

# Understanding Deutsch's probability in a deterministic multiverse

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## Abstract

Difficulties over probability have often been considered fatal to the Everett interpretation of quantum mechanics. Here I argue that the Everettian can have everything she needs from 'probability' without recourse to indeterminism, ignorance, primitive identity over time or subjective uncertainty: all she needs is a particular \*rationality principle\*.

The decision-theoretic approach recently developed by Deutsch and Wallace claims to provide just such a principle. But, according to Wallace, decision theory is itself applicable only if the correct attitude to a future Everettian measurement outcome is subjective uncertainty. I argue that subjective uncertainty is not to be had, but I offer an alternative interpretation that enables the Everettian to live without uncertainty: we can justify Everettian decision theory on the basis that an Everettian should \*care about\* all her future branches. The probabilities appearing in the decision-theoretic representation theorem can then be interpreted as the degrees to which the rational agent cares about each future branch. This reinterpretation, however, reduces the intuitive plausibility of one of the Deutsch-Wallace axioms (Measurement Neutrality).

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