THE 16TH-CENTURY MATHEMATICS ACADEMY: PHILIP II, SILICEO, JUAN DE HERRERA

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During the 16th century, architects, and engineers performed a crucial role in the Spanish monarchy. They were new social agents and leaders combining theoretical and practical knowledge in their professional practice.

Engineers and architects connect to scientific culture through the so-called "arts", which include the military arts, construction, extracting benefits from metals (or metallurgy), and navigation, or nautical science. The scientific renaissance underway in Hispanic society continued during the reign of Philip II (1556-1598).

For the first time, during this period, the cultivation of scientific-technical knowledge became a State affair, as the rulers recognized the great utility of improving management of the Empire.


Phillip II

Philip II's tutor was the Cardinal of Toledo, Juan Martínez Silíceo, professor at the University of Paris and author of works on mathematics such as the *Ars Arithmetica*. Silíceo instilled in Philip an interest in the discipline of mathematics. The figures that decorate the ceiling of the great library in the Monastery of El Escorial represent Arithmetic, Geometry, Music, and Astrology, reflecting the importance attributed to mathematics in the library resources collected there.

In 1582, Philip II established the Academy of *Mathematics and Military Architecture* in the Royal Palace in Madrid.
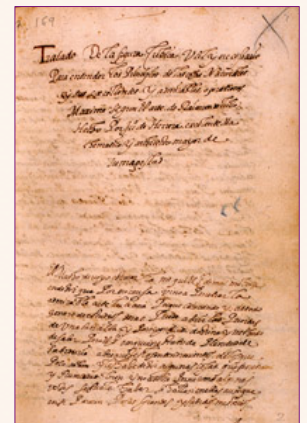

Juan Martínez Silíceo
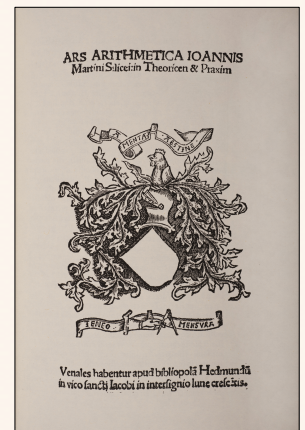
Ars Arithmetica

The architect Juan de Herrera, who built El Escorial, directed the Academy of Mathematics. Both military and civil students received very complete training ranging from mathematics to fortification, architecture, and cosmography.

Juan de Herrera is considered the main exponent of the Spanish Renaissance. He authored a brief but important theoretical work that reveals his extensive knowledge of other disciplines. His *Treatise on Cubic Form* reflects this humanist spirit, combining such varied topics as geometry, mathematics, and philosophy, and taking the first, exact and empirical science as the starting point of knowledge of the whole and applying its formulas and systems to the most abstract concepts.

Juan de Herrera

Treatise on Cubic Form

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