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ENTASIS – SHAPE OF BEAUTY

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Interest in the legacy of the ancient Greeks, which had been aroused in Italy during the Renaissance, brought the first descriptions of architectural ruins, monuments and ancient sculptures. Detailed studies of ancient monuments were initiated by founded in 1663 French scientific society - Academie des Inscriptions et Belles-Lettres. Continuation of this research through the years and centuries brought the detailed arrangements for the size, proportion of individual elements of architecture and geometric construction proposals reflecting their shape. That was reflected in numerous publications and academic textbooks. One of the most popular is the work of the Technical University of Munich professor Josef Bühlmann - Die Bauformenlehre, Darmstadt 1896. There are two constructions of Doric columns entasis given there (quoted in Polish literature - Ulatowski, Architektura starożytnej Grecji), which will be examined in this study.

Fig. 1 Entasis- characteristical curvature of Doric columns

Both structures are based on the separation of column height into any number of equal parts. By setting the division into 4 parts, there would be 5 points obtained designating the shape of the

column. Five points lying on a plane determines a conic section. So the curve defining entasis of Doric columns determined in this way will surely be part of the conic section.

To determine type of the conic section we look for its characteristic parameters. Using the Pascal's theorem about a hexagon inscribed in a conic section we construct additional points and tangents at those points. Basing on the two points, tangents at these points and the third point we determine the collineation transforming the curve (conic section) into the circle k. That allows you to state clearly the type of the curve - because a border line n crosses the circle k it will be a hyperbole, not ellipse as given by Bühlmann (and Ulatowski as well).

It is interesting that by far the non-compliance wasn't noticed nor corrected. Given the high level of development of projective geometry in Germany in the nineteenth century and attention paid to details by German authors one can be surprised. We hope that popularization of this issue among specialists both the geometry and the history of architecture will broaden our knowledge on this topic.

References:

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