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**James J Madden\*** (madden@math.lsu.edu), 222 Prescott Hall, Baton Rouge, LA 70803. *An Historical Perspective of Proportion, Ratio and Measurement.*

“Ratio and Proportion” is a classical topic of school mathematics, and the mastery of “proportional reasoning” is said to be a critical step in advancing to algebra. To a modern-day mathematician, “proportional reasoning” is about using equations of the form  $y = kx$  to model situations in the world. Over the course of history, there have been numerous fundamentally different paradigms for representing situations described by this equation and solving the problems that arise in them. Different paradigms are distinguished by basic assumptions about the kinds of things that the symbols employed refer to. For example, Euclid’s ratios were formed not from numbers but from non-numerical things called magnitudes. Galileo presented his reasoning in the Euclidean paradigm as did many other thinkers following him up to Newton, and a Euclidean ontology is still used today in some physical sciences. Different sets of assumptions about meanings lead to different conceptualizations of the modeling process, and an understanding of the alternatives provides some deep insights into the logic of school mathematics. In this talk, I will describe how an historical perspective of ratio and proportion leads to some surprising ideas and proposals for the K-12 curriculum. (Received September 09, 2015)