BOOK REVIEW

My Search for Ramanujan

A Review by Mei Kobayashi

My Search for Ramanujan: How I Learned to Count

Ken Ono and Amir D. Aczel

Springer, 2016

238 pages, US\$29.99

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Mathematics is often regarded as a mysterious art populated by gifted prodigies who unlock its secrets with uncommon ease. This image could not be further from the truth for most practitioners in the field, who, at some point in their careers find the long hours and dedication to study difficult and tiring. In reality, most so-called prodigies enjoy spending endless hours contemplating mathematics as a sort of game or religious experience so that their acquisition of knowledge merely appears to be effortless.

My Search for Ramanujan is a refreshingly candid account of one number theorist's circuitous journey to a research career and professorship at Emory University. It is Ken Ono's personal story of rebellion from parental expectations and adventures during soul-seeking years before discovering his loves in life: Erika, his wife; mathematical research; teaching/advising students; and his friends, mentors, siblings, and parents. The book sets forth a realistic view of the challenges of pursuing an academic career and provides tips to young readers on

the broader goal of searching for one's own path in life to find fulfillment and happiness.

The book will be of interest to several types of audiences, such as aspiring young scholars contemplating a career in mathematics or scientific research; parents and educators who seek to improve their mentoring skills; and fans of *The Man Who Knew Infinity*, the original book by Robert Kanigel or the 2015 movie directed by Matthew Brown which focuses on Ramanujan and his professional relationship with Hardy (Hardy's views on his relationship with Ramanujan appear in his classic book *A Mathematician's Apology*). Many readers know that Ken Ono was the mathematics coach for the movie, which was reviewed by George Andrews in the February 2016 issue of the *Notices*.

I recommend online videos by Ken Ono on number theory, this book, and the movie. Ono's charisma and talent for explaining mathematical concepts convey the fun and magic in playing with numbers.

My Search for Ramanujan consists of four parts, with a whopping total of thirty-four chapters that are interconnected through a seemingly uncountable multitude of themes and subthemes. The central

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Ken Ono (left) served as mathematical coach on the 2015 film *The Man Who Knew Infinity*, based on Robert Kanigel's book. Dev Patel (right) played Ramanujan.

theme is the great mathematician Ramanujan and the enormous barriers he overcame to fulfill his passion for mathematics. A second recurring theme is parental expectations for achievement, especially for their sons. A sample of other topics in the book includes: the value of mentorship and how thoughtful shepherds at critical junctures can impact the life of a fragile lamb, cultural assimilation of immigrants, educational systems, racial tension, understanding diverse viewpoints, the beauty of number theory, spirituality and religion as emotional oases, India, and making a movie about a mathematician. Readers may find the frequent change of topics and style of prose overwhelming. However, the book is structured so that readers can easily skim its chapters and jump ahead to material that interests them.

The first and third parts of *My Search for Ramanujan* are personal accounts of the author's childhood. Most progeny of immigrants to the United States, such as Ken, have moments of embarrassment and unhappiness about their parents' lack of cultural assimilation, though the frequency and degree vary. The cultural gap for immigrants can be extremely difficult to overcome, through no fault of their own. Ken's mother is a stellar example of a Japanese mother and wife of her generation who takes her role as a professional homemaker very seriously. She loves her children and is intent on raising them to have successful careers, and she views academic achievement as the vehicle for driving them to success. Though the book describes a typical "Asian Tiger Mom," she shares many characteristics with soccer moms of millennials who obsessively micromanage their children's schedules to ensure all coursework and extracurricular activities will improve the odds of acceptance to a prestigious university.

More often than not, energetic and mischievous little boys, like Ken, resent their mothers' well-intentioned disciplinary remarks to devote more time to academic studies. Unfortunately, the old-world style of rearing children full of reprimands and scant on praise does not transfer well to the rearing of children born into a new generation in the new world. And it was certainly not a good match for Ken's temperament. To circumvent parental rebukes, Ken masters the art of hiding mistakes from his mother, such as forging her signature to verify receipt of her son's

academic progress report to school administrators. Like Huckleberry Finn and Aunt Polly, delightful passages in the book remind us that the naughtiness and pluck of little boys transcends nationality, race, and religion.

Ken first learns of the remarkable life of the Indian genius Ramanujan when his father receives a letter from Ramanujan's widow in Madras, India, asking for donations to pay for a bronze bust of her late husband.¹ "Ken-chan," says his father,

I have to tell you...the most incredible story, about the life of Srinivasa Ramanujan. It is the story of an Indian man who overcame incredible odds to become one of the most romantic and influential figures in the history of mathematics. It is the story of a self-taught dropout whose ideas came to him as visions from a goddess. It is the story of a man who had the courage to send his ideas to random mathematicians at the University of Cambridge, and then to accept the invitation of a world-class mathematician who recognized his genius and travel halfway around the world to work with him in England. It is the story of a man who suffered racial prejudice as he strove for accomplishment and recognition. It is a story of a man who would then die tragically at the young age of 32."

