

Re: Nonrenormalization vs Renormalization 63: If Subtraction is More Fundamental Than Integration vs Differentiation, Then What Happens to Functional Analysis?

Source: <http://sci.tech-archive.net/Archive/sci.physics/2006-06/msg01691.html>

- *From:* "Finder" <poe1kdifhtsadf@xxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Thu, 15 Jun 2006 08:19:57 -0500
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<snip crap>

Mumbo Jumbo Doctorow. You make less sense than you did when you were spamming Patricia Schwartz Stringtheory forums.

more compost from the past.....

From: Marlene Doctorow – view profile Date: Tues, Jan 28 2003 12:50 am

From Osher Doctorow Ph.D.

In the days of Sputnik, the USA and USSR explored space rapidly because there was a Cold War competition between them.

Today, when no urgent competition seems to be around the corner, space travel and space communication are much less urgent priorities and publish-or-perish isn't filling in the gap by itself. What little work there is in the field (understaffed, underfunded, and under-organized and under-"ideas" as the report on NASA and the Space Shuttle disaster indicates) is being done by engineers and physicists largely without the best minds in mathematics.

I would like to argue here that geometry as a branch of mathematics does not need engineers and physicists any more than the latter two think they need non-computer-workhorse mathematicians, and that we in geometry can give the engineers and physicists a space horse race that they won't soon forget.

My posting appeared today in researchmathemat...@xxxxxxxxxxxxxxxx, a moderated email group/forum, and proposes a three-pronged attack on the geometry of the universe which has strong possibilities for making a big improvement in space travel and space communications via changing the curvature of space(time) in space warps and wormholes. I want to thank Dr. Paul Karl Hoiland for clarifying and explaining some of his ideas on space warps which helped to motivate my work. He contributes to two yahoo internet forums, stardri...@xxxxxxxxxxxxxxxx and modernappro...@xxxxxxxxxxxxxxxx, both of which I have just left because of strong personality and theoretical differences with some of the physics and/or engineering people other than Paul. Knowing about Kip Thorne's (CalTech) wormhole theories also helped, although I have found similar difficulties and additional ones on the forum of Patricia Schwarz Ph.D. of CalTech at <http://www.superstringtheory.com> after several years of contributing to that forum in the String/M Theory-Duality subforum of their Forum section and am currently no longer contributing there.

The three-pronged attack uses fuzzy multivalued logics (FML), probability-statistics, and proximity-geometry-topology (at least the intersection of topology and geometry) which turn out to lead to very analogous if not identical results. Instead of making Curvature or discrete-type topology as the basis of the universe (as physics and engineering are now tending to do), I define a Language of the Universe L11U with 11 elements or alphabet letters: E (expand), C (contract), R (Rare), N (Non-Rare), p (potential), a (actual), i (inside), o (outside), K (Knowledge or Semantics), I (information or Syntactics), T (transmission). Words are formed by concatenation of these symbols. The symbols can be quantified in terms of variables on a scale from 0 to 1. Then a fuzzy multivalued logic (FML) or proximity function (p1, p2, ..., pn) or a probable influence P or P' relates the symbols and words.

It turns out that the universe can generate arbitrary Curvature of space(-time) and space and time themselves by expansion-contraction to different amounts (radii) and different speeds in different directions and at different times. Thus, instead of Curvature and space and time being the Fundamentals of Geometry, Expansion and Contraction are among the Fundamentals of Geometry, together with the other symbols above. Curvature and space and time are not banished, but rather are used as secondary or derived quantities.

The problems of space travel by warp drives or wormholes and of long-distance space communication change from the usual engineering and physics pictures to studying how human beings can master the variables like Expansion, Contraction for example in a way somewhat comparable to the way in which the universe has mastered them. The

history of the universe via cosmology and astrophysics and astronomy is of course vital in this process, but the physics or engineering theories that seek to explain and predict this history are not in my opinion. They can sometimes approximate and even be accurate "on the nose", but they have too many defects including anomalies, paradoxes, fads, lack of examining fundamental ideas in detail. Some philosophically oriented mathematicians and logicians may notice that Socrates' asking repeatedly "What does that mean?" would have clarified most of those problems.

Osher Doctorow Ph.D.

*** BUT WAIT< THERE'S MORE.....

From: Osher Doctorow – view profile Date: Sat, Feb 14 2004 6:57 pm

From Osher Doctorow mdocto...@xxxxxxxxxxx

I have to thank Michel Petitjean of the Universities of Paris for replying to a post of mine on sci.stat.math 13 Feb 2004 10:58:02 (replying on that date) which stimulated my interest in relating entropy to symmetry vs asymmetry and thence to the present topic.

Rather than "belabor" the whole problem from the beginning which the above paper has done well, I will emphasize its relationship to my own current research in Mathematical Physics, Mathematical Probability–Statistics, and Philosophy.

I was unable to find a better summary of Philosophical issues than that of the Stanford Encyclopedia of Philosophy on the internet, <http://plato.stanford.edu/entries/time-thermo>, "Thermodynamic assymetry in time," listed as having its last substantive content change Nov 15 2001 (also the year of copyright) That is from Stanford University. The paper is signed by Craig Callender, ccallen...@xxxxxxxx (University of California San Diego) at the end, who is presumably the author.

Perhaps the foremost advocate of Thermodynamics and Entropy in present–day Quantum Theory is Stephen Hawking who especially applies it to black holes, and an entire generation of Scientists and perhaps Philosophers of Science has been brought up to believe that the microscopic world via Quantum Theory underlies and explains the macroscopic world that we live in and the larger astronomical structures that we are aware of.

