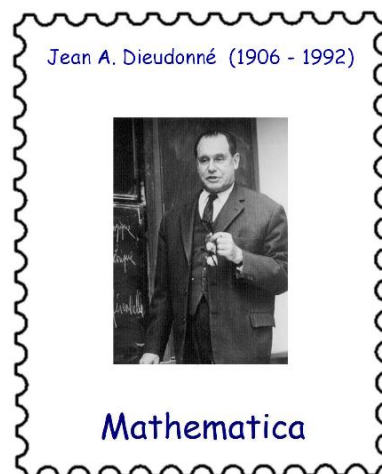


JEAN DIEUDONNÉ (July 1, 1906 – November 29, 1992)

by HEINZ KLAUS STRICK, Germany

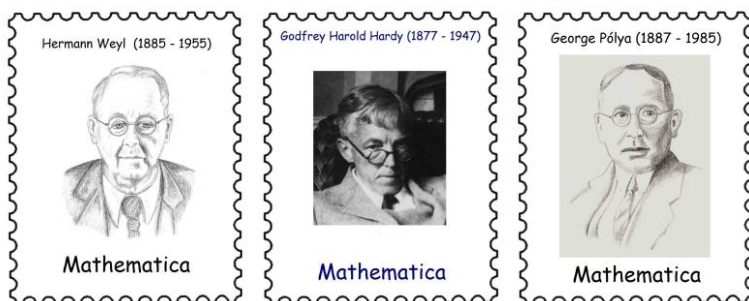
In the early years of his life, JEAN ALEXANDRE EUGÈNE DIEUDONNÉ grew up with his sister ANNE MARIE in the northern French city of Lille. The family's financial circumstances were secure. His father ERNEST had worked his way up from a simple clerk to director of a textile factory and his mother LÉONTINE worked as a primary school teacher before JEAN's birth. There was no lack of stimulating literature for the inquisitive boy in his parental home – browsing through encyclopaedias was his favourite reading.



When German troops occupied Lille in 1914, the family fled to Paris. After the end of the World War, JEAN attended a school on the Isle of Wight for a year, after which he continued his school career in Lille. JEAN showed a particular interest in mathematics at an early age. In 1923 he won first prize in the *Concours général*, the national mathematics competition.

In 1924 he passed the entrance exams to the *École Polytechnique* and the *École Normale Supérieure* in Paris; he decided to study mathematics at the latter of the two elite universities. Together with ANDRÉ WEIL, who was the same age, he was lucky enough to be encouraged by teachers such as JACQUES HADAMARD, ÉMILE PICARD, ÉLIE CARTAN, GASTON JULIA and PAUL MONTEL.

After completing his compulsory military service and studying in Princeton (guest lecturers: HERMANN WEYL, GODFREY HAROLD HARDY) and – as a scholarship holder of the ROCKEFELLER Foundation – in Berlin (LUDWIG BIEBERBACH) and in Zurich (GEORGE PÓLYA), he completed his doctorate in 1931 with MONTEL on a topic on complex-valued functions.



He then worked as a *Maître de Conférences* (lecturer and researcher) first at the universities of Bordeaux and Rennes, and from 1937 at the university of Nancy and then in Clermont-Ferrand, to where the University of Strasbourg had been moved during the German occupation.

In 1938 he received the *Prix Francœur* and in 1944 he was awarded the *Grand Prix* of the *Académie des Sciences*.

After the end of World War II, DIEUDONNÉ took a visiting professorship in São Paulo, then returned to Nancy, where he finally obtained a full professorship. One of his doctoral students there was ALEXANDER GROTHENDIECK, who was awarded the FIELDS medal in 1966. From 1952 he taught at the University of Michigan and at *NorthWestern University* in Chicago and in 1958 he returned to France.

Together with ROBERT OPPENHEIMER, he founded the IHÉS (*Institut des Hautes Études Scientifiques*) near Paris, modelled on the *Institute for Advanced Study* in Princeton, where scientists from all over the world could conduct research.



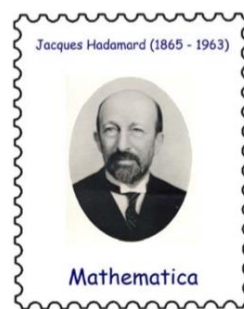
In 1964 he took over as Dean of the newly founded University of Nice (*Université Nice-Sophia-Antipolis*, now the *Université Côte d'Azur*). The Mathematical Institute of this university bears his name today.

With the organisation of the *International Congress of Mathematicians 1970* (ICM70) in Nice, he ended his academic career. Afterwards, the "prolific writer" (over 300 contributions to journals) was mainly involved in writing textbooks. From 1973 to 1981 he took over the presidency of the *Comité National Français d'Histoire et de Philosophie des Sciences*.

