Paul Bernays – A Short Biography (1976)

Paul Bernays

(Paul Bernays – A Short Biography, p. xi–xiii.)

Translation by: *English original*

Comments:

The text uses English spelling for "axiomatisation" and "favour".

Paul Bernays was born on October 17th, 1888 in London, the son of Julius and Sara Bernays, and spent a happy childhood in Berlin.

He attended school at the Köllnisches Gymnasium from 1895 to 1907. After that he studied at the Technische Hochschule Charlottenburg for six months and then transferred to the University of Berlin. He studied there for four semesters, then for six more in Göttingen, majoring in mathematics with philosophy and theoretical physics as subsidiaries. At the University in Berlin be studied mainly under Issai Schtur, Landau, Frobenius and Schottky in mathematics, Riehl, Stumpf and Cassirer in philosophy and Max Planck in physics; in Göttingen he attended lectures on mathematics chiefly by Hilbert, Landau, Weyl and Klein, on physics by Voigt and Born, and on philosophy mainly by Leonard Nelson. It was through Nelson that he took up closer acquaintance with the Neu-Fries'sche Schule, and his first philosophical papers were published in this setting.

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In the Spring of 1912 he received his doctorate under Edmund Landau with a dissertation on the analytic number theory of binary quadratic forms. At the end of the same year he obtained his Habilitation in Zürich where Zermelo was professor; his Habilitationsschrift was on function theory and had to do with Picard's theorem.

From the end of 1912 till Autumn 1917 he was a Privatdozent at the University of Zürich. During this period he got to know Georg Pólya, both as a friend and intellectually; visited Einstein a few times; and enjoyed stimulating social occasions at Hermann Weyl's.

At the beginning of the First World War he worked on a reply to critique by Alfred Kastil of the Fries philosophy. This reply was not published (by the time there was an opportunity to have it published he no longer agreed with all of it).

In the Autumn of 1917, on the occasion of his lecture in Zürich on "Axiomatisches Denken", Hilbert invited Bernays to work with him as his assistant on his investigations of the foundations of arithmetic, which he was then resuming. This brought him back to Göttingen. His work with Hilbert consisted on the one hand of helping him to prepare his lectures and making notes of some of them, and on the other hand of talking over his research, which gave rise to a lot of discussions.

Alongside this work for Hilbert he was soon also giving lectures on various general areas of mathematics at the University of Göttingen, at which he obtained the venia legendi in 1919, with a Habilitationsschrift on the axiomatics of the propositional calculus of "Principia Mathematica", this, however, was not published until 1926, and then only in abridged form.

From 1922 on he was extraordinary professor without tenure at Göttingen. He himself also went to lectures, among others to those of Emmy Noether, van der Waerden and Herglotz, preferring to learn by listening to a lecture delivered personally rather than by reading. During term-time he enjoyed the intellectually stimulating company of his colleagues; the vacations were spent with the family in Berlin, now diminished by the loss of his father in 1916.

In 1933 Bernays, as a "non-Aryan", was deprived of the venia legendi of the University of Göttingen. Hilbert employed him privately as his assistant for six months, then the family moved to Switzerland, whose nationality they had inherited from Bernays' father.

For the summer semester of 1934, and several times after that, Bernays received a temporary teaching post at the ETH (Eidgenössische Technische Hochschule) Zürich. For the academic year 1935/36 he was invited to the Institute for Advanced Study in Princeton, where he gave lectures on mathematical logic and axiomatic set theory. In set theory he lectured on his own axiomatisation, thought out a few years before on the basis of von Neumann's axiom system. He had presented this axiomatisation in Göttingen, at the end of a lecture on set theory in 1931, and also, before that, in a talk given to the Mathematical Society of Göttingen, but had hesitated to publish it because he felt that axiomatisation was, to a certain extent, artificial. He expressed this feeling to Alonzo Church, who replied with a consoling smile: "That cannot be otherwise"; this persuaded him to publish. Before publication he made certain changes in the terminology and in the definitions. In particular, he altered his original definition of ordered pair in favour of Kuratowski's,

and adopted Raphael Robinson's definition of ordinal number instead of the one he had had before.

In the Autumn of 1939 Bernays was awarded the venia legendi of the ETH Zürich, and in the Autumn of 1945 he became extraordinary professor there. His lectures at the ETH were on: Algebraic number fields, set theory, elliptic functions, geometrical constructions and the concept of number, elements of analysis, mathematical logic, theory of the Lebesgue integral, introduction of proof theory, lattice theory, constitution of the continuum. Here too he went to lectures given by various colleagues, among others to those of Michel Plancheret, Beno Eckmann and Eduard Stiefel; and he participated in the seminars of Heinz Hopf, whom he knew from his Göttingen days and with whom be was friendly.

In Bernays' study of Kant, Fries and Nelson, he had become acquainted with Ferdinand Gonseth and discovered much in common between their points of view. This led him to a closer association and participation in several symposia ("Entretiens") organized by Gonseth and to join the editorial board of the philosophical review "Dialectica", which Gonseth had founded. He also became a member of the International Society for the Philosophy of Science founded by Père S. Dockx, and was its president for two years.

During the period from 1956 to 1965 Bernays was invited to the University of Pennsylvania in Philadelphia as visiting professor three times, and to the Institute for Advanced Study in Princeton in 1959/60.

Paul Bernays, who now lives in Zürich, still maintains close contact with many of the friends he has made during his long academic life.