

Formal Systems as Physical Objects: A Physicalist Account of Mathematical Truth

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Abstract

This paper is a brief formulation of a radical thesis. We start with the formalist doctrine that mathematical objects have no meanings; we have marks and rules governing how these marks can be combined. That's all. Then I go further by arguing that the signs of a formal system of mathematics should be considered as physical objects, and the formal operations as physical processes. The rules of the formal operations are or can be expressed in terms of the laws of physics governing these processes. In accordance with the physicalist understanding of mind, this is true even if the operations in question are executed in the head. A truth obtained through (mathematical) reasoning is, therefore, an observed outcome of a neuro-physiological (or other physical) experiment. Consequently, deduction is nothing but a particular case of induction.

Keywords: mathematical truth, physicalism, formal systems, deduction, induction, Platonism, formalism, Goedel

[Specific Sciences: Cognitive Science](#)

[Specific Sciences: Computer Science](#)

Subjects: [General Issues: Confirmation/Induction](#)

[General Issues: Conventionalism](#)

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[Specific Sciences: Mathematics](#)

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