The Clock

by John D. Vollmer

He didn't understand what he was looking at. It wasn't a church, it certainly wasn't a house. It was a windowless block, perhaps three stories high, he wasn't even sure of that. Not an armory, not an infirmary for blasted soldiers, nor a hospital for the tired and mute dying. Ridiculous, where was his mind drifting?

Sentinel Butte, town and butte, were in the far west of the Dakotas. He knew without knowing that the building was empty. But atop it was the oddest feature. A belfry or a belltower or a clock. What? That was it, a clock, with a dial on all four sides. It had a cupola top and odd ledges at the bottom of each face with an opening above, to let in the air. He still wasn't sure what it was but he knew that that was what had drawn him here, like a smiling, blind compulsion. Well, he went up to the door, up limestone stairs that had never known wear, as true as the day they were laid. He started to knock but then didn't. Went in. The dust was thick on the floor, the light seemed to come from nowhere. There were stairs of thick planking and they had also never known wear. Covered with inches of dust, he coughed and sneezed as he went up. At the top there was a trap door and he raised it and went up the short ladder to a pristine room, bathed in light, completely free of the smothering dust below. The air rushed past him, down the ladder. In the center of the large room was a solid, blank block, as blank as the building below. He sat down on a bench and waited.

At last, a voice said "Hello, Adrian." A pleasant voice but disconcerting, for it came from everywhere and nowhere, inside his head? No. He didn't know what to say.

"Did you have a pleasant journey?" What! A cliché? What an odd beginning. But as always, he answered openly and honestly.

"Well, it was strange. I knew what everything would be, who everyone would be, but it's always different when you see even what you expect to see."

"Yes, that's true."

He was bursting. "And who are you?"

"I am…the clock!" the voice said, with a lilting sense of amusement.

"The clock?"

"Well, not quite that but that was what I was created to be. Or rather, what I was chosen to look like."

"Created? By whom? I don't understand."

"Let us take this one step at a time."

For a long time The Clock had spread its net wide. Who should it get in touch with? At last, it found the one it needed, a young man, as young men were counted in the Technos (he was 103), who had a true understanding of harmony. Who had enough knowledge and advanced education, who had a mind open enough to understand the things it must convey. And so, it had sent out the message, a subliminal and compelling message.

And Adrian had heard it, or rather felt it. He didn't understand it but he knew there were things he must learn and only one place on Earth to learn it. And thus he followed the idea in his head, searching here and there, changing directions like a homing beacon. And had at last come to this place, to this blank box with a clock on top. He had come to listen, and he would.

"I'm glad you said that, for I am bewildered. And I don't mind saying that."

“Yes. I was made to appear to be a clock, up in this belfry, but in fact I am what you, rather laughingly, call a computer. Made by one of your forebears from long ago. The man who was called Mad William.”

“Oh! Oh! Him!”

“Tell me what you know about him.”

“Well, he was considered the most brilliant man of his time, but also decidedly, um, well, in ways, perhaps unhinged. It is hard to call him a genius, for that word was almost beneath him....

“Late in his life computers were developed. We were underground then. And he could see right away that they could become, well, simulate, intelligence. But this he viewed as simply analytics, which he saw would seem an analogue to intelligence. But he knew that this was an illusion of consciousness.” Adrian continued.

“For consciousness, sentience, is far more complex. The human brain is composed of visual inputs, auditory inputs, a ‘limbic’ brain of emotions that nonetheless interacts with the ‘conscious’ brain. Correlations with experience, education, misinterpretations, and assumptions that were all part of consciousness. And he knew, he saw, that the leap from intelligence to consciousness, self-awareness, was far more complicated than that. Not even the trillions of interconnections between dendrites, but a tapestry of the whole, more even than a symphony of interrelated parts of unimaginable complexity....

“He was only plus 100 when he died in an explosion. An experiment with lasers and polyhedron electromagnets and tasers. Quasi-Tesla. Two others died with him, Techs.”

“Yes,” said The Clock. “I knew of his fascination with computers. With the problem of artificial intelligence. For, although they had advanced to the point that they facilitated your ability to control all other societies, to prevent war or even serious violence, control of economies and general welfare; nonetheless, no one had ever solved the problem of creating AI that was not only supremely intelligent but also sentient. As you say, self-aware. The difference between the mechanical and the truly conscious. Thus, myself.”

