## QBist Descending a Staircase, No. 2

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QBism (pronounced cubism) is a foundational program for quantum mechanics premised on the idea that quantum probabilities should be understood as personalist Bayesian probabilities—that is, quantified degrees of belief or gambling attitudes for specific agents and not objective properties of nature. Philosophers hate the idea. "Wah, wah, wah, your quantum states aren't real; they have to be real because my philosophy says so!" What the philosophers have never appreciated (or perhaps cared about) is that this turn in thinking has motivated a significant number of theorems in quantum information science that might not have been discovered otherwise. In this talk, I will sketch QBism's most ambitious project yet—rewriting the quantum formalism so that it wears its Bayesian character on its sleeve. One of our key moves will be to replace the notion of Hilbert space with the notion of a reference measurement. But which reference measurement is the most revealing of quantum theory's essence? In trying to answer this question, we will see that it leads to a deep mathematical question related to Hilbert's (still unsolved) 12th problem and suggests a novel measurement with a growing number of applications in quantum information science, including generating states of maximal "magic" for Clifford-gate quantum computation.