

+++

Gooney Ducks and Naked Physicists

Part IV **The Enthusiasm Spasm**

Written by D. and S. Birks
2015

Editing contributions by Daniel Birks

Abstract: An allegory of modern science.

Part IV

Thinking back to my school days, I vaguely remember that two of the “fathers” of calculus were Archimedes and Newton. And who can forget Archimedes’ famous quote?

Give me a lever long enough...and I shall move the world.

I used to think, “How outrageous! Talk about chutzpah!”

But now I think maybe he was talking about his math. His lever of calculus certainly moved the world of science! (And Archimedes was always way ahead of his time—jumping out of the tub and running around the neighborhood shouting “Eureka!”—probably the first streaker!)

I looked on Wikipedia to see how calculus developed. It started out simple enough: Mathematicians like Thales, Pythagoras, Euclid, Archimedes, Oresme, Fermat, Descartes—all referenced their math to the square and the square corner.

- Archimedes described and filled curved forms with areas of squares.
- Then, centuries later, there was “The French Connection”: Nicole Oresme visualized concepts (such as heat, speed, time, distance, etc.) as sides of plane figures (and areas) on a coordinate axis of latitude and longitude.
And René Descartes (or should I call him Renatus Cartesius?) followed this up with his interpretation of squaring and plotting equations on his “Cartesian grid.”
- But I guess when Newton applied the geometry of squaring to gravity, attempting to describe a trajectory with the area under its curve, that’s when it all snowballed!

From then on it was no-holds-barred squaring!

It’s as if calculus had taken Euclid’s definition:

When two numbers having multiplied one another make some number, the number so produced is called a plane, and its sides are the numbers which have multiplied one another.

and (like Archimedes) ran with it to the extreme!

All of a sudden, any number assigned to any measurement of anything when multiplied became fair game for the planes and squares of calculus!

There was squaring of time, mass, velocity, space—everything!

And as everybody jumped on the bandwagon, kaboom! Modern theoretical physics was born!

Whoa! What have I just stumbled into here?

Could this be a new scientific realm of understanding?

Man, simply questioning mathematical terms like velocity squared, time squared, and mass squared stretched my mind to the limit.



But questioning an entire branch of mathematics and the validity of modern theoretical physics?

How audacious! Now that's chutzpah!

So where do I go from here? What do I do now?

I guess when the tide goes out in Elliott Bay you can always see who's wearing a swimsuit!

Now *there's* a headline for the PI. The exposé of the day:

RELATIVITY DEBUNKED!
MODERN THEORETICAL PHYSICS EXPOSED!
PHYSICISTS OBSERVED SWIMMING NAKED IN PUGET SOUND!

Holy Toledo, Batman! Goody ducks and naked physicists spotted at low tide!

Well, as long as I avert my eyes, tighten the drawstring of my Speedo, and swim on...

I could be in for some shocking revelations! (Should I turn around and go back?) But what the heck—I'm knee deep in the big C anyway, so I guess I'll go on. Somebody's got to do it!

Wow! What a story! This is huge, this is scandalous! How outrageous!

Could it really be true? Modern theoretical physics wasn't about investigating the limits of light, space, and time, it was all about investigating the limits of calculus!

And as calculus can produce equations to infinity, I guess that's why modern theoretical physics produced such a sea of equations!

What a monumental mathematical misstep!

Relativity—the culmination of the misapplication of calculus!

And modern theoretical physics—just the result of trying to apply the square to everything in the universe!

Sixteen

Here I thought that the days of wild intellectual discoveries and breakthroughs were over—that all the good stuff was in the past.

But this shakes things up! This could be the beginning of a full-blown scientific revolution!

I can see it all now...the coffeehouse underground, bearded beatniks in berets, seething crowds of activists besieging the ivory towers, worldwide sit-ins, marches on Washington!

Science boring? This sounds like fun! Something to get caught up in!

Here's my chance to dust off my beret, head down to Starbucks, and help raise the banner.

Here's a chance to change the world!

Calculus, it seemed to make so much sense! I can see how science got carried away!

I can understand the big C 's allure, the dilemma of the modern scientist—all the natural curves and spirals in nature and only the square to measure with, what d'ya do?

The squaring of calculus was considered a godsend—modern science's greatest discovery!

Calculus was the new wiz-bang gizmo, the new dream machine—a math of excitement, inspiration, and euphoria. No wonder science got caught up in the enthusiasm spasm!

It was like handing the keys to a brand-new Ferrari over to a sixteen-year-old!

The new car smell, the roar of the engine (varoom! varoom!)...all that temptation!

The inevitable result? The irresistible urge to take it out, rev it up, and see what it'll do.

So modern theoretical physics was just an experiment in mathematics—just a test-drive—exploring the limits of how far the imagination and calculus will go.

Aha! That's how mathematics took over science! By taking that step from simply trying to measure curves with the square, to trying to measure everything in the universe with the square, calculus took on a life of its own! The slave became the master!

Theories of light, gravity, space, and time; of relativity, string theory, etc.—the squaring of calculus was the heart of it all! You couldn't have modern theoretical physics without calculus!

How about that! So calculus isn't merely the mathematical glue holding modern theoretical physics together.

Modern theoretical physics is calculus!

They're one and the same!