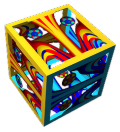


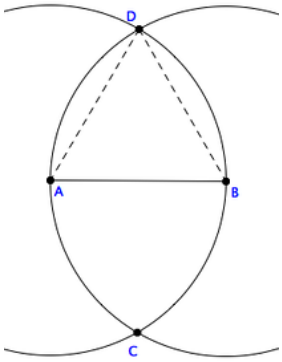
Extracted from: **Analyze the Data not the Drivel**.
See: https://analyzethedatanotthedrivel.org

src-tex: https://github.com/bakerjd99/Analyze-the-Data-not-the-Drivel/tree/master/wp2latex/ckrajugeniusorcrankp722.tex
src-tex-sha256: f9259238eb8b6a8c8bebd2fbf39b30c632f8b9d0ae13f4275028bd0d1d0c04f3

C. K. Raju: Genius or Crank (Part 1)

Posted: 12 Aug 2010 19:21:14

Lately I have been amusing myself by working through Euclid's Elements. Despite studying mathematics in university, teaching it in high school and *occasionally* using it in my software-soaked day job I never got around to reading Euclid.



Euclid's first proposition

Euclid is routinely lionized as the wellspring of axiomatic mathematics. Before *The Elements* mathematicians were *clearly* out of control! They were running around developing useful methods, (counting, fractions, roots), and – *gasp* – *making unjustified assertions!*

Fortunately, *The Elements* put an end to all that and ushered in the endless age of rigorous axiomatic mathematics. I admire mathematical rigor but my tiny brain can only take so much of it before an all-pervading fog of befuddlement sets in. When I'm all fogged up there are only a few options:

1. Reread and rework until the fog clears.
2. Press on and review later.
3. Give up and abase self.
4. Take a break.

I'm a lazy S.O.B. so option (4), take a break, comes up more often than it should. One of my favorite ways to break away from mathematics is to read about it's *long*

history. While tracing the history of *The Elements* I came across the writings of C. K. Raju.

C. K. Raju has written a fascinating book: (the) Cultural Foundations of Mathematics: The Nature of Mathematical Proof and the Transmission of the Calculus from India to Europe in the 16th c. CE. Raju's book is a bit hard to get your hands on. It's not on Amazon but you can use World Cat to find a copy near you.

Raju's thesis consist of these major points:

1. Significant portions of the *calculus* developed in India long before Newton and Leibniz and Indian methods, particularly series expansions, came into Europe via 16^{th} century Jesuit missionaries.

2. European notions of rigorous mathematical proof evolved from the needs of the Catholic Church to convert Muslims with *impressive* iron-clad logical arguments. The old baffle them with bullshit tactic. Raju claims this *theological* attitude worked it's way into mathematics and resulted in the *bizarre western view* that deduction is superior to observation, experience and induction.

3. The ultimate source of eastern secular knowledge, (mostly Arab and Indian), was systematically suppressed and "Hellenized" by the Catholic Church. The church claimed all the "good stuff" in Arab texts originated with the ancient Greeks and had been *merely preserved by Arab copycats.* It just wouldn't do to credit hated, (remember the crusades), enemies for their good ideas.

4. Insisting on rigorous proof when teaching mathematics, especially to children, is sterile and stupid.

All of this reads like a mathematical Dan Brown novel and oddly the Catholic Church is once again the villain. I was enjoying Raju's account until this passage about Kepler:

> *Why, after all, was Tycho so secretive about his papers, not even allowing his trusted assistant Kepler to see them? In any case, on Tycho's sudden death, Kepler obtained not just Tycho's observations but also the rest of his papers which contained the underlying theory. Being inclined towards heliocentrism, Kepler transformed Nilakantha's "Tychonic" orbits to a heliocentric frame (a simple transformation). This made Nilakantha's variable epicycles come out as ellipses. Being a professional astrologer, Kepler was good at making up stories, and he made up the story about how he had arrived at his results using Tycho's data.*

In other words Kepler is a fraud and he ripped off one of the major discoveries in astronomy, the elliptical orbits of planets, from Indian astronomers. It's one thing to spin plausible stories about how parts of calculus may have seeped into Europe from unacknowledged sources it's another thing to posthumously accuse someone of fraud.

What would it take to make Raju's case? *How about some hard evidence!* What about Tycho's secret papers, do any of these documents survive and do they contain references to Nilakantha? Now that would be a smoking gun. Of course we don't know of any such papers *but that doesn't mean they didn't exist.* Proof by conspiracy is a very powerful inference rule — 9/11 troofers and ufologists swear by it! What about the claim that the transformation from Nilakantha's variable epicycle **Earth centered system** to a **Sun centered** elliptical orbit system is "a simple transformation." I rather doubt it's as simple as claimed and even if the transformation was, to use the most abused word in mathematics — *trivial*, it still misses the point. The major shift was to abandon all pretense of **Earth centered systems** no matter how mathematically sophisticated! Before Kepler astronomers and mathematicians, in many cultures, toyed with the idea that planets orbit the sun. After Kepler everyone had to grow up. Planets do orbit the sun deal with it!

And it was precisely how Newton dealt with it that made calculus something worth fighting over. Newton's unprecedented and monumental proof that elliptical orbits are a mathematical consequence of the inverse square law of gravity is the dividing line between modern and early science. Nothing like it had ever been done before and even today physics and mathematics students are given to chanting we are not worthy when presented with this brilliant argument. Without Newton's use of the calculus nobody but a few anal mathematicians would give a rat's ass about who invented calculus.

In a later post I will argue that Raju discounts the importance of independent and coequal mathematical discovery in his account.