

# INFINITY

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“I hate you!” she screamed. I don’t remember her name.

“I hate you more!” I replied, nose wrinkled.

“Oh yeah? I hate you times infinity!” she proudly exclaimed. I was taken aback. She had gone for the knockout punch so quickly. I struggled to come up with a response.

“I hate you infinity plus one!” Thankfully, my young mind was able to think above what most view as a theoretical constant. Our second grade teacher had, months before, told us that infinity was the absolute highest number. But that couldn’t be right. What about infinity plus one? Infinity times infinity? The possibilities of numbers above infinity themselves seemed infinite.

In third grade, we were taught that the universe was infinite, too. Mrs. Delores Dinn said it so confidently.

That seemed improbable. If it were endless, how could she have gone to the edges of the universe and come back in time to tell us before the 1:15 bell rang and we were sent back to Homeroom with Ms. Hornacek, where we would be allowed to eat our snacks and read our stories for fifteen minutes while she went outside to smoke?

Scientists say that the universe is not infinite. It is constantly expanding, but it has borders that stretch outward and drag along the stars and comets and galaxies in its folds, like a bubble blown at recess that didn't pop as it snapped off the bright pink magic wand.

Is the length of the universe – or the circumference, or the area – is that the concept of infinity?

Scientists say no.

“The universe we know is likely just a blip in a landscape of many thousands of universes called the *multiverse*,” said the scientist in a popular video.

When he arrived at the word multiverse, his voice grew in power and depth, as if he were reciting an incantation that was meant to levitate my TV.

He was old, with unkempt silver hair that flowed sideways like a lion's mane in black and white. I don't remember his name either.

My father was a perfusionist. Whenever people asked what he did for a living, I automatically added a description of his duties along with his title. His job was to make sure patients stayed alive while the doctors operated on them.

I always imagined that the heartbeat monitor was operated in the same way as the seismograph; I pictured a small needle jumping up and down with each heartbeat as it would with an earthquake, recording an unbroken line of the patient's life measured out in rapid pulses of blood through the body.

The peaks and valleys of life were clearly displayed for me then, and now. Each time the needle in the heart monitor jumped up, it was a surge of anticipation, a joyous occasion. And when it subsequently fell, spirits lowered and melancholy lingered. My father came to know that life was not the line on the seismograph.

When the heartbeat stopped, the line fell flat but continued on to infinity, even after the nurse silently entered the room after the doctors had all left and plucked the various suction cups off the bare, pale chest of the dead patient. The second the seismograph lit up again, it was already attached to another dying patient, and the infinite needlework continued for another victim.

It's only logical to assume that there must be an upper bound to infinity. Every other constant in the universe – multiverse – knows some limit. The fastest anything can go in any circumstance is precisely 299,792,458 meters per second.

The stubborn human race has tried to surpass this figure, but it remains the literal speed limit. When a particle is going nearly that speed, the speed of light in a vacuum, instead of converting injected energy into more speed, it actually gains mass and slows down time around it.

The oldest person in recorded history is 117. When we get old, instead of gaining mass and slowing time like speeding particles, our bodies deteriorate and our minds weaken. This is as much concerned with the laws of physics as the speed of light. There is an upper limit, and there are forces that prevent reaching infinity.

My father says that the one thing all of his patients have in common is their understanding and acceptance of mortality. That scares me. I would have thought otherwise.

When ice paved the roads and the elementary school had closed in fear of a blizzard, I went to visit my father at work. He pointed at the doors through which I entered into the operating room and said that he'd watched a few people pass through a different set of doors the night before.

I found out that the electrocardiograph did not operate like a seismograph, and I found out that it was called an electrocardiograph. I looked the electrocardiograph in its square face. It stared back blankly. It was not plugged in. The endless line of life had halted, and I was there to witness it. I no longer believed that infinity existed.

The doctors all went out for a smoke break, just like Ms. Hornacek. On the soft blue velvet throne in the waiting room, I tore the crust off my peanut butter and jelly sandwich and read the posters on the wall.

**“The doctor of the future will give no medication, but will interest his patients in the care of the human frame, diet and in the cause and prevention of disease.” – Thomas Edison**

That wouldn't work, I thought. No one cares about a disease they don't even have yet. I asked my father about it. He told me I was right, it didn't work. The one thing all of his patients have in common is their understanding and acceptance of mortality. I understood.

### **“A Cigarette a Day Keeps the Doctor in Pay!”**

But it seemed to me as if the doctors were accustomed to smoking many more than one cigarette in a day. I did not understand that poster. I wondered if the men in the pallid blue scrubs believed in infinity. I wondered if anyone had ever given it much thought. Then I thought that it was useless, because even if I thought forever, I wouldn't reach infinity.

“What happens if you add infinity to infinity?” I asked the next day in class. I needed to know. Mrs. Delores Dinn frowned and stopped writing the addition problem on the board.

