The life of a mathematician

Recently, my condominium instituted a library where residents could leave discarded books for others to take. My wife came across a 1983 novel by Rebecca Goldstein, entitled *The mind-body problem.* The heroine and narrator is a woman of Orthodox Jewish background, who having arrived at Princeton to do graduate work in philosophy meets and marries a mathematical prodigy, Noam Himmel, recently recruited to the mathematics department. The author is a distinguished philosopher of science and the mind, but evidently has had direct experience with mathematicians. Her novel explores through the evolution of the narrator's marriage and cultural beliefs as well as the intellectual, cultural, social and familial milieu of mathematicians. There are a few wry sketches, such as this description of Noam's take on ethical questions:

> *"That's yet another ethical question, whether we have an ethical obligation to consider ethical questions, including this very one. However, since I haven't considered this question, I don't know that we do have such an obligations, and thus feel no obligation to consider this question."* $\cdots$ *Self-referring propositions, as I was to learn, are a favorite source of humor for Noam.*

The narrator's introduction to the life as a mathematical spouse came early, when her honeymoon was combined with attendance at mathematical conferences. *There was an ordering of mathematical talent at the conference. First there were the Kohanim, the high priests, descendents of Aaron — about seven or eight mathematicians who converse directly with God. Then came the tribe of the Levis, very special, but not allowed entry into the Holy of Holies. And last came the congregation of Israelites, awaiting word from those on high, but still a nation apart, chosen by God. The mathematical heirarchy was duplicated in the groupings of spouses.*

Reading this novel got me thinking that an important part of the education and mentoring of students is helping them to understand what the life of a mathematicians entails. Some students have a great deal of talent, but the ease with which they encompass the mathematics can sometimes be a confounding factor as they carve out a career; others, while intelligent, have to struggle to make their way, and, while doing so, need to be both both inspired and instructed by others before them who had a similar journey. One's success as a mathematician is not solely a function of brainpower; a lot depends on personality, networking, the breadth of one's curiosity, the reliability of one's memory and intellectual instincts and also on luck in finding an area that suits one's predilections and capabilities.

While fictional accounts of mathematicians seem to be rare, there are many biographies and autobiographies that show well the different ways in which mathematicians construct their careers.

Some recent plays have also treated the mathematical life. *Proof*, by David Auburn (2000) explores the lifetime contribution of a mathematician and raises the mystery of his daughter's own role in that contribution, while *Arcadia* by Tom Stoppard takes us back to the nineteenth century and the abilities of the young girl, Thomasina.

The undergraduate who wants to understand something of the texture of a career of a mathematician, as well as the nature of the society in which mathematicians move, has a great number of resources available. I will list but a few of these that I think are particularly frank and insightful, and likely to be of the greatest value. A fine biographer is Constance Reid, whose *Hilbert* (1969) provides a first-class account of how a famous mathematician structured his career and stood at the centre of a distinguished mathematical community. A more recent biography about a mathematician who is also active in politics, is Steve Batterson *Stephen Smale: The mathematician who broke the dimension barrier* (AMS, 2000). A very recent example of particular significance to us in Canada is *King of Infinite Space: Donald Coxeter, the Man Who Saved Geometry* by Siobhan Roberts (Anansi, 2006), in which we get a many-sided look at the his life and influence.

Siobhan Roberts followed up with the challenging task of charting the intellectual career of John Conway in her book, *Genius at play: the curious mind of John Horton Conway* (Bloomsbury, 2015). Conway is an unusual character even in a field which has its share, and Roberts has to exert her literary skills to convey the essence of her sometimes reluctant subject, often simply letting him speak in his own words.

While the amount of historical and biographical material has increased enormously since the middle of the last century, there are a number of notable American autobiographies that provide a remarkably detailed account of the social and intellectual milieu of contemporary mathematicians. I recommend the following:

Philip Davis, *Education of a mathematician* (2000)

Paul Halmos, *I want to be a mathematician: an automathography* (1985)

Robert Kanigel, *The man who knew infinity: a life of the genius Ramanujan* (Washington Square, 1991)

Norbert Wiener, *Ex-prodigy: my childhood and youth* (1953) and *I am a mathematician: the later life of a prodigy* (1956)

Stan Ulam, *Adventures of a mathematician* (1976)

Two forays into the world of novels, one based on real characters and the other on a fictional one, are instructive. *The Indian clerk* (Bloomsbury, 2007) by David Leavitt explores the complex relationship between Hardy and Ramanujan, while *Uncle Petros and Goldbach's conjecture* (Faber & Faber, 2000) portrays the tragedy of a man who sacrifices his life to an impossible problem.

In recent years, the *College Mathematics Journal* has been publishing interviews with contemporary noted mathematicians, such as the recent one in which Scott H. Brown interviews Henry Wadsworth Gould, an enumerative combinatorist (*College Math. J.* 2006 (37:5), 370-379). Twenty-five such interviews have been collected in the 1985 Birkhäuser publication *Mathematical people: profiles and interviews* edited by D.J. Albers and G.L. Alexanderson; this is well worth having as the foremost figures of our time, such as Coxeter, Conway, Erdös and Graham, talk about their lives and work.

Even though the author is a physicist rather than a mathematician, it is well worth mentioning the autobiographical *Surely you're joking, Mr. Feynman: the adventures of a curious character*, by Richard Feynman. It is hard to suggest a book that sheds light so clearly on the abundant cultural, social and intellectual life of a genius who carries his abilities lightly and joyfully.

For school students, a very fine introduction to the mathematical world is *A mathematical mosaic: patterns and problem solving* by Ravi Vakil (Brendan Kelly, 1996). Along with a plethora of mathematical recreations, problems and interesting results are historical vignettes and short personal profiles of younger mathematicians with whom they may identify: J.P. Grossman (b. 1973), Catriona Maclean (b. 1976), Ka-Ping Yee (b. 1976), Eugenia Malinnikova (b. 1974), Jordan Ellenberg (b. 1971), Vin de Silva (b. 1971) and Noam Elkies (b. 1966).