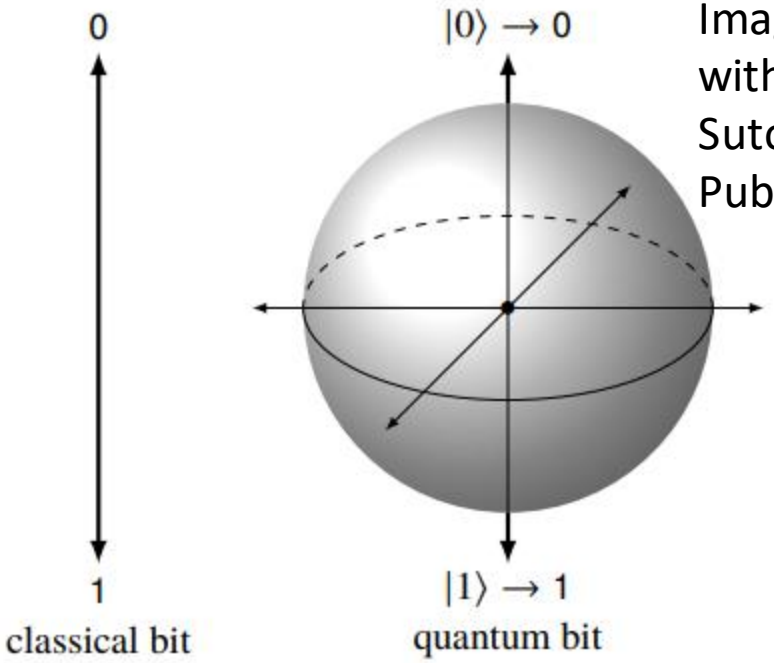
Let's begin by thinking about a classical bit and a quantum bit.



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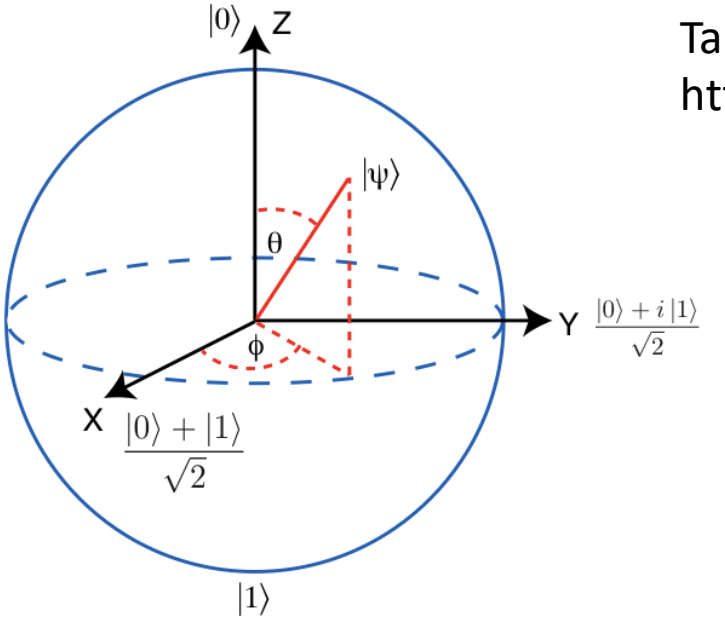
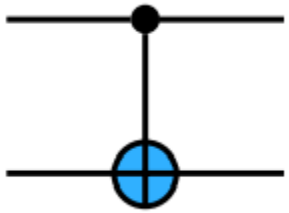
On the left, we have the classical situation where a bit can only take on the values 0 and 1. More precisely, a bit can be in one of those *states* and only those. You can look at the bit at any time and, assuming nothing has happened to change the state, it stays in that state.

For the quantum situation on the right, we change the notation slightly. The qubit always becomes the state $|0\rangle$ or $|1\rangle$ when we read information from it by a process called *measurement*. However, it is possible to move it to an infinite number of other states and change from one of them to another while we are computing with the qubit before measurement.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