
ZMATH 2010f.00122**Gessner, Samuel****Knowing how to handle instruments: Geometry in Italian writings on architecture (1545-1570). (Savoir manier les instruments : la géométrie dans les écrits italiens d'architecture (1545-1570).)**

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There is a lot of bibliography on the development of perspective and technical building in the Renaissance. However, there are hardly any works on the mathematical content of the architectural writings. This article aims to fill this gap and explores a feature of the geometry conveyed by architectural writings, in particular by Italian writings of the second half of the 16th century: namely the fact that mathematical instruments play a central role therein. The architectural analyzed writings are L'architettura di Pietro Cataneo (1567), Il primo libro d'Architettura, di Sebastiano Serlio, (1545), Regola di far perfettamente col compasso la voluta ...(1552) by Giuseppe Salviati, and I dieci libri dell' architettura di M. Vitrubio tradutti... (1556) by Daniele Barbaro. Gessner focuses the analysis of these architectural writings on three aspects: the adaptation of the "Euclidian" model in the context of mechanical arts; the increase of diverse instruments, beyond the ruler and the compass, used in geometrical operations, and finally the appropriation of instruments by these authors describing their construction. Thus, in Section two of the article entitled: "The resolution of a geometrical problem: the synthesis of two discourses", Gessner analyses proposition 18 of Book VII by Cataneo and compares it with the Euclidian enunciation structure and the construction in Euclid VI.13. Geometrical construction and structure are identical in both propositions. Nevertheless, in contrast to Euclid, Cataneo insists on the figure and introduces the geometric elements following the same order as they appear in the construction. Furthermore, Cataneo refers constantly to the instruments used for constructing the geometrical figure. Indeed, he prioritizes the aspect of manipulating the instrument, while the demonstrative part of the proposition is reduced. Gessner shows that Cataneo makes a type of synthesis from two discourses that answer the problem of finding an adequate notation for geometrical teaching. In the third Section entitled: "The use of the machines for the design", from these architectural writings Gessner describes the instruments used to design a perpendicular bisector, an ellipse, an oval, the volute, the duplication of cube, the conchoids and the duplication 'mechanical' of a figure by compass. In the fourth Section entitled: "Fabrication and use of instruments of measure" Gessner emphasizes the detailed descriptions of the fabrication of instruments found in these texts. He analyzes Cataneo's presentation of scala altimetra and the rule with a "boussole" and by means of examples their procedures for measure. Gessner concludes that these three analyzed aspects are shared throughout these works. In fact, these features taken together express the underlying understanding of geometry as a science dealing with the use of mathematical instruments, an understanding that can also be found in practical geometries of the period. Nevertheless, the writing technique used by these authors adopts approaches from the scholarly tradition as well as from the literature on practical mathematics.

*Maria Rosa Massa Esteve (Barcelona)**Classification:* A30 M80*Keywords:* Practical geometry; mathematical instruments; architecture; Pietro Cataneo; Sebastiano Serlio; Giuseppe Salviati; Daniele Barbaro; 16th centuryhttp://smf4.emath.fr/en/Publications/RevueHistoireMath/16/html/smf_rhm_16_1-62.php