A GIFT FROM GOD

Prologue

In the end Man destroyed the heaven and the earth.

Chapter 1

This was not the beginning! More precisely, it was long after the beginning—thirteen thousand thousand thousand years after the beginning, to be somewhat exact.

The beginning had begun in a point smaller than anyone can imagine—and now the universe was vast! And expanding more and more with every passing day.

So, behold the whole!

Clusters of galaxies—filled with stars and various other suspicious things.

For a hypothetical moment, let us take a few steps even further up the scale. Is there only one universe…? Perhaps there are more… And who knows how they might affect one another?

But *that* is more a philosophical or perhaps a religious question. A question left for others to discuss. *We* shall stick to facts…

One universe! We know that *one* universe exists. It has no name, for we know only one—ours… And it is so vast that mankind cannot comprehend its size. But we can try!

Thus, we lower our gaze and see the universe as it is—over 100,000,000,000,000,000,000,000,*000* meters in diameter! We may call it a hundred quadrillion meters, a hundred yottameters, or a hundred trillion *trillion* meters—but that gives us no better sense of the horrific distance than saying ten to the power of twenty-six meters.

Because of the difficulty in perceiving such distances, scientists invented the concept of the light-year. A light-year is not a unit of time, but of distance. Measuring the universe in light-years gives us smaller, more manageable numbers—but to truly understand them, one must then also grasp the immense speed of light…

Reaching the speed of light is no easy task. For a human, it requires time and a horrifying amount of energy. You might think it impressive when a sleek sports car accelerates from zero to a hundred in five seconds. Now imagine that the car has no speed limit. You just keep accelerating forward on a perfectly straight and empty road—constantly, at the same rate. After nearly two years, you would be approaching the speed of light!

Unfortunately, the car's three or four hundred horsepower wouldn't quite be enough to maintain acceleration all the way… This is an effect of Einstein's theory of relativity, and if you wish to complain, I kindly ask you to take it up with him—I will not be touching relativity in this story!

One light-year, then, is the distance light travels in one year. It is far! Over nine million billion meters! And yet it is more than four times farther to the Sun's nearest twin…

Chapter 2

Measured in light-years, the universe is today roughly ninety-three thousand thousand *thousand* light-years across. Ninety-three billion *light-years*! That is a long distance—even for light…

So, what is the universe made of? A great deal, one might say. One could also say that it consists mostly of emptiness. Both statements are equally true!

We now move downward, one step at a time—and don't complain if I am a little biased in my choice of which part of the universe to describe. After all, I am only human myself.

We take a microscope and set it to about two hundred times magnification and once again look down at a portion of the universe—slightly to the right of center… We see a cluster! A *large* cluster! A cluster known as the Local Supercluster. It is called 'local' because somewhere within this cluster, mankind has its home!

The universe consists of vast emptiness, with superclusters scattered here and there—and all of them are moving at tremendous speeds outward from the center of the universe. A speed that we humans do not feel at all.

It takes light sixty-five million years to travel from one end of the Local Supercluster to the other. The light that was emitted when the dinosaurs went extinct on Earth has only just now crossed it…

The supercluster is filled with galaxy clusters. One of these galaxy clusters, within the Local Supercluster, is the Local Group—home to mankind.

Thus, we increase the magnification of our microscope by about twenty times and focus on the Local Group—which is no less than three million light-years across. Mankind was not yet mankind when the light we now see from, for example, the Andromeda Galaxy was created by various reactions…

Our Local Group contain more than twenty-six galaxies of varying sizes. Our galaxy, the Milky Way, is one of the three large spiral galaxies. The other two are the much larger Andromeda Galaxy and a galaxy simply called M33.

In addition to these three spiral galaxies, the group contains two elliptical galaxies. The remaining galaxies are smaller dwarf galaxies.

We now wish to see *our* galaxy, the Milky Way, in greater detail. Therefore, we increase the magnification of our microscope by roughly thirty times.

We now have the Milky Way fully in view. Four large spiral arms extend outward from its center—which may very well consist of a gigantic black hole… The Milky Way is our home galaxy—and yet it is enormous! It takes light one hundred thousand years to travel from one side of the galaxy to the other.

The galaxy rotates within the Local Group at a speed of nearly one hundred and fifty kilometers per second! A speed that we humans do not feel at all…

The stars located far out in the spiral arms are relatively isolated—the region can be compared to sparsely populated countryside. The center of the Milky Way, by contrast, can be likened to a metropolis—the stars here are packed very closely together.

Had Earth been located near the center of the galaxy, our night would have looked very different—it would have been roughly as bright as our day!

