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Gooney Ducks and Naked Physicists

Part XIV
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Abstract: An allegory of modern science.

Part XIV

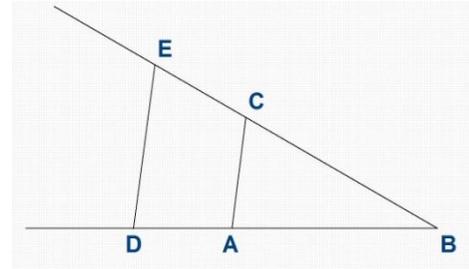
Okay! Time to “cross the Rubicon”! “*Alea iacta est!*”

No turning back now! Time to prove, once and for all, that it’s not possible to square line!

So, once more from the top!

Descartes’ first diagram (in his *Geometry*) illustrates the concept of multiplying or dividing line:

Let AB be taken as unity, and let it be required to multiply BD by BC. I have only to join the points A and C, and draw DE parallel to CA; then BE is the product of BD and BC. If it be required to divide BE by BD, I join E and D, and draw AC parallel to DE; then BC is the result of the division.



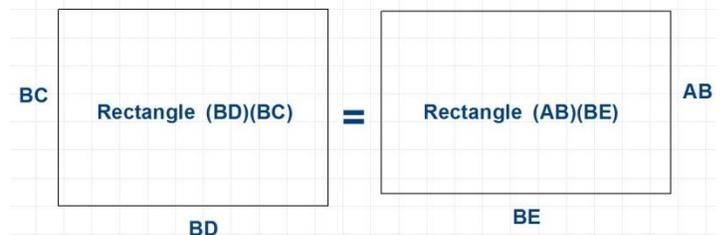
Point one: Descartes is using Thales’ (or the intercept) theorem.

By crossing an angle with parallel lines, Descartes constructs similar triangles whose sides are proportional, which is the same as creating equations for rectangles of equivalent areas.

$$(BD)(BC) = (AB)(BE), \quad \text{or} \quad \frac{BE}{BD} = \frac{BC}{AB}$$

So multiplying lines BD and BC produces a rectangle of area equal to that of rectangle AB, BE.

And what Descartes is calling multiplying, dividing, or squaring line is just your normal, everyday area squaring!



Point two: By defining line AB as representing unity (the number one),

Descartes converts Thales’ classic diagram and “similar triangle/equivalent rectangle” proportional equation of $(BD)(BC) = (AB)(BE)$, into the equation:

$$(BD)(BC) = (1)(BE), \quad \text{or} \quad \frac{BE}{BD} = \frac{BC}{1}$$

And there’s the obvious “algebraic magic”! Descartes makes the line AB *appear* to disappear by calling it the number one! Yeah, having the multiplication of lines BD and BC equal one multiplied by line BE, the result is made to appear to be simply line BE.

But in reality, line AB hasn’t disappeared. The line AB always represents one.

So the result of multiplying BD by BC is always going to be AB multiplied by BE—the area of a rectangle, not a line!

On to point three: Being designated as the unit one, line AB becomes the identity element that defines the number values of all the other lines and ends up part of every calculation within the diagram! In other words, with line AB as the number one, every line becomes a number and every number a line—a multiple of line AB.

So Descartes is seeing his lines as numbers! He says as much on the first page of his *Geometry*:

Taking one line which I shall call unity in order to relate as closely as possible to numbers...

And with the lines of the diagram converted into numbers, the geometric diagram is converted into a number equation. So any number equation can be expressed as a geometric diagram! Wow! Brilliant! With Descartes' method, each and every geometric diagram can be used as a calculator. How 'bout that!

But now comes the good part! The real kicker!

Point four: The Multiplicative Identity Property. Going back to the basics of algebra, multiplying something by one should always result in that same something.