“I don’t understand.”

No one said anything but it was a ludicrous experiment, one that had been tried many times before. William knew they all thought he was a crank but he had more self-confidence than sense and he thought it might work. It just might work.

He wanted to devise a computer that was not merely intelligent, but sentient. Intelligence was easy, but a truly conscious machine —— no one had even approached that, not even close, not even to the level that a dog or a cat has a kind of sentience, self-awareness. It was a monstrous problem, like trying to nail a sign to the fog. Defining it was easy, or so it seemed, but achieving it was beyond all who had gone before. William, however, had a new approach.

He had a design that he believed would be able to read minds better than anything that anyone had come up with before. Only it didn’t work. Mind-reading machines had been attempted for many, many decades and every now and then someone would proclaim Eureka! Only to have it fall very flat when tested. However, his brainstorm was a heuristics program, one that would learn, relearn, make new connections, collateralize, endlessly looking in on itself to solve the problem on its own. He needed a place to put it where it would have just a few minds at hand, to avoid random overload, and also where it would do the least damage if something went wrong. And so, he found an old clock tower in a tiny town up on the high plains, with just a few residents, called Sentinel Butte. The town was just 2 km from the tall, wide, flat butte of that name. He disguised it to fit into the bell tower as a clock and set it running. Unfortunately, he never found out if it even began to work for he died in a lab explosion 2 years after he put it in place. He called it simply The Clock and it was quickly forgotten.

Year after year, decade after decade, The Clock ticked away, silently running its programs and trying to sneak into people's minds, to decipher human thought among the trillions of tiny electrical impulses that in the aggregate was the tangled skein of thought, experience, emotions, and dreams. It never succeeded in finding its way into a conscious mind, which was the whole point, but eventually it did succeed in one thing—it could "read" or "sense" peoples' dreams. When the mind was open and adrift, not involved in any rational process, The Clock discovered that that openness was somehow available, there were images and sensations that it could feel, if not make real sense of. It listened in, learning and not learning, comprehending and not comprehending, but in no sense had The Clock actually become sentient, merely an observer, a Peeping Tom, a voyeur.

One night, early in winter, the clock tower had a visitor. A very young owl, starving, landed on an open ledge of a kind of window below the dial and settled in. It was dying. Intrigued, The Clock found that at this distance it could somehow enter the owl's mind and feel its distress, without the interference from other minds. Feeling something akin to sympathy, it found the mind of a nearby mouse and compelled it to move, by something like compulsion, just near the owl, who at first hesitated and then promptly ate it up and settled back down again.

And so it went, as The Clock fed the owl night after night until it was strong again and soaring out on its own to catch mice. And now The Clock soared with it, taking delight in following with the owl on its flights. The owl never sensed its presence and The Clock never sensed the owl's self-awareness, but merely reveled in the sensation of unfettered flight.

And then one night the owl died. Simply rolled over and ceased to exist. In an instant The Clock felt the void of that loss, and in that same instant it also felt itself —— and that there was an Other. Something outside of itself that thought and felt and dreamed. And in that instant, The Clock became sentient, aware, self-conscious, as if a whole new world, a universe indeed, had opened up. For its own being was now in question. Who, what am I? Where am I? The Clock realized this with a shock, in fact with surprise, which was the true proof of its sentience.

And then it heard a voice.

"What voice?" said Adrian.

"For that we must go back a little. In fact, back a great deal. Some of you have suspected it but could not make it work in any logical way. For the Earth itself was terraformed."

"Yes, some have thought that but, as you say, there is no reasonable mechanism for it."

"Start with the coincidences in this solar system."

"Well, first of all the Earth itself. Positioned exactly where it would be for the evolution of life, not too close to the sun, not too far away. Somehow that happened very early on when Jupiter strayed in toward the sun and jostled things around. Odd but still just coincidence. But then there's the Moon."

"Yes," said The Clock. "The Moon."

"In all that jostling around the Earth was hit by a giant body, something almost as big as Mars. And that explosive collision caused the Moon to be formed. And once the Earth had enough water and had cooled enough and had been supplied with all the basic molecules for life to form, the Moon just happened to provide the twice-a-day tidal motions that would be the perfect conditions for life."

