

Review of: "Impossibilities, mathematics, and logic"

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The article, while dealing with an interesting and in principle worthwhile topic, adds essentially nothing new to current philosophical or mathematical literature. However, I am not sure whether that is the aim of the piece. It would be better if the author could find some connecting thread between the variety of proofs of impossibility he considers, or provide further motivation for why it should be puzzling that impossibilities can be mathematically proven. As it stands, the article could perhaps serve as a teaser for interested laypeople, as it touches upon many different important and surprising results, such as Cantor's proof of the uncountability of the continuum, Galois theory and the classical problems of Greek geometry, and Gödel's incompleteness theorems. But to be more than just a teaser, it would need to supply the reader with more detail. One recommendation for the author would be to focus on the examples he finds most fruitful or stimulating, and try to be more precise about in what sense these examples are proofs of impossibilities.

Some scattered specific comments here:

An interesting result that fits with the theme but isn't mentioned by the author is Arrow's result. Euler's theorems regarding the traversability of Königsberg could be explained in more detail, as it provides an example of a mathematical explanation for a physical fact/phenomenon much discussed in the recent literature on mathematical explanations.

Of interest to the author might be critiques of Wigner's position regarding the applicability of mathematics such as Abbott's, since Wigner's position is essentially accepted uncritically in the article. Islami's work on why the applicability of mathematics is reasonable might also be of interest in this regard.

The discussion of Galois theory and Cantor's result is short and could perhaps be expanded, as it is not pre-theoretically obvious how results dealing with field extensions could be applied to resolve ancient debates about geometry, and this might perhaps be of interest for the intended readership.

Finally, the discussion of Gödel is imprecise, as Gödel's theorems apply only to formal theories of sufficient expressive power. In any case, the exact philosophical import of Gödel's results is a controversial matter.