Quantum nonlocality
http://www.braungardt.com/Physics/Quantum%20Nonlocality.htm

Quantum nonlocality is a paradox that was described first by Einstein, Podolsky, and Rosen (EPR), who published the idea in 1935. The EPR paradox draws attention to a phenomenon predicted by quantum mechanics known as quantum entanglement, in which measurements on spatially separated quantum systems can instantaneously influence one another. As a result, quantum mechanics violates a principle formulated by Einstein, known as the principle of locality or local realism, which states that changes performed on one physical system should have no immediate effect on another spatially separated system.

At the quantum level, instantaneous actions occur at a distance. Two particles that are part of a single system continue to act in concert with one another no matter how far apart they appear to be separated by spacetime.

Nonlocality or nonseparability is asking us to revise completely our ideas about objects, to remove a pervasive projection we have upon nature. We can no longer consider objects as independently existing entities that can be localized in well-defined regions of spacetime. They are interconnected in ways not even conceivable using ideas from classical physics, which is largely a refinement and extrapolation from our normal macroscopic sense of functioning. (Mansfield, 1995, p.122).

Quantum nonlocality proves that "particles that were once together in an interaction remain in some sense parts of a single system which responds together to further interactions". Since the entire universe originated in a flash of light known as the Big Bang, the existence of quantum nonlocality points toward a profound cosmological holism and suggests that every particle in every star and galaxy that we can see "knows" about the existence of every other particle (Gribbin, 1984).