We now zoom in on one of the Milky Way’s smaller intermediate arms, the Orion Arm. We see a small solar system located about thirty thousand light-years from the galactic center. This solar system completes one revolution around the center every two hundred million years, which corresponds to a speed of two hundred and twenty kilometers per second. A speed that we humans do not feel at all—despite the fact that it is our own solar system!

To get a closer look at the solar system, we now drastically increase the magnification of our microscope—by roughly thirty *million* times!

A small sun at the center. Nine larger planets of varying sizes orbiting it. Asteroids and comets. A sphere of solar wind streaming outward from the Sun—the heliosphere.

Now the distances begin to feel a little more comprehensible to us simple humans. From edge to edge, the heliosphere measures about 0.003 light-years. At this scale, light-years are no longer a convenient unit of measurement. Instead, we can say roughly thirty light-hours. Or we could begin measuring distances in kilometers—but that is still astronomically far—thirty *billion* kilometers!

The Sun itself is only 1.4 million kilometers in diameter. Yet this is still large compared to the third planet from the Sun—Tellus, which its inhabitants also call Earth. Earth’s diameter of thirteen thousand kilometers is less than one hundredth of the Sun’s.

We now increase the magnification by a little over *two* million times and bring a beautiful blue planet into sharp focus!

At a distance of one hundred and fifty million kilometers from the Sun, it completes one orbit in just over a year. This gives Earth a speed of thirty kilometers per second. A speed that we humans do not feel at all.

To bring a single person fully into view in our microscope, we must once again increase the magnification dramatically—this time by more than *six* million times!

We have a magnificent microscope…!

A person is just under two meters tall— zero point zero zero zero zero zero zero zero zero zero zero zero zero zero zero zero zero *two* light-years from head to toe! I think we will now definitely stop measuring in light-years…

As Earth rotates around its axis once every day, a person standing at the equator has a speed of about seventeen hundred kilometers per hour. A person in Stockholm has roughly half that—about eight hundred and fifty kilometers per hour!

A speed that we humans do not feel at *all*!

Chapter 3

Do you now believe that our journey has reached its end? Then you are mistaken… We have not even come halfway!

We can now exchange our astronomical microscope for a human one—only to replace it again shortly thereafter with a non-human one…

We shall now examine what matter is made of—with particular focus on mankind.

Man is a complex life form—but the foundation is the same for all living beings. They are all built from cells. Many cells! An adult human body contains roughly one hundred thousand *billion* cells of various shapes and sizes.

To see a single cell, we increase the magnification of our microscope from its previous setting by about one hundred thousand times.

A small nucleus at the center. Cytoskeleton, cell membrane, and organelles. All of it floating around in a sea of cytoplasm.

The organelles are roughly one tenth the size of the cell itself, but still gigantic compared to the molecules they consist of.

The human body, and thus its cells, consist largely of water. Therefore, the water molecule is the most common type of molecule in a cell. To see a water molecule, we now increase the magnification by another one hundred thousand times.

One large blob. Two small ones.

One oxygen atom. Two hydrogen atoms. H_2O!

We immediately double the magnification and concentrate on the oxygen atom.

An atomic nucleus at the center. Eight large protons and eight large neutrons. Eight small electrons surrounding it—forming a sphere.

The atom is small! More precisely, it is about one hundred picometers in diameter! That is zero point zero zero zero zero zero zero zero zero *one* meters—more easily written as ten to the power of minus ten.

But that is *huge*! Imagine that people once genuinely believed that this blob was the smallest building block of matter—an elementary particle…!?

This blob consists almost entirely of empty space. We must travel downward through layers of electrons a distance five thousand times the diameter of the nucleus to reach it.

We focus on the atomic nucleus by increasing the magnification ten thousand times.

As mentioned, protons and neutrons have almost exactly the same mass and size, but not the same charge… Each is about ten to the power of minus fifteen meters in size. If we increase the magnification just ten more times, we can study a neutron in detail.

Can we go further? Of course!

Quick as lightning, we increase the magnification by about one thousand times and see that the neutron, like all other large particles, is built from smaller components. In our lens, we now have a quark.

Now things *are* getting small! A quark *is* small! So small that it is the smallest thing we humans know to exist.

And yet we are still nowhere near the end—the smallest thing there is! There is still a long way to go…

The problem now is that since mankind cannot see smaller components, there are no names for the parts that make up a quark. Therefore, we skip four or five intermediate steps and focus directly on the smallest building block of matter—the superstring.

We increase the magnification by an enormous one hundred million *billion* times to bring into focus the superstring, measuring ten to the power of minus thirty-five meters!

The smallest thing there is!

That is *tiny*!

