

Astronomical Instrumentation and Sociopolitical Philosophy in the *De Re Publica* and *De Natura Deorum* of Cicero

In the tradition of texts of classical philosophy which conceive of the ordered movements of the universe as a macrocosm of an ordered human society (such as the *Timaeus* of Plato), Cicero's *De re publica* and *De natura deorum* offer the reader an immense insight into the conceptual relationship between astronomy, scientific instrumentation, and sociopolitical philosophy in Late Republican Rome. In this paper, I will analyze the passages from these two Ciceronian texts which concern the so-called *sphaerae*, famous among experts on ancient philosophy and astronomy alike—the *sphaera* of Archimedes in the *De re publica*, and the *sphaera* of Posidonius in the *De natura deorum*—from two perspectives. First, I will assess the literary and politico-philosophical function of these two scientific devices within Cicero's texts, with a view to interpreting what ideological relationship they might have had to Cicero's social and political beliefs. In so doing, I will also consider how effective the mention of the *sphaerae* might have been in aiding Cicero's contemporary readers' understanding of the point he was attempting to make: were Cicero's readers aware of such scientific devices? Could they have understood the astronomy behind them? Did Cicero create an appropriate and intelligible metaphor between cosmic order and sociopolitical order?

Second, I will analyze the passages through the lens of the history of science, with a view to understanding and perhaps identifying the *sphaerae* which Cicero mentions. It is well known within the history of science community that devices similar to those mentioned by Cicero did exist, but do Cicero's *sphaerae* represent actual scientific instruments for which we have evidence? Might Archimedes really have invented such a *sphaera*? From his descriptions, is it

clear whether Cicero himself had seen such a device—or understood the workings of such a device and the science behind it? The fact of the personal friendship between Cicero and Posidonius, the alleged inventor of the *sphaera* in *De natura deorum*, does seem to make more likely the possibility that the Posidonian *sphaera* did exist. Also interesting is the link between Posidonius, Rhodes, and the Antikythera mechanism, classical antiquity's most famous piece of astronomical instrumentation, which may have been created in Posidonius' hometown (and perhaps even by Posidonius himself). Recent research has shown that one of the functions of the Antikythera mechanism was to model in metal certain social customs of the Greek world, which, if the link between Posidonius and the mechanism holds any truth, would tie in quite neatly with the literary function of Cicero's *sphaerae* within his philosophical framework.