

Leibniz's first book on theories of symbolic and mathematical logic

Gottfried Wilhelm Leibniz, *Dissertatio de Arte Combinatoria, in qua Ex Arithmetica fundamentis Complicationum ac Transpositionum Doctrina novis praeceptis exstruitur, & usus ambarum per universum scientiarum orbem ostenditur; nova etiam Artis Meditandi, seu Logicae Inventionis semina sparguntur...* Leipzig: Joh. Simon. Fickium and Joh. Polycarp. Seuboldum, 1666. 7 7/8 inches x 5 7/8 inches (200 x 149 mm), [6], 78, [1 errata] pages; page 21 incorrectly numbered 12.

Gottfried Wilhelm Leibniz (1646–1716), a German mathematician and philosopher, was also active in the law, the physical sciences, and history. He made important contributions to the fields of logic, probability theory, optics, statistics, and mechanics. Leibniz received his law degree in 1666 at the age of twenty, the year *Arte Combinatoria* was published. Four years later Leibniz became a diplomat in service to the bishop of Mainz, spending several years at the Parisian court of Louis XIV; there he studied mathematics under physicist Christiaan Huygens and worked with philosopher Nicolas Malebranche. In 1676 Leibniz was in the service of the Duke of Brunswick in Hanover as privy councilor, librarian, and historian; through this post he met Frederick I, King of Prussia, who in 1700 established an academy of science in Berlin with Leibniz as its first president. When Leibniz died in 1716, much of his work, contained in letters and essays, was unpublished.

Leibniz is perhaps most famous for the development of the infinitesimal calculus in 1675–76; he published his calculus in 1684, nine years before Isaac Newton's, creating notation that is still universally used. For both Newton and Leibniz, Cartesian coordinates and modern symbolism made possible the development of the calculus. Leibniz also invented one of the first calculating machines and contributed significantly to the field of mathematics with his binary system of arithmetic and his work on determinants, created from his developing methods for solving systems of linear equations; he also made crucial additions to the field of dynamics.

Leibniz' *Arte Combinatoria* was an expansion of his thesis "Disputatio arithmetica de complexionibus," also written in 1666. In it he describes his belief that all concepts are made up of smaller, more basic ideas, just as language is structured with words and ultimately the letters of the alphabet. He proposed that by combining certain concepts their underlying truths could be discovered through the demonstration of their relationships.

This copy of the Leibniz' *Arte Combinatoria* is bound in contemporary Italian carta rustica; author and title are hand lettered in brown ink on the spine. It is located in the Warnock Library.

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