

JAMES GUNN'S
AD ASTRA

KU CENTER FOR THE STUDY OF SCIENCE FICTION

ISSUE 1

JULY 2012

SHORT FICTION

- * CHILDREN OF THE THOUSAND DAYS,
BY PETER CHARRON
- * NATIVE, BY ERIC CLINE
- * COLORLESS GREEN IDEAS, BY
SHAENON K. GARRITY
- * THE AGREEMENT, BY ADRIA
LAYCRAFT
- * BRANCHES ON MY BACK, SPARROWS
IN MY EAR, BY NIKKI J. NORTH
- * RACING THE MOON AND THE HILL
THAT BURNED THE WORLD, BY ADRIAN
SIMMONS

ARTICLES

- * HUMAN EVOLUTION AS A
FRAMEWORK FOR THE THEMES
OF SCIENCE FICTION, BY JEAN
ASSELIN
- * FANTASTIC JOURNEYS OF
THE MYTHIC KIND, BY SHEILA
FINCH
- * MUTATION AND INFERTILITY
IN SCIENCE FICTION, BY
VICTOR GRECH

POETRY

- * SILENT SPIRIT, BY KENNY A.
CHAFFIN
- * STRING THEORY, BY JOHN PHILIP
JOHNSON
- * THE GREAT SILENCE (SONNET FOR
SETI), BY GEOFFREY A. LANDIS
- * ETILATEP, BY KATHARYN HOWD
MACHAN
- * WE FOUND A KIND OF VINE, BY KEVIN
RABAS
- * KNOWLEDGE STREAM, BY WC
ROBERTS
- * GENOME, BY JACQUELINE SEEWALD

\$5.00

JAMES GUNN'S AD ASTRA

KU CENTER FOR THE STUDY OF SCIENCE FICTION

James Gunn's Ad Astra is an online resource for authors, scholars, and anyone interested in speculative fiction to share their ideas on how the genre has developed into its current forms, what's happening in speculative fiction right now, and what might happen next.

It can sometimes be difficult to locate serious, academically sound studies or educational applications of science fiction or fantasy. The Center for the Study of Science Fiction is known for its excellent resources, links, reading lists, workshops and online courses, but not everyone has the ability to attend the Intensive English Institute on the Teaching of Science Fiction, the SF Writers Workshops, our other courses at the University of Kansas campus or online, or the Campbell Conference and join the discussion. *Ad Astra* expands the CSSF resources to reach a wider audience, which in turn will broaden the conversation and inspire new creators and new explorations of the genre.

Ad Astra offers venues for creative short fiction and poetry. We feature scholarly articles about the critical and scientific considerations in speculative literature. We provide ways for people to join in critiques of fiction, contribute to the academic understanding of the genre, and share these ideas with people outside of the fan community.

Each year, *Ad Astra* will focus on a different theme related to the Campbell Conference. This year, our theme is information and communication, how we come to understand the world and share our knowledge.

Ad Astra is online at adastra.ku.edu.

Staff

Contact the staff at jg.adastra.ku@gmail.com

Isaac Bell, Issue Editor
Tepring Crocker, Outreach Manager
Douglas McKinney, Fiction and Poetry Editor
Kathy Kitts and Mark Silcox, Scholarly Editors

Consulting Board

Chris McKitterick, CSSF Director
Kij Johnson, CSSF Associate Director
Adrian Melott, Professor of Astrophysics
James Gunn, CSSF Founder

About the CSSF

The Center was founded in 1982 as a focus for the SF programs created at the University beginning in 1970, with the first course taught by Professor James Gunn. In 1991, Dr. Richard W. Gunn, a retired physician in Kansas City and Professor Gunn's brother, created an endowment for the Center, and it was renamed the J. Wayne and Elsie M. Gunn Center in honor of their parents.

In 1985, the first Writer's Workshop in Science Fiction was held. In 2005, Kij Johnson first offered the Novel Writers Workshop, and recently added the "Repeat Offenders" Workshop. Chris McKitterick and Professor Philip Baringer began offering the "Science, Technology, and Society" course in 2006.

