HISTORICAL BIOGRAPHY
LEONHARD EULER

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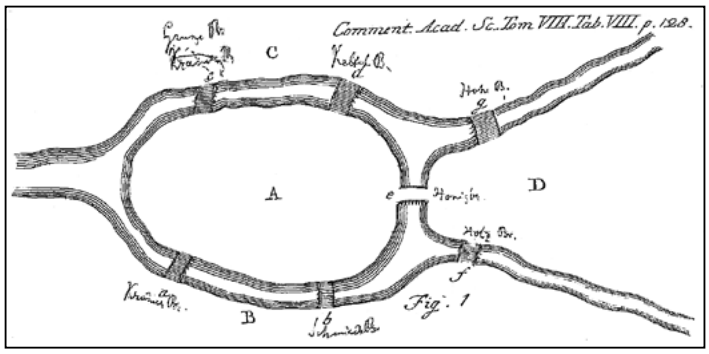
Most people who have studied math and science in their academic career have, at the very least, heard of Euler (pronounced “Oiler”). They might recognize Euler’s number, Euler’s method, the Cauchy-Euler equations, Euler-Bernoulli beam theory, or maybe even Euler’s formulas. Wikipedia’s list of things named after Leonhard Euler has over sixty-five distinct items, ranging from calculus to geometry to physics to music. Hailed as one of the greatest mathematicians of the eighteenth century, he shaped the course of math and science for centuries to come.

Leonhard Euler was born in 1707 in Basel, Switzerland, to Paul Euler III, a minister, and Marguerite Euler. While at the University of Basel, he studied mathematics under Johann Bernoulli’s guidance, even though—at that point—he was planning to enter the ministry. He completed his studies in philosophy in 1723 and began to study theology that fall, though he could not find passion in the subject. With Bernoulli’s help, he convinced his father to let him pursue mathematics, completing his studies at the university in 1726.

He was offered a position at the St. Petersburg Academy of Sciences as a teacher of physics with regard to medicine, but he waited to accept it until well into the next year because he was waiting for a position in Basel. By the time he arrived in 1727, Daniel Bernoulli (Johann’s younger brother) and Christian Goldbach had secured a position for him in the Academy’s division of mathematics and physics. Not being a full member of the academy, Euler also worked as a medical lieutenant in the Russian navy until he became a professor of physics in 1730. Three years later, Bernoulli would return to Basel, letting Euler take his place as the senior chair of mathematics. He soon married Katharina Gsell and would have thirteen children with her, five of which survived infancy.

Changes in Russian politics put pressure on foreign academics, so in 1741, Euler relocated to Berlin at the request of Frederick the Great—though he kept his connections with the academy. Now the director of mathematics at the Berlin Academy of Sciences, he supervised many of its projects and facilities, served on the library and publication committee, was a government advisor, and maintained an impressive scientific output, writing around 380 articles as well as books on calculus, physics, shipbuilding, navigation, and astronomy. In 1759 the president of the academy died, and Euler assumed its leadership. Euler, however, had lost his favor with Frederick and found the academy increasingly hostile to him. Euler returned to St. Petersburg in 1766, greatly angering Frederick. Soon after, he lost most of his already dimmed eyesight. Despite this, he produced nearly half his works in this period. Of course, he did this with the help of collaborators with whom he discussed and developed his ideas, which they wrote down. Euler died in 1783, and St. Petersburg Academy continued to publish his works for nearly fifty more years.



How would you cross all seven of these bridges only once? Is it even possible? Euler’s solution to this led to the invention of the entire field of topology in mathematics.

Euler’s work in mathematics was varied and prolific. The books he wrote set standards and introduced concepts and notations that are vital to us today: i (the square root of -1), e (the base of a logarithm), f(x) (a function), and the well-known π, and many other notations. He also solved many problems such as the Basel problem ($1+1/2^2+1/3^2...=\pi^2/6$), the Seven Bridges of Königsberg, and many others. Without his work, it is difficult to know where we would be today.