Strings of supersymmetry that build *everything*! Strings that *connect* everything—gravity and electromagnetism, the strong and weak forces. Imagine if Einstein had been able to study them in detail… They in fact build the laws of physics themselves—though this was something no scientist had yet dared to speculate upon.

We have traveled a long distance, from the universe to superstrings. More precisely, we have taken approximately 10,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000

,000,000,000,000,*000* steps, which in itself means that the universe is approximately 10,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000 times larger than a superstring! A journey from ten to the power of twenty-six meters down to ten to the power of *minus* thirty-five meters.

Thus, a superstring is so infinitely small that it is smaller in relation to us humans than we are in relation to the universe!

No one knew then that these strings were programmable—and that they were not even locked into fixed programs!

Chapter 4

Professor Dumm was rather short—only zero point zero zero zero zero zero zero zero zero zero zero zero zero zero zero zero zero one eight light-years from head to toe. His reputation and fame, however, were considerably greater!

The Nobel Prize in Physics guaranteed him enormous demand; for many years he had now served on the board of the Institute for Increasingly Devastating Research—IIDR.

IIDR had succeeded in what appears to be every researcher's great dream—to destroy yet another of humanity's illusions.

Three years after Dumm was elected to the board, they had, at his urging, initiated Project Tunnel.

The task was to analyze the visions people claim to have when they are close to death. After two years of intensive research, they unequivocally proved that near-death experiences are nothing more than hallucinations. Oxygen deprivation causes one to see darkness and light—which has sometimes been interpreted as a Tunnel to Heaven.

Simply chemically predictable—the brain's final breath.

Professor Dumm was now about to commit an even greater blunder…

Chapter 5

For a long time, IIDR had been at the forefront of the research field somewhat ambiguously referred to as Stringent Physics. It was Professor Dumm who had initiated the work of analyzing the smallest components of matter, and in addition to leading Project Stringent Analysis, he was himself the researcher most deeply familiar with the infinitely microscopic world they studied.

IIDR was a non-deregulated, government-owned organization and, as such, focused solely and exclusively on increasingly devastating research. The organization was therefore not profit-

driven. It depended entirely on the goodwill of politicians and the hard-earned tax money scraped together by honest working people.

For the most part, these taxpayers had no idea what they were paying for—and if anyone had even a vague notion that some of the money went to IIDR, they rarely had any understanding of what was actually going on there. This was especially true of Project Stringent Analysis—it was research at the highest level of secrecy. No one outside the research group knew more than that they were analyzing the smallest things that exists. No results had yet been published.

This was, however, to some extent about to change. And in an unexpected way it would soon seriously intrude into everyday human life.

Professor Dumm needed money!

The work of analyzing superstrings was expensive. Even the most basic instruments were outrageously costly—this was new research, and what was required was the absolute cutting edge of spearhead technology. In order to continue his research at the same devastating pace, it was now time for Professor Dumm to demonstrate results!

He had therefore invited a rather unnecessary minister to his laboratory to showcase his research—Minister Ahew Jazz. Accompanying the minister were also two other members of IIDR's board, Professors Hugin and Munin.

Dumm was bent over a multidimensional microscope when Hugin and Munin arrived with the minister.

"Professor," Hugin ventured cautiously.

But Dumm seemed completely absorbed in his studies.

Hugin cleared his throat and tried again.

"Well… Professor!"

Dumm looked up from the microscope and appeared not quite sure where he was. He looked from person to person, scratched his temple, and then beamed like a child on Christmas Eve.

"Yes, yes, of course! I had almost forgotten."

Hugin and Munin exchanged brief greetings with Dumm. Munin gestured toward the minister and introduced him.

"This is Ahew Jazz."

Professor Dumm shook his hand.

"Good morning. I'm Dumm."

Chapter 6

Dumm led the gentlemen to a laboratory a couple of floors further down in the building.

To descend to the next level, he had to identify himself beyond all doubt by loudly declaring:

"I am Dumm!"

"That you are," replied the door, and opened as if by magic. The professor stepped through.

"I am Ahew Jazz."

Dumm turned around and saw the minister leaning toward the door's microphone.

"I am Ahew *Jazz*!" he tried again.

"No, no," Dumm called back. "You're not stored in memory! But you don't need memory—just come in with me."

All three stepped into a new corridor.

To go yet another floor down, Dumm had to identify himself beyond any and all doubts by entering a personal code on a small keypad. To be sure he got it exactly right, he pronounced the code out loud:

"D – U – M – M."

Once again, a door opened as if by miracle.

To his top-secret laboratory, only two people besides Dumm had access—his mother and his newspaper delivery man. Therefore, there was a third security check at the lab door, to completely and utterly confirm that beyond any and all possible doubts it really was Dumm himself who wanted to enter.