"I was stunned that my father held this college dropout in such high regard; he revered this man as some kind of demigod."

Ingenious, presumptuous youths can conjure up convenient interpretations of an awe-inspiring story, and Ken was no exception. He decides "to play the Ramanujan card (and offer) him as a role model, a successful dropout whom (his) parents understood and revered." Ken leaves home and drops out of high school. One of Ken's older brothers, whose name Santa fits the role he plays in Ken's life, agrees to take his little brother under his wing. Ken leaves his parents' home in Baltimore to move to Montreal, where Santa resides after graduating from McGill University. Thus begins Ken's initiation into a new phase in life, free from parental supervision.

Independence is liberating and fun at first, but Ken is clearly too smart to remain happy without intellectual stimulation. Santa helps Ken to believe in himself and apply to colleges that admit students without a high school degree if they are academically qualified. He decides to enroll at the University of Chicago since it is sufficiently far away from his parents. At Chicago, a more mature relationship with the spirit of Ramanujan emerges to inspire Ken to become a serious student and professional mathematician. Back in school, Ken meets Erika, a beautiful and kind person who becomes his wife and mother of their children. She is his soul mate and source of warmth and happiness in his personal life.

¹I recommend *Letters from an Indian Clerk*, a 1987 movie on the life of Ramanujan featuring interviews with his widow. It is available on YouTube.

In 2000, Ken Ono (right) received the Presidential Early Career Award in Science and Engineering, which is presented by the president in a ceremony in Washington, DC. Just before the ceremony, he posed with his father, Takashi Ono, in front of the White House.

To avoid spoiling the plot, I will refrain from revealing further details. However, I found the latter half of the book more substantive and fun to read, and so I encourage readers who find the first part a bit too gloomy to hang in there. Though a little rough around the edges in nonmathematical sections, *My Search for Ramanujan* is a gem. It presents

*Young
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by Ono's story*

beautiful and magical ideas from number theory in a down-to-earth format, with a focus on topics in Ramanujan's notebooks. It inspired me to look up and read more about the subjects presented and brought me back to my graduate student years and to the enjoyment of learning mathematics. Ken Ono has an uncommon gift for teaching and is a great ambassador for promoting number theory and mathematics to nonexperts.

However, the book is about more than mathematics. Ken Ono's generosity and courage to share some of his innermost feelings and personal life with readers is admirable. The study of mathematics is a very solitary occupation that has led to feelings of inadequacy and depression in some of the greatest minds. Adding to this difficulty is the social awkwardness of the vast majority of mathematicians. I believe that young readers searching for meaning in life and mathematics will be reinvigorated by Ken Ono's story: believe in yourself; find and worship your companion and soul mate; appreciate friends, siblings, and loving parents; and give back to society at least as much as you have been given.

Addendum

My father, the late Shoshichi Kobayashi, and I used to walk home from Evans Hall when I was a graduate student at Berkeley. Since our research areas did not overlap, our conversations were not about mathematics per se, though they sometimes touched on related gossip. When I was contacted about this book review, I recalled that on one of our walks, my father mentioned that all Japanese mathematicians who immigrated to the US in the 1950s and 1960s know each other, so I asked my mother about the Ono family. Apparently, I had the honor of meeting Takashi Ono in Vancouver when I was a newborn in diapers. My mother added that several years ago, my father mentioned over dinner that one of Takashi Ono's sons gave a seminar at the Mathematical Sciences Research Institute and that he is an unusually gifted young mathematician.

Credits

Photo of Dev Patel, courtesy of Sam Pressman.

Photo of Ken Ono and his father, courtesy of Ken Ono.

Photo of Mei Kobayashi, courtesy of Mei Kobayashi.

ABOUT THE REVIEWER

Mei Kobayashi received her PhD in mathematics from the University of California at Berkeley and for most of her career was a researcher at IBM. She has also taught at Japanese national universities, including the University of Tokyo. Currently Kobayashi is a manager in the Customer Services Division of NTT Communications. See Kobayashi's webpage at: <https://sites.google.com/site/meikobayashi/home>.

Mei Kobayashi greets Pepper, the SoftBank robot, in Ginza, Tokyo, where she was covering robots for a blog on the Communications of the ACM.