

ZMATH 2009c.00016**Pacheco, José M.; Pérez-Fernández, Francisco J.; Suárez, Carlos****On the reception and spread of metaphysical explanations of imaginary numbers in Spain.**

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This is a welcome paper. It is related to a number of important papers of the authors dealing with the 19th century developments of mathematics in Spain. In the 19th century, Spain was experiencing a turbulent political and intellectual scenario, after the Napoleonic invasion and having lost her colonial empire. While there was a vigorous development of rigorous mathematics and philosophy in Europe, in Spain a few isolated individuals, mainly in seminaries, military schools and in the secondary educational system, were aware of what was going on the rest of Europe. This paper focuses specially one of such individuals, José María Rey Heredia (1818-1861). Heredia was preparing for an ecclesiastical career, but did not receive the orders and decided for a career as a teacher. He took degrees in Laws and in Philosophy and Letters, and became a Professor of Logic at a High School in Madrid. In 1853, Rey wrote a textbook, called *Elementos de Lógica*, which is a classical treatment of logics. This book was sort of a springboard for his most important book, the *Teoría Transcendental de las Cantidades Imaginarias*, which he started to write in 1855. The book was posthumously published in 1865, referred to by the authors as a “beautifully printed book”. The authors give a good overall description of the *Teoría*. They discuss the important question of sources and contacts of Rey with other European scholars. Rey went through successive exams in order to obtain his academic degrees and, in preparation for them, updated his philosophical and mathematical knowledge. It seems that he had good access to English sources. The authors analyze the *Teoría* by books. Book I is very important, since it is where Rey’s conception of imaginary numbers is discussed. He recognizes the influence of A.-Q. Buée (1748-1826), a Frenchman leaving in England and a very interesting example of someone with original ideas, but not well recognized in current historiography. Rey is indebted to Buée for his conception of imaginary numbers as quantities modified by a quality, which express directions in a plane. Commenting on Rey’s approach, the authors give a very interesting explanation of quantity and quality as mathematical categories. Books II, III and IV treat algebraic manipulations with complex numbers. According to the authors, Books II and III are commonplace. Book IV is more advanced. It deals with graduation for raising to powers. This book treats more advanced themes and reveal the mathematical background of Rey. The authors reveal disappointment with Book IV, mainly because Rey reveals rigor in the metaphysics and logics, but lacks mathematical rigor. Last part of the paper is about the reception of Rey’s ideas in later 19th century and early 20th century. The authors claim that “the theories of Rey enjoyed a certain popularity in the following years, and several mathematicians incorporated some of his ideas in their texts”. This is illustrated with a brief analysis of five authors. The Conclusion applies to historiography in general. There is, justly, a dominant presence of scholars who have, effectively, contributed to the advancement of mathematics. But others, whose contribution are not brilliant and determinant for the advances of mathematics, like Rey, are, unjustly, ignored. It is important to recognize their importance in influencing new generations of mathematicians which will have effective academic contributions. This interesting and carefully written paper exemplifies this.

*Ubiratan D’Ambrosio (São Paulo)**Classification:* A30*Keywords:* imaginary quantities; complex numbers; Kant; Spain; 19th century