

Short Story 93: Procreation

The Urth list — 6 messages, 3 voices, 15 Aug 2014

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Marc Aramini — 15 Aug 2014, 10:38

Procreation

Procreation first appeared in its entirety in 1985 in The Fourth Omni Book of Science Fiction and is recollected in *Endangered Species*.

SUMMARY:

Section I: Creation ?

The story place as Gene's journal over the course of a week, starting on August 1, a Monday, as Gott's remarks on the universe containing only one monopole inspire Gene to shoot particles at "Nothing" in an electron accelerator, at which point he produces something. By the third day he asks his wife and sister how they would feel about being related to a Nobel Laureate, and he returns to the lab to discover that gravity separates moisture from solids in the pyramidal shape that has formed in the microverse he created. He seeds it with scrapings from the apple his sister put in his lunch, and then from tissue samples from the biology lab. The next day Gene sees large microorganisms and spore pods in his creation and even puts a scraping of himself into the microverse, then scrapes the "little critter" that resulted to produce another, "much the same". On the seventh day, a Sunday, Gene opts not to go to the campus and is nagged about church by his wife. Instead, he sleeps late and watches baseball. His sister makes drawings to describe how the microverse originated, "starting with the arc discharge and ending with me watching the Yankees drop one to the Angels." They reduce it with a copier, and as he goes to place the document in, he sees that the "critters" are eating the spore pods, so he scares them off by putting a fruitfly in the microverse. They write their names on the cover of the book they create, "Gene" and "Sis", before dropping it in.

Section II: Recreation

The journal of Gene picks up on the 1st of September. He turns the microverse over to Dr. Ramakrishna of the astronomy department, and says "we will eventually have to draw some sort of line between their claims to new universes and ours." The astronomers say the new universe is outside the solar system and headed to Vega, even showing a red shift (see scientific allusions below). The next day he receives an airmail letter from Dr. John Cramer saying that Gene might have created a net magnetic charge — that if Gene-eration (which Gene calls his microverse) was seeded by a north monopole, there must be a south monopole. He calls it "Sis-eration" after his sister, who he claims "was [his] sounding board for the first one." He says it is apt because "sis" is a palindrome running the same forwards and backwards, and the time in Sis-eration might run backwards, destroyed at the moment Gene-eration was created. On Saturday he goes to look for Sis-eration and says that his own universe was seeded by a monopole, with a resulting net magnetic charge, so Sis-eration is mythical, "the Atlantis of physics".

On the next day as he is at church with Martha, he has a “waking dream” during the sermon and remembers a vision he had the previous day of a floater in his eye, and saw it explode into the Big Bang, calling it the “primordial supersun the old philosophers called the Ylem — saw it open like a milkweed pod and scatter the galaxies.” He realizes that he did not remember it until he was sitting in church — “my subconscious must have decided it was irrational and blocked it out completely.” He considers what else he might have lost because of it. The fifth day he considers how matter and anti-matter could be separated, thinking that perhaps their innate physical properties would create the separation, ultimately producing a surplus of hydrogen, with its single proton. On the sixth day Ramakrishna tells him that Gene-eration has shifted into the infra-red. He tells Ramakrishna to think of the Big Bang like a Big Blossom, with matter slowly picking up speed as it accelerates from its origin. On the next day he remembers visiting Sis-eration as a child, something he couldn’t possibly have forgotten, and it disturbs him. “It was created when I performed my experiment, and it’s propagating through our past. What will it do to us” Got to talk this over with Sis. But I can’t — what if I’m really crazy?

