# What the Romans learnt from Greek mathematics

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Greek mathematics is considered one of the great intellectual achievements of antiquity. It has been decisive to the academic and cultural development of Western civilisation. The three Roman authors Varro, Cicero and Vitruvius were all, in their own way, influenced by Greek knowledge and transferred it to Roman literature. In his dissertation, Erik Bohlin, at the University of Gothenburg, Sweden, studied the traces of Greek influence on these authors with regard to the mathematical branch of geometry.

Most people have heard of the great Greeks Euclid and Archimedes. And who is not familiar with Pythagoras' theorem? When Rome usurped political power around the Mediterranean, the Romans came into close contact with Greek culture, its literature and science.

According to some sources, the Roman author Varro is supposed to have written a book on the subject of geometry. This book has not been preserved however. In Erik Bohlin's view, after critical examination of the collective historic evidence, very little can be established with reasonable probability about its contents. Earlier research has attempted to claim, for example, that Varro's book was used by later Roman authors as a source of geometric teaching matter. This assertion does not stand up to critical examination, however, and must be seen as a more or less unfounded hypothesis according to Bohlin.

Cicero's rhetorical and philosophical writings contain many passages that deal with or touch on the subject of geometry. Geometry and geometric

knowledge are fundamental in Vitruvius' De architectura (On architecture). There are many passages in which geometry is applied practically or which assume that the reader is familiar with it. The dissertation comments on and interprets a selection of significant passages from both these authors.

For Vitruvius, the practical use of geometry does of course come first: geometric designs are required in architecture, not least, to achieve exact drawings. In general, the scientific view of the Romans was strongly influenced by limiting utilitarianism: only knowledge with immediate practical use was worth cultivating.

According to the author of the dissertation, this picture ought to be nuanced, however, especially with regard to the authors Cicero and Vitruvius who essentially had an open and appreciative attitude to the Greek advances in mathematics and studies of geometry - even if practical use came first. Bohlin finds a clearly expressed ideological dimension to the significance of geometry in both Cicero and Vitruvius. Geometry is regarded as an integrated part of civilisation and refined human culture. As such, an inherent cultural value, which is thereby also universal, is attached to geometry.

For Cicero and, in particular, for Vitruvius, this ideological dimension was not independent of practical use, but both aspects were seen as linked.

"With this perspective, the actual differences between that which is Roman and that which is Greek can be toned down, and in this we find a motivation for Cicero's and Vitruvius's more open attitude to geometry and Greek knowledge in general," says Bohlin.

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