Dumm took the key from his pocket and tried to unlock the door.

"Oops! I guess it was already open…"

Chapter 7

"Strange…" muttered Dumm as he used one foot to sweep empty film canisters aside from the floor. "I can't remember laying out all my notes like this…"

He gathered up his formulas and musings—completely incomprehensible to Ahew Jazz—and stuffed them all into a box.

"I also don't recall the lock on this cabinet being broken. Oh well—I do have some trouble with my memory sometimes. I can never quite focus on trivial matters."

Professor Dumm now decided not to delay matters and planned to shock the minister and his colleagues by demonstrating his results straight away.

"Would you mind closing the door, Hugin?"

Bang!

Dumm jumped.

"Hugin! You don't have to slam it like that!"

"But…" Hugin began. "But… I wasn't even near the door."

Very well, Dumm thought irritably and continued toward the far corner of the lab. Then it must have been Ahew Jazz.

"As you know, it is common practice to test one's theories on mice. And that is exactly what I have done in this project as well."

"Mice?" Hugin blurted out, instantly forgetting about the door. "Mice!? I thought you were researching strings! What do mice have to do with that?"

"One thing at a time," Dumm replied. "I can assure you that my mouse most definitely has something to do with strings…"

"Well, but—" Munin began.

"Just take a look first, and we can discuss it afterward."

Dumm pointed to a bench. On it stood a seemingly empty cage.

The three gentlemen stepped closer for a better look. The cage was empty and looked to be upside down!

"What do you mean?" asked Hugin. "There's no mouse here."

"Maybe it escaped," Ahew Jazz blurted out, anxiously glancing down around his feet.

"You're looking in the wrong place," Dumm explained with a grin. "Don't look at the bottom of the cage—look at the ceiling."

"At the ceiling!?" Munin exclaimed as all three of them bent down to peer up into the top of the cage.

Suddenly, the world turned upside down for the three of them, and they simultaneously lost their balance. Hugin landed in Ahew Jazz' lap, who in turn knocked the breath out of Munin by involuntarily sitting down on his stomach.

"The… ceiling…" Hugin murmured feverishly.

"Down… is up… mouse… How!?"

Dumm looked condescendingly at the pile of men. He couldn't help smiling though, admiring both his own intelligence and his sense of drama.

The cage's ceiling was not its ceiling. It was its floor!

There was a wheel for the mouse to run in. There were small bowls for water and food. There was a little house!

And what's more—the ceiling was covered with sawdust, and there was water in the little bowl.

But that was not all…

From the door of the little house, a small mouse emerged.

Chapter 8

"You see," Dumm explained, "a superstring is the definitive elementary particle. There is nothing smaller, and therefore a superstring is not built from anything—it simply *is*!"

Dumm had patiently waited until his three guests had recovered enough to be able to appreciate a brief lecture. He now demonstrated his research as best he could. His audience had some

difficulty concentrating, and to understand even the most basic theories of Stringent Physics requires sharp and undivided attention.

"There is only one type of superstring. This may be difficult to imagine, but strictly speaking the entire universe contains only one thing—superstrings!"

"Perhaps," Hugin objected. "But now you're talking about matter. The universe may contain no other matter than superstrings, but it still contains forces like gravity, magnetism, and radiation. Doesn't it?"

"Well," Dumm began, "all of that is more or less the same thing. I mean, the relationship between magnetism and gravity was discovered long ago. And if you had kept up with developments over the last two years, you would know that all forces are now demonstrably interconnected—magnetism, gravity, the weak interaction, the *strong* interaction… Electromagnetic radiation is, of course, merely an effect of electromagnetism."

"Fine, perhaps," Hugin replied, "but we still have two concepts—strings and this fancy force theory."

"But there you are wrong!" Dumm revealed. "The very premise of the research we are conducting is that they are one and the same. And we have found the connection!" Dumm triumphed.

"I'm not really following here," Ahew Jazz suddenly admitted.

"What is it you don't understand?" Dumm asked.

"Well…" Jazz began awkwardly, "I, uh… What does gravity mean? And all this talk about electro-things! Does it perhaps have something to do with electricity?"

The other three simply stared at him. An awkward silence followed, which Munin finally broke.

"For my part, I still don't understand what any of this has to do with the mouse!"

Dumm decided to ignore Ahew Jazz.

"Yes, as I said, we have found the ultimate connection," he continued, brightening again. "And the connection lies in the superstrings." His expression twisted into a most cunning smile.

"They are programmable!"

Chapter 9

"Eh," Hugin began.

"Hmm," Munin continued.

