Newton took space to be more than relations between material objects and based his position on observation and experimentation. For a relationist there can be no real difference between inertial motion, in which the object travels with constant velocity, and non-inertial motion, in which the velocity changes with time, since all spatial measurements are relative to other objects and their motions. But Newton argued that since non-inertial motion generates forces, it must be absolute.[9] He used the example of water in a spinning bucket to demonstrate his argument. Water in a bucket is hung from a rope and set to spin, starts with a flat surface. After a while, as the bucket continues to spin, the surface of the water becomes concave. If the bucket's spinning is stopped then the surface of the water remains concave as it continues to spin. The concave surface is therefore apparently not the result of relative motion between the bucket and the water.[10]Instead, Newton argued, it must be a result of non-inertial motion relative to space itself. For several centuries the bucket argument was considered decisive in showing that space must exist independently of matter.