Computationalism — The Next Generation

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Star Trek – The Next Generation
Old Computationalism

Leibniz – Symbolic logic
“There would be no more need for disputation between two philosophers than between two accountants. For it would suffice to take their pencils in their hands, to sit down to their slates, and say to each other (with a friend to witness, if they liked): calculemus – let us calculate.” (Leibniz 1875-90, p.200)

Turing – Turing Machine
“Any function that can be computed by a human being following fixed rules, can be computed by a Turing machine.”
Computationalism under Attack

Lucas – Gödel’s incompleteness theorems
“The mind cannot be a Turing machine”

Searle – Chinese room thought experiment

Connectionism
“Symbolic activity should emerge from a sub-symbolic level, most of the so-called dynamicists find the symbolic level of description superfluous altogether and argue instead for an explanation of cognition in terms of dynamic system.”
A Rebound of Computationalism?

Computation fails as an explanatory notion for mind, because computation necessarily neglects the real-time, embodied, real-world constraints with which cognitive systems intrinsically have to cope.

Computation does not fail because computing is irrelevant to mind, but because “old generation of computation” do not to address real-world aspects that are vital to both (real-world) computers and minds.

The current problems of computationalism do not so much lie in computing per se, but in our present understanding of computing.

The next generation is the intrinsic relationship between intentionality and responsibility. - for a system to be able to have genuine intentionality is for it to have the capacity to accept what he calls “authentic responsibility.”