johnreed take 1.1

Source: http://sci.tech−archive.net/Archive/sci.physics/2004−08/9419.html

---

From: johnlawrencereed (*randamajor_at_yahoo.com*)
Date: 08/30/04

```
Date: 30 Aug 2004 10:51:19 −0700
```

Today the mathematical descriptions of the universe on the blackboard and in the published papers, are abstract and devoid of any conceptual connection to physical reality. The American physicist, Steven Weinberg, wrote, "... it is always hard to realize that these numbers and equations we play with at our desks have something to do with the real world." With the phrase, "...something to do with the real world", Weinberg reveals that the mathematician has an unformed idea as to what his abstractions represent conceptually.

Consider the words of the late Hungarian mathematician and physicist, Eugene P. Wigner, "... the enormous usefulness of mathematics in the natural sciences is something bordering on the mysterious ... there is no rational explanation for it." It is in the contemplation of the mathematics and the operation of the stable systems in the universe, that I found the rational explanation for it. Galileo may have been the first to formally assert that, "... the laws of nature are written in the language of mathematics." Today we may elaborate.

Stability in the field requires economy in cyclic motion. The invariant aspects of the stable systems within the physical universe, toward which we necessarily direct our investigative efforts, derive from least action functions.* Continuity and symmetry are intrinsic to least action functions. Mathematics feeds on continuity and symmetry. It is illuminating to note that what the mathematics represents well, is the action stable systems must follow to maintain perpetuity in the field. The laws that result from the mathematical abstractions, derive from a physical system's potential for stability, and not from its experimentally observed operational quantities. The mathematics fits the stable universe because mathematics easily represents the economic properties of stable systems.

As a result our classical physical laws speak to the economic orders of form attendant to stable system action. This is not to say that there are no underlying reasons for the order we observe in the universe, beyond the principle of least action. Rather, it is to say that our laws are derived solely from the principle of least action and beyond this we know nothing.

Consider the continuing words from Eugene Wigner, "... it is just this uncanny usefulness of mathematical concepts that raises the question of the uniqueness of our physical theories." The uniqueness of our physical theories is defined by the properties they retain after reduction to their most basic state. In this form they are consistent with, or reduced to, the orders of form attendant to an instant or complete cycle of stable system action, be it as in the inverse square property of an economic sphere, the circumference line segment ratio to its radially enclosed area in the Euclidean circle, or the planet's trajectoral time interval ratio, and its swept out area of the orbital conic. These are all attended by a least action function.

The consequence of these observations is that we can create a mathematical system that fits experimental measurement by utilizing operational quantities that are economically compatible, symmetrically consistent, or otherwise without effect, with respect to the invariant kinematic orders of form that describe stable system action. Wigner approaches the idea that one can mathematically define an experimentally verified quantity with a local numerical magnitude, and if that quantity operates within least action parameters, without influence, or effect, it can be proportionally applied to other stable systems, utilizing its locally derived magnitude, by virtue of the invariant, economic, time−area, or frequency−wavelength aspects, common to each stable system. This suggests that with a seminal, quantitative, a priori knowledge assisted, dynamic assumption, one can extend the seminal assumption beyond its local quantitative value, and obtain an apparent fit with the non−local observed system.

Aside from the kinematic quantities common to stable systems, our operational quantities are products of our assumptions which in turn are limited by our sense perceptions. The consequence of this is that mathematical models of stable physical systems are conceptual creations of the observers. Therefore devising an operationally effective mathematical scheme based on the quantitative notion of mass**, or high energy particle collision data and principles of symmetry, does not raise the operational quantities to the level of a physical reality.

The fact that we can alter the energy of a proton into transient energy states we call bosons and fermions causes us to conclude that a physical proton object is composed of physical quark objects, whereas, this does not reasonably follow. The quarks have a physical justification that is dependent on the trails of transitory atomic fragments created by high energy collisions in the laboratory. I introduce the question here. Of what significance is an unstable energy state? Murray Gell−Mann put the theory together from the particle data available, but he did not believe that it truly mirrored, real world quantities. Consider Steven Weinberg's words again. "... it is always hard to realize that these numbers and equations we play with at our desks have something to do with the real world."

Before the publication of The Physics Preview for the 21st Century, the "... something to do with the real world" aspect of the mathematics, had not been clearly articulated. As a result we assumed a too literal
interpretation for the operational quantities within our theoretical constructs, and the mathematicians and physicists were taught, and accepted the physical reality of the theories they learned. What this meant for the rest of humanity was: absent a clear understanding of the connection between the mathematics and the stable systems in the universe, and as long as the physicist had something that worked as a mathematical model for a physical system's action, humanity was stuck with the operational quantities used within that model. These function within a representation of stable physical systems, as mathematically constructed aspects of those systems, and are conceptually applied to the real universe, describing it in terms of the mathematically predictive model.

We are given these quantities as real objects, and we are told that they are fundamental aspects of the universe. The most recent additions are the logical result of an unquestioned, never verified, one hundred year old seminal assumption.*** Colored quarks have no real existence in the universe, yet, today the academic humanist must reason from a theoretical reality, composed of colored quarks, joined together with gluons, within a time dilating, curved space universe. Why? Because mathematics has something to do with the real world.

* A simple example of an economic or least action function, in terms of its form, is a Euclidean circle. The circumference is the shortest line length to contain the greatest area.
** See Takes 3,4 and 5 for discussions on mass.
*** The assumption was that the electron manifests as a particle inside the atom.