable with Poincaré's empiricist scepticism.

Keywords Émile Boutroux · Henri Poincaré · Epistemology

In the summer of 1878 Poincaré, still a student at the École des Mines, undertook a journey to study in Sweden and Norway. While away, he received a letter with important news: his beloved sister Aline (1856–1919) was engaged to marry Émile Boutroux (Fig. 1). When he returned home, his mother said to him, 'Tell me, Henri, is he a philosopher or a professor of philosophy?' Poincaré answered without hesitation, 'He is a philosopher' [1, p. 313].

Student of the spiritualist philosopher Jules Lachelier (1834–1918) at the École normale supérieure, Boutroux pursued his studies further at the University of Heidelberg. He remained there for 2 years, until the outbreak of the Franco-Prussian war, and he was able to attend the lectures of Hermann von Helmholtz (1821–1894) and Eduard Zeller (1814–1908), the eminent historian of Greek philosophy. Once back in France, in 1871 he was named professor of philosophy at the lyceum in Caen, where he began a close collaboration with the Tannery brothers, Paul (1843–1904) and Jules (1848–1910). In those years he wrote his doctoral dissertation, entitled *De la contingence des lois de la nature* [1895], in which he launched a frontal attack against the kind of positivism espoused by Auguste Comte, criticising both its deterministic assumption and its deductivist formulation. In particular, according to Boutroux:

Quant aux lois de la nature, elles n'auraient pas une existence absolue; elles exprimeraient simplement une phase donnée, une étape et comme un degré moral et esthétique des choses. Elles seraient l'image, artificiellement obtenue et fixée, d'un modèle vivant et mobile par essence [2, p. 169].

(As for the laws of nature, they have no absolute existence; they simply express a given phase, a stage and kind of moral and aesthetic degree of things. They are the image, artificially obtained and fixed, of a model that is living and mobile in essence.)

Boutroux transferred to the University of Nancy, where he taught from 1876 to 1879. He married Aline on 9 October 1878. Between the 'philosopher' and the young Poincaré there grew a relationship of familiarity and friendship which, while strengthened by bonds of kinship, was rooted above all in the exchange of ideas regarding the topics in epistemology that interested them both. In 1880, for example, Boutroux published an important edition of Leibniz's *Monadologie* [4] to which Poincaré contributed a brief but significant note on the principles of mechanics in Descartes and in Leibniz.

There were numerous affinities between Boutroux and Poincaré (see [5, 8]), including: the fierce criticism of philosophical mechanism, the conception of theories as living organisms in continuous transformation,¹ and the role of 'reasoning by recurrence' in marking the radical

¹ For Poincaré a good theory had to be *souple*, supple, and similar to an animal *qui mue, qui brise sa carapace trop étroite et s'en fait une jeune. Sous son enveloppe nouvelle, on reconnaîtra aisément les traits essentiels de l'organisme qui ont subsisté* ('an animal that exuviates, that breaks its too narrow carapace and makes itself a fresh one: under the new envelope one will recognize the essential traits of the organism which have persisted') [6, pp. 146–147; English trans., p. 319].

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Fig. 1 Family reunion in Remenoncourt, 1907. Henri Poincaré and Émile Boutroux are in the front row facing the camera. Reproduced by generous permission of the LHSP—Archives Henri-Poincaré. UMR 7117 CNRS/Université de Lorraine



distinction between laws of logic and mathematical laws [3, chap. III]. However, their divergences were no less numerous. In the final analysis, Boutroux's spiritualism, profoundly grafted onto a matrix of Catholic traditionalism, showed itself to be irreconcilable with Poincaré's empiricist scepticism, convinced as he was that

La foi du savant ne ressemble pas à celle que les orthodoxes puisent dans le besoin de certitude. ... Non, la foi du savant ressemblerait plutôt à la foi des hérétique, à celle qui cherche toujours et qui n'est jamais satisfaite [7, p. VI].

(The faith of the scientist does not resemble that of the orthodox, which is rooted in the need for certainty. ... No, the faith of the scientist rather resembles the faith of the heretic, he who is always searching and is never satisfied.)

Translated from the Italian by Kim Williams

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Claudio Bartocci is associate professor of mathematics at the University of Genoa. His research interests are focused on the following topics: algebraic geometry and mathematical physics, history of the mathematical thought in the nineteenth and twentieth centuries, philosophy of mathematics. His recent books include: *Una piramide di problemi* (Raffaello Cortina, Milan, 2012); *New Trends in Geometry: Their Role in the Natural and Life Sciences* (coedited with L. Boi and C. Sinigaglia, Imperial College Press, London, 2011); *Fourier-Mukai and Nahm transforms in geometry and mathematical physics* (coauthored with U. Bruzzo and D. Hernández Ruipérez, Birkhäuser, Boston, 2009); *Mathematical Lives* (coedited with R. Betti, A. Guerraggio, R. Lucchetti, Springer, Berlin-Heidelberg, 2010). He is the coeditor, with P. Odifreddi, of *La matematica* (Torino, Einaudi, 4 volumes, 2007–2011).