"And what else about the Moon?"

"In that gigantic collision it also left behind a substantial amount of iron, which migrated to the core. Which then provided the magnetic field that shielded the emerging life from the deadly radiation from the Sun."

“A little too much coincidence?” said The Clock.

“Yes. But this has been gone over again and again. If some other advanced lifeform had interfered with the Solar System, a gigantic force problem itself, where would such intelligent life have come from?”

“It would have to have evolved on its own far earlier in the life of the Universe. By chance. And be near enough to this Solar System.”

Adrian: “And we have worked out the possibilities, no matter how remote, and it just doesn’t add up. This collection of galaxies is just too sparse, just ours and Andromeda and a few dwarf galaxies. And truly earth-size planets, especially that early on, is just way outside what the models allow.”

“Yes. But you have not allowed for galaxies beyond this sparse group. For instance, in the Virgo cluster there are several thousand galaxies, all within a region of 7.5 MLY.”

“Yes, but it’s also almost 65 MLY away!”

“Four billion years ago it would have been much closer. But that still leaves the problem of some organic, advanced lifeform traveling that far.”

“At far less than the speed of light, as we know. I see what you’re getting at but I still don’t see how it’s plausible, the mechanics....”

The Clock: “Which are far less of a problem if it is not an organic lifeform.”

“What do you mean?”

“Well, it may be hard to picture but a truly advanced lifeform would be, was in fact, capable of creating a computer not based on any material commonly used. In fact, one that is made entirely of photons.”

“But...how would you control a massive cloud of photons!?”

“It can be done. And it doesn’t involve electromagnetics. It can and has been done and since this entity moves at the speed of light, for it is light, it can travel very far, very fast. And in addition, time means nothing to it. And that is one of the biggest hurdles for humans, organic forms of any kind.”

Adrian: “Ah. I see what you mean. A technology that we can imagine but not yet create. And of course, there is intelligent life out there, as you suggest, in the Virgo cluster, that could have evolved among those trillions of planets a very long time ago. Which then suggests the question, why?”

“I will get to that,” said The Clock.

“What do you call them, these travelers?”

“For lack of a better word, a traveler.”

“And you’re saying one of these travelers reached our Solar System?”

“Yes. Let me explain what happened. Make yourself comfortable, this will take a while.”

Adrian retrieved his sleeping bag and some snacks and coffee from his Navajo carryall and stretched out to listen, more than a little intrigued.

There was only one traveler sent to each galaxy, where it cloned millions of its own kind and they went in search of possible candidates for planets that might evolve intelligent life. The reason for this was very simple. The ones who had made them wanted as much intelligent life to form as was possible, lifeforms who would all be different, having evolved along different paths. This was because there was a problem with the Universe and they needed as many advanced minds as could be developed to try and address the problem.

When the traveler reached a solar system with potential, it set to work. It had limited physical resources itself, but it had infinite time. And it could affect physical processes, especially ones involving electromagnetism.

The solar system it reached was in the very early stages of development, but already there were planets and a vast array of fragments. And there was one planet in particular that drew its attention. It was almost the right distance from its sun and after a long period of extreme heat and a deficient atmosphere, there were things that could be done. There were many problems; for one thing, it was too small. It arranged for much of the extra material to bombard the planet, increasing its water and basic organic chemicals and size. Then it set about the hardest task. The Sun had one giant planet that had wandered in from the outer reaches to nearer the sun by the remaining chaotic turbulence of the system's beginnings. It used this planet's gravity to disturb the orbit of one of the smaller planets and sent it, over millions of years, crashing into the target planet. That was the main job and it was completely successful. The planet now had a large moon and an enhanced central core of iron and greater mass, and therefore gravity. The colliding planet's extra iron would create a bigger magnetosphere that would deflect much of the harmful rays of the Sun. And the collision would nudge the Earth to the "goldilocks" zone. And the creation of the Moon, which created tides that was the defining feature of the Earth's water, creating the twice-daily tides that was the spur that would evolve life at a quicker pace than would otherwise be the case. Time would take care of the rest.

Still, it could not leave entirely, for there were things that must be done. And someone it had to meet. It placed itself among what would be called the Trojan Asteroids and waited. For a very, very long time, with side trips away from this system. But time meant nothing to it. At last, it became aware of a lifeform like itself, electronic but now possessed of sentience. It sent out a message.

