# Georg cantor

Science, Mathematics

History ofMathematicsPortfolio Standard 1 Discrete Mathematics Georg Ferdinand Ludwig Phillip Cantor (1845 – 1918) …the transfinite species are just as much at the disposal of the intentions of the Creator and His absolute boundless will as the finite numbers. Georg Cantor Georg Cantor was born on March 3, 1845 in Saint Petersburg, Russia. Georg lived in the city until age eleven, when his father became sick and thefamilymoved to Germany to get away from the bitter winters in Russia. Throughout his youth, Georg played the violin and showed great talent, a talent he inherited from his musical parents.

Georg graduated in 1860 from Realschule in Darmstadt. He was given praise for his outstanding skills in mathematics, especially trigonometry. He continued his studies at the Federal Polytechnic Institute in Zurich, where he stayed until his father's death in 1863. At this time, he was given a considerable inheritance, and decided to transfer his studies to the University of Berlin. While at the University, Georg attended lectures by prominent mathematicians such as Leopold Kronecker, Karl Weierstrass, and Ernst Kummer.

In the summer of 1966, Georg attended the University of Gottingen, which was and still is an important mathematical research center. He received his Ph. D. in 1867 for his thesis on number theory, De aequationibus secundi gradus indeterminatis. After receiving his Ph. D. , Georg began working at an all-girls' school in Berlin. He quickly left this position to take up another one at the University of Halle, where he remained for the rest of hiscareer. In 1874, after Georg's career began, he met and married Vally Guttmann.

Between 1874 and 1886, Georg and Vally had six children. Thanks to his father's inheritance he was able to care and provide for such a large family while making a modest salary in academia. The decade of 1874 to 1884 proved to be Georg's finest mathematical time. It was during this time that Cantor began his work on set theory. He was able to prove that there are (infinitely) many possible sizes for infinite sets, which were not trivial and needed to be studied. Before this proof, " infinite" was a philosophical discussion, not a mathematical one.

In one of Georg's first papers, he proved that the set of real numbers is " more numerous" than the set of natural numbers. He also showed the necessity of one-to-one correspondence in set theory. He used this concept to define finite and infinite sets, subdividing the latter into denumerable sets and uncountable sets. Georg also pioneered using fundamental counting in set theory. This discovery led to Cantor's theorem: the size of the power set of A is strictly larger than the size of A, even when A is an infinite set.

Georg had many triumphs during his career, making him one of the great discrete mathematicians in history, but he also suffered because of his career. He was hospitalized several times throughout his life, which until his death, was contributed todepression. He would sever ties with friends and colleagues if they criticized his work. He once became so " depressed" from criticism by Leopold Kronecker that he began applying himself to lecture onphilosophyinstead of mathematics. He spent a great deal of time trying to prove that Francis Bacon wrote the plays attributed to Shakespeare, even writing two pamphlets on it.

All of his correspondence with friend and publisher Gosta Mittag-Leffler attacked Kronecker and displayed how much of his confidence he lost due to Kronecker's critiques of his work. Georg retired in 1913, still battling chronic depression. He suffered frompovertyand malnourishment during World War I. He passed his final year of life in the sanatorium, where he died on January 6, 1918. After his death, Georg was diagnosed with bipolarity, which is attributed for his erratic behavior and depression.