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Vagueness in Context

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REVIEW

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The “double slit” experiment is well-known from quantum physics. Very briefly, in the experiment electrons are fired from the back of a tube (e.g., a TV tube) whose front is phosphorized (so that a flash of light is seen when it is struck by an electron). Between the electron source and the screen in front is a vertical metal plate containing two slits. Observation of the light flashes on the screen reveals an interference pattern, behavior typical of waves. However, under certain conditions, observation of the paths of individual electrons shows that each electron that reaches the screen passed (exclusively) through either the top slit or the bottom slit, behavior typical of particles. Here is the “odd” part: when the screen is viewed *at the same time* that the electrons are observed passing through the slits the interference pattern disappears! So are the electrons particles or waves? Well, it depends. It depends on us—observers. In principle, there is no way to eliminate this observer-disturbance. At the quantum level things are oddly uncertain (as Heisenberg famously observed).

Most of us are willing to allow that uncertainty is the norm for the quantum world, but what about the ordinary world of normal-size objects that we inhabit, think and talk about? Since ancient times many thinkers have noted that our talk often reveals a high degree of uncertainty—vagueness. In particular, very (perhaps, very very) many predicate expressions that we normally use are vague. A pile of sand one meter high is clearly a heap of sand. A single grain of sand is clearly not a heap. But how many grains of sand have to be added to a single grain before we characterize the result with the term ‘heap’? A man over seven feet tall is tall. I am not tall. What of a man just slightly under seven feet? What of a man just slightly shorter than that man? How many inches under seven feet does a man have to be before