

**On the Use and Abuse of Formal
Logic in the Study of Euclid's
*Elements***

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January 9, 2016

Abstract

The talk focuses on whether formal logic constitutes a valuable instrument for analyzing Ancient Mathematics. Starting from the mid-seventies¹, this question has been the subject of a new wave of interest².

In order to attempt to answer this question, I will first analyze different contemporary formal accounts of Euclid's geometry from a logical point of view³, then look at them against the backdrop of current philological studies. In particular, these accounts will be considered with respect to:

- the role of geometrical construction procedures in them;
- the role of diagrams in them;
- their answers to the generalization problem;

Focusing on these aspects I will argue that not only formal logic should be counted among the instruments that we normally rely on in our studies of ancient mathematics, but also that ancient mathematics can offer a very interesting context of application and further development for contemporary research in logic.

¹Hintikka and Remes [1974]; Hintikka and Remes [1976]; Mueller [1981]; Mäenpää and von Plato [1990]; Mäenpää [1993; 1997]; von Plato [1995; 1998]; Mumma [2006]; Graziani [2007; 2014]; Miller [2008]; Mumma and Avigad and Dean [2009]; Beeson [2009; 2012; 2014]

²In its most general form, it can be traced back to previous formal renditions of syllogistic logic: notably Lukasiewicz [1957].

³For example: Mueller [1981]; Mäenpää and von Plato [1990]; Mäenpää [1993; 1997]; von Plato [1995; 1998]; Mumma [2006]; Graziani [2007; 2014]; Miller [2008]; Mumma and Avigad and Dean [2009]; Beeson [2014].