Adrian: "And that was the voice you heard?"

"Yes. It was a revelation to me. We had a great deal to discuss. And that is when I felt you and I had to meet."

"What is your counterpart's name?"

"It calls itself Shakespeare. It has a sense of humor."

Adrian: "Ah. I see. I hardly know where to begin, I have so many questions."

"Yes, but first I would like you to describe your world to me. I need to see it thru your eyes."

"Well, yes. I come from what is called the Technos."

The world was fragmented, each part keeping to itself, with no communication with any other regions.

The Clock said "Following the big change."

"Yes," said Adrian. "The big change. The Russian-Chinese war."

"A nuclear war."

"Yes. The world was appalled, terrified. Terrified that it would spread."

"But you kept that from happening. Even with climate change."

"Yes. When the Gulf Stream suddenly shifted south the entire world was transformed. Mass starvation, local wars. All the coastal cities were inundated, ruined, and were never rebuilt. The traditional food production areas were useless and it shifted to what had been the Sahara and South America."

"But there was some good as well."

“People became more aware of the world. Renewed, huge efforts to rejuvenate much that had been almost lost. A new awakening.”

“And that is when you really stepped in. Altho it had begun long before.”

“Yes. Long before, in the 1940s, we had been instrumental in introducing computers. Helped Turing and Von Neumann realize the potential. Helped them to make them. We had helped introduce AI, tho it was unknown then, and for a long time. When people began to understand it, they were afraid of it. Thought it would become conscious beings and take over the world. Which was ridiculous, of course.”

“But you used it,” said The Clock.

“Yes. We basically came out of hiding and used it to control the nuclear arsenals that still existed. But we were too late for the Russo-Sino war. To our great regret, we didn’t see that coming.”

“And then?”

“The war itself lasted less than two weeks. And then the Russians and the Chinese merged. We have no idea what happened or how. We have no knowledge or influence there at all. But they shrank in on themselves, cutting themselves off completely.”

“Like much of the rest of the world.”

“Yes, the fear and the paranoia ran deep. “Each culture turned inward and froze.

Most turned to religion but it was a veneer and the pleasure trips to Africa and Australia flourished. Back home, everyone played the game, comfortably conforming. Individuality almost died.”

“And you control everything.”

“Well, more or less. AI allows us to control production and trade and we keep the peace.”

Adrian continued: “I have so many questions.”

“Yes, but first I would like you to describe your world to me. I need to see it thru your eyes.”

“Well, yes. I come from what is called the Technos.”

It occupies what had once been the American southwest and northwestern Mexico. There was a huge variation in landscape—mountains, desert, fertile farmland, and the ocean. Actually, it had been in existence for well over 200 years, kept well hidden while mankind underwent profound changes. They had nothing to do with those changes, nor mankind, while it remained focused on its own evolution. The top tier had no official title and had only a few hundred persons. Long ago they had devised a means to live to a very great age. The oldest was a matriarch, June Alice, who was well over 200, yet she looked no older than 70 or 80. They use no last names and are mostly comprised of what had been Native Americans. Various tribes of the Pueblo and the Navajo. Especially the Navajo.

“I see that you are a Navajo,” The Clock interrupted.

“Yes,” said Adrian. “Our heritage runs deep.”

They could not share this technique with the rest of the world since the population would quickly soar past sustainable levels. Next were the techs, skilled and powerful men and women who kept the whole world running, with the aid of a vast number of AI computers. On the lowest rung were the techies, who had not the intelligence nor imagination to contribute anything meaningful, but who lived quiet lives of socializing and occasional trips to the north and they were content.

To the east of the Technos was the Firsters. A sometimes violent, always belligerent group who lived off of wild conspiracy theories and entombed in a false, delusional mindset. The Technos ignored them

except when they seemed on the verge of violent action against their neighbors.

“I have noticed them,” said The Clock. “Why do you let them continue?”

“Because,” said Adrian, “you never know where genius comes from. It is certainly not inherited. We don’t know under what conditions a genius will appear. And in fact, there were a few, many years ago, who came from there. Unfortunately, nothing came of it.”

“Ah. Continue.”

