Abstract Submitted
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How They (Should Have) Built the Pyramids GREGORY GALLAGHER, JOSEPH WEST, KEVIN WATERS, Indiana State University — A novel "polygon method" is proposed for moving large stone blocks. The method is implemented by the attachment of rods of analytically chosen radii to the block by means of rope. The chosen rods are placed on each side of the square-prism block in order to transform the square prism into a prism of higher order polygon, i.e. octagon, dodecagon etc. Experimental results are presented and compared to other methods proposed by the authors, including a dragging method and a rail method which includes the idea of dragging the block on rails made from arbitrarily chosen rod-shaped "tracks," and to independent work by another group which utilized wooden attachments providing a cylindrical shape. It is found that the polygon method when used on small scale stone blocks across level open ground has an equivalent of a coefficient of friction order of 0.1. For full scale pyramid blocks, the wooden "rods" would need to be of order 30 cm in diameter, certainly within reason, given the diameter of wooden masts used on ships in that region during the relevant time period in Egypt. This project also inspired a "spin-off" project in which the behavior or rolling polygons is investigated and preliminary data is presented.

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