The Unreasonable Effectiveness of Mathematics: (Dis)solving Wigner's Applicability Problem

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چکیده

The Applicability Problem is the problem of explaining why mathematics is applicable to the empirical sciences. This problem is revived and reformulated by the physicist Eugene Wigner under the striking title "The Unreasonable Effectiveness of Mathematics in the Natural Sciences". In this influential work, Wigner argues that the applicability of mathematics is a miracle, "a wonderful gift which we neither understand nor deserve". Responses to this problem range from metaphysical claims about the mathematical structure of the universe to epistemic claims about the nature of human cognition, as well as formalist views that characterize mathematics as a type of game. In my view, to find an explanation for this relationship, we must first understand the explanandum itself. More fundamental than the why-question (why is mathematics applicable in the natural sciences) is the how-question (how is mathematics applicable in the natural sciences). By examining how mathematics has been used across different eras and fields within the natural sciences, we can begin to understand the relationship between mathematics and the sciences. More importantly, this exploration allows us to address questions regarding the nature of mathematics as it is used and practiced. By distinguishing pseudo-problems from the genuine problems of applicability, we open new paths for philosophical reflections on the nature of mathematics and the sciences.

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برگزاری صرفاً به صورت مجازی در لینک

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