Philosophically, rough as it sounds or reads, that idea seems to be "shot full of holes". It is somewhat reminiscent of David Hume's "debunking" of causation–causality, but with a possibility that the reverse may actually be true – that the macroscopic or Classical or (modified) General Relativistic world may actually explain the microscopic Quantum world. This is not entirely without precedent. Martin C. Gutzwiller of IBM T. J. Watson Research Center in his *Chaos in Classical and Quantum Mechanics*, Springer–Verlag: N.Y. 1990 argued that classical chaos was essential to understand quantum–mechanical chaos and his theme was explaining the former and its relationship to the latter rather than mainly explaining the latter. Einstein of course believed until his death that the macroscopic world explained the microscopic world, and if we add probability to the macroscopic world (in which Einstein and his colleagues as well as the quantum mechanical "opposition" were not well versed), there is much to argue in his favor.

The Achilles' heel of the Quantum–Thermodynamics viewpoint revolves around four difficulties concerning the direction of time, well isolated by Callender: (1) The psychological arrow, (2) The mutability arrow, (3) The epistemological arrow, (4) The explanation–causation–counterfactual arrow (p. 15 of Callender's paper). I will only deal with aspects of (3) and (4) here.

Callender's example is the Quantum–Thermodynamics viewpoint that, upon seeing a footprint in the sand (a slightly enlarged scenario, but an interesting thought experiment), we can infer that because it has high order in the sense of orderliness or pattern, it must have been caused by something previous that also had high or higher order such as somebody walking. This tells us very little actually, for example about human walkers – in fact, it only tells us that the sand grains interacted with its environment previously. J. Earman (1974) in "An attempt to add a little direction to 'The Problem of the Direction of Time,'" *Philosophy of Science* 41, 15–47, gives the opposite viewpoint of a bomb destroying a city. The only thing we can essentially tell is that a bomb went off, but the city that was bombed doesn't have lower entropy than its surroundings and doesn't even have any intuitive kind of higher order than its environment.

The types of Probability and Sets or Objects used in Quantum Theory, especially in their Thermodynamic and Statistical Mechanics and Entropy studies, are themselves rather low–level in terms of Probable Influence or Probable Causation, which makes several of their conclusions about Non–Causality being important quite questionable. I have been studying Probabilities on new types of Sets in various places, most recently on sci.stat.math, and it turns out that the type of Set Probability which most closely resembles our

intuition of Probable Influence or Probable Causation is essentially Macroscopic at least in definition and development: the Probability of Rare Events. Whereas Quantum theorists typically use a symmetric version of Probability which disguises asymmetric features that are so common in intuitive notions of causation (like "a" comes before "b" in time which is asymmetric), and which is based on a ratio of probabilities that doesn't apply to Rare Events because its denominator is zero or close to zero for Rare Events (events of Probability less than .05 for example), Rare Event Theory starts from a new type of set ($A \rightarrow B$) which is the Set Theory analog of the logical conditional $a \rightarrow b$ for propositions a, b, or logical implication $a \Rightarrow b$. It then puts a probability on this set, and eliminates the anomaly of dividing by zero or near-zero quantities. Most interesting of all perhaps, it is fundamentally Asymmetric rather than Symmetric, although it can explain Symmetry as a special situation. Thus, it reverses the intuitive picture of Mainstream Quantum Theory as underlying and explaining Macroscopic and Astronomical events/processes.

What is the origin of the Asymmetry in Rare Event Probability? It is the direction of the arrow \rightarrow in ($A \rightarrow B$) in the Set. In Set Theory, this means that the set ($A \rightarrow B$) is equivalent to the set ($A' \cup B$), which is the analog of logical "either 'not A' or 'B' or both," and that is Asymmetric with ($B \rightarrow A$).

Yet there is also much more powerful Influence and Causation in Rare Event Probability, and even that can be expressed intuitively. The Mainstream fraction or ratio expresses at most the probability of the "caused" event B occurring "given" that the "causing" event A has occurred, which is to say "freezing" the causing event. The Rare Event probability expresses the probability of the "causing" event A influencing or causing the "caused" event B. The difference can be illustrated by the "footprint in the sand" example earlier. When you see evidence of a footprint in sand, you see a caused event B (the footprint in the sand) and you've "frozen" the causing event A back in time where it can't change in whatever particular state out of many possible states it was. This doesn't tell you much even if by some method you were told the probability involved, since it could be that by "freezing" event A at some different state, a different result for B would have been obtained. But if you were told the Rare Event probability, it would work for all and any state of A.

Even Callender earlier in his paper (p. 12) assumes that the world is fundamentally quantum mechanical rather than classical mechanical, but he is assuming what physicists have told us. What is the reason for physicists' view aside from historical accident of being interested in quantum mechanics? It has to do with a little number called Planck's Constant h , which depending on whether it is very small or very large changes the picture from Quantum Mechanics to Classical

Mechanics or Classical Physics in the formulas or equations of Quantum Mechanics. It is a rather small foundation to build an entire Science around, not to mention an entire Philosophy! Since Symmetries are really special situations of Asymmetries intersecting in opposite directions intuitively, we can just as easily argue that Rare Event Theory contains Quantum Theory as a special or limiting case! (For those who are interested, the equation $x = y$ is the intersection of the opposite inequality $x \leq y$ (x is less than or equal to y) and $x \geq y$ (x is greater than or equal to y)).

Osher Doctorow

Messages to the list are archived at

<http://listserv.liv.ac.uk/archives/philos-l.html>.

Prolonged discussions should be moved to chora: enrol via

<http://listserv.liv.ac.uk/archives/chora.html>.

Other philosophical resources on the Web can be found at

<http://www.liv.ac.uk/Philosophy/philos.html>