Zaouati, Philippe
Perelman's refusal. A novel. Translated from the French by Rachel Zerner. (English)

This book is probably the very first novel published solely by the AMS (the other *Reality Conditions: Short Mathematical Fiction* written by A. Kasman is published by the AMS jointly with the MAA in 2005). The author assures his readers that this "is a work of fiction, a novel", and what he attributes to the main characters mostly express his "own concerns and questions" (p. 133). So, this is not a *Living Proof: Stories of Resilience Along the Mathematical Journey*, edited by A.K. Henrich et al. (2019) and published jointly by the AMS and MAA, which contains personal stories from mathematicians told by themselves.

It is good to see that mathematicians are not *mad*(mathicians) here, like many other novels; "just that the power and complexity of the investigations they were involved in set them apart from their fellow human beings" (p. 2). However, the first character, "Perelman was generally described as being autistic dysfunctional, and asocial hermit type" (p. 107). But what the second character, Ball, found was that Perelman "was sensitive, open and cultivated. He was an accessible and affable human being, once the wary business of mutual observation dispatched. ... Perelman had turned out to be an accomplished musician, a fan of opera and above all, an inexhaustible fount of knowledge when it came to the history of his country. Ball had been worried he would find himself faced with a mulish, arrogant mathematician, a closed-minded misanthrope who lived disconnected from reality, blinded by his own brilliance. Miraculously, he had enjoyed the man's company, and indeed felt empathy for Perelman" (pp. 107–108).

Grigori Perelman, a renowned and eminent mathematician, is well-known to have solved (the last piece of the puzzle of) the Poincaré Conjecture (that every simply connected, closed 3-manifold is homeomorphic to the 3-sphere). He is even more famous for having refused the Fields Medal and also the Clay Millennium Prize (worth a million dollars) for his mathematical achievements.

When he declined the prizes, everybody had their own hunches for his potential reason. One can find very many stories on the net. I had my own guesses; maybe he was sick and tired of ... of what? What had made me sick and tired of the mathematical community. Does *mathematics*, as a very pure and exact science, need a Union? a Chair of that Union? Prizes? and Committees for that Prizes? Don't those administrational works deprive these high standing people from doing genuine real mathematics? As Perelman fictitiously said, the world of Math is "the reign of plagiarism and stupidity. That's what pushes me away from the world" (p. 53); and that "Math is being stifled, mathematics required fresh air" (p. 114). The following are taken from his words in reality: "I have very low expectations of mathematicians. Almost all of them are conformists. They are more or less honest, but they tolerate those who are not honest" (pp. 47–48).

Speculations for reasons (if any) of Perelman's refusal are continually coming from mathematicians and non-mathematicians. The author tries not to "give it a political, philosophical, or even a scientific dimension" (p. 31). Those were the words that the author puts in Perelman's mouth; so are the following: "I realized early that awards ceremonies exist to show off the givers, not the recipients of prizes" (p. 73).

The book is an enjoyable novel on mathematicians (and not on mathematics) and is suitable for non-mathematicians, even for non-academic people, as well. I cannot help pointing out a couple of typos: (i) "he would would conjure" on page 40, and (ii) "I told her. it sound like" on page 95. There are also a couple of mistakes and confustions that I would like to figure out:

(1) On page 11 we read "It is said that Alfred Nobel purposefully left out mathematics from his list of prizes in order to avoid having to award it to a great mathematician of the time who happened also to be his wife's lover". It is a very old anecdote, and by a skillful search on the net one can find the truth. I suggest this as a good exercise to the reader (and the author) of this novel. Putting this untruth, even in a fiction, is annoying and could even be offensive (given that Alfred Nobel never married!).

(2) On page 15 Yau is said to have "attributed half of the collective achievement to Hamilton, twenty percent to Perelman and thirty percent to Cao and Zhu!". But we read on page 56 of *Manifold Destiny*,

written by S. Nasar and D. Gruber in *The New Yorker* (21 Aug. 2006), which is the second reference in footnote 2 on page 132 of this book, that according to Yau, "Hamilton contributed over fifty percent; the Russian, Perelman, about twenty-five percent; and the Chinese, Yau, Zhu, and Cao et al., about thirty percent". Nasar and Gruber add that "Evidently, simple addition can sometimes trip up even a mathematician" (*ibid.*). The article *Manifold Destity* is not a fiction; so, why the jocular mistake is corrected in this fiction? While the other false legend on the non-existence of a Math Nobel Prize remains? The author could at least talk about the equivalent newly established Math Able Prize, if he insists on the truth.

Despite all this, I recommend the book for everyone, and strongly recommend that reading it (or translating it to other languages) be accompanied by reading (or translating) the only two references of the book (in footnote 2 on page 132): one the article *Manifold Destity* written by *S. Nasar* and *D. Gruber* [Nieuw Arch. Wiskd. (5) 8, No. 1, 34–43 (2007; Zbl 1239.00040)], and other the book *Perfect Rigor* written by *M. Gessen* [Perfect rigor. A genius and the mathematical breakthrough of the century. Boston, MA: Houghton Mifflin Harcourt (2009; Zbl 1191.01044)].

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