On the Banach-Tarski Paradox

[working draft]

The scenario put forth by the Banach-Tarski Paradox could more accurately be described as an illusion. The key lies in the setup, if you buy the premise then the rest follows. The [crux] is that of taking a three dimensional object that is necessarily quantized and therefore finite and performing operations on dimensionless subsets of the original.

Working with dimensionless points in three dimensional space has no meaning

The dimensions required to construct a sphere can only occur in a quantized, physical space. Overlaying that with any number of dimensionless points is a meaningless gesture.

The surface of a sphere cannot be covered with dimensionless points. When dealing with dimensionless points there is no sphere. There is nothing at all. To have a sphere one must have a radius, r which requires some unit of measure to be manifested. In dimensionless space there are no units of measure. You cannot construct a sphere nor any object, since you cannot leave the origin. You can stack an infinite number of dimensionless points atop each other, but that is all.

Mixing physical and dimensionless leads to a multitude of apparent paradoxes, but these are in fact just artifacts of mixing two things that cannot be discretely combined.