Mathematicians A-Z





Mathematical Institute

Despite its often abstract nature, the study of mathematics is not divorced from the political,



social, and historical forces that influence its investigators. Such influences may cause the achievements of individuals to not be fully recognised or appreciated within their lifetimes. Consequently, our understanding of what it means to be a "mathematician" can be biased.

This poster series presents the life and work of 26 female & non-binary mathematicians, ordered alphabetically, who hail from backgrounds that are historically under-represented (or even prejudiced against) in the field but who nevertheless achieved great distinction, either within their own time or in recent years. Here we showcase their contributions to mathematics and its applications to the natural sciences. In doing so, we aim to bring more recognition to their accomplishments and inspire reflection on what it means to be a mathematician in contemporary society.

Maria Gaetana Agnesi (Italy, 1718–1799)

Born to a wealthy Milanese family, Maria Gaetana Agnesi was quickly recognised as a child prodigy and tutored by some of the leading Italian mathematicians of the era. In 1749 she became the first woman to publish a mathematical book; an introductory treatise on differential and integral



Mary Everest Boole was a largely selftaught mathematician, whose early education was complemented through her friendship with her future husband George Boole (English mathematician, 1815–1864). Indeed, Mary contributed as an editor to his 2nd book The Laws of *Thought*; a monograph on algebraic logic. Her work in education began at her first post, as a librarian at Queen's College London, where she would unofficially tutor students and develop new methods for children's education. She believed working with physical materials would strengthen a child's understanding of abstract mathematical concepts, and popularised creative methods of teaching (such as *curve*) *stitching*, below) to realise this. She was the author of innovative pedagogical textbooks, publishing Logic Taught by Love in 1890, The Preparation of the *Child for Science* in 1904, and *Philosophy* and Fun of Algebra in 1909.



calculus. Her clear and detailed exposition of the difficult mathematical ideas were hailed by contemporaries, and she became celebrated for her knowledge within the Holy Roman Empire. One year later, she was appointed to the chair of mathematics, natural philosophy & physics at the University of Bologna by Pope Benedict XIV, although she never served due to her father's deteriorating health and her own illnesses. A devout Catholic, she spent much of her life and family fortune on behalf of the sick, poor, and elderly of Milan.

 $y = \frac{a^3}{a^2 + x^2}$





x-axis, passing through the origin. The x-coordinates of the Witch are located where a straight line from the origin intersects the line y = a, while its y-coordinates are where the same line intersects the circle. Equivalent to the graph $y = \frac{a^3}{a^2 + x^2}$, its English name derives from a mistranslation of the Italian word for a sailing sheet (versiera).



An example of a parabola created by stitching straight lines between points. The curve is the envelope of this family of lines.

Poster sources Agnesi: Wikipedia, mathshistory.st-andrews.ac.uk. Boole: Wikipedia, darwinproject.ac.uk.

Image sources Agnesi: (top) Wikimedia Commons, (bottom) Engines of Our Ingenuity #1741, J.H. Lienhard. Boole: (top) CUL 300:2.c.95.12 (Cambridge University Library)

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