

## The Flat Sphere

### The Wazzalcora

“The wazzalcora is similar to the divine mind; its name in Latin sounds “flat sphere”, but it is also called “astrolapsus” of Ptolemy. In the wazzalcora, there is a description of the whole form of the heavenly sphere, a form determined by natural rationality in accordance with the roundness of the sky. In the wazzalcora, all rules of celestial configurations are represented with architectonic rationality.”<sup>1</sup>

This passage is taken from one of a number of short texts grouped together in over thirty Latin manuscripts, the earliest of which dates from the beginning of the eleventh century.<sup>2</sup> The authors of the texts remain for the most part anonymous, but the fact that they could read and write leaves little doubt that they were clerics.<sup>3</sup>

The individual texts deal with very different subjects, ranging from cosmology to surveying, but they share a common focus of interest, which I shall refer to as “the flat sphere”. This expression is the literal translation of “*plana spera*”, one of

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1 “Est autem Wazzalcora divina mente comparata, quod latine sonat plana spera, quae etiam alio nomine astrolapsus Ptolomaei. In qua Wazzalcora secundum coeli rotunditatem formata naturali ratione tota coelestis sphaere describitur forma et omnia ritu coelestium figurationum architectonica ratione notantur.” (Nicolaus Bubnov, ed., *Gerberti opera mathematica* (Hildesheim, 1963), p. 374). All translations from the Latin are mine. The fame of Ptolemy (Claudius Ptolomaeus, ca. 100–170), Greek astronomer, was still alive in the Latin Middle Ages (Gerald J. Toomer, Ptolemy, in: *Dictionary of Scientific Biography*, vol. 11 (New York, 1975), pp. 186–206).

2 This chapter is based on research by A. Borrelli, *Aspects of the Astrolabe. Architectonica Ratio in Tenth- and Eleventh-Century Europe*, Ph.D. thesis, submitted in November 2005 to the Faculty of History, University of Braunschweig (unpublished). Lists of manuscripts containing material on the flat sphere can be found in: Bubnov, *Gerberti opera*, pp. 109–113; Werner Bergmann, *Innovationen des 10. und 11. Jahrhunderts. Studien zur Einführung von Astrolab und Abakus im lateinischen Mittelalter* (Stuttgart, 1985), pp. 226–227. Editions of some of the earliest texts on the flat sphere are: Bubnov, *Gerberti opera*, pp. 114–147 and 370–375; José Maria Millás Vallicrosa, *Assaig d’història de les idees físiques i matemàtiques a la Catalunya medieval* (Barcelona, 1931), pp. 271–327; Joseph Drecker, Hermannus Contractus. Über das Astrolab. *Isis* 16 (1931): 200–219.

3 For an overview of the historical and cultural context in which the manuscripts were written, see: Arno Borst, *Astrolab und Klosterreform an der Jahrtausendwende* (Heidelberg, 1989); Charles Burnett, King Ptolemy and Alchandrus the philosopher: The earliest texts on the astrolabe and Arabic astrology at Fleury, Micy, and Chartres. *Annals of Science* 55 (1998): 329–368.