Giovanni Girolamo Saccheri Biography

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Biography

Giovanni Girolamo Saccheri was a Jesuit priest who did pioneering work in the areas of mathematical logic and non-Euclidian **geometry**.

The son of a lawyer, Saccheri was born in San Remo, Genoa (now Italy) on September 5, 1667. He began academic training with the Jesuits in Genoa in 1685 and five years later enrolled at the Jesuit College of Brera to study philosophy and theology. In the meantime, he made a modest living by tutoring at the school. One of his teachers, a poet and mathematician named Tommaso Ceva, convinced Saccheri to direct his energies toward mathematics and became the young man's academic mentor. With Ceva's guidance, Saccheri published his first book, *Quaesita geometrica,* in 1693. In it, Saccheri solved numerous problems in elementary and coordinate geometry. He was ordained a priest in 1694 at Como, Italy.

That same year, Saccheri began teaching philosophy at the University of Turin, where he remained until 1697. While there, he published *Logica demonstrativa,* one of his most important works. *Logica* treats logic in the Euclidian style, with definitions, demonstrations, and postulates. In 1697 Saccheri changed jobs again, this time moving to the Jesuit College of Pavia (also known as the Universita Ticinese), where he would teach for the rest of his life. Two years later, he became the mathematics chair at the school, appointed by the Senate of Milan.

In 1708, Saccheri published *Neo-statica,* based on a branch of **mechanics** (statics) that deals with objects at rest or forces in equilibrium. His most famous work, however, did not come until 1733. *Euclides ab Omni Naevo Vindicatus (Euclid Cleared of Every Flaw)* attempted to prove Euclid's **parallel postulate**. In this work of synthesis, Saccheri gave a complete analysis of the parallels problems in terms of Omar Khayyam's quadrilateral. He used the Euclidian assumption that straight lines cannot enclose an **area**, and thus felt justified in excluding geometries that contain no parallels. Yet he also had to show that a unique parallel through a point to a given line exists. To do this Saccheri assumed the existence of multiple parallels and tried to find a contradiction in that. He reportedly managed to convince himself of a contradiction, but no one else. Nevertheless, Saccheri's logical and mathematical reasoning are now integral facets of modern mathematical logic and non-Euclidian geometry.

Saccheri died in Milan, Italy on October 25, 1733.