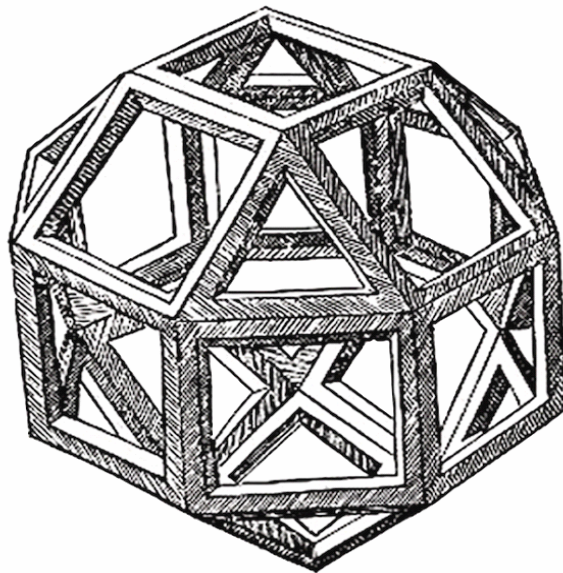


Mathematics Education Research Unit
Unité de Recherche Éducationnelle en Mathématiques
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MERU Seminar Series Série de conférence UREM

Between Mathematics and Physics: Aristotle, Archimedes and Châtelet



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Some mathematics educators are interested in how science might provide helpful ways to do mathematics in school. Hanna and Jahnke (1999, 2002, 2003), for example, use physical models to support students' understanding of *why* some theorems are true. Tanguay and Geeraerts (2012), on the other hand, promote an *experimental approach* in geometry, in which students formulate hypotheses, based on measurements, that they then investigate mathematically. Rarely, however, do scholars in our field reflect on the relation between mathematics and science, or physics, more specifically. How do mathematics and physics relate to one another? Investigating this question is important to provide a strong, articulated, well-informed foundation to the "incorporation" of science in mathematics education. It also enables us to imagine new ways of connecting mathematics and physics as a way to do mathematics in school.

In this presentation, we will introduce the perspective of three philosophers of mathematics and science who made important contributions to the question of the relationship between mathematics and physics. The ideas of the first two, Aristotle and Archimedes, still influence current conceptualizations of these relations. The third, Châtelet, is a contemporary figure whose work is currently gaining interest in our domain. We will discuss the influence of Aristotle's, Archimedes' and Châtelet's ontological/epistemological perspectives on the relations between mathematics and physics on research in mathematics education, and offer a few insights concerning other aspects of their work that have been overlooked.