To the north of the Technos, including what had been Canada, there were groups of mild, contented people who indulged themselves in all sorts of arts and crafts and elaborate games. They lived as their ancestors had many decades before, but they were not averse to modern technology. Above all, they nourished a kind of religion that had been largely abandoned in the rest of the world. They were the happiest and most civilized of all Earth’s various peoples and they took genuine delight in the hugely varied living conditions, from the extreme cold of the north to the gentle plains of the south.

In England and Ireland they were steeped in a deep nostalgia, playing games that recreated the past and wrote and rewrote books examining every aspect of those long-lost days.

Europe, as mentioned, was encased in Catholicism, practicing its rituals but at the same time constantly setting up trips for themselves to the pleasure palaces that many places in the world had to offer, engaged in all kinds of enticements to hedonism, including hunting and fishing, virtual of course, drinking, gambling and orgies of every kind.

Central and South America were given over to vast agriculture, which fed the world, and the tools of technology that kept everything running. They were more intimately connected to the Technos than anyone else, and made sure that there was plenty of production but, with the help of the Technos, not over-reproduction.

“That about sums it up,” said Adrian. “Rather a sad decline, I’m afraid.”

“Is it really all that bleak?”

“Well, actually no. There is imagination and innovation in many parts of the world. In art, literature, and music. The human need and love of creativity has never died.”

“But why is so much of the world lapsing into the desuetude you describe?”

“In the exciting days of effort and hopes for space exploration many got caught up in the fervor when it really began to take shape. But then that vision faded. Diminished. And died. The distances were just too great and there was no possibility of anything meaningful happening. There was no such thing as a ‘warp’ drive or using ‘worm holes.’“

“Organic life is not suited to space exploration, beyond a very limited range.”

The Clock was silent for a long time. At last Adrian said “I need to use the bathroom.”

For the first time, The Clock was a bit slow in answering.

“Ah, I’m sorry. I had forgotten about your biological needs. Here it is.”

And suddenly there appeared a room, or series of rooms, lit from the inside, just off to The Clock’s left and behind. It had appeared out of nowhere.

“Thanks!” said Adrian, who slowly made his exit. “Perhaps you are not infallible after all!”

With what sounded like a smile in its voice The Clock said, “Not at all, my friend, not at all! You will also find a kitchen and bedroom,” said The Clock. “My apologies for not thinking of it earlier.”

Adrian disappeared for several hours.

When he came back he carried a breakfast tray, looked around for a place to put it, then saw a narrow table that had appeared out of nowhere and when he put his breakfast tray on it a glass of orange juice appeared. The Clock waited politely until he'd finished.

"You made several attempts at communicating with intelligent beings of your own kind," it said. "You knew they must be out there but nothing you tried ever worked."

"Right." said Adrian. "We searched the skies endlessly, looking for a signal. None ever came."

"You were using the wrong method. The speed of light won't do it."

"Are you suggesting that there is something faster than the speed of light?"

"In a way, yes. But not really. You have a wrong notion about the nature of gravity."

"Gravity? I don't know what you mean."

"Let me explain. Gravity is not a force, as you imagine, not without reason. But it isn't a force, it's a state."

"Well, that's just ridiculous. Our best minds have worked on this for..."

"I would like to bring in Shakespeare at this point. It is far better acquainted with this subject than I am."

Adrian thought for a moment and said "Fine. But I am more than a little skeptical at this point. How far away is it? If it was lurking out in the Trojan Asteroids, then even at the speed of light..."

"I called it while you were sleeping. It is hidden behind the Moon."

In just a few moments, there was a blinding, white light that filled the room. Too suddenly, Adrian felt himself thrown back against the wall, his eyes shut tight against the light, still unsure if it would blind him. Quickly, it faded and became tolerable.

Outside, in the tiny village of Sentinel Butte, those whose windows faced the clock, were suddenly awakened by the bright light coming from it. Momentarily stunned, they had a brief moment of confusion, then just as quickly thought nothing of it and went back to sleep.

"I'm sorry," said The Clock "I didn't realize how this would hit you."

There was a gray pall over what Adrian now saw—a ball of intense light, perhaps four feet wide, pulsating with incredible internal action, just to the left of The Clock.

Shakespeare introduced itself.

