

Re: Tackling John Baez Head-On

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>>From Osher Doctorow

In our fad-oriented era in the 20th and 21st centuries, 3 fads are especially prominent: A. algebraic geometry, B. algebraic topology, C. category theory (algebra-based in direction although functors and functional equations are more closely related to Set Theory and Analysis and so on). By remarkable coincidence (well, not entirely remarkable – they tend to adhere together despite their occasional squabbles), John Baez likes them all very much.

It isn't that these fields with the possible exception of the "objects" of category theory (which should really be designated and thought of as "generalized sets") were unnecessary or useless any more than Cartesian/Analytic geometry was useless. Analytic Geometry was quite valuable and is quite valuable, although anybody who obsesses about it today is probably either an under-researched teacher in a pure "teacher's college" or hasn't gone far beyond Analytic Geometry mathematically. And Algebraic Geometry and Algebraic Topology have some "objects" and theorems that are quite useful, although it probably won't be long before people who obsess about them will be behind the times.

Why did Analytic Geometry improve things, and why did obsession with it go out of fashion, and why did it "reach its limits"? It is a good lesson for the "Idols of the Tribe" etc. today.

John Baez probably thinks that Analytic Geometry "showed that geometry is algebra and algebra is geometry." Hogwash. It's no more true than that English language is Mathematics Language and Mathematics Language is English language. Sure, it helps very much to translate between languages, especially between verbal and quantitative languages, and in fact in my opinion if you can't do the latter two it may well not exist as they say about the Yellow Pages. But if it were merely changing the outer forms of information rather than getting insights into different meanings, then we would all be Syntactic Information engineers setting up satellites for both Terrorists and Peace-At-Any-Prices.

Is there a correspondence between Algebra and Geometry that Analytic

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Geometry discovered and "unified"? Yes. It's slightly more valuable than the correspondence between Verbal and Quantitative languages in general, because when Geometry guides Algebra into classes of equations, then we can explore the Algebraic properties that equations have in common and which distinguish them. At that point, something else happens. The Algebraists lose it. All they can do is manipulate equations and occasionally move back and forth between different phases that they don't recognize like real vs complex functions and ponder inequalities. Then the Boys and Girls from Analysis enter the picture which their continuous and geometric and limiting orientations and save Algebra from a "fate worse than death". And the differential equation people make the final "coup de grace" and the physicists and other scientists interact with them or make differential equations part of their "data-and-theorem base". Differential Equations are Analysis-based and Analysis-derived, not Algebra-based. Little things like continuity, limits, geometry, etc.

I know that some members of the usenet are very impressed by Analytic Geometry to the extent of wanting to make it central to everything. I was like that earlier – there was nothing in the world like it. Neither is there anything in the world like using the toilet, but we don't make a Religion out of it. Yet with the conics and their 3-dimensional analogs and so on, there's almost a Religious conviction that Analytic Geometry has incredible power. So does a water faucet. It doesn't produce Probability, Logic, Physics, Engineering, Philosophy, Geometry, Topology, Arithmetic. It's nice, and then we go on to other things while retaining the good parts of the past.

If you really are obsessed with Analytic Geometry, your calling may be Linguistics and Languages. You'll have a chance of making it to the U.N., where everybody translates Syntax but Semantics hasn't yet penetrated. Good luck.

I think that John Baez about now is reduced in his arguments to claiming that Algebra even in Algebraic Geometry and Algebraic Topology is a building-and-unifying-block. Building yes. Unifying? Does a building brick unify a building? Not as much as an Architect's plans and a Contractor's insights. And two joined bricks don't either. It's the Meta-building, the "game" of joining, that's key. Try a picture of a building. If somebody tries to sell you a building or a house without knowing your ideal picture and their picture, then I just happen to have a Brooklyn Bridge that's available at great savings. :>)

Osher Doctorow

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- *Follow-Ups:*
 - ◆ **Re: Tackling John Baez Head-On**

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◇ *From:* OsherD

• **References:**

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- Prev by Date: **Re: Good Newsreader program**
- Next by Date: **Re: What types of RESONANCE are there ?**
- Previous by thread: **Re: Tackling John Baez Head-On**
- Next by thread: **Re: Tackling John Baez Head-On**
- Index(es):
 - ◆ **Date**
 - ◆ **Thread**