Naming Infinity: A True Story Of Religious Mysticism And Mathematical Creativity (Belknap Press)
In 1913, Russian imperial marines stormed an Orthodox monastery at Mt. Athos, Greece, to haul off monks engaged in a dangerously heretical practice known as Name Worshipping. Exiled to remote Russian outposts, the monks and their mystical movement went underground. Ultimately, they came across Russian intellectuals who embraced Name Worshipping—and who would achieve one of the biggest mathematical breakthroughs of the twentieth century, going beyond recent French achievements. Loren Graham and Jean-Michel Kantor take us on an exciting mathematical mystery tour as they unravel a bizarre tale of political struggles, psychological crises, sexual complexities, and ethical dilemmas. At the core of this book is the contest between French and Russian mathematicians who sought new answers to one of the oldest puzzles in math: the nature of infinity. The French school chased rationalist solutions. The Russian mathematicians, notably Dmitri Egorov and Nikolai Luzin—who founded the famous Moscow School of Mathematics—were inspired by mystical insights attained during Name Worshipping. Their religious practice appears to have opened to them visions into the infinite—and led to the founding of descriptive set theory. The men and women of the leading French and Russian mathematical schools are central characters in this absorbing tale that could not be told until now. Naming Infinity is a poignant human interest story that raises provocative questions about science and religion, intuition and creativity.
I had the pleasant assignment of reviewing this book for The Mathematical Intelligencer (my review is to appear in a few months). In that review, I invoked the image of the Tower of Babel as a metaphor for the efforts (ultimately vain) of N.N. Luzin to find an effective way of enumerating the countable ordinal numbers. It is more than a coincidence that Luzin was an adherent of a splinter group in the Orthodox Church that called itself "onomatodoxy" (imeslavie, in Russian), meaning "name-glorification" or "name-worshipping". This group attached supreme importance to getting names exactly right in religious matters. Luzin carried this zeal into mathematics as well, trying desperately to break everything into clear, unambiguous definitions. The Polish mathematician Sierpinski had horrified him with a list of results in analysis that can't be proved without invoking the axiom of choice, and he actually had insomnia over that for many nights. It is true that Henri Lebesgue, who shared none of Luzin's religious mysticism, also tried to deal only with functions that are "analytic," but he didn't make a fetish of it. Luzin invented the contrasting terms "effective" and "auswahlistic" to emphasize the true epistemological status of results in analysis. If they used the Auswahlprinzip (axiom of choice), they weren't "effective." In order to make the book as widely accessible as possible, the authors do not go into any deep mathematical detail (there are no equations in the book), but they describe it in general terms well enough to give an adequate picture. In addition to the broad mathematical trends that are reflected in the book, there are gripping personal stories of individual mathematicians and their troubles.

My abilities in mathematics are decidedly pre-Euclidean. A scientist friend of mine used the visual metaphor of an established tree to explain mathematics: arithmetic, geometry, algebra and trig are the roots, the many developments in modern math are the branches and leaves. The trunk connecting roots and branches and supporting the tree is the calculus. Given this metaphor, I'm still scrambling among the roots for acorns of understanding from the top of the tree, because I never climbed past calculus. This limited my capacity to understand the math concepts Graham and Kantor describe in "Naming Infinity". Other reviewers have commented on the book's lack of equations to demonstrate the math propositions discussed in it. I wish some simple clear definitions of the building blocks of set theory had been available in an appendix. Beyond the few figures which elucidate Cantor's discoveries in the second chapter, and a discussion of the conflict between Platonic and Aristotelian notions of mathematics and how these played out in both the French and Moscow Schools of math in the early XXth century, there are precious few tools to help the untutored reader develop a more profound comprehension of the subtleties of set theory and the mathematical continuum. It's also true that I sometimes wished for the authors to return to topics
briefly discussed in earlier chapters: did the religious practices of the Name-Worshippers persist through the post-Stalin era, for example? What was Luzin's life like in his later years, after the discontinuity event of his pardon by Stalin? (Beyond his caustic insult to Kolmogorov, and his lover Bari's suicide after his death, there is precious little here about Luzin's twilight years.

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