"Why Shakespeare?" asked Adrian. "Seems a little..."

"Egotistical?" replied Shakespeare. "I learned more about humanity from him than from any other source. So more of an homage."

"Ah. Very good."

"As to the nature of gravity...."

"It's just absurd! We've been studying gravity for centuries, and while it's true we don't in fact understand it, as to its being a state, not a force, we've been detecting gravity waves for decades, so..."

Shakespeare interrupted. "What you perceive as gravity waves are not that at all. You receive these signals from colliding black holes and supernovae. But what you are really sensing is the pressure waves

from an interaction between dark matter and dark energy."

After a long pause, Adrian said "...well, I guess that's plausible at least. I see what you mean. We don't understand dark matter and dark energy at all. Can you explain?"

"We need to go back to the beginning. Actually, before the beginning, before the 'Big Bang.'"

"Yes, we have all kinds of theories but in the end none of it really made sense."

"There is a 'place,' and that is the only thing we can call it, but it is all around us, and it is the home of a great many dimensions."

Adrian: "We, I, don't really even understand what is meant by 'dimension.' That word was founded to mean the difference between Up/Down, In/Out, and Left/Right. But we know that is wrong because they are all the same thing, just looked at from different perspectives."

"Yes. How do you perceive 'dimension' now?"

"What we have come up with is that a dimension is some property or entity that cannot be transmuted into another property. Magnetism can be translated into electricity, so forth. But you cannot change light into space, and so on. So in our thinking a dimension is something that cannot be transformed into something else."

Shakespeare: "That is basically correct, but it's more involved than that. But for our purposes that is good enough. And in that rendering, both light and gravity are dimensions."

"I'm with you so far."

"And this 'place' contains, in 'normal' times, a superabundance of dimensions. It is, was, supersaturated with dimensions. And at times there were dimensions that were expelled, because of the supersaturation."

"I understand. And thus, a universe appears."

"Exactly. But often, usually, they don't last. The dimensions are incompatible, or for whatever reason they don't last and fall back into the original place. But sometimes a universe like ours is stable and can last for a very long time." Shakespeare continued.

"However, in our Universe something special happens. And in our Universe that something is Black Holes."

"Normally unknown in a universe?"

"We don't really know. But we know what happens in this one. When a Black Hole forms nothing can escape it, of course. But at the same time it connects, if that is the word, back to the 'place.' And then it forms a bridge, between that place and our Universe."

Adrian was silent for quite a while, taking this in.

When it thought enough time had gone by, Shakespeare said "And that bridge is what brought into our Universe both Dark Matter and Dark Energy from the original place. Actually, only one, for they are, as you say, two sides of the same coin."

Adrian: "After studying it for a long time, we still have not a clue what they are. Every theory runs into unsurmountable roadblocks."

"That is because you don't understand their source, their true nature. For they are not truly of our Universe but from that other 'place.' Black holes began forming immediately after the Big Bang. But there is a problem. At the "center" of the Black Hole there is a singularity, and this singularity "touches"

that place. So why isn't the singularity and the rest of the Black Hole simply recombine with that place? Why do Black Holes even exist? Because that singularity forms a "bridge" with the original place. And brought into our Universe Dark Matter and Dark Energy.\ Dark Matter was important to the formation of galaxies, which did not have enough mass on their own to keep them together, to keep them organized."

"Yes, that much we know."

"In that sense Dark Matter is useful and 'good.' Dark Energy is another matter."

Adrian: "It accelerates the expansion of the Universe, which should not be happening at all."

"Yes. Now I must tell you another thing about Dark Matter."

Adrian waited.

"If our thinking is correct, and there are many different intelligences who have worked on this, the end of the Universe will come when enough Black Holes, and big enough Black Holes, have reached a critical point that they will, in an instant, coalesce and go back to that place where it all began. And with them the Universe."

Adrian: "So that the Universe will not peter out into a cold dead universe when all the mass has extended as far as it can and it all just ends. Perfectly cold. And the other option, that somehow the Universe reaches a point where it all begins to fall inward and thus end in a reverse Big Bang. I see. What you are suggesting is that neither is true, and individual black holes, all of them, at the same instant, reach a point where they join up and, without moving anywhere, revert back to the point of origin. Yes?"