"Oh," Ahew Jazz concluded, now appearing to finally understand something. "Like little computers!"

"Well… not quite," Professor Dumm replied. "But for our purposes, that may be a useful illustration. They are programmed to behave in a certain way. And since everything is contained within

these superstrings, that programming builds our world—it encompasses all our laws of nature!"

"Stop!" Hugin exclaimed. "Go back! Before we go into this programming, explain how laws of nature can be determined by strings. At least I have always thought that matter follows natural laws, not that it creates them…"

"Well," Dumm said, glancing briefly at Jazz, "hmm… perhaps it's best not to go too deeply into details just now. Besides, we haven't discovered all the facts yet. Much remains to be understood! Let me just say this: since the universe contains nothing but superstrings, the laws of nature depend on how the strings affect one another.

"Each individual string knows where all other strings are—*all* the strings in the universe! The programming tells each string how to behave in every possible context—alone or in groups.

"An example: I drop a ball. The strings that make up the ball know that there is an enormous collection of strings *beneath* them—the Earth—and so they are drawn toward one another as a result of the programming. The programmer could just as easily have left them unaffected by one another, which would have resulted in a world without gravity…"

"The programmer?" Ahew Jazz asked nervously, forcing a smile. This was far beyond his world. "Who programmed them?"

Dumm looked amused.

"Well now, that is precisely what we ask ourselves! In all practicality, of course, it was God! Who God is, or where He is, is another question entirely…"

"How can a string know where all the other strings are?" Hugin asked.

"Good question," the professor replied. "One to which I have no answer.

"It is quite obvious that even if we ignore the issue of updates, it is difficult to imagine such an enormous amount of memory fitting into such a tiny string. The theory we work with—and which no one has yet been able to disprove—is that they are all somehow connected to an extradimensional database. Don't ask me how or where. Your guess is as good as mine."

"I know the military has quite a large database at its headquarters…" Ahew Jazz tried to contribute, but was generously ignored.

"You said that…" Munin hesitated, "…that God could have programmed things differently. What makes you think He had a choice?"

"The simple fact that I myself, depending on mood and whim, alter our laws of nature on a daily basis!"

Chapter 10

"Yes, it's true! We can reprogram the strings!"

"I can't believe this!"

"Munin, the mouse is the proof! Can you see any other explanation for why it's walking on the ceiling and the sawdust is still staying put?"

"All right! Let's say you can reprogram a string. I can't even begin to imagine how many strings a mouse must consist of. It would take an eternity to reprogram all of those!"

"Wrong!" Dumm replied. "The strings contain an extraordinarily useful feature that makes copying between them very easy. It all works rather like a virus… If we program a single string, we have programmed them all. The first one spreads its programming to every other string it comes into contact with. In that way, the change propagates in an avalanche."

"Think of the Big Bang as the original programming event. All matter was then gathered in a singularity, which greatly facilitated the spread. Ever since, all superstrings have shared the same program—but it can be *changed*!"

Munin felt a chill run down his spine and had to grab the edge of the table to steady himself. He almost felt as if he were becoming lighter, as if he were losing his weight.

"Wait a minute!" Sweat beaded on his forehead. "If the mouse now has a different programming of its strings, why doesn't that programming spread from the mouse to everything else?"

"Yes! This sounds dangerous!" Ahew Jazz had taken several steps back from the cage and looked as though he regretted coming at all. "What would happen if I grabbed the mouse!?"

"Calm down!" Dumm exclaimed. "Surely you understand that if the mouse was still infectious, all four of us would already be sitting on the ceiling." He looked mildly amused. "No—there's another built-in function that makes our work simple. It seems as if, from creation itself, the system was designed to allow local alterations of the programming. So, there's really nothing to worry about. You can even hold the mouse—if that's the right word for it…"

"Explain!"

"Well, there's a built-in time limit that one can—and in fact must—make use of. It means that strings are only infectious for a very short period of time. If we ensure that an object has no physical contact with anything else during that interval, the reprogramming remains locally confined to the object."

"And how do you isolate such an object?" Munin asked.

"Vacuum!" Dumm answered sharply. "We place the object in a total vacuum while we use electromagnetism to reprogram its strings. After the specified time period has passed, it is perfectly

safe to remove the object from the vacuum and study the effects of its reprogramming."

"How long is this time period?" Hugin asked.

"It's adjustable! In fact, it's the very first parameter that must be set before any alteration of the program can proceed. It's binary-adjustable between about one nanosecond and one millisecond."

"How long is that?" Ahew Jazz asked, still casting uneasy glances toward the mouse.

"Between a billionth and a thousandth of a second," Munin explained impatiently.

