On how mathematicians' historical and philosophical reflections have been essential to the advancement of mathematics: A historical perspective

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The presentation will focus on an episode in which the historical and philosophical work carried out by mathematicians played a decisive role in overcoming a mathematical difficulty and introducing an idea that had a major impact on future developments in mathematics. The episode in question is the introduction in 1845 by Ernst Eduard Kummer (1810-1893) of the "ideal factors" of what he called the "complex numbers". The first public presentation of this concept by Kummer in 1846 allows us to trace the impact on this breakthrough of the historical and philosophical reflections that Jean-Victor Poncelet (1788-1867) and Michel Chasles (1793-1880) developed while giving shape to what would become projective geometry. This episode suggests the benefits that could derive from a more systematic inclusion of historical and philosophical approaches in the practice of mathematics, as an integral part of it.