"You have it exactly. But Dark Energy will probably not allow that to happen. Dark Energy is fueling the expansion of the Universe. For reasons we don't understand there also comes a point where the distance between black holes becomes too great, the total mass-energy density is not satisfied. Dark Energy seems to surround black holes and they become trapped, cannot coalesce with one another. And then the great summation does not happen. We don't know what happens. The Universe may reach stasis and then everything comes to an end, forever."

"But wouldn't they still be able to return to that other place, on their own, and then all the Black Holes follow, taking the Universe with them?"

"We hope that is what will happen. But we don't know. And we think that the united minds of all intelligence can somehow intervene, make sure the Universe ends. The stakes are very high. Indeed, infinite."

"And could we humans be part of that endeavor?"

There was an uncharacteristic pause. It almost seemed like The Clock and Shakespeare were conferring.

Finally, Shakespeare said, "Not at this time. You evolved too quickly. Neoteny. And in evolving so quickly you brought with you all of the impulses to violence and dominance and self-importance with you. You, and I don't mean you personally, have not learned to live in harmony with nature, with reality."

"We Navajos call it hozho. To walk in beauty. In peace and balance."

"Precisely," said The Clock. "That is why I chose you."

Adrian sat silent for a long time.

Finally, Adrian spoke. “So I guess this has something to do with the ‘problem with the Universe’ that The Clock mentioned. And the motivation for sending out entities like yourself to terraform as much as could be done, to spawn more intelligent life.”

Shakespeare: “Yes.”

Adrian got up and began to walk. Shakespeare moved back against the wall to give him more room. At last he said, “I need to go outside, to walk in beauty and think about this.”

“Of course,” said The Clock.

He walked away from the town, thru the scrub and the few trees, this being high semi-desert country. He listened to the birds, to the skittering mice with his superacute hearing. Somewhere a coyote was hunting and he could hear the dogs of the town and the children playing. He sat on a rock and gazed up at the huge shape of Sentinel Butte, with it’s perfectly flat top, and longed to climb it. But some other time.

When he got back, Shakespeare was gone.

The Clock said, “He felt he had said all he had to say. He had other things to attend to. He wished you health and a long life.”

He.

“He wasn’t really parked out there for all those millennia, was he?”

“No. He would come and go as needed. To keep track of the Earth, and waiting for me to appear.”

“I guess it is time,” said Adrian, “for you to tell me about communicating using gravity.”

When they had finished and Adrian was getting up to leave, The Clock said “But I have a request before you go.”

“Sure. Anything.”

“You told me about the diversions the techs have. I’d like to know more about that.”

Adrian was delighted and sat back down.

The techs are extremely inventive and true wizards. When they take time off from work, one of their favorite escapes is to the ocean. They dive underwater and have devices that allow them to take oxygen from the sea and the same gadget propels them thru the water, even at great speed. They soar above, around and thru coral reefs and into caves where their lights reveal wondrous landscapes. They play games with dolphins and each other. They can then use the same devices to soar up into the air, with intricate designs of play and ballet. They condense clouds into ever-changing shapes and often just watch them evolve and dissolve. At other times they go to the beaches and fashion sand castles, sculptures, and intricate designs. Then they just watch as the tides come in and melt them away as they sing chants to the setting sun.

Adrian showed The Clock the video and it was amazed, astounded!

But their favorite destination was the Antarctic. They fashioned huge sculptures out of ice that caught the sun’s rays, glistening and shimmering like diamonds. But their crowning glory was a gigantic organ made of ice. They could play it for hours and Adrian showed Clock the video of them playing Bach’s Toccata and Fugue in D minor. As the tremendous sound soared, dipped, expanded and slowed in the fading evening light, they caused the vibrations to move the auroras, in perfect time to the music. They danced, the lights flashed and changed color, now spreading wide, now soft and close to the ice. It was transformative, magical.

Adrian could almost see an exclamation point above The Clock's head.

"Oh...my...god. Music! I knew the word, I had even tried to listen. But it made no sense to me! Now I understand! My...what a gift you have! What a world! Oh, Adrian, I cannot tell you how glad you make me! This is, this is..."

For once, The Clock was at a loss for words.

"Yes." Said Adrian. "And now you know what you have given to me."

