What is a Mapping?

Mathematicians generally use the terms *mapping* and *function* interchangeably, considering a mapping/function f to be a rule that assigns to certain values v a value $f(v)$. However, a function f has a domain, which is a set, and the rule applies only to values in its domain. I use the term *mapping* both for a function and for a rule that applies to a collection too big to be a set. (See Section 14.5$^\square$.)

    The value of a variable can be any set, so there are at least as many states as there are sets. The collection of all sets is too big to be a set, so the collection of all states is not a set. Hence, a mapping that assigns a value to every state cannot be a function.