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How does the universe expand into nothing

The universe can be understood as a vast, ever-expanding system where everything is interconnected. There is no clear boundary or edge to the universe, so it cannot expand into anything external. Instead, it's the fabric of space itself that expands, causing all objects and galaxies to move away from each other. A useful analogy for this concept is the surface of an inflating balloon, where dots on the surface represent galaxies moving apart as the balloon expands. However, this analogy becomes less clear when considering the possibility of extra dimensions beyond our three-dimensional reality. As a two-dimensional being on the surface of such a balloon would perceive, distances in their world increase while they remain unaware of the third dimension into which the balloon is expanding. Similarly, as humans observe galaxies moving away from each other, it suggests an inflation of space but doesn't allow us to perceive extra dimensions beyond our own. The expansion of the universe raises fundamental questions about its nature and whether it's part of a larger multiverse. Looking into higher dimensional space allows us to consider geometric shapes like a sphere's surface without accounting for our everyday three-dimensional environment. This concept also applies to four-dimensional spacetime, where calculating distances between points becomes more complicated. If we assume space is expanding into additional dimensions, our current knowledge isn't enough to grasp what lies beyond. Even with some theories suggesting the universe may be infinite or have a multiverse structure, visualizing these ideas remains challenging due to the complexity of extra dimensions. Some scientists propose that we might be living on the surface of a four-dimensional sphere, where traveling in any direction doesn't encounter an edge. This idea suggests our expanding universe could continue indefinitely without entering another realm. However, exploring such concepts pushes the boundaries of human understanding and requires further research.