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Shoe Sizing

as an analogy of

Current Physics

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We need a breather from all the heavy papers I have put up recently, dense with equations. We need something a bit lighter. So let us look at shoe sizing as an analogy to some of the problems of physics.

I needed some new shoes for volleyball this month, so I began trolling ebay for a good deal. As you know, shopping online for clothes is a bit risky, since of course you can't try anything on. So I was comparing the sizing of different brands. I wanted to know if Adidas, New Balance, and so on tended to run large, small, or to size. To make a long story short, I normally wear a 10, and this time I had to buy 10.5, since the brand I chose ran small. But to find that out I had to do a search. I had to ask the question and scan the answers. The question I asked was, "Does brand X run small?" Perhaps it will not surprise you to know I found the answer was *yes* and *no*. I got about equal numbers of both answers. However, it wasn't that those who replied disagreed, or had different opinions, it was that they had different ideas about what "ran small" meant. Some thought that because I needed a 10.5 in brand X instead of a ten, that meant that brand X ran large. The number 10.5 is larger than the number 10. But of course the right answer is the opposite: because I need a larger size, the shoes themselves run *small*.

Sifting through this nonsense made me realize it was the same sort of nonsense I had to sort through when unwinding Relativity, among other physical problems. It is the same problem, because it shows how the number and the thing the number applies to are not necessarily the same. The number is not the object. We see this clearly with shoes, where the numbers are larger while the shoes are smaller. If you study it more closely, you quickly see that this is because of the question we asked. We didn't ask, "Is a size 10.5 larger than a 10?" The answer to that is always going to be *yes*. In that case, the number and the thing match up. The shoe is larger and so is the number.

But if we ask, "Do the shoes, as a whole, run small or large?" we get a different answer. We find the shoes running small as the numbers run larger.

In physics, I have found this problem over and over. It is especially persistent in the problem of Relativity, where most people tend to get mixed up pretty easily. When a problem begins to get complex as a matter of kinematics, most people stop following the physics and just concentrate on the math. They can't follow all the number *assignments*, so they just stick to the numbers. Problem is, once you do that, you are in grave danger of losing touch with reality. If your numbers and your physics start moving in opposite directions, as in the shoe problem, you are lost.

This just proves you have to stay in touch with the questions you are asking at all times. You have to understand what your question is, and how the kinematics applies to that question. If you don't, you are going to get the wrong answer. Even if your math is perfect as a series of steps, you will still get the wrong answer.

As perhaps the clearest example of this, we may return to my exchange with three top physicists and mathematicians on the question of time dilation. Even after a week of email exchanges, I still could not get any of them to comprehend the physics, and this is because I could not get them past the numbers. They were dealing with free-floating numbers. They had never properly attached those numbers to the real field, and they could not be taught how to do so, no matter how I tried. In the end, this was simply because they were incapable of visualizing the motions. With no ability to visualize, they had no ability to see how the question asked fit the real bodies. As with the shoe problem, they couldn't fit the numbers to the facts. They had no problem with math as math, they only had a problem with *applied math*. Their math was fine, but they had no ability to apply it.

I will gloss the problem one more time, to remind you how it went. It was simply a matter of applying the data of time to the idea of time. Their argument was that time dilation meant a slowing of time. In a slowing of time, you get fewer ticks. Fewer means less, which implies a smaller number. Therefore, as a matter of number, time dilation means a lower number.

This analysis looks good at a glance, but it is upside down just like the shoe sizing analysis. It is upside down because they aren't paying proper attention to the operation of measurement. What we are looking at in Relativity is the relationship of time to distance. We have to get that relationship right or we are going to get the wrong answer. We don't just have time dilation, we also have length contraction, so we have to look at both at the same time, and be sure our operation matches them both.

So let's start by looking at the measurement of length. Einstein makes a big deal about the measurement of length, telling us again and again that length is measured with "rigid rods." So it is clear that we are measuring the gap from end to end. A defining length is the gap from one end of the rigid rod to the other. That is what a length is: it is the *difference* between one end of the rod and the other.

