**The Church-Turing Thesis**

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**Abstract**

We have recently axiomatized effective computations and shown that the Church-Turing Thesis follows. These abstract and generic axioms are independent of the domain over which computations are performed. They postulate that states can be captured by logical structures over a constructor-based domain, that initial states can be described finitely, and that state transitions may be described by a finite text.

Once we agree how to measure the size of inputs other than strings, it can be shown that every effective algorithm may be simulated by a random-access machine with at most constant-factor slowdown. This is accomplished by emulating an effective algorithm via an abstract state machine, and simulating such an abstract state machine by a random-access machine, representing arbitrary constructor-based data with multiple multi-dimensional arrays.