Section III: The Sister’s Account

Here, Gene’s sister reveals that she and Gene have visited a different universe several times, once when they were children on a camping trip in the Sierras as they searched for a spring, suddenly seeing land masses thrust above a desert landscape, until they came to water, where Sis saw their tent and family reflected on every wave. They return to the “real” world, and later, in high school, they are exploring tide pools when Sis sees giant trees under the water, and the tenth one opens to reveal a beckoning family consisting of a husband, wife, and child, who try to communicate through some kind of drawing or paper. Sis believe the father is trying to explain that they live underneath the surface so that the trees and deer can exist above ground, and then the woman opens up a crumpled mirror that allow Sis to see the real world reflected again, so that they can return. As an older woman, “when Gene had married and it was clear [Sis] never would”, she once again visits the world by peering through the vanity in her bedroom beyond her reflected face to see the sea. The sun is hotter than before, with life on the beach, and she “understood that all three had been one world, and that in [her] own short life [she] had seen its senility and flower, and now [she] saw its beginning.”

She sees her bed reflected in the pools, the coverlet spread for the repose of her rag doll. In the present of her story, she finds the letter from Dr. Cramer warning of the dangers of the net magnetic charge, saying there must be a second universe. She believes Dr. Cramer is correct, but now when she looks in the mirror she sees only her own face, for Sis-eration disappeared at the creation of Gene’s universe. She concludes by thinking that perhaps the second universe was “ours”, “and it is we who are gone, leaving as our only trace these words upon a printed page.”

COMMENTARY: There is a kind of eclectic catch-all nature to procreation that throws religion, science, metafiction, myth, and even a kind of bitter irony at play throughout “Procreation”. At the end, there are a few major thematic questions that we are forced to ask: is the universe that Gene created actually distinct from ours even though it exists “within” it? Before we confront this level of the text or get into the easier mapping of religious allusions to the first section, we should comment that the final subjective section, “The Sister’s Account”, varies significantly from the previous two, as it covers three events over the course of her life which sound much more like the fantasy or myth than the journal entries.

Each visit to the strange world which Gene has “forgotten” involves either water or a reflection of Sis that serves as the gateway in both directions, as once Sis is inside the other reality she can see the “real” world in reflections. While at first I wanted to explore the idea that there was

some kind of waveform representation of reality moving through the other universe, the mirror that she uses to transport herself the final time prompted me to believe that it is the reflective property itself which allows her to be aware of the other reality, and that every trip involves Sis looking at these reflective surfaces. When Sis is young, the world is old. When Sis is old, the world is beginning. In this way, it seems that Sis is actually one side of the monopole that joins the creation of Gene with this universe. (Whether they were actually travelling into Sis-eration or Gene-eration is a bit confusing, and we will return to that question). When Gene calls Sis-eration mythical, the Atlantis of physics, it rings eerily true — the presentation we get of a lost world seems extremely mythical in nature, with tree spirits and weird reflective mirrors and waves that serve as conduits to the real world. Ultimately, it seems that Sis is the conduit to this world, and it is entirely possible that Sis, too, has been created in Gene's Gene-eration, giving him a sister that serves as the opposite monopole to his creation backwards in time. Indeed, there is a throwaway line in the first section, that Sis someday plans to put her own genetic material into the microverse - perhaps the presence of Sis in the universe proper is the result of this insertion in a strangely twisted fashion.

The first section, "Creation", is straightforward enough, with the mapping of the Biblical story of Genesis onto Gene's experiment. While this fictional Gene might bear some resemblance to ours as a creator of vast universes, the metafiction at play here is distinct from "The Last Thrilling Wonder Story" — this time Gene seems to succeed in being the God of his universe. (Obviously our Gene Wolfe never had a wife named Martha, nor a sister, though I think the presence of the sister is a bit more mysterious than a first reading indicates.) The wife, Martha, whose name implies bitterness (pretty consistent pattern in Wolfe's work in the 1980s) criticizes everything, while the sister supports him.

The second section seems to describe the cosmological complications of physics and science in the tale of creation, thus the name "Recreation" — the microverse is placed in the universe itself, and the concept of ylem and the scientific explanation of a Big Bang/Big Blossom are confronted. No doubt this mirrors some of the problems religion faced when science became sufficiently advanced to offer alternative explanations for the existence of the universe.