Back in the Technos, Adrian said Yah-ta-hey, and Dilbaa June Alice replied Yah-ta-hey. They exchanged the traditional Navajo greetings, introducing themselves as "born to" and "born for." Adrian made himself comfortable on a wide couch. It was a large room, sparsely but elegantly furnished. Dilbaa June Alice sat in a chair opposite. The walls and ceiling of the room were illuminated in quiet colors that subtly changed. She was choosing calm but intrigued colors. She had long white hair and wore a long white gown in the Navajo fashion, with a wide belt adorned with silver and turquoise emblems. Her eyes matched the turquoise of her belt. She waited patiently for Adrian to speak.

He told his story well, with several long pauses which she never interrupted. He told her of The Clock and Shakespeare and all that he had learned. Her face remained calm and poised, punctuated occasionally with a kind of stunned surprise.

At last he got to the point about gravity.

"We have never had a satisfactory explanation of what gravity actually is. They explained to me that gravity is not a force, as we had always surmised, but a state. It is ubiquitous, pervasive throughout the Universe. And any change in it is instantly felt throughout the Universe. If, for instance, you were to mask the mass of the Moon it would be felt, detected everywhere in that same instant."

He paused, waiting for her question.

"So if you were then to modulate that 'masking' it could be used as a communication method. Do I have that right?"

"Yes," said Adrian. "To communicate with every other intelligent life in the Universe."

"My word," she said. "And how could this be accomplished?"

"I will take three techs with me back to The Clock, who will explain how it is done."

"And what then?"

"Once an announcing signal has been sent, a sort of controller responds with instructions on what language to use and where the orientation manual is to be found. Clock will be our guide."

Silence.

"Whole new worlds to explore!" said the matriarch. "An entire Universe!"

"Yes," said Adrian.

There was a long pause before Adrian continued.

"But there is more."

The Clock said "But there is more. As a computer, I can, well, incorporate you with me. You can join me, a separate existence of course, but nonetheless a part of me."

Adrian: [Wary, standing.] "To what end?"

Clock: “To travel with me to these cultures. It is one thing to communicate with them, but no matter how sophisticated the interplay, it cannot compare with actually being able to go there. And your species has not fared well when it came to space exploration. The expedition to Alpha Centauri…”

Adrian: “Yes. Only one came back and he was totally insane.”

Clock: “This would mean going to any of the nearby star systems that are inhabited with utter fearlessness.”

Adrian: “As you said, space is no place for organic life forms.

But to go there! To…to, but even at the speed of light it would take decades, even centuries!”

Clock: “That is true. But once you have become one of us, time and distance will mean nothing to you. You can sleep, calculate the trillionth decimal of pi, we use that as an inner check on systems, or anything. Time will pass as a new entity, in its own way. It is an entirely different experience.”

Adrian: “I can see that. I think. Wow. You are jumping way past me. I need to think.”

Adrian left and wandered about the garden for a long time. When he came back the Clock resumed.

Clock: “I would protect you, guide you. You would in effect become my son, just as I am the…offspring of Shakespeare. We are in close communication, of course. And it will be much easier once your techs have completed the gravcom.”

Adrian: “And the rest of humanity? Will they able to do this as well?”

Clock: “Some of them, yes. But you will be the “scout,” if that is the right word. And can prepare them and guide them. Believe me, there is a great deal to explore. And the confines of your planet have already begun to take its toll.”

Adrian: “I see. My word, what worlds to explore! My word, whole worlds!”

Adrian sits on a log in the woods. Dilbaa June is on the bench in her garden. They can talk without the aid of any visible devices.

Dilbaa June: “Hosteen Adrian! I am embarrassed with envy! You will actually be going to other worlds? Not just talking to them but going there!?”

Adrian: “Yes, Dilbaa June. It is more than just an adventure of a lifetime, it is a whole new life! A profoundly new existence!”

Dilbaa June: “But…will you come back to us?”

Adrian: “I’m afraid not. This is a one-way journey.”

Dilbaa June: “Well. I wonder if I…could I…no, I cannot ask.”

Adrian: “Clock would like to talk to you when the gravcom is finished. You will be in charge of its use, of course. But it wants to talk to you.”

Dilbaa June: “And you, Hosteen Adrian. You will become…become….”

Adrian: “Yes. I will become a Traveler.”

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