The CSSF is online at www.sfcenter.ku.edu

TABLE OF CONTENTS

Editorials

“To the Stars, Through Difficulties,” by Isaac Bell	page 3
“The Universal Motivator,” by Douglas McKinney	page 4

Short Fiction

“Children of the Thousand Days,” by Peter Charron	page 6
“Native,” by Eric Cline	page 17
“Colorless Green Ideas,” by Shaenon K. Garrity	page 25
“The Agreement,” by Adria Laycraft	page 31
“Branches on My Back, Sparrows in My Ear,” by Nikki J. North	page 41
“Racing the Moon and the Hill that Burned the World,” by Adrian Simmons	page 46

Poetry

“Silent Spirit,” by Kenny A. Chaffin	page 58
“String Theory,” by John Philip Johnson	page 58
“The Great Silence (Sonnet for SETI),” by Geoffrey A. Landis	page 61
“Etilatep,” by Katharyn Howd Machan	page 61
“We Found a Kind of Vine,” by Kevin Rabas	page 64
“Knowledge Stream,” by WC Roberts	page 65
“Genome,” by Jacqueline Seewald	page 65

Scholarly Articles

“Human Evolution as a Framework for the Themes of Science Fiction,” by Jean Asselin	page 67
“Fantastic Journeys of the Mythic Kind,” by Sheila Finch	page 81
“Mutation and Infertility in Science Fiction,” by Victor Grech	page 86

Final Thoughts

Looking Ahead	page 95
---------------------	---------

TO THE STARS, THROUGH DIFFICULTIES

Or: How Did We Get Here?

by Isaac Bell, Issue Editor

I wasn't aware of the danger when I sat down to dinner with friends at the end of our summer writing workshop. We were flush with the joy of studying our craft, honing our writing, and learning a great deal about ourselves and others. During our conversation, we bounced between many topics, including what makes the speculative fiction genres of science fiction and fantasy so appealing, the need for more serious scholarship about these kinds of literature, and how much fun we had during the workshop.

We, and many other writers, students, and teachers, were participating in the month-long celebration and examination of speculative fiction provided by the Center for the Study of Science Fiction at the University of Kansas. The experience began with the Science Fiction Writers Workshop and Science Fiction and Fantasy Novel Writers Workshops conducted by Chris McKitterick and Kij Johnson. They were following the tradition of SF Grandmaster James Gunn, who was one of the first scholars to study this field. In addition to the workshops, the CSSF offers the annual Campbell Conference, and then follows it up with the Intensive Institute on the Teaching of Science Fiction.

These courses are great experiences. Everyone who takes part in them comes away enlightened, full of ideas, and ready to make use of our knowledge.

Someone at that dinner table talked about sharing this experience with others. Someone else (it may have been me, but I plead the Fifth) said something about how easy it would be to create a magazine or journal online, where we could publish stories, poems, and articles. Everyone present agreed that this would be a great idea. When we brought the idea to Chris, Kij, and Jim, they also thought the idea would be exciting.

The danger was that someone—who turned out to be me—would have to do the work. True, these days it is much easier to publish and share information, to communicate what we are thinking, but “easier” is not the same as “easy.” There has been a fair amount of heavy lifting going on here, from struggling with multiple layers of campus IT, two servers and versions of the site, Schrödinger's volunteers, work, family, school, learning and relearning programs, and of course, making a great many decisions while always wondering how it was that we were in a position to make these decisions.

After all that, the end of this journey has been almost smooth and pleasant.

It's safe to say there is no way I could have done this by myself.

Ben Cartwright, the previous Coordinator for the CSSF's AboutSF educational outreach, was instrumental in providing us with an outline and infrastructure. He also put me into a position where I could get the resources to make this happen.

Jen Green not only helped sell the idea, but recruited volunteers, provided planning and moral support, and most of all, named our project.

Tepring Crocker has been invaluable, taking on all sorts of duties beyond the job of “Outreach Manager,” including some spot editing, helping with website set-up, volunteering her husband's expertise, and making sure this project has been heard about by more than just those people sitting down to dinner a year ago, or our close friends.

Douglas McKinney has done an incredible job organizing our readers, sorting through our submissions, and editing several great short fiction and poetry pieces. He has literally done the work of two editors on his own, and I cannot thank him enough for it.