Munin still looked uneasy. "It can never be completely safe! You can never produce a perfectly pure vacuum."

"True!" Dumm replied. "Which is one of the reasons we need money—and why we need so much money. We need a satellite! A space laboratory would make our research extremely safe. Even if an experiment were to go wrong and the entire satellite were reprogrammed, it would be infinitely unlikely for the effect to spread to Earth. Naturally, we want the satellite as far from Earth as possible. Ideally, we would like a Lagrange point—perhaps on the far side of the Moon."

"No financial discussions right now," Jazz said, clearly relieved. A thousandth of a second! There was nothing to worry about—it was faster than you could even say 'stop'… "Is there any way to actually see this programming? Could you possibly perform an experiment right now?"

"No," Dumm replied rather brusquely. "We've halted all experiments because of the risk of leakage. No one is allowed to conduct any further tests until we can do so at a safe distance and in a total vacuum. It is simply too dangerous!"

Ahew Jazz was visibly disappointed and said very little during the rest of the tour. He did not like being brushed off!

He wanted to see an experiment—and he did not want to go to the Moon to see it…

Didn't they know who he was?

Didn't they know that he was Ahew Jazz!?

Chapter 11

The tour was over. It was now up to Jazz to ensure that Project Stringent Analysis received unlimited funding. With three such well-known and respected researchers as Dumm, Hugin, and Munin backing him, he did not believe this would pose any problem whatsoever. With his little souvenirs as proof, he would be able to convince the entire government of the importance of continued research.

He did not, however, reveal his optimism to Dumm.

"Hm, I wonder if this really amounts to anything." he said hesitantly. "I can't really see what continued research would be good for. It may be difficult to secure funding." He observed Dumm's disappointed expression and thought he had him right where he wanted him. "Of course, I'll do my best—but I can't promise anything."

He had been casually tossing a souvenir Dumm had given him. A rather unusual marble. It very clearly wanted to fall upward!

He now slipped it into his pocket and took a step forward. The marble fell out of his shirt pocket—and fell up to the ceiling! Jazz recoiled in shock. The marble had passed just a few millimeters from his nose.

"What!?" he exclaimed. "What happened?"

He looked up at the ceiling and saw the marble bounce a couple of times before slowly rolling toward one of the walls.

"Ah! Oh yes…"

"Take this instead," Dumm said, slipping one of Jazz' fingers through a loop.

Jazz now had a yo-yo instead—and it was hanging upward! He looked delighted and shook his hand slightly, to no effect.

"This is better…"

"Why is it that up and down are the only things you've changed?" Munin asked.

"It was easy." Dumm replied. "The programming of the strings is horrendously complicated, and most of it we still don't understand. There is much we suspect, but haven't dared experiment with yet. Gravity was simple—we just swapped a plus for a minus. That's all there was to it. We were lucky!"

"Aha." Hugin and Munin replied in unison. "Thank you for the demonstration—we'll see what can be done."

They took their assigned marbles and disappeared through the door.

After them followed a playful Jazz, leading his yo-yo on a very short leash…

Chapter 12

The phone rang!

It was the middle of the night—and the phone rang?

Dumm reached for the receiver and nearly fell off the laboratory table where he had been sleeping. After muttering a few choice words, he lifted the phone to his ear.

"I am Dumm! What are—ahem—*who* are you?"

It was Ahew Jazz calling.

He had been unable to sleep—being utterly enchanted by his yo-yo. He simply had to see more!

"I want a demonstration!" he demanded of Dumm.

Dumm tried to dissuade him, but Jazz insisted that it was absolutely necessary if the project were to receive continued support. He rather enjoyed feeling not so dumb, lying to Dumm.

"We had a meeting this afternoon. As I suspected, approval was… mixed."

He suppressed the truth: that an overwhelmingly enthusiastic one-hundred-percent majority of politicians had been delighted and were more than happy to squander taxpayers' money on devastating research. IIDR already had its funding!

"We concluded that a demonstration is needed. After a small experiment, my colleagues will surely soften." Jazz tried to sound cautiously optimistic. "Just a very small one. It doesn't have to be extensive."

Dumm was tired and wanted Jazz out of his ear. He thought that one more experiment surely couldn't hurt—and afterward, the money would start pouring in.

"What kind of a very small experiment did you have in mind?" he asked.

Jazz struggled not to let out an excited squeal. Instead, he replied in a neutral tone:

"Well, that hasn't been decided yet. I'll bring an object—a very small one. Then we'll see what you can do with it. When would it suit you?"

Dumm decided it was best to get it over with and scheduled a time with Jazz early the next morning. He fell back asleep and continued dreaming about unsolvable mathematical equations.

