

## *Aristotle's Mistake; Embrace the Mathematics*

What you're trying to do is to *understand* quantum theory in terms of more familiar everyday phenomena. This is called trying to develop a hidden variables theory ( see:

<http://plato.stanford.edu/entries/bell-theorem/>

<http://plato.stanford.edu/entries/qm-bohm/>

<http://plato.stanford.edu/entries/qt-quantlog/>

<http://plato.stanford.edu/entries/kochen-specker/>

There are theorems proving that this is not possible in one sense and other theorems proving that it is always possible in other senses! In particular, your attempt would be a local hidden variables theory. Bell showed that all local hidden variables theories satisfy a certain inequality which quantum theory violates. So far experiment supports quantum theory!

More generally, I call all such attempts *Aristotle's Mistake!* The Greeks believed in a spherical Earth at the center of a finite spherical universe. From this point of view the motions of the planets are quite complicated. Plato proposed the program of *saving the appearances*; i.e., showing that the complicated orbits can be understood in simpler terms. Eudoxus showed how this could be done by using homocentric spheres; from our point of view this is curve fitting using circular functions, i.e., trig functions. Aristotle wasn't satisfied with a purely mathematical explanation, and expanded it into his more realistic, material theory of crystalline spheres. This was the dominate worldview through the middle ages. They were later shown not to exist. Similarly, Newton's mathematical theory of gravitation using action at a distance wasn't felt to be an adequate explanation of gravity by Huygens, Leibniz, and even Newton himself. Maxwell's theory originally assumed a background ether to explain electro-magnetic phenomena. I call all these and similar attempts to *explain* the mathematics *Aristotle's Mistake*. One should instead *Embrace the Mathematics* which is all one really needs!