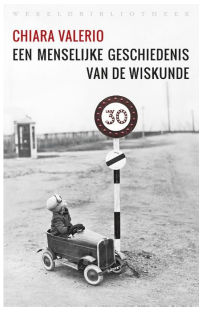
Storia umana della matematica by *Chiara Valerio*. Giulio Einaudi, 2016,
Een menselijke geschiedenis van de wiskunde Wereldbibliotheek, 2017, isbn 978 90 284 2714 3







Chiara Valerio

At the moment of writing this review, I could only find a Dutch translation, no French or English edition seems to exist (yet). Nevertheless, this is a very curious... book (I hesitate to classify it as a novel, a mathematical history book, a collection of essays, or whatever), so I just call it a book to be on the safe side.

Valerio, born in 1978 got a PhD in mathematics from the Università degli Studi di Napoli Federico II in Rome about a mathematical approach to natural neurons. She chose mathematics because she failed admission to the faculty of literature (her father was a physicist). But literature remained her first love. She published her first novel in 2003, and after a postdoc in Cambridge in 2009, she left mathematics and became fully involved in literature as an author, an editor, a blogger and related activities.

The book is indeed partially about math history, but it is not 'just that'. In the first six chapters she focusses on some historical mathematicians, and she tells about herself in the seventh chapter.

The first chapter is giving some biographical facts about father and son Farkas and János Bolyai. Farkas spent much time in trying to prove the parallel postulate from Euclidean geometry. He was not successful, but János succeeded and so 'invented' non-Euclidean geometry. When the father proudly showed the results of his son to Gauss, the latter presumably answered: "To praise it [the work of János] would amount to praising myself. For the entire content of the work...coincides almost exactly with my own meditations which have occupied my mind for the past thirty or thirty-five years". Nevertheless the idea was quickly picked up by others and it changes geometry forever. Valerio adds to these facts her own experiences and links them with work by Poincaré, Kant and others.

Riemann is the subject of the second chapter, with the associated theme 'dimensions'. An extensive discussion is devoted to Abbott's *Flatland* and again following different detours, to eventually arrive at curvature on n-dimensional Riemannian manifolds.

With Laplace, probability is introduced in chapter 3. But many other mathematicians feature as well: John Napier, Galilei, Mersenne, d'Alembert.

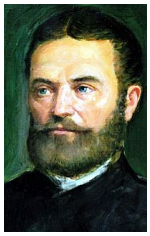
Mauro Picone (1885-1977) is an Italian mathematician that may be less known. In 1916, he improved ballistic computations during the war against the Austrian-Hungarian army. He composed tables that took the air resistance and difference of heights in the mountains into account, which prevented the artillery from shelling their own infantry. Later he founded one of the first institutes of applied mathematics.

Lev Landau was a Russian physicist who was involved in a car accident in 1962, the year when he was awarded the Nobel Prize. He spent some time in a coma from which he recovered, but his scientific career was over. A reason for Valerio to contemplate life and death. Landau the man who died twice, and also lived twice.

The aspects of Norbert Wiener that are highlighted are cybernetics and communication theory.

Each chapter has some biographical details about these mathematicians, but they are certainly not intended as a complete biography. They focus on the person as a human being, as far as this is known (hence the title), but Valerio relates this to many experiences from her personal life and family too. The chapters are thematic and sometimes are zigzagging to different topics occasionally turning them into a philosophical essay. At other points there are some tongue-in-cheek remarks which can be experienced as funny anecdotes.

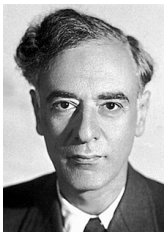

F. Bolyai
1775-1856

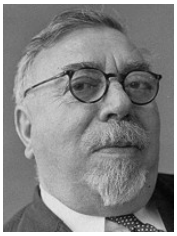

J. Bolyai
1802-1860


B. Riemann
1826-1966


P.-S. Laplace
1749-1827


M. Picone
1885-1977


L. Landau
1908-1968


N. Wiener
1894-1964

Valerio is obviously very well read and she relates with ease mathematical topics with Dostoevski, Shakespeare, and many other less known authors. Sometimes she is retelling stories and sketching the characters and relationships between characters of novels to ponder why they made certain choices. Numerous pointers to films and books are just mentioned quickly in passing or in parenthesis. They can easily escape attention if the reader is not familiar with the movie, book, or the television series.

Let me take as a typical example the flow of chapter 4 about Mauro Picone. It starts with a description of an Italian colonel Baistrocchi defending a bridge during the war in 1916. This is an occasion to refer to José Saramago's *Memorial do Convento* (translated as *Baltasar and Blimunda*). Then she reflects how she played cowboy and indian as a child with her father. When Picone arrives at the 1916 battle field as 'the mathematics professor from Turin', Valerio gives some of his biographical background, which allows her to discuss James Blackadder, a character in A.S. Byatt's *Posession*. Picone recognizes and solves the ballistic problem of the colonel and becomes a war hero. The computations of Picone are a reason to mention Niccolo Fontana, better known as Tartaglia (the stutterer) who found a closed formula to solve a cubic equation and who also wrote a book on ballistics. Via Youcenaar's *L'Œuvre au noir* Valerion is reflecting on life and death and on cats who are said to have seven lives, which makes her think of the cat she had as a child and about the cats that were thrown from heights to study gravitation, which leads her to Archimedes, Peano, Kepler, and Galilei (with a discussion of a fragment of his *Discorsi*) and the planetary motion. This brings her back to Picone and the tables he computed. After the war Picone is meeting Volterra, to discuss the founding of the first computing center ever and an institute of applied mathematics, long before Turing. The chapter ends with Valerio's father falling from a ladder, as a consequence of gravity, and by a praise of Baistrocchi who gave Picone the possibility to apply his mathematics and save many lives, hence recognizing the power of a book over weapons.

The other chapters have similar meandering constructs. They are not always easy to read because Valerio writes long sentences with sub-phrases and parentheses, following a thread that is not always linear. A mathematical reader will probably not learn much new about mathematics but on the other hand, if the reader has no mathematical background, some of the mathematics only mentioned in passing will probably not be clear. Also some of the literature and references to the media are very Italian and may not be so familiar to non-Italians.

The first sentence of the introduction says 'Everything that Euclid talks about does not exist'. This means that mathematics is about abstract concepts that do not physically exist, and a bit further we read: 'To prove the Pythagorean theorem, it requires more imagination than to bring the death back to life, because the latter existed once. Lines, points and geometrical objects never existed'. Perhaps she means to say that it is easier to talk about mathematics by using elements from the biographies of mathematicians, because that is exactly what she did.

Adhemar Bultheel