Ahew Jazz could not sleep.

He grabbed his flashlight, crawled back under the covers, and played hot-air balloon with his yo-yo.

Chapter 13

There was a knock at the door!

It was early in the morning—and there was a knock at the door?

Dumm stretched, rubbed his eyes, and fell off the laboratory table where he had been sleeping. After a dozen colorful curses, he stood up and speculated about what might be going on.

The knock came again. Dumm opened the door.

He looked at the man outside and seemed unsure of where he was. He glanced from person to yo-yo and back again, scratched his temple, and then beamed like a child on his birthday.

"Yes, yes, of course! I had almost forgotten. You're Ahew Jazz!"

Still groggy and unprepared, Dumm and Jazz nevertheless set up the experiment they were about to perform. Fortunately, almost

everything was already prepared. It was simply a matter of getting started.

Jazz had brought several possible objects with him and now asked Dumm whether there was anything besides gravity they could alter. Dumm replied that there wasn't much, but handed Jazz a short list of what they had so far managed to decipher from the strings' programming.

Jazz was impatient. He chose quickly!

He pulled a ring from his pocket.

"I want to melt this ring!" he said, looking at Dumm with hopeful eyes.

"Melt it?" Dumm asked. "What do you mean?"

"Well, I see here that you can alter a string's temperature," Jazz said, pointing at the paper he had been given. "Somehow you can swap the minimum and maximum values of the scale and turn it upside down. What would that mean for a metal ring?"

Dumm looked thoughtful.

"Well, it would most certainly change its temperature. It would become hot when exposed to cold, and cold when exposed to heat. It would probably melt at room temperature."

He thought a bit more and caught himself liking the experiment.

"That would mean that if we put the ring in a refrigerator, it would get hotter—and if we put it in an oven, it would get colder… Fun!"

Dumm was also pleased that Jazz had chosen a metal object. It made the experiment easier, since the ring itself was affected by magnetism. They didn't need to improvise to make it levitate inside the magnetic field they created in the vacuum chamber.

Dumm programmed his equipment with the sequence required to alter a string's programming. In his slightly groggy state, he failed to notice that he had selected the longest delay time—one millisecond. With the vacuum equipment they currently had, this was theoretically within the danger zone. The chamber was not large enough, and the vacuum not pure enough.

Still, the safety margins were generous.

It would surely be fine…

Chapter 14

Ahew Jazz was stunned.

The ring was clearly floating in midair inside the small chamber behind the glass window.

"How does that work?" he asked. "Have you already programmed gravity away?"

"No," Dumm replied patiently. "That's magnetism. Imagine that we have equally strong magnets surrounding the ring, repelling it—

pushing it away. It simply hangs where it is affected by the least force!"

"I see," Jazz said, looking as though he understood even less.

"We can't let the ring touch the wall," Dumm continued. "That would cause an uncontrollable chain reaction. It could be somewhat dangerous…" He handled Ahew Jazz with kid gloves.

"Hm…" Jazz *seemed* to be in thoughts. What passed through his mind were electrical impulses, certainly—but they had very little to do with what might be called thinking.

"Hm…"

Dumm continued tapping at his equipment, and presently he was finished. He set up a video camera to document the experiment and asked Jazz to focus on the ring in the window.

"I'm ready to begin now," he said. "Are you prepared?"

Jazz merely nodded.

Dumm pressed a button.

They saw the ring flash and begin to glow intensely—so intensely that they were forced to look away.

What they did not see was what happened to an atom near the surface of the ring. That atom's superstrings—like all other superstrings in the ring's atoms—were 'infected' with Dumm's altered programming and abruptly reversed their temperature behavior relative to what had been normal for nearly fifteen billion years.

They became hot.

A hot atom is often a very mobile atom. That was the case here as well. One hundred microseconds after becoming hot, the atom suddenly collided with another very hot atom. The result was an abrupt change in both direction and velocity. The atom accelerated, left the ring, and continued outward.

Six hundred microseconds after becoming hot, it was halfway between the ring and the chamber wall.

The atom was incomplete! This meant that it was pulled increasingly *faster* toward the wall as a result of the magnetic field. Had it not been for this additional acceleration, the atom would not have reached the wall while it was still 'infectious,' and the future would have unfolded a few steps differently.

As it was, the atom struck the wall approximately nine hundred and ninety-nine microseconds after it became hot.

There was only *one* microsecond left in the safety margin.

But that was all it took!

Chapter 15

At first, Dumm and Jazz did not realize what was happening. Their eyes were still turned away, dazzled by the intense glare.

Only when the wall in front of them began to glow, and the glass window suddenly melted and the chamber imploded with a deafening bang, did they realize that something was terribly wrong.