Kathy Kitts not only brought her academic expertise to bear, but also gave me great advice based on her considerable experience with journals and other grand projects. She made certain that our scholars gave us the highest quality articles. Mark Silcox made the perfect one-two punch with Kathy, with insightful comments and guidance for our scholars.

And of course, none of this would have happened without the inspiration and example of James Gunn, author, editor, and scholar. When we asked permission to use his name, it was because we hope to follow in his footsteps.

Thank you for joining our experiment, and enjoy!

EDITORIAL

THE UNIVERSAL MOTIVATOR

by Douglas McKinney, Fiction and Poetry Editor

When I signed on to serve as a fiction and poetry editor for the inaugural edition of *James Gunn's Ad Astra*, I have to admit I had my doubts about what we might receive after we told the world we were soliciting submissions. After all, we were brand-new to the scene and most of us had never done something quite like this before. To make matters even more uncertain, we were asking for submissions with a specific theme of "communication and information." There were times when I wondered if we would have enough strong works to choose from, or whether we would be able to handle the volume of submissions we would discover in our inbox.

I guess you could call it fear.

Fear is the universal motivator. Flight or fight instincts exist for a reason. When faced with the uncertain, the new or the downright terrifying, we have to decide how to respond. I decided early on flight wasn't an option, or I would never have volunteered my time. All that remained was to fight. In many cases, that meant making time for things beyond reading submissions.

Thankfully, I wasn't alone in taking up the fight. We had volunteer readers helping to whittle down the list of potential works, giving me and Issue Editor Isaac Bell a more diverse sampling of opinions to consider before making our final selections. In the end, I can honestly say we chose works that not only pass the quality test, but make significant statements about our chosen theme. As it turns out, fear provides the spark in many of these works, particularly among our Featured Selections for fiction.

In "Colorless Green Ideas," Shaenon K. Garrity takes a tense situation and makes it even more fraught with the threat of violence by introducing language and generation gaps as impediments to peace. Similarly, Peter Charron's "Children of the Thousand Days" gives us a future where adults fear the alien in their own children. Even though we don't know how the stories end, their characters choose to fight fear with communication. If that happened more often in the real world, maybe there wouldn't be so much to be afraid of.

Adria Laycraft's "The Agreement" and Eric Cline's "Native" are less overtly about communication, but they are every bit as concerned with confronting the alien or "other" as their protagonists struggle with their very natures as human beings. Sometimes when you look in the mirror, there's even more to be afraid of than you'll find looking out a window. It doesn't make it any easier when the world outside is filled with bigotry, an even uglier type of fear.

In Nikki J. North's "Branches on My Back, Sparrows in My Ear," we meet a woman who is one of

the few unconnected individuals remaining in a connected world. Is she motivated by fear? I think so; the fears of being different and being denied that which everyone else takes for granted are powerful incentives to seek change. Unfortunately, sometimes a granted wish can be worse than an unfulfilled one.

When you read “Racing the Moon and the Hill that Burned the World” by Adrian Simmons, you will find no shortage of fear motivating the insectoid inhabitants of a world where humans are a destructive outside influence. What makes the story even more compelling is how well Simmons captures what it might be like to be in the aliens’ metaphorical shoes. Be forewarned: this is not an easy story to zip through. It takes some work to see things from an alien point of view, but I think it is one of the better examples of such attempts I’ve ever read. There are a lot of established authors who have tried and have come up short of what this piece accomplishes.

If you take a closer look at the seven poems we chose as Featured Selections, you may question if some of them even qualify as “speculative” poetry. For example, there are three that might be better described as “technological” poetry. “The Great Silence (Sonnet for SETI)” by Geoffrey A. Landis and “Silent Spirit” by Kenny A. Chaffin may be grounded in the technology of the present day, but it’s what our machines fail to tell us that opens the door to speculation. “Knowledge Stream” by WC Roberts is less specific about its technological muse, but captures a similar sense of wonder about the unknown beyond our reach.

“String Theory” by John Philip Johnson takes a step farther from objective reality to speculate on the nature of information and existence without ever leaving an office cubicle.

