Review of: "A New Family of Solids: The Infinite Kepler-Poinsot Polyhedra"

Maxim Olshanii[1]

1 University of Massachusetts Boston

Potential competing interests: No potential competing interests to declare.

In my view, this paper does constitute a discovery, and I am glad it appeared. Below, please find my suggestions for its improvment.

1. "*Four more regular solids, the so-called Kepler-Poinsot polyhedra, can be obtained when star polygons or intersecting polygons are allowed*" should read "*Four more regular solids, the so-called Kepler-Poinsot polyhedra, can be obtained when intersecting polygons, of a regular or star type, are allowed.*"

2. The cubohemioctahedron, is, apparently, an extension of a notion of an Archimedean (or, more generally, a semi-regular) solid to polyhedra with self-intersecting faces. The paper will benefit from a note that mentions how many more of such solids are out there.

3. As with other Coxeter-Petrie solids, it would be useful outline the route of promotion from a semi-regular to regular. With the Coxeter-Petrie solids, the promotion happens because one of the two face types become the edges of the voids (if I am not mistaken). In the case of the new infinite polyhedron suggested, such a promotion can be more convoluted.

4. Figs 5 and 6 are missing Schläfli symbols.

5. The identified relationship between the dual to the new solid and the Kepler-Poinsot solids is a very convincing indication that the author is on the right track in his taxonomy.

6. I found the account of a conversation with Branko Grünbaum---"*Asked for a second opinion on the* $\{6, 8\}$*-polyhedron, Branko Grünbaum stated that "it appears to satisfy the conditions imposed explicitly by Coxeter and others", for a shape to be called a polyhedron. "I must say that I never encountered it in the literature," Grünbaum added.*"---be too colloquial for the main text: I want to suggest moving it to a footnote.