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Maria Gaetana Agnesi



Figure 1: An image of “Maria Gaetana Agnesi, Stipple engraving by J. C. Armytage after M. Longhi” (©Creative Commons).

Maria Gaetana Agnesi (1718 – 1799)

Maria Gaetana Agnesi was a mathematician in the 18th century and was widely considered as the ‘first important lady mathematician since Hypatia’ 1,200 years after Hypatia’s time. She was also the first female author of a mathematics book and the first female professor at a university in Europe. Maria's talents were discovered early in her life with her excellent memory and intelligence. The child prodigy was born into a wealthy Italian family in Milan as the eldest of 21 children in 1718. She was given the nickname ‘Seven Tongued Orator’ as by six years old, she was fluent in French as well as her native Italian. By eleven years old, she was fluent in the five other languages, including Latin, German, Greek, Hebrew, Spanish. Maria was also interested in women’s rights and equality from a young age. She wrote a one-hour long speech in Latin about the right to education. Her father exhibited her at academic evenings, where she would recite or debate with guests with her siblings until 1739. When she fell ill at age twelve, doctors blamed her constant, excessive studying and made her do dance and horse riding to be more active. When this did not work, they tried to get her to do things in moderation and not to excess.

Maria was a devout Catholic and wanted to become a nun. Her father refused but compromised by saying she could dress modestly, attend church whenever she pleased and stop going to shows or anything of that nature. The next chapter of her life she spent dedicating to studying maths. Ramiro Rampinelli was a Professor of Mathematics at both Rome and Bologna Universities and taught Maria maths when he came to Milan, studying the calculus text *Analyse Démontrée* by Reyneauand. Rampinelli also encouraged her to consider focusing on differential calculus when Agnesi told him she was considering writing a textbook. Having 20 younger siblings, she spent a lot of her life devoted to educating them, which led

her to write a two-volume work that introduced the work of Euler and was the first text to use methods from Newton and Leibniz. Although Maria did no original work, these volumes of over 1,000 pages combined contained many examples from topics including Algebra, Calculus and Differential Analysis. It was published in 1748 and called *Instituzioni ad usodella gioventù Italiana (Analytical Institutions for the Use of Italian Youth)*. The Académie des Sciences in Paris reviewed the book, stating 'we regard it as the most complete and best-made treatise' and its legacy has lasted almost 300 years. Two years later, at the University of Bologna, Pope Benedict XIV appointed Maria as the Chair of Mathematics, making her the first female professor at a university in Europe. In her textbook, Maria discusses the cubic curve we now know as 'witch of Agnesi.' This name comes from a translation error caused by the English Mathematician John Colson, who tried to translate the Italian word for 'sailing sheet' but mistook it for 'she-devil' instead.

After the death of her father in 1752, Maria changed her focus to religion and used her wealth for charitable work. In 1751, she established a home for the poor and an improvised hospital for the sick. In the same year, she became the head of a home for the elderly, where she lived and served until her death in 1799 at 81 years old. By this time, she had given her possessions away, and, despite the wealth she was born into, died in extreme poverty. Maria led a remarkable life in which she lived for others, either by using her wealth to help the poor and the sick or writing texts for young people to learn mathematics. Regardless of the fact Maria did no original research, her work stayed significant for hundreds of years, and her story lives on today.

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