Creation is the easiest section to explain — after being inspired by physicist named Gott's work about the monopole (Gott means "good" or ?God?, but almost certainly refers to the real astrophysicist J Richard Gott), Gene creates his universe in seven days which map to the days of creation. On Monday, Gene has a "flash of insight" — this is analogous to the "let there be light" concept of the first day. He shoots electrons at "Nothing" to see if there is attraction or repulsion, and gets electrons and a few positrons. On day 2 a dark spot of water with heavy stuff settling mirrors the separation of the waters above from the waters below in Genesis. On day 3, the gravity of our universe separates the sea from the land. On Day 4 the light that Gene rigs in his lab is the light of the sun and celestial bodies, and the spherical shape is the earth taking shape as a sphere.

Gene determines that even though gravity is shared in the universes, space is relative — the microverse grows and develops but takes up no more space in his universe. The scrapings on day 5 are of course the vegetable and animal species which will populate the earth in Genesis, and on day 6 Gene scrapes his own wrist to create another Adam in his image before taking a culture from it and producing its mate, as Eve was taken from Adam. This is where the story conflates the two separate creation myths present in Genesis (one with the celestial breakdown of the days found in Chapter 1 and the other with the personal story of Adam and Eve and their trespass in the Garden which begins in Chapter 2). The idea of a fruitfly as the cherubim keeping Adam and Eve from the garden of Eden is one of the more memorable conceits of the story, and it is equally absurd that the deity of Gene-eration "rests" from church by catching a game between the Yankees and the Angels. We should think about the title of the universe and

the story as a whole: a play on generation and procreation, which usually involves a seed and an egg to quicken into life.

The constant multiplication of dimensions, from a pyramidal to cubical shape to one that is spherical, might also prompts the inception of time inside the closed system as well, and it is clear that the microverse, even though it grows, always takes up the same amount of space in the universe of Gene, though it exhibits relativistic effects on anything which enters it (affecting the size of the ruler, for example).

The presence of Sis at home with Gene as he watches baseball while his wife goes to Church seems odd, and she seems to live with Gene as well. Martha and she are parenthetically paired early in the first story: "Told Sis, Martha, How'd you like to say, 'My brother (husband) the Nobel Laureate?'". Later, he thinks, "Suppose somebody (Martha) finds this" I'd be locked away, after which he is certain that he can't speak to Sis about it.

Section II, "Recreation", complicates the rather simple pastiche of Genesis that adequately explains the first section. Gene turns over his universe to the physics department under Dr. Ramakrishna where "We will eventually have to draw some sort of line between their claims to new universes and ours." In addition to representing the scientific view of the universe and its inception which challenged the accepted creation story historically, the allusions become rather heavy in this section. Ramakrishna's name itself is certainly famous — Ramakrishna is the 19th century Indian mystic and spiritualist who ultimately said that all paths led to God. The red shift of the universe shows that it is retreating, but the changing wavelength may also have something to do with the representation of waves as a conduit between the mythical and real world found in "The Sister's Account". Section II is primarily concerned with Gene's search for Sis-eration and realizing that his memories are faulty, but it also deals heavily with physics and physical reality. Day 5 talks about atoms and anti-atoms, considering how they might interact and segregate themselves, while when an atom meets another of the same type "there's no bounce". Somehow the relationship between Gene, Sis, Gene-eration, and Sis-eration must be related to this talk of matter and anti-matter.

The sister's account reverts to a more personal, fantasy story that has none of the scientific objectivity that the first two portions contained. Gene's explanations mirrored religious and scientific concepts of the start of the universe, but the sister's account is entirely personal in nature, resembling the fantasies that it mentions at the start. However, it does present a waveform vision of reality: Sis can see her parents "quite clearly in the lifted surface of every wave — just as if I were seeing the same picture again and again in the TVs in a department store." This waveform concept of reality is repeated when they look at their footprints: "all the footprints pointed away from the tent, as though we had walked into the spring and swum into the earth. Later, in a high school trip to tide pools, Sis looks into waves and sees something that seems like trees beyond the bottom of the pool she found. In the tenth tree that they pass, a man comes out and beckons them into his underground lair. They return to their own existence when a crumpled mirror is opened and they see themselves in it. Any reflective surface winds up being a gateway through the universes for Sis.