“There is nothing larger than infinity. I told you. The answer is still infinity, because infinity is already infinity.” She turned back to the board. The black Expo marker squealed as it grinded across the sharp white surface.

$$21 + 7 = 28$$

If there were a hypothetical rocket ship that could travel one thousand meters per second, and attached to it a huge flashlight pointed forward, how fast would the light be traveling when the rocket ship was at full speed? Wouldn't that surpass the speed of light?

No, the light would be moving at exactly 299,792,458 meters per second.  $21 + 7$ , in this instance, equals 21. Time and space around the light bends and distorts so that the light cannot and will not break the finite constant, the speed of light.

Mrs. Delores Dinn, whose teeth were rotting and whose voice scratched more shrilly than the Expo against the board, never asked us that question. She was preoccupied with satisfying the curiosities of the elementary school textbook than mine. That was probably for the better. Kids would be better off to know and think (as they do) that everything can be infinite.

When my grandmother died, she had learned that she had cancer three days prior. Her infinity was three days.

She learned more in those three days than in her seventy years. Before her diagnosis, she had never attempted to add three to infinity.

When my grandfather died, he learned that he had cancer nearly three years prior. I think he'd have rather had those three years after his diagnosis than even consider infinity.

I am certain it is impossible to understand either side of the spectrum of finite to infinite until faced with death, the only absolute that we cannot even attempt to manipulate.

### **Zero**

"You have fifteen apples," Mrs. Delores Dinn droned in her signature raspy voice, as if each word had trouble extracting itself from the thick mess of ruby lipstick around her mouth.

"You give the person next to you four apples. How many do you have left?" The marker whined as it was dragged lazily across the board.

$$15 - 4 = ?$$

Mrs. Delores Dinn set the problem up for my class on the board. This was easy. We had learned subtraction the year before. The next year, though, we delved into negative numbers. Fifteen minus forty-four is negative twenty-nine.

I have fifteen apples. I give the person next to me forty-four. I now have negative twenty-nine apples.

Scientists say that absolute zero is the lowest possible temperature. At exactly zero degrees Kelvin, matter has no heat energy and cannot become colder.

I guess they never took fourth grade math and learned about negative numbers.

I imagine zero to be when the power goes out in the hospital and the backup generators fail and the crooked grin is wiped from the square face of the electrocardiograph. The needles of life that move up

and down across the seismic lines would finally cease before they can attach to another patient when the power returns, and the infinite cycle would break.

Zero, then, is the opposite of infinity. It is the misunderstanding of life that has a hold on all those who have not yet become my dad's patients.

It is as conceptual as infinity; it is not a number, but rather a name for an idea that has absolutely no value. It has different rules than any other number in our system.

I should have asked Mrs. Delores Dinn what nine divided by zero was. She would have neglected to write the problem on the board with the screeching Expo and simply told me that it was impossible, because you can't take nine apples and divide them into zero groups.

I arrived at school one morning to the sharp blast of an ambulance horn constantly sounding near the main entrance. I slept in the car on the way to school every day, but the swirling lights alone would have been enough to wake me up from any slumber. The air was thick with an oppressive fog that accumulated above the two lakes on both sides of the building, removing the aspect of time from the scene entirely.

Our secretary, Mrs. Kraus, had a stroke and died immediately. Her life was infinite one moment, and zero in the next.

The haunting thing about zero is that it is absolute. Infinity gives us space to work with, whereas zero is a hard limit.

Unlike my dad's patients, Mrs. Kraus never had the time to reconcile the difference between infinity and zero. She was all there, and then all gone, rather than drifting slowly away over the course of weeks like water dripping from a leaky faucet.

The relationship between infinity and zero is often strained. At the drop of a hat or the push of a pin, everything can be nothing.

A black hole is an oxymoronic affirmation of this relationship in a way. It is an object with unimaginable – almost infinite – density, yet by definition, nothing can escape its grasp. While it has all the properties of

infinity, all that we can observe of it is nothing. Indeed, it took scientists until quite recently to detect the faintest traces of the gravitational waves produced by the collision of two supermassive black holes.

My father, I think, is counting down the days until his retirement. He has helped an incredible amount of people transition from accepting their infinity to the cold, hard fact of a straight line on the electrocardiograph.

He says that the amount of people he's helped stay alive in the operating room are nearly meaningless to him, because the understanding of infinity that he recognized in his patients never quite effervesced into his own mind. All that he understood was the absolute halting of the infinite line into a concrete sum of zero.

*Our universe crunches and bounces between the realms of near ZERO (NOTHING) and near INFINITY (EVERYTHING).  
Our world is something in between, dependent on this interplay between zero and infinity. The middle ground of the two givens, the ground of ZEROFINITY.*

-- Dr. Anthony Lethbridge, *The Gist in the Mist*

What we are given in life is the interpretation of the theoretically boundless distance between zero and infinity. We are from nothing, yet we are everything in the next instant. The challenge in accepting our inevitable return to nothing is an acceptance of the gift of infinity that is bestowed upon us in the first place.

Mrs. Delores Dinn had a heart attack. My father was not the perfusionist on duty at the time. Had he been operating on her, I would have been curious to know if she had a revelation about infinity, finally.

