

Agnieszka Proszewska

The Unreasonable Effectiveness of Mathematics or the Simple Efficiency of the Linguistic Model?

'The miracle of the appropriateness of the language of mathematics for the formulation of the laws of physics is a wonderful gift which we neither understand nor deserve" wrote the great physicist Eugene Wigner in his famous article "The Unreasonable Effectiveness of Mathematics in the Natural Sciences" in 1960. Speaking about the miracle, Wigner seems not to be exaggerating. Faced with the overwhelming success of the natural sciences, which nowadays benefit from experiment and mathematical deduction as procedures for testing the validity of hypotheses, one can not ignore this almost magical relationship.

For many years this deep connection between the physical world and mathematics has been leading both philosophers and scientists towards mathematical realism. But during the last decade, when people also started to discuss the linguistic character of mathematics – not as a part of a formalist philosophy but as an object of linguistic and semiotic analysis – Wigner's classic article received additional interesting comments.

What is really applied when we apply mathematics? In my presentation I will discuss not only the classic arguments for mathematical realism such as the Quine-Putnam Indispensability Argument or the famous Richard Hamming's response to Wigner's original paper and his idea of four "partial explanations" for this phenomenon but I will also present the interesting idea of Sundar Sarukkai – the philosopher and physicist who claims that the view of mathematics as the medium of language and models can help us understand the mechanisms for its unreasonably effective applicability.

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