When we move on to the problem of time, we have to match our operation to our operation of length. We have to ask the *same question* of time that we asked of length. To make this even clearer, let us give a real dimension to the rigid rod. Let us call it a meter rod. Now, when we move over to the question of time, we must ask how the *second* compares to the *meter*. What is a second? Or, what is a second, as an analogy of the meter? A second is a length between ticks of a clock. It is not the ticks, it is the time between ticks. The *length* of a second is the time between ticks.

Therefore, if x stands for the length of the meter in the equations, then t must stand for the length of the second in the equations. The variable t is not the number of ticks, it is the length between consecutive ticks. In time dilation, we have fewer ticks, it is true. But fewer ticks means we have a longer second in between those ticks. The second is *bigger*. As the meter gets smaller, the second gets larger. Therefore, logically, time dilation implies a larger number for t. As length contracts, the second gets larger. The variables x and t are therefore in inverse proportion, as a matter of number.

And in fact, this is what data shows. The current equations confirm it, too, since the transforms beneath the tensor calculus confirm it. In the current field equations, x and t are in inverse proportion.

However, as I have reminded the world, the starting equations of Einstein contradict this. The tensor calculus has actually had to reverse the numbers of Einstein, without admitting it. In Einstein's proof, the postulate equations indicate that time and distance are in direct proportion, one getting larger as the other gets larger. This is incorrect. Somehow we are supposed to believe that current field equations with t and x in inverse proportion were derived by Einstein from equations where t and x are in direct proportion. Since this is clearly impossible, we know that madness has long been afoot.

I have shown that this means that Relativity needs to be re-derived from the ground up. Once we correct the proof, we discover new answers to many other old problems.

The exact same problem is at the root of the famous Pound-Rebka experiment. I have shown that historically, the equations in the P-R experiment had been run upside-down, creating much new confusion, and getting the wrong answer. Because physicists and mathematicians failed to understand the time transform, they ran it upside-down, making a huge mess of the field equations in this problem. This required them to contradict themselves over and over in the physical explanations. Only because the problem is so difficult to visualize were they able to get away with it. No one caught them at it until I did so.

I have shown the same problem at the root of the Mercury perihelion solution. Although Einstein's solution is considered to be long and dense, it is actually very incomplete, as I show in my paper. The first problem is that Einstein finds the correct number for curvature, but fails to apply it to the planet in the right way. He ends up applying the number to the wrong year (he applies it to the Earth year instead of the Mercury year), and this fouls up the entire solution. So he finds the right number with the right math (mostly), but since his application of the math is wrong, his solution is wrong.

A similar problem is encountered when Einstein applies his new number to all the field precessions. Because we have multiple field precessions caused by the Earth as well as Mercury, we have to add these all together to get the right total. I show that no one has ever done this addition in the right way. I show that some of the precessions are opposite others, so that we have to subtract instead of add. This means that although physicists have been able to get the right numbers for the individual precessions, they have misunderstood the totals. Again, this is caused by an inability to *apply* the math and the numbers. Because physicists have not been able to visualize the precessions as actual field motions, they have not realized that some are differentials instead of sums. This has compromised the Mercury solution a second time.

In conclusion, we find that in physics, the math not only has to be correct, it has to be applied correctly.

Correct math applied incorrectly will get the wrong answer. We saw this most recently in my analysis of the Einstein and Friedmann field equations. Since both are based on Minkowski's 4-vector field, if that field falls, so do they. I have shown Minkowski's 4-vector is false, and it is false for the same reason as all the others above. Minkowski borrowed Einstein's first equations from Special Relativity in order to develop this 4-vector, and in those equations the time variable is upside down. All of the math of Minkowski, Hilbert, Klein, Einstein, Russell, Feynman, and many others falls to this error.

These great mathematicians and physicists couldn't visualize physical motions in real fields, and so they were unable to apply the math correctly. Once more, this is why my abilities as an artist are not beside the point. My critics try to imply that artistic abilities are either useless or negative in physics and math. They imply that an artist simply cannot be right where professional physicists and mathematicians are wrong, since artists are less intelligent by nature. But I think it is clear that an ability to visualize is among the most important abilities of a physicist—if not *the* most important. Without a very advanced ability to visualize both physical motions and math, a physicist can never hope to apply his learning to the real field—Nature.