Looking back, DIEUDONNÉ described 1934 as the most important year in his life: It was the year in which he met his wife ODETTE; they married just six months later. The marriage ("56 years of happiness") produced a son and a daughter. In retrospect DIEUDONNÉ regretted that he had too little time for his children because of his many professional activities.

In December 1934 DIEUDONNÉ accepted an invitation from ANDRÉ WEIL to a meeting of former *École Normale Supérieure* graduates. The time was ripe for a new French-language book on calculus that corresponded to the current scientific state of the art. French universities were still using a textbook that was published in 1902 and had been unchanged since. Unlike in Germany, during World War I on the French side, all those fit for military service were sent to the front as soldiers, including many young scientists, so that after the war it took a very long time before the next generation of scientists was available in sufficient numbers at the universities in France.

In 1934 HADAMARD retired as one of the last important French mathematicians of the turn of the century. The top position that French mathematics had once held in international comparison had long since been lost, as the following generation had "bled to death on the battlefields of the Marne."



Against this background, the work to be written could only be a collaborative project – without fixed authors for the individual chapters. The group, which also includes HENRI CARTAN, CLAUDE CHEVALLEY, JEAN DELSARTE and RENÉ DE POSSEL, chose the title *Éléments de Mathématique* for the planned series and the name NICOLAS BOURBAKI as a pseudonym – without reference to any living person with this name. (CHARLES BOURBAKI had been a general in the French army who – in a hopeless situation – fled to Switzerland with his troops during the Franco-Prussian War of 1870/71).

The group was in principle open to new contributors. Eligible candidates were invited by the members to the regular meetings and if they fit in with the group and could cope with the irritating procedures (see below), they might join in the future. When a member reached the age of fifty, he or she automatically left.

The first volumes dealt with the basics of mathematics. These included set theory, algebra, topology, functions with one real variable, topological vector spaces and integral calculus. The axiomatic structure of the books with detailed proofs – but without graphics and examples – the emphasis on general structures and the elaboration of methods became a model for other new publications at this time. In the period between 1939 and 1998, a total of 27 BOURBAKI volumes were published.

Until the beginning of the 1950s, it was DIEUDONNÉ who embodied BOURBAKI. The ritual of the group's meetings was always the same: one member presented a draft text; this was loudly criticised in the discussion, usually slated. The agitation of the participants was often so great that one could hardly follow the arguments. Then another member would take over the formulation of the next version, which generally suffered a similar fate.

DIEUDONNÉ was a spirited, enthusiastic participant in discussions, but he was also capable of outbursts of rage – even to the point of breaking off his collaboration in the BOURBAKI group. Occasionally, the "regular" members allowed themselves the joke of teasing him to the point of such "resignation". After being informed of the true situation, he reacted calmly, not at all resentfully.

DIEUDONNÉ, *l'adjutant* (the sergeant-major), had all the proposals and intermediate stages of texts in his head and was thus able to formulate the final version. Since he paid attention to clarity of formulation and rigour of thought in all subject areas, even those in which he was not so well versed, he also benefitted himself, as he wrote in retrospect. After his retirement, there was no one left with such a memory and comparable encyclopaedic knowledge.

WEIL and DIEUDONNÉ supplemented the individual volumes of the *Elements* with historical annotations, which, however, did not go through the same laborious process of discussion.

Even after leaving the BOURBAKI group, DIEUDONNÉ wrote numerous books (26 in all), including eight volumes together with GROTHENDIECK.

After *La Géométrie des groupes classiques* (1955), the nine volumes of *Éléments d'Analyse* (Elements of Analysis), among others, appeared between 1960 and 1982. In the volume *Algèbre Linéaire et Géométrie Élémentaire* (1964) DIEUDONNÉ demanded the treatment of the vector space concept (including the scalar product) and of quadratic forms as a prerequisite for a course on geometry – even as early as in school lessons ("Down with EUCLID! Death to triangles!").

After his retirement, DIEUDONNÉ devoted himself to the history of mathematics. In the 2-volume work *Abrégé d'Histoire des Mathématiques 1700-1900* (A Brief History of Mathematics), he detailed how individual ideas originated and were further developed. In the 1980s, further volumes on the history of sub-fields of mathematics appeared.

At last bedridden, he died at the age of 86 surrounded by his family - happy and content: "Now I am ready to go. ... I have had everything I wanted in life."

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<https://www.spektrum.de/wissen/jean-dieudonne-und-die-neue-bourbaki-lehre-der-mathematik/2140008>

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