



Map Projection of Glavač's Map

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Abstract

Stjepan Glavač's map dated 1673 forms part of his valued heritage and a testament to the history of the late 17th century. It is also a unique example of his detailed fieldwork. The map is housed in the Croatian State Archives at the Metropolitan Library of the Zagreb Archdiocese. The call no. is VZ VII/12, and it forms part of Valvasor's Graphic Collection. Until recently, the map projection was unknown. We approached the issue of the map projection by looking at the graticule. It consists of two images of meridians that appear twice, $40^{\circ}/51^{\circ}$ and $41^{\circ}/52^{\circ}$, and the images of two parallels, 45° and 46° . On the map, the images of the meridians are mutually parallel straight lines perpendicular to the images of the parallels, which are also parallel straight lines. According to the appearance of the graticule, we concluded that the map projection of Glavač's map was a cylindrical projection. Our conclusion that Glavač used an equidistant cylindrical projection with the equator as a standard parallel was based on the relation between the rectangular and geographic coordinates read from the map. The last part of our research involved calculating the ratio of the radius of the Earth, which was then considered to be a sphere, and the scale of the map R/M . The calculated ratio was 2292.7. Calculating the map scale depended on the chosen radius of the Earth's sphere and the way the map scale was determined. A numerical map scale can be derived from a graphical scale depending on the length of the mile at the time, and the calculated ratio of the radius and map scale. It should not be overlooked that the conversion of the radius from the previous measurements to the present metric unit system also included an error. When Glavač made his map, there had been several attempts to determine the Earth's dimensions, so several possible radii of the Earth's sphere were proposed in the late 17th century.

Keywords: map projection, Stjepan Glavač, Glavač's map dated 1673