The 'infection' now spread at tremendous speed. Each superstring collided with many others, which in turn collided with many more. In this way, an uncontrollable avalanche was unleashed.

The worst kind of meltdown!

This must not happen! This *could* be somewhat *dangerous*!

"Yee-haw!" Dumm barely had time to see his fingers begin to glow before his entire body was transformed into a luminous cloud of plasma.

Ahew Jazz no longer wanted to participate. He no longer cared about the ring. He no longer cared about the cloud of plasma beside him.

He wanted to go home!

He saw his yo-yo, resting beneath a shelf in front of him, begin to glow—and then vanish into a blinding cloud of gas. Desperately, he tried to pull his finger free from the loop. He didn't want the yo-yo anymore. It was no longer fun!

He saw the yo-yo's string burn toward him like a fuse on a bomb.

"No!" he screamed as the superstrings closed in on him from every direction. "I'm sorry! I want to go home, I want—"

He felt the air in his lungs become hotter than the Sun. He grew tired of screaming.

Ahew Jazz, the first of many, died.

Chapter 16

Jazz saw his body burn—transform into superheated gas—before his eyes.

He understood that he had died and had now left his body, in search of a better place. He could not help but feel immense gratitude and happiness. Such feelings inevitably arise in a person's soul right after the moment of death; they are a natural law in themselves. Jazz was no exception.

He heard the music. He saw the light. He felt the pain!

Pain? What pain?

In his incorporeal state, he turned around and saw his transparent feet catch fire. This was a blue fire—a strange fire, a fire he did not understand.

But he understood the pain—and it was increasing!

His spectral body burned upward from his feet. His natural body had been transformed into glowing plasma. His spiritual body was rapidly transformed into—nothing.

The blue fire spread across his body and left no trace of the spirit that had existed moments earlier.

The last thing Jazz' soul thought was that this was wrong. Something was wrong! This was not how it was supposed to go.

He wanted to read the rules!

He wanted to go home to his mother!

The human soul was far from fully understood. Consequently, knowledge of its construction from superstrings was hardly common knowledge.

Heaven would have to wait.

Heaven would have to wait a long time!

Chapter 666

Three people were currently aboard the space station Mir. The two Russians had been having trouble with their microwave, which was why an American had been rushed there at great speed.

The problem was no more.

The three of them now sat munching on their space burgers. Ketchup smeared itself around the cabin along with greasy French fries and unwrapped Coca-Cola.

"Almost daytime again…" muttered Spatsiba suddenly.

"Nyet, not quite yet!" Nikitska objected. "There are still a couple of hours left."

"Well, but look!" Bubba exclaimed with his mouth full. "Don't you see it there on the horizon?"

They saw a light spreading faster and faster along the horizon. At first, they thought their calculations must have been wrong—that they had circled through the night faster than planned. But when the light spread downward across the globe, they saw that it was not sunrise.

The Earth itself was glowing!

All three fell silent. No one said a word, and the food floated from their hands. Their fear was palpable—thick and pitch-black—and wrapped itself around the astronauts' minds like a black hole around its own axis.

What was happening? The Earth was not supposed to glow. Not like this.

True, light streamed upward from cities all across the planet—but this was different. This was fire! This was far worse than fire—this was the *end*!

The fires of Hell seemed to spread across the Earth, and the three could only watch.

Half the globe now shone brighter than the Sun on a hot summer day. It was nearly impossible to look at the planet.

Bubba saw the fire spreading toward Chicago and immediately thought of his car and his new barbecue grill.

“No! What’s happening!? Not home!”

“Caramba!” Spatsiba shouted—completely forgetting that he was Russian.

The Earth was now entirely covered in a fire fiercer than the Sun’s. A shockwave was moving outward; the three astronauts could see the fire racing toward them. They realized they did not have much time.

“I want to go home,” Bubba sobbed, utterly broken.

Spatsiba downed an entire bottle of vodka and began singing Russian folk songs.

The fire swept over the capsule, and the edges began to glow.

With a resigned sigh and a thought of a prayer never prayed, Nikitska rose and stepped into the adjacent compartment. She lay down on her bunk, felt her back catch fire, closed her eyes, and wept:

“God! How astringent You are!”

Epilogue

And the earth became without form, and void; and light was upon the face of the deep. And the Spirit of God moved upon the face of the fires.

And God said,

Let there be an end:

and there was an end.

Written by Ola Magnusson, December 24, 1997.
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Disclosure: I’m not happy with the translation of the last pun. In Swedish, the word for both string and stern are the same, ‘sträng’. It doesn’t translate well into English.