



Grigori Perelman

Genius, that declined the Fields medal



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1 Biography

1.1 Early life

Grigori “Grisha” Perelman is a Russian mathematician renowned not only for his groundbreaking achievements and genius, but also for his unconventional lifestyle and controversial decisions. Most notably, his refusal of the Fields Medal, one of the most prestigious awards in mathematics.

Grigori Yakovlevich Perelman was born on June 13, 1966, in Leningrad (today’s Saint Petersburg, Russia), then part of the Soviet Union, to a Jewish family. From a very young age, his exceptional mathematical talent was apparent, and he was admitted to an elite high school in Saint Petersburg specializing in mathematics. According to a story, he was so focused on learning that he even refused to eat his lunch in order to continue studying [3].

One of Perelman’s early achievements was winning a gold medal at the International Mathematical Olympiad held in Budapest in 1982. At only sixteen years old, he achieved a perfect score. In the Soviet Union, the Olympiad was taken very seriously, and his gold medal earned him admission to the prestigious Leningrad State University. This was a remarkable opportunity for Grisha, as academia in the Soviet Union was often discriminatory toward people of Jewish descent [3].

Perelman completed his doctorate there and went on to work at the Steklov Mathematical Institute. Because he was Jewish, his admission was possible only thanks to the support and advocacy of prominent mathematicians who spoke up for him [3]. During most of the 1990s, Perelman spent time in the United States, working at several universities, including Stony Brook University and the University of California, Berkeley. Despite the number of ongoing offers from prestigious universities in the United States, Grisha decided to come back to Russia to the Steklov Mathematical Institute to continue with his work [1].

Although Perelman had already gained significant respect within the mathematical community, colleagues often described him as a deeply private and introverted person who cared little for academic hierarchy or prestige. His unusual habits and quiet determination made him stand out, reinforcing the image of a mathematician driven purely by curiosity rather than career ambitions [3].

1.2 Grigori's great success

After his return to Russia, Perelman distanced himself from the mathematics community, quietly working on one of the toughest challenges in the field of mathematics [2].

In 2000, the Clay Mathematics Institute (CMI) selected seven unsolved mathematical problems, designated them as the “Millennium Problems,” and offered a \$1 million prize to the first person to solve each one. One of these seven problems was the Poincaré conjecture, a problem originally conjectured by Henri Poincaré in 1904 [3]. The conjecture posits that every simply connected, closed three-dimensional manifold is topologically equivalent to a three-dimensional sphere [1].

After returning to Russia, Perelman built upon the work of William Thurston and Richard Hamilton and succeeded in proving the Poincaré conjecture. His proof was published in 2002 as a series of three papers, which he made freely available on the internet. This was a deliberate decision, as Perelman fundamentally disagreed with the scientific publishing industry and the notion that one must pay to access academic articles [2].

Proving the Poincaré conjecture was a major breakthrough and brought Perelman widespread attention. His achievement qualified him for a \$1 million prize, which, to everyone's surprise, he declined. It is speculated that he refused the prize because receiving the money would have required publishing the article in a journal, which went against his principles. In 2006, Grisha was offered the Fields Medal for his proof of the Poincaré conjecture, which he also declined. The reasons remain unclear, although one theory suggests that part of his decision was influenced by a public dispute over the recognition of the proof. His choice was likely also motivated by his apathy to press and media attention, as he was deeply focused only on mathematics [2].

In 2005, Grigori Perelman decided to leave the Steklov Mathematical Institute and retire from mathematics altogether. He stated that he was disappointed with the field and wanted to try something new. Since then, very little has been known about his life. He distanced himself from public view and began living with his mother [3].

Grigori Perelman remains one of the most mysterious and brilliant mathematicians of modern times. His groundbreaking proof of the Poincaré conjecture not only solved a century-old problem but also reshaped the field of topology. Equally remarkable is his unconventional approach to life and academia - rejecting fame, prizes, and public recognition in favor of pursuing

mathematics on his own terms.

Reference

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