Once the Newtonian framework was accepted, the agenda was clear: to demonstrate mathematically that all the observed movements of the celestial bodies were the result of attraction.

But even among those prepared to countenance attraction as a valid concept in physics, a choice between the two philosophies of nature was by no means clear, nor was it evident that a compromise was ruled out. A direct choice was the more difficult in that Cartesianism did not lend itself to quantitative predictions, so that issues in which experiment might decide between contradictory forecasts were few. One such, however, concerned the shape of the Earth.

The incorporation of a telescope into traditional measuring instruments, to improve the resolution of the unaided eye, was slower in coming. Johannes Hevelius defended his refusal to use telescopic sights when measuring the positions of astronomical bodies, by claiming that his traditional instrumentation was supplying an accuracy never before achieved, of only a few seconds of arc. Robert Hooke, however, had little patience with what he saw as a perverse refusal to accept a technical advance, resulting in a waste of time and resources. A public squabble ensued, with Hevelius refusing to budge; but by the time of his death he was almost alone in denying the value of telescopic sights.

Hevelius using his azimuthal quadrant, which he termed exquisitissimus, 'most exquisite'. He rotated the quadrant until it was aligned in the desired direction. He then aimed the sight rule at the star, using his right hand to position it with the aid of counterbalanced weights, and read the angle from the scale. The bronze figures on the left helped balance the instrument.