The Weil Conjectures: On Math and the Pursuit of the Unknown

by Karen Olsson

LONDON: BLOOMSBURY PUBLISHING, 2019, 224 PP., £13.49, ISBN 978-1526607539

Weil: La geometría de la teoría de números

by Ágata Timón and David Fernández Álvarez

BARCELONA: RBA, 2017, 158 PP., ISBN 9788447391592

REVIEWED BY OSMO PEKONEN

The extraordinary lives of the siblings André Weil (1906–1998) and Simone Weil (1909–1943) continue to generate literature. As primary sources on the Weil family, one should read *Souvenirs d'apprentissage* (1991), by André Weil, and *Chez les Weil* (2009; reviewed by myself in our fall issue 2012), by his daughter Sylvie Weil, born in 1942, a remarkable author in her own right. Besides the original French, both of these books are available in English, German, Italian, and Spanish, and the first-named one in Japanese as well.

André Weil is a household name for every mathematician, but he remains—as so usual for our profession—virtually unknown outside of the mathematical community. As for the philosopher and social activist Simone Weil, she published not a single book during her brief and tormented existence, but her posthumous collected works edited by Gallimard measure by now over 7000 pages, and even more is coming. As for secondary literature, the library of the University of Calgary, which specializes in the topic, currently lists some 5000 books, theses, and articles in a multitude of languages devoted to her life and work.

Karen Olsson, a novelist based in Austin, tries to bridge the gap between mathematics and humanities with her *Weil Conjectures*, a double biography of the Weil wunderkinder that alternates episodes of their parallel lives and draws on their correspondence. The author knows some mathematics, having done a two-year stint as a math major at Harvard some twenty-five years ago, but she quit the subject, preferring a career in creative writing instead. Her book is actually a triple biography, since it also contains episodes of her seemingly uneventful personal life as a middle-aged mother of two. A dramatic highlight of her story is one August evening in Austin when “in the bulk

foods section” of her local supermarket she bumps into a real mathematician, a number theorist, who might have explained to her the scientific meaning of the “Weil conjectures,” the central metaphor of her book, but failed to do so. Thus, we have to remain content with Olsson’s statement that “these conjectures are outside the limited terrain I covered in college,” whereas about Simone Weil we learn that her writing is “awfully high in fiber, hard to digest.”

At this point, the reader may wonder about the *raison d’être* of Olsson’s book. Bloomsbury markets it as “non-fiction,” but it is really a novel. The author resorts to fiction, for instance, in an embarrassing chapter in which she enters into André Weil’s dreams and even meets with him, as a time traveler, in a dream of her own. At an ensuing moment of self-criticism, the novelist pauses to ask herself whether “the ghost of André Weil would have something acid to say about all this.”

Olsson has mainly drawn the factual contents of her book from the above-cited writings of André and Sylvie Weil and from some standard biographies of Simone Weil. As if the lives of André and Simone didn’t carry enough romance as such, the author moreover peppers her writing with dozens of unrelated mathematical anecdotes gleaned from dubious sources. For her, a good anecdote seems to be equivalent to someone’s violent death. Thus we learn, once again, how a Roman soldier slayed Archimedes, how Pythagoras may have been murdered as well, how “the Christian fanatics” tortured Hypatia to death “because she refused to give up her pagan beliefs,” how Galois perished in a duel, and how the Nazis pushed Hausdorff to suicide.

All this is anticipation to the dramatic episode of *Souvenirs d'apprentissage* in which André Weil, suspected to be a spy due to his erratic behavior, gets arrested by the Finnish police in Helsinki on 30 November 1939, during the Finnish–Soviet Winter War. This is true; Weil was indeed detained for a fortnight, until he was expelled to neutral Sweden on December 12. According to Olsson’s speculation, “the chief of police did intend to kill him”—but this is fiction, as I showed long ago in a paper cosigned by André Weil.¹ All in all, I cannot recommend Olsson’s novel to any scholarly reader. One is left wondering for whose benefit it was written.

A much better book with a partially similar approach is that written by the two young Spanish mathematicians Ágata Timón and David Fernández Álvarez. As volume 46 of the series “Genios de las Matemáticas,” published as a supplement to several newspapers in different countries, their book in Spanish has enjoyed wide circulation in the Hispanic world, but it is unfortunately not available in other languages. It focuses on André Weil but also tells about Simone and Sylvie Weil. It also popularizes the work of Bourbaki and Oulipo, thereby creating many bridges between mathematics, philosophy, and literature. It con-

¹Osmo Pekonen. L'affaire Weil à Helsinki en 1939. *Gazette des mathématiciens* 52 (1992), 13–20. With an afterword by André Weil.

tains some lofty mathematics—including a precise statement of the Weil conjectures—but the more mathematical passages are separated into boxes, so that readers from the humanities might have a chance. This book is the only one on André Weil that gets straight his mishaps in Helsinki in 1939. To be sure, it was I who supplied the authors with photocopies of the original documents from the Finnish police files.

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