

Icosahedron Stellation

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For my project I chose to recreate the figure on the cover of Peter Cromwell's *Polyhedra*. The star figure is the result of connecting the vertex points of a small icosahedron to the midpoints of corresponding faces on a larger icosahedron. Using the program Pov-Ray, all of these points had to be entered by hand after mathematically figuring them out. To do this I used a simple formula that was the average of the three coordinates of the vertices of each face. To extend these points I simply scaled them to be four times farther from the center than the vertices. After creating this figure, which required only patience and a keen eye for typos, I began working on the outer figure, an icosahedron which had most of every face cut out leaving only pentagram like structures which were centered around the vertexes. To create the pentagrams I connected the midpoints of each edge to arbitrary points that I chose to be one tenth of the distance from the vertex to the opposite edge's midpoint. Once the two figures were created I placed them together, gave them an appealing texture and gave them a background for character. This is the final result.