In the final analysis I think the hint that Sis plans on putting her own material into the creation of Gene, along with the final musing that the universe created was somehow ours, not only plays with the metafictional awareness that Sis and Gene are in fact in Gene's story, but with the cosmological idea that, at least in the story, somehow the magnetic monopole has created a universe which might even be the one contained inside it, with Sis' existence acting as the seed of another, opposite universe — perhaps even propagating her existence backwards into Gene's reality.

SCIENTIFIC REFERENCES

Scientific references abound in this one, and some research into them is actually quite astonishing.

The monopole is simply the idea that, even though in nature magnets have a positive and negative side, even when broken into smaller pieces, charges exist in subatomic particles — the monopole would always have only a positive or negative charge no matter how it was split.

John Cramer is a real professor of physics at the University of Washington who also occasionally writes a column for Analog, and fascinatingly enough he proposed (as far as I could tell in 1986) quantum exchanges and interactions as a wave formed by both “forward-in-time” retarded waves and advanced “backward-in-time” waves. The fantasy section of “The Sister’s Account” seems to play with the idea of waves going forward and backward in time in that fashion, perhaps entering a quantum universe, and her account ends by quoting a fictional letter from Dr. Cramer to Gene: “You must surely have made a pair, a “north” monopole and a “south” monopole. Otherwise you would have created a net magnetic charge, which is a no-no. — The one you describe must be like ours, but the other should contain antimatter and have time running in reverse. Since this story was at least started in 1983 before being finished in 1985, perhaps the waveforms moving forward and backward in time that are given artistic expression as the reflection of Sis are merely coincidence, but it is a rather striking one.

The ylem that Gene remembers seeing on his eyes while he is at church was coined as a concept in the late 1940s, a kind of primordial plasma undergoing a kind of synthesis into matter besides Hydrogen. The radiation released from this Big Bang can still be seen as cosmic microwave background radiation, a pervasive light that does not originate from celestial bodies, but rather from the inception of the universe.

The redshift that the microverse creates happens when light or other electromagnetic radiation increases in wavelength, become “redder” by moving towards that end of the color wavelength spectrum. This is equivalent to a lower frequency and photon energy, which might have some relevance since Sis sees reality repeated through the waves of the ocean on the other world.

The question is whether the Gott referenced in the text is actually the Princeton astrophysicist J Richard Gott, who had published several papers by the 1970s, or merely a play on the meaning of Gott — God. I believe the 1982 paper in *Nature* titled “The Creation of Open Universes from Desitter Space” attracted Gene’s attention. Gott’s science would be particularly interesting to Wolfe, because he explores the possibility of time travel, and even states in an interview, “Certainly in the subatomic world, particles called positrons look like they might actually be electrons traveling backward in time.” This is fascinating in light of the first day of the experiment, when Gene shoots the electrons at nothing and produces electrons and a few positrons — has he locally reversed the flow of time? It also seems that the transformation of the pyramid into a sphere might be an exploration of skew polyhedra, which Gott wrote a paper on as well in 1967.

Gene writes articles for Physical Review C, which is the journal of Nuclear Physics.

UNANSWERED QUESTIONS:

Even though Gene’s wife in the story is named Martha rather than Rosemary, there is something about the idea of the Sis universe propagating through the past of this one that

leaves me to wonder if we are to infer that the unnamed Sis, who he speaks to at the same time that he speaks to his wife and for some reason knows that she herself will never marry, has always been real, especially considering that her name is "Sis". Has his creation of the monopole created a sister that never existed before (especially as our Gene Wolfe is an only child)? Is this why the story is called "Procreation" — the seed of Generation creates a sister, rather than Gene and Sis coming together to create a universe?

Do the waveform reflections of Sis constitute the entrance to Siseration? Why is her name actually "Sis" if she was always real?

