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A LECTURE ON THE STRONG HYPOTHESIS
OF ARTIFICIAL INTELLIGENCE

Abstract

This paper is divided in two parts. The first part is concerned with the idea of Turing (1950), taken up again and expressed in details by Newell and Simon (1976) almost a quarter of century later, known as “the strong hypothesis of artificial intelligence”. During the following years, many investigator have taken up again such hypothesis adding small irrelevant variations. The first part of the present work will report and discuss, synthetically but hopefully in sufficient details, the fundamental lines of criticisms to the strong hypothesis of artificial intelligence: i) the line which could be called *semantic* concerned with the capacity/incapacity of a machine to understand the *meaning* of the symbols it is using; ii) the line which generally speaking could be indicated as *logic* which refers to Gödel’s first incompleteness theorem and to Tarski’s theorem on the notion of truth; iii) the line which could be called *epistemologic*, which make reference to the Lakatosian notion of regressive research program.

The second part of this paper will recall the computer program BACON which, according to its author (H. Simon) could make again discoveries already made by human investigators. The fallacy of Simon’s argument will then be demonstrated: in fact BACON could, in principle, do things which de facto it does not do (as shown, e.g., by Gillies) on the basis of a presumed validity of the strong hypothesis of artificial intelligence, whereas such presumption of validity is based on the assertion that BACON (or similar artifacts) although unable to make original scientific discoveries is able to make re-discoveries. Finally, this paper presents a few remarks on some banal errors often made by partisans of the strong hypothesis of artificial intelligence.

