

[A. Soifer, *The Scholar and the State: In search of Van der Waerden.*]

by Norbert Schappacher, Strasbourg

Bartel Leendert Van der Waerden was a prolific and influential mathematician of the twentieth century—through textbooks, research, and editorial activity, esp. for *Mathematische Annalen*—as well as a writer on the history of science in Antiquity. He chose to stay on his chair at Leipzig University throughout the Nazi era, which then created major problems for him in his home country, the Netherlands, after the war. His life and work clearly deserve thorough historical study. The book under review presents a valuable, lavishly illustrated piece of investigative journalism with quite a bit of new (at least to the reviewer) information and evidence about Van der Waerden’s life; but only one tiny gem from Van der Waerden’s vast and rich mathematics is discussed (in chapters 7, 37, and 38). Several of the findings had already been described by the author in his earlier book [4] and other earlier publications. The author unfortunately does either not cite, or barely mentions relevant studies like [1] (along with other important chapters of that same book), [2], or [3], even though his presentation could have profited from taking them into account.

Perhaps the most striking novel elements in the book include information about Van der Waerden’s Dutch family and upbringing, as well as his fate after 1945, including the remarkable story of Rolf Nevanlinna’s and Van der Waerden’s hiring at the University of Zürich (chapters 25, 26, 30, and 39). Van der Waerden’s stance with respect to the Nazi regime is often discussed in parallel to Werner Heisenberg’s attitude and with considerable moral emphasis (chapters 15, 32, 33, 34). Indeed, Heisenberg was one of Van der Waerden’s colleagues in Leipzig before the war, and Soifer appropriately points to their close correspondence after the war, which includes a defense strategy for Heisenberg developed by Van der Waerden.

Anybody seriously interested in Van der Waerden has to take this rich and detailed book into account. At the same time it may be regretted that a book about “the scholar and the state” never asks how politics may have affected the content or presentation of Van der Waerden’s mathematics. When such an influence actually suggests itself in Chap. 9, where Van der Waerden’s famous suppression of the axiom of choice from the 1937 edition of his well-known Algebra book is discussed, Soifer describes this as a “victory of Brouwer’s intuitionism”, and he is then puzzled to see that Van der Waerden reverts back to his original treatment in 1950, when times have changed. Also when Soifer discusses his favourite mathematical theorem of Van der Waerden’s, his historical questions hardly go beyond priority issues for conjectures or results. In [2], I have tried to show how political agendas entered Van der Waerden’s favourite domain of research, Algebraic Geometry. Also Van der Waerden’s forays into statistics constitute a fertile ground for genuine history of mathematics. And the political undercurrents of Van der Waerden’s work on the history of mathematics call for closer inspection. None of this is touched upon in Soifer’s book.

The author, even though he calls himself a historian, deliberately adopts a journalistic style, sharing with the reader his personal adventure through a great number of archival documents, his astonishments and personal reactions, as well as some of the exchanges with people who provided him with information. The journalistic character of the text shows rather crudely when written and oral sources are treated indiscriminately; for example on p. 186, the author reproduces a fairly unlikely interpretation transmitted by Washnitzer of something Helmut Hasse had said at the Oslo ICM in 1936, even though there is absolutely no shortage of written, archived documents showing very precisely how well Hasse arranged himself with the Nazi regime, while at the same time keeping his distance from “Deutsche Mathematik” in Bieberbach’s and Teichmüller’s way. Here and elsewhere the author tends to work with an oversimplified picture of the Nazi regime. For example on p. 99 he exclaims with respect to Richard Courant’s having to leave Germany even though he had been a frontline fighter in WW I: “Doesn’t this episode clearly illustrate the lawlessness of the new Third Reich?” Now, it is true that the law of 7 April 1933 was never applied to Courant who finally resigned from his position in 1934, following Hasse’s suggestion. But Soifer’s rhetorical question underestimates the cunning interplay of the various clauses written into the law. Those who made this law knew very well how to exert *legal* pressure: the exception for frontline fighters applied to §3 (dismissal of non-Aryans), but not for example to §4 (political incompatibility), and even less to the general arbitrary clause §6 (administrative simplification). This is why those who in 1933 or 1934 wrote petitions for Courant, or for Edmund Landau (who had not fought in the war, but was exempt from §3 because he had been a

professor already before WW I) typically tried to argue with a view to §4 that these Jews protected from §3 were also politically inoffensive. Contrary to Soifer, Van der Waerden did appreciate these distinctions, for instance in his letter of support for Edmund Landau of 6 February 1934 (which Soifer does not quote directly). Explaining such details could have benefited Soifer's account (chapter 15) of Van der Waerden's and Heisenberg's protest at the 1935 faculty meeting in Leipzig.

Journalistic is also the way in which the author at times tries to enter into Van der Waerden's (or Heisenberg's) mind, whereas at other times he just lays out pieces of evidence for the reader to interpret, but arranging them in a way that seems to want to suggest a conclusion which, however, is not explicitly stated. See for instance the anti-chronological order in which events are told in chapter 13 on the 1933 offer from the IAS, Princeton, which Van der Waerden finally turned down even though he had received official authorisation to accept it.

On the technical level, there are of course occasional oversights which are inevitable in a book of this size; for instance, the name of the physicist James Franck is misspelled on p. 91; and p. 224 and p. 279 contradict each other about whether the Queen's own opinion did or did not matter for approving the appointment of a professor at any Dutch university. Troublesome, however, is the fact that the author is not a reliable translator of his German sources, and has not had his translations checked sufficiently carefully by others. This poses a real problem for using the book as a basis for further work, since the original texts of most of the sources are unfortunately not supplied; maybe this could still be done on the internet? To quote just one non-trivial instance of this recurrent problem, on p. 116, where the translation misses the scene described: it is of course not Geyer who "forbade Professor Golf to speak in the tone he was using", but rather Golf who reprimands Van der Waerden for raising his voice (the translation confuses *verbitten* and *verbieten*, and thus fails to interpolate the missing 's' in front of *ich*).

References.

- [1] Reinhard Siegmund-Schultze. Bartel Leendert Van der Waerden (1903-1996) im Dritten Reich: Moderne Algebra im Dienste des Anti-Modernismus? In B. Hoffmann & M. Walker (eds.), *'Fremde' Wissenschaftler im Dritten Reich*. Göttingen (Wallstein) 2011.
- [2] Norbert Schappacher. A Historical Sketch of B.L. Van der Waerden's Work on Algebraic Geometry 1926-1946. In J.J. Gray & K.H. Parshall (eds.), *Episodes in the History of Modern Algebra (1800-1950)*. AMS / LMS 2007, pp. 245-283.
- [3] Martina Schneider. *Zwischen zwei Disziplinen. B.L. Van der Waerden und die Entwicklung der Quantenmechanik*. Springer-Verlag 2011.
- [4] Alexander Soifer. *The Mathematical Coloring Book. Mathematics of Coloring and the Colorful Life of Its Creators*. Springer-Verlag 2009.