

0913.01011

**Busard, H.L.L.** (de Muris, Johannes)**Johannes de Muris: De arte mensurandi. A geometrical handbook of the fourteenth century.** (English, Latin)

Boethius. Texte und Abhandlungen zur Geschichte der Mathematik und der Naturwissenschaften. 41. Stuttgart: Franz Steiner Verlag. 392 p. DM 148.00 (1998). [ISBN 3-515-07410-4/pbk]

During the last 50 years, the majority of major scholastic mathematical works have been published in critical editions – not least thanks to 35 years' ongoing effort by H. L. L. Busard. The present volume fills one of the remaining major lacunae, and gives us the second work of Jean de Murs, the most conspicuous Latin fourteenth-century mathematician outside the *via moderna* current (to which the Merton College group and Nicole Oresme belong), known from the *incipit* as *De arte mensurandi*. As already known, the first fifth or so of the treatise is due to an earlier anonymous hand.

The edition is preceded by a 90 pages' introduction with bibliography, containing:

- An extensive historical survey of the genre of practical geometry from the agrimensor-based *Geometria incerti auctoris* until Rigiomontanus, Chuquet and Oronce Fine.
- A discussion of the date of Jean's part of the treatise and of the circumstances of the writing; it appears to have been made between his completion of the *Quadripartitum numerorum* in late 1343 and the recommendations for a calendar reform in 1345, and its character to be rather that of a hastily prepared draft than that of a finished work.
- A proposition-for-proposition summary of the treatise, discussing also possible sources as well as such earlier treatments of the same problems which no reasons suggest to have been direct sources for Jean. Fallacies in Jean's solutions are identified often enough to warrant the conclusion that Jean "was not an original geometer. Only when he follows his source he does well" (p. 33). (The reader will easily find supplementary flawed arguments).
- The list of the 11 manuscripts that have been used (one of which is almost certainly the autograph, whose text is taken as basis for the edition). Manuscript descriptions or references to recently published descriptions are given.
- An appendix listing in parallel a number of questions from Abū Bakr's *Liber mensurationum* (as translated by Gherardo da Cremona), and the versions of the same problems in Savasorda's *Liber embadorum* (transl. Plato da Tivoli), Fibonacci's *Pratica geometrie*, and chapter V.2 of *De arte mensurandi*. It becomes obvious, both that Jean borrowed, and that he took care to formulate everything in his own words (with an abstract statement followed by an example as in Jordanus's *De numeris datis*, not as with the precursors through numerical examples alone).
- Another appendix listing the added propositions in *Commensurator*, a 16th-century epitome of *De arte mensurandi*.

The text itself (or the survey) reveals Jean as an eclectic with wide-ranging interests, reaching from elementary applications of similarity to the Euclidean theory of irrationals, the construction of regular and semi-regular polyhedra, to stellar polygons and horn angles (interests typical of the century), etc., and intended to raise the practical

rules to the level of theory. In particular, it confirms Jean's interest in algebra (on which account he is quite isolated among 14th-century Latin mathematicians), and in the geometric quasi-algebra known from the *Liber mensurationum*. In algebra, he first gives al-Khwārizmī's rules and next his geometric demonstrations, with the explicit argument that "mathematics is a demonstrative discourse" (V.1 prop. 15). Though less insightful than Regiomontanus (and less fortunate in the access to sources), his attitude to the character and tasks of mathematics comes closer to this late successor than to near-contemporaries like Oresme.

Because Jean's interest in quasi-algebraic geometry is so exceptional in his environment, his treatment (in V.2. prop. 26) of the rectangle problem  $A + l + w$  given,  $l - w$  given ( $A$  being the area,  $l$  and  $w$  the sides) is worth mentioning. Abū Bakr's solution is fallacious, and only works because  $l - w = 2$ ; Fibonacci sees something is wrong and escapes by means of an "etc."; Pacioli is somewhat better but still fallacious. Jean gives the geometric argument that underlies the various erroneous calculations (introducing the distinction between a "side", which is a rectangle with breadth 1, and its *longitudo*, which is a line proper). Comparison of the various versions suggest that Jean has not invented the argument but borrowed it from some unidentified source.

Given the richness of Jean's text, Busard's edition will certainly open our view to many other so far unidentified historiographic problems (some of which, e.g. links to Pappos's *Collection*, are pointed out in the survey) while allowing us to settle others.

*Jens Høyrup (Roskilde)*

*Keywords* : practical geometry; scholastic mathematics

*Classification* :

\*01A35 Mathematics in the medieval

Cited in ...