

# Étienne Bézout in Portugal: The reform of the Portuguese University and beyond (1772–1838)

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## Abstract

After a long period of stagnation in the Portuguese University, a change arrived with the 1772 reform of the University, which included the foundation of the first faculty of mathematics in Portugal.

Three of the four textbooks used in the first two years of the mathematics course were translated from works by Étienne Bézout (1730–1783). We present an overview of his life and his mathematics textbooks, and a survey of his Portuguese translations. We evaluate his impact on Portuguese mathematics through examination of mentions of him in the first series of the *Memoirs* of the Lisbon Academy of Sciences.

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## Sumário

Terminou um longo período de estagnação da Universidade Portuguesa com a reforma da Universidade em 1772, que incluiu a criação da primeira Faculdade de Matemática no país.

Três dos quatro manuais utilizados nos dois primeiros anos do Curso de Matemática eram traduções de textos de Étienne Bézout (1730–1783). Apresentamos uma perspectiva da sua vida e manuais matemáticos, bem como um levantamento das traduções para português das suas obras. Avaliamos o seu impacto na matemática portuguesa através da análise das suas menções na primeira série das Memórias da Academia das Ciências de Lisboa.

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## 1. Introduction

We shall analyze Bézout’s translations in the period 1772–1838. The first date is the year of the Reform of the Portuguese University, then located in Coimbra, which led to his textbooks being used in the University in the first two years of the mathematics course. The second date is the year in which the Mathematics Congregation of the University of Coimbra decided to replace Bézout’s course with Francoeur’s. That is, our research is centred on the period in which Bézout’s textbooks were officially approved for students in the Mathematics Faculty in the first two years of their course. Because it is a special case, we also analyze the Paris reprints of the Portuguese translation of one of his textbooks which was aimed at the teaching of traders and bankers.

The two centuries between the middle of the 16th century and the accession of King D. José in 1750 can be considered a period of stagnation in Portuguese mathematics. The existence of a powerful Inquisition and the control of the Society of Jesus over education<sup>1</sup> were two important factors that affected the development of mathematics in Portugal during this period and prevented the new mathematics then taking shape in Europe, led by mathematicians such as Newton, Leibniz, the Bernoullis and d’Alembert, from gaining any discernable influence in Portugal. In his groundbreaking history of Portuguese mathematics, the Portuguese mathematician and historian of mathematics Francisco Gomes Teixeira (1851–1933), the most influential Portuguese mathematician of the 19th century, describes what was taught of mathematics in the Society’s colleges, as well as in the University<sup>2</sup>:

[...] rudiments of arithmetic, of geometry and of astronomy, and the other Aristotelian philosophical and physical theories, and some of the masters wrote good textbooks for the teaching of these sciences, and others commented wisely on these theories, but without originality, and conservative in its essence, tied to the old theories of the Peripatetics and of the medieval scholastics; they did not introduce into the country the discoveries that were being made in science and in philosophy abroad.

They were learned and they knew how to teach and taught well, but they only taught knowledge of the works of the past; they did not face the future, they did not teach how to progress. Furthermore, what concerned them above all was to defend Catholicism against heresy, and to spread Christian civilization overseas.<sup>3</sup>

[Teixeira, 1934, pp. 204–205]

The Portuguese Assistancy has been analyzed in detail by Ugo Baldini, who studied its characteristics in the context of the existing Assistancies of the Society of Jesus. See (Baldini, 2000), (Baldini, 2004) and (Baldini, 2008). See also (Leitão, 2007), who studied the scientific teachings in the important *Aula da Esfera* in Lisbon.

One of the aims of Sebastião José de Carvalho e Melo, the future (in 1769) Marquis de Pombal, King D. José’s Prime Minister, was to centralize power, and for this he had to fight the nobility and the Society of Jesus. The nobility came under control after the Távoras trial (1758), which marked the end of the political

<sup>1</sup> The Portuguese assistancy of the Society of Jesus, like its Spanish counterpart, and in contrast to other assistancies, had a backward attitude towards mathematics. On this, and in particular on their stubborn opposition to the innovation required by their Roman superiors, see (Baldini, 2004, especially pp. 302–327).

<sup>2</sup> In what follows, all quotations in Portuguese will be given in English translation, with the Portuguese text in footnotes.

<sup>3</sup> “[...] elementos de Aritmética, de Geometria e de Astronomia e as doutrinas filosóficas e físicas de Aristóteles, e alguns dos seus mestres compuseram bons manuais para o ensino daquelas ciências e outros comentaram sabiamente estas doutrinas, mas desprovidos de originalidade de espírito e fundamentalmente conservadores, presos às velhas doutrinas dos Peripatéticos e dos Escolásticos medievais, não introduziram no país as descobertas que no campo da ciência e da filosofia se iam fazendo fora dele.

Eram doutos e sabiam ensinar e ensinavam bem, mas só ensinavam a conhecer as obras do passado, não olhavam para o futuro, não ensinavam a progredir. Demais, o que principalmente os preocupava era a defesa do catolicismo contra as heresias e a divulgação da civilização cristã pelas terras de além-mar.”

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