Just as multiplying a by one should result in a , multiplying BE by one should result in BE:

$$a \times 1 = a, \quad \text{and} \quad BE \times 1 = BE$$

But in Descartes' diagram, multiplying line BE by AB (the line representing one), doesn't result in line BE; it results in BD multiplied by BC: the area of a rectangle, not a line!

$$(BE)(AB) = (BD)(BC) \quad \text{or} \quad (BE)(1) = (BD)(BC)$$

So any way you shake it, bake it, slice it, or dice it, Descartes' system of multiplication and division of line breaks the most basic rule of algebra!

Multiplying line AB by line BE will never result in line BE. It never can and never does!

There's just no way around it: If you break the first rule of algebra, it all stops right there!

Holy smokes! No basis for multiplication or division? No basis for conversion of unit?

Yeah, with no Multiplicative Identity Property, there's no algebra of lines, no squaring of lines, no squaring of time, velocity, mass, light, etc...Wow! No theoretical physics or calculus as we know it!

The party's over! Life on Earth will never be the same!

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So hold on to your seats, baseball fans! What excitement!

It's the bottom of the ninth, the score's tied, two outs, and the bases are loaded!
The crowd's cheering! And the suspense? It's intense!

The giants of science have just struck out with their "squaring of line," but who's on deck?
Who's batting cleanup?

If this were a Mariners' game, it might be Marté, Seager, Canó, Cruz, or Guti up to the plate,
but in the game of theoretical physics, who knows?

Who's gonna be that next up-and-comer, that star on the horizon, the new phenom, that
"Fortune and Glory Kid"? Who's gonna step into the batter's box and knock it out of the park?

Man, I can't wait to see what's coming down the pike (or should I say the pine)!
If the D-haus were still here, I know what he would say:

My, oh my! Get out the rye bread and mustard, Grandma, it is grand salami time!

Yeah, talk about opportunity!

Without the erroneous "squaring of line" holding science back, the sky's the limit!
Time to swing for the fences!

Wow! I still can't get my head around it!

All the scientific progress that was put in peril because of a simple math error—
trying to "square" line, time, velocity, light, and mass!

And to think, if we went to the moon with "bad" math,
I wonder where "good" math coulda taken us!

Maybe we coulda had it all: a cure for cancer, true solar energy, atomic fusion, renewable
clean energy tetrahedrons from salt water, Rosie the robots...a vacation hideaway on Venus!
Ah, shucks! Dagnabbit! I coulda been writing this in my flying car commuting to Mars!

Yessiree Bob, it's all too tragic!

But what a headline:

A ONE-WAY TICKET TO PALOOKA-VILLE?
SCIENCE'S GROWTH STUNTED BY THE SQUARING OF LINE!

Wow! This is so huge it might even make the financial news!

I can just see the breaking news in *The Wall Street Journal*:

SCI-CON INTERNATIONAL, GOING OUT OF BUSINESS!
ONE HADRON COLLIDER HALF PRICE!
STOCK MARKET GURU CORNELIUS P. ROSENBERRY SELLING SHORT!

Yep, I'm definitely gonna have to rethink my theoretical physics portfolio!

Talk about a falling market!

What a shake-up!

What a correction!

Who'd a thunk it?

"Squaring the line"—all along, it's always never been anything!

Wow! This will certainly deflate some inflated egos, but what a small price to pay!

What turmoil, but what elation!

This could be the watershed moment science has been waiting for!

Bursting the false bubble of "squaring" line, time, velocity, light, and mass should bring on an explosion of new ideas and technology!

This could be the start of the real deal...

the biggest thing to come along since "peanut butter and jelly"!

Yeah, sayonara, Palooka-ville!

I can already see mediocrity disappearing in the rear view mirror.

What's the equation for scientific reform? *Mathematical Reform = Scientific Success.*

There's the formula! That's the ticket!

It may seem like a daunting task, but the choice seems easy!

Get rid of the squaring of line! Cut your losses!

Correct the mathematical error right here and now, and maybe by this time next year we will be flying to Mars!

Whoo-hoo, doggie! I can feel the rush and the g-force already!

Yaaaahoo!