

*This is a review submitted to Mathematical Reviews/MathSciNet.*

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**Mathematical Reviews/MathSciNet Reviewer Number:** 127139

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**Author:** Berenguer, Joaquim

**Title:** Introducing differential calculus in Spain: the fluxion of the product and the quadrature of curves by Tomàs Cerdà.

**MR Number:** MR4220674

**Primary classification:** 01A50

**Secondary classification(s):**

**Review text:**

This is a rigorous and detailed paper about the role played by the Spanish Jesuit mathematician and cosmographer Tomas Cerda on the introduction of differential calculus in Spain. In it, Berenguer studies Cerda's "Treatise on Fluxions", an unpublished manuscript which was probably the basis for his mathematical lectures at the College of Cordelles in Barcelona and at the Imperial College in Madrid. Cerda used Thomas Simpson's definition of fluxion as stated in his treatise on The Doctrine and Application of Fluxions. In fact, Simpson's work seems to be the main source of Cerda's treatise. The paper provides a clear definition of fluxion and introduces the differences between the Leibnizian and the Newtonian methods for infinitesimals. The last one was preferred by Cerda, locating him in the Newtonian tradition of not accepting the reality of infinitesimals and acknowledging the fruitfulness of Newton's geometric-kinematic conception. But Cerda's treatise is not a mere reproduction of Newton's ideas through Simpson's work, he also introduced the Leibnizian differential notation where he considered that it would be helpful to understand certain topics, which makes it an original contribution for someone who employed the Newtonian approach. The author presents Cerda's contributions through the study of two particular aspects: the method of fluxions and the calculation of the area under a curve. He provides a comparison of Newton's, Simpson's and Cerda's works including tables and figures which help the reader in understanding the similarities and differences of these three works. The paper also has an extensive and exhaustive list of references. Berenguer's is a contribution to the understand-

ing of scientific practice outside the main centers of research in the eighteenth century.

**Comments to the MR Editors (not part of the Review Text):**

The *Doctrine and Application of Fluxions*, should be in italics (it is the title of Simpson's work) The name "Tomas Cerda" has two accents that I cannot include in the LaTeX format. The correct spelling is with grave accent in the "a".