

The 7th AISB Symposium on Computing and Philosophy: Is *Computation Observer-Relative*?

One of the claims integral to John Searle's critique of computational cognitive science and 'Strong AI' was that computation is 'observer-relative' or 'observer-dependent' (Searle, *The Rediscovery of the Mind*, 1992). This claim has already proven to be very controversial in cognitive science and AI.

Those who come to the subject of computation via physics, for example, often argue that computational properties are physical properties, that is, in Searle's terms, that computation is 'intrinsic to physics'. On such views, computation can be characterized in terms of the flow of information, where information is conceived of in statistical terms, and thus computation seems both observer-independent and (perhaps) ubiquitous. Connected with this are related issues about causality and identity, as well as the question of alternative formulations of the notion of information.

Our symposium seeks to evaluate arguments, such as (but not limited to) Searle's, which bear directly on the question of what *kind* of processes and properties computational processes and properties are. It thus seeks to address the general question 'What is computation?' in a somewhat indirect way. Questions that were tackled include: Are computational properties syntactic properties? Are syntactic properties discovered, or assigned? If they must be assigned, as Searle argues, does this mean they are or can be assigned arbitrarily? Might computational properties be universally realized? Would such universal realizability be objectionable, or trivialise computationalism? Is syntax observer-relative? What kinds of properties (if any) are observer-relative or observer-dependent? Is observer-relativity a matter of degree? Might the question of whether computation is observer-relative have different answers depending on what is carrying out the computation in question? Might the answer to this question be affected by the advent of new computing technologies, such as biologically- and physically-inspired models of computation? Is there still mileage in the idea that some single notion of computation is both thin enough to cover all the kinds of activities we call computational, and yet still informative (non-trivial)? How does Searle's idea that syntax is observer-relative bear on his famous 'Chinese Room argument'?

In order to further explore these and related questions, the papers in this Symposium raise and address key questions. Some defend Searle's claims, either by extending them in certain respects, by analyzing them to determine their most plausible core elements, by critiquing existing objections to Searle, or by invoking figures from the past history of philosophy to support them. Other contributors identify an important connection with our conceptions of language, arguing that what is at stake in debates over the observer-relativity of computation is a matter of our explanatory language, or models, or that the dependence of computation on programming languages and their generative symbolic capacities renders computation a social reality, in Searle's own sense. For others, a crucial aspect of computation is that it is a knowledge-generating

process. Two of our contributors argue that thinking of computation as a dynamic process legitimates thinking of brains, or other natural entities, as computers. Along the way, the papers cover key related issues including, but not limited to: Computationalism and the brain; Models of Computation; Natural Computing; Computation as Knowledge-Generating Processes; Pancomputationalism and Trivialization Arguments; Natural Computation; Dynamical Systems Theory; Computation and Pragmatics; Dynamics of Information; Cellular Automata.

On behalf of the Organising Committee of this Seventh AISB Computing and Philosophy Symposium, we would like to thank all the members of the Programme Committee for their generous support, and for the excellent work in refereeing submissions. We hope that participants will find the event stimulating and enjoyable.

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