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Gödel’s theorem and the debate on mechanism

ABSTRACT. This paper discusses and summarizes the main aspects of the debate on the implications of Gödel’s incompleteness theorems for mechanism. First, the general line of argument against mechanism is presented based on the incompleteness theorems. Secondly, three specific strategies of argumentation are outlined, i.e. those proposed by John R. Lucas, Roger Penrose, and Kurt Gödel himself. Each of these strands of

thought is analyzed by taking special care to bring out the underlying philosophical, logical and mathematical assumptions as well as to clarify the understanding of basic concepts such as those of 'mind', 'machine' or 'mechanism', and finally, to precisely formulate the conclusions that can be drawn from different arguments. The paper concludes with a brief assessment of the validity and philosophical significance of Gödel's theorem-based arguments against mechanism and suggestions on what can in fact be concluded from this theorem as to the relation between the human mind and machines.

KEY WORDS: philosophy of mathematics, philosophy of mind

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