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Realism and the epistemic view of quantum states[1]

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The idea that quantum states reflect only an observers knowledge/beliefs/information about the world has a long history, with a wide variety of strong arguments having been proffered in its favour. The challenge for an advocate of this position, however, is to identify what we can deduce is "really going on" out there. There seem to three main paths proponents of the epistemic view have followed in trying to extract such a narrative from quantum theory. I will explain how the most naive such path–that quantum states can be associated with standard (probabilistic) uncertainty about some (arbitrary) real states of the world–is not tenable under some extremely mild assumptions about how any theory of reality must treat independent experiments. I will then overview the other two paths and what I see as the challenges they face.

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