

Church's Thesis and Cognitive Science

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1 Introduction Although Church's Thesis (CT) has been central to the theory of effective decidability for fifty years, the question of its epistemological status is still an open one. My own view, which is prompted by a naturalistic attitude toward such questions in mathematics as elsewhere, is that the thesis is an empirical statement of cognitive science, which is open to confirmation, amendment, or discard, and which, on the current evidence, appears to be true. Naturalism, although not to be identified with any of the classical schools of philosophy of mathematics, including the historicism of Webb [65], is hardly new; and if pushed to its Quinean limits would have to insist that mathematical epistemology is in principle a part of psychology. However in this paper I wish only to advocate the limited metathesis that CT is empirical, yet mathematical. I leave defense of the wider claim to others.

This interpretation of CT is quite naturally suggested by one of the standard arguments for a mechanist theory of the mind, which CT supports. That argument, which I will review in more detail below, is this: Human cognitive processes are effective; by the thesis it follows they are recursive relations. This justifies defining the mind *qua* cognizing as a system of recursive rules, i.e., as a *machine* of some kind. Considerations in defense of mechanism thus tend to support CT much as empirical findings and low level laws in the physical and biological sciences tend to confirm or disconfirm relevant hypothetical generalizations. In my opinion much of this support is likely to come from cognitive science.¹ Likewise, putative refutations of mechanism threaten CT and are likely to stem from empirical findings.

*I have benefited from many discussions of Church's Thesis with William Thomas and Judson Webb. I do not want to suggest, however, that either one would wholly agree with the position expressed in this article. I also wish to thank David Helman and Stewart Shapiro for their helpful comments