

Francesco Maurolico, a Renaissance interpreter of Euclid

Veronica Gavagna

Francesco Maurolico (1494-1575) has been one of the most interesting restorers of Greek mathematics during the Renaissance. His approach to the restoration of Classics was creative rather than philological, even in the case of Euclid's *Elements*. Among his extant writings we find a quite faithful "reading" of some Books of the *Elements* (V, VII-X), but the most innovative work is a compendium of the Euclidean text.

In 1567, in fact, Maurolico was involved by the Jesuits in a plan for arranging all the sciences in an encyclopedia structured in compendia. Such compendia were to be used in the teaching of the *Collegium* of Messina and, possibly, in every *Collegium* of the Society of Jesus. In a few months, Maurolico completed the compendia of the first ten books of the *Elements* and reworked a text of some years earlier (1563), dedicated to stereometry, transforming it in the compendium of Books XI and XII. To conclude the work, he then decided that the old edition of Books XIII-XV – written in 1532 – would have finally completed the whole *Elementorum compendia*, that unfortunately were never printed, except for Books XIII-XV (*Opuscula Mathematica*, 1575). Maurolico's *Compendia* are not really a reasoned synthesis of the *Elements*, but rather a reworking influenced by a deep arithmetical interpretation of the topics, from the theory of proportions to the relationships between regular polyhedra. Maurolico's reworking of Books XIII-XV, devoted to regular polyhedra, is particularly interesting for the increased number of new propositions. Maurolico's deep interest in these solids is also testified by *De impletione loci*, a work on the problem of filling space with regular polyhedra written in 1529. The goal of this writing is confuting Averroes' remark (influenced by Aristotle) on the possibility of filling space with regular tetrahedra. The novelty is that Maurolico's approach to this problem was definitely mathematical and not philosophical: he measured the dihedral angles of the regular polyhedra and tested all the suitable combinations of the solids. Finally, in his studies on regular polyhedra Maurolico emphasized the discovery of a relationship that sounds as a kind of Euler's polyhedron formula.