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Gooney Ducks and Naked Physicists

Part VI **The Quantum Quagmire**

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Abstract: An allegory of modern science

Part VI

I think I've discovered a way to travel to the moon or through time.

Anytime I want, I can ride the memory bus back to Pike and Pine, past the sleeping hobos curled up in the inset doorways, and hear PI Mary shouting, "Get your PI here!"

Or I can envision a future where I take a spin around the Space Needle and then slingshot out to the moon with George Jetson and Astro in my space buggy.

Breaking the barriers of time and space? With imagination, there's nuthin' to it!

I remember years ago...anchored in the cool quiet of a September morn, the dawn breaking, the river gently lapping against the sides of the boat, waiting to see that first wave of arched backs break the surface—for those herds of salmon to start their morning gallop upstream toward the spawning grounds. And listening to my grandfather: who can forget those wild tales of cowboys and Indians; of pack trains, lumber camps, sand monkeys and scallywags; of characters like Slippery Bill and Mose Delaware; and, of course, the fish that got away.

Good storytelling has the luxury of stretching the limits of reality to the breaking point. Fact and fiction, actuality and imagination, are spun from the same words—the same language.

But what about the language of math? Is math all truth?

Do I swallow everything—hook, line, and sinker? Or it possible to tell tall tales with math?

Wow! Was relativity just the biggest whopper of all?

Yes, I know I was entertained: I was impressed by all the science and math.

But what's the gauge for truth? What do I use for a truth meter?

Math and science rely on proofs. But where's the proof for squaring time?

I don't think I've ever heard of one! And what about the proofs for squaring velocity or mass?

Huh...If there aren't any proofs, and these aren't proven, then they must be unproven.

How about that! So the theories produced by modern theoretical physics and calculus are based upon unproven concepts of squaring!

Amazing! I think I've found the core I've been searching for!

Maybe I should run through the neighborhood in my birthday suit shouting "Eureka!"

No, I think I'll just throw down the gauntlet and issue a challenge to the champions of science!

Time squared? Prove that!

Yeah, how do you prove or disprove what's never been proven?

Nineteen

I'd heard that the math of theoretical physics culminates in the "hypothesis of quantization." I just had to look it up. Huh, probability clouds, uncertainty principles, eigenstates, wavefunction collapse or entanglement, time-evolution. Man alive! It's a quantum quagmire!

Aah! Here's something more understandable. Unit vectors, square-integrable functions, complex planes and projective Hilbert space—so the mathematical basis of quantum theory is still calculus, infinity, and a reference to x and y axes, the square, and the square corner.

A little further on the web, I came upon an astounding quote from John Von Neumann (the dude famous for establishing a mathematical framework for quantum physics):

Young man, in mathematics you don't understand things. You just get used to them.

Hmm...so this is where modern mathematics has led us? This is it, the *Summa Mathematica*?

$$I = B$$

Ignorance equals bliss? Man, I'd hate to think that was true!

To never try to understand mathematics, but just accustom ourselves to a process?

Learn a method of how without understanding why?

Be content with uncertainty, and simply accept the way it is because it's out there?

Don't ask, don't question, just shut up and go to sleep?

I don't think so!

Not asking why goes against my very nature! Ever since I can remember, all I've ever wanted to know is why! In those immortal words from Star Trek, "*The most elementary and valuable statement in science, the beginning of wisdom, is, I do not know.*"

Isn't that what it's all about? To try to understand—to strive to know how and why!

And now!

To stumble upon one of the undiscovered, fundamental truths of mathematics!

Wow! To take that next step on the path to mathematical enlightenment!

To finally find an answer! To finally understand at least one *truth*!

This is huge! I want to shout it from the rooftops, from every street corner!

This could be the biggest breakthrough in modern mathematical history! And it's so simple!

ALL SQUARING IS NOT A GIVEN!

Yikes!

So the real problem with theoretical physics comes down to unproven concepts of squaring!

All this time science has just been proceeding on habit—going through the motions.

I square, you square, we all square! Pete and repeat! But why?

Time squared, velocity squared, mass squared?

I realize now, with no way to prove, support, or explain this math—you got nuthin'!

And if calculus and theoretical physics demonstrate anything, it's that all mathematics isn't truth—some of it's just an experiment in truth!

Imagine that: mathematics not all truth! Now there's a revelation!

At last, here's a way to go forward!

What a relief! For a moment there I was starting to think *calculus* was the bad guy.

I was starting to see all modern theoretical physics (relativity, space-time, string theory, black holes, quantum theory, etc.) as just science being sucked into the vortex of the Big C; that frightening, universe-swallowing Charybdis of calculus, infinity!

I could even feel it pulling me in! Danger, Will Robinson!

But now I realize there's more to it than that.

I can't just blame calculus and infinity.

Hmm...theoretical physics:

Calculus, infinity, imagination, *and* unproven concepts of squaring?

What a concoction, what a mix, what a skull-puncher!

It's like one of those Zombies they serve over at the Bait Shop!

Each of the bottles is potent enough on its own, but together? Kaboom! Kazowie!

I can appreciate a good thought experiment...but you don't want to blow up the chemistry lab!