The most difficult interpretive task is questioning the microverse's relationship to our own universe. Are both Generation and Siseration separate from our universe, the complementary positive and negative monopoles? The ending of Sis? account complicates this: [The other universe] is gone now, so that when I stand before my mirror, I see only my own face. Or perhaps that second universe was ours, and it is we who are gone, leaving as our only trace these words upon a printed page. I feel that this is a bit more philosophical than the simple metafictional explanation that Gene and Sis are creations of our Gene Wolfe, just words on a page.

Once again, there is a mystical association with trees — in the reflection, Sis sees a family living underground inside a giant tree, so that the tree can live on the surface. When she sees the continents rising up in the apocalyptic vision of her youth, they are "as high — as large trees".

CONNECTION WITH OTHER WORKS:

The light-hearted hubris on display here is slightly more pronounced than in "The Last Thrilling Wonder Story", and the idea of artificial universes within other universes seeded by a simple moment that serves as the first cause that complicates cosmology beyond most rational attempts to categorize it are of course Borgesian in its convolutions.

The female characters have names which imply "bitter" became an increasingly common trend in Wolfe's fiction of the 1980s.

In some ways the repeated cycles of the New Sun books plays with many of the same themes, and the incorporation of religion, science, and myth are hallmarks of Wolfe's preoccupations throughout his entire career, though this story is exceptionally "hard" in its use of physics.

Cramer, John. "The Transactional Interpretation of Quantum Mechanics." **Reviews of Modern Physics** 58, 647-688, July (1986)

Gott, J Richard. "Creation of Open Universes from DeSitter Space." **Nature** 295, 304-307, 1982.

Niemark, Jill. "J Richard Gott on Life, the Universe, and Everything." *Science and Spirit Magazine*, 2007.

Robert Pirkola — 07 Oct 2014, 20:50 · follows Marc Aramini

Marc Aramini wrote: "Gott's

science would be particularly interesting to Wolfe, because he explores the possibility of time travel, and even states in an interview: 'Certainly in the subatomic world, particles called positrons look like they might actually be electrons traveling backward in time.'" What interview are you quoting from?

Marc Aramini — 07 Oct 2014, 20:56 · in reply to Robert Pirkola

Wolfe makes the same statement in *Seven American Nights* about the forward/backward temporal nature of protons and electrons but I think the interview is cited at the bottom of that write up... Will check.

On Tuesday, October 7, 2014, Robert Pirkola <rpirkola at hotmail.com> wrote:
Marc Aramini wrote: "Gott's science would be particularly interesting to Wolfe, because he explores the possibility of time travel, and even states in an interview: 'Certainly in the subatomic world, particles called positrons look like they might actually be electrons traveling backward in time.'"

What interview are you quoting from?

Dan'l Danehy-Oakes — 07 Oct 2014, 21:06 · in reply to Marc Aramini

Wherever the interview is, Wolfe is quite correct; in quantum mechanics a particle travelling in one direction in time is the same thing as its antiparticle travelling in the other direction in time. In the QM universe, time's arrow seems not to apply...any given event can happen in either direction. But decoherence gives us a meaningful entropy and so a unidirectional time...

On Tue, Oct 7, 2014 at 1:56 PM, Marc Aramini <marcaramini at gmail.com> wrote:
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What interview are you quoting from?

Marc Aramini — 07 Oct 2014, 21:17 · in reply to Robert Pirkola

It is the one cited at the very end by Jill niemark, "J Richard Gott on life, the universe, and everything"

On Tuesday, October 7, 2014, Robert Pirkola <rpirkola at hotmail.com> wrote:
Marc Aramini wrote: "Gott's science would be particularly interesting to Wolfe, because he explores the possibility of time travel, and even states in an interview: 'Certainly in the subatomic world, particles called positrons look like they might actually be electrons traveling backward in time.'"

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Robert Pirkola — 08 Oct 2014, 14:30 · follows Marc Aramini

Sorry, for some reason when I was reading the passage it sounded as though you were saying Wolfe made the quoted statement in an interview. Thanks for clarifying.