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Possible Predicates, Actual Properties, and Hale's Principle

Bob Hale has recently defended the legitimacy of second-order logic, and the existence of the properties that fall in the range of second-order quantifiers, via an argument for what I shall call Hale's Principle:

> HP: A property P exists if and only if it is possible that there is a predicate "$\Phi(x)$" such that "$\Phi(x)$" holds of the Ps.

I will not examine the arguments for and against Hale's Principle, but will instead investigate exactly how much second-order logic one obtains via mobilization of the principle. Obviously, the strength of the second-order logic obtained depends crucially on what predicates one takes to be possible in the relevant sense. It turns out that the assumptions that are required in order to obtain a certain philosophically important sort of categoricity result within second-order logics based on Hale's Principle are both relatively weak and (so I will argue) philosophically plausible – in particular, we need only assume that it is at least (logially) possible to construct countably infinite conjunctions and disjunctions via supertasks.