“Genome” by Jacqueline Seewald and “We found a kind of vine” by Kevin Rabas both take up topics of genetics, or communication at its most sublime levels. In one, a scientist searches for the kind of perfection he could never be accused of possessing himself. In the other, we discover the ultimate escape hatch for an alien race swept away by human intrusion into their fragile ecosystem. Compared to the Simmons story of alien survival, Rabas shows us an alternative solution to the perils human exploration might cause.

Finally, Katharyn Howd Machan’s “Etilatep” gives us a glimpse at more of that supreme catalyst, fear, and what it does to a wife who loses an entire world in the service of a spiteful, jealous husband. Her only recourse is action, followed by a perhaps futile attempt to connect with the divine. Are her prayers answered? Will her life have meaning? These are questions sentient beings have struggled with for as long as there has been self-awareness, and will continue to struggle with for as long as it exists, in any potential form.

In sum, *James Gunn’s Ad Astra* presents you with thirteen Featured Selections dealing with a broad spectrum of themes centered on communication and information. Just as I did when reading these works for the first time, I hope you will find within them plenty to think about. Like our patron Grand Master, these writers were not afraid to ask “what if?” and for that I thank them.

CHILDREN OF THE THOUSAND DAYS

Helena's phone rang again as she reached the concrete steps of her parent's back porch. Tom's icon flashed for the fourth time in as few hours. Helena had been in no condition earlier to debate with him. The long, quiet walk had improved her mood. She sat on the steps, closed her coat against the damp, afternoon air of a Minnesota spring and answered. Tom started in before she could say hello.

"I'm not accepting an emailed resignation, Helena. If you want to quit, you'll have to do it in person."

In the six years Helena had worked for Tom, she'd seen how much he enjoyed the chaotic environment of the State Department. For the first time, he sounded stressed.

If things were that bad—no. "That's all you're going to get. I told you last week, I can't do it anymore. I'm not coming back."

"If you need more time, I understand. Take it. It's only been a month since the funeral. The Department's offered grief counseling if you want it."

"I don't *need* more time."

"There are conflicts breaking out all over the place. Two dozen in Africa alone. Things are worse now than before the Object left."

Helena had been in Geneva when, one thousand days after arriving, the alien Object accelerated out of Earth orbit. The featureless torus had neither initiated communication nor responded to the signals broadcast at it. There was only the Blue Cloud, named for its spectral signature, flowing from the Object into the atmosphere, where it seemed to dissipate. Atmospheric samples taken immediately by low orbiting aircraft failed to identify anything harmful. The official release theorized the cloud to be some form of exhaust related to the Object's advanced propulsion. Every attempt to get close to the Object also failed. No vessel or missile had closed to less than a mile before deflecting away.

Its departure had elicited a worldwide sense of relief. The Object had apparently done nothing; surely any harmful effects would have manifested during its nearly three-year stay if its intentions were hostile. That sense of security ended when children conceived after the Object's arrival spoke their first words, in *Tajgee*. All of them, everywhere across the globe: no child was born without instinctive knowledge of the alien language.

"Every xenophobic, ultra-nationalist group has gone into overdrive since the latest Tajgee report broke," Tom continued. "We don't have the manpower to field all the requests for negotiators. We need you to pull off another..."

"No!" Helena immediately softened her tone after realizing how on edge she sounded. "Tom, no." Her mind was a jumbled mess of doubt, anger and cold loss. She needed time to make sense of the debilitating chaos. Until she gained control of the dangerous spiral, she could not risk taking on an assignment where the wrong word could derail a cease-fire.

There was a long pause. "Take care of yourself, Helena. I'm marking you down for a leave of absence. I'll call you in a week or so."

Her calm shattered, Helena felt the cold winding itself around her as the sun descended behind the pines lining the driveway. She went inside and hung her coat on the same hook she had used as a child. Her name was still scratched into the wooden frame beneath. The warm kitchen smelled of onion, garlic and simmering *afritada* sauce.

Helena's mother, Riza, rinsed vegetables in the sink. "You were gone a long time. I was beginning to worry." Though over sixty, only a fine tracery of lines around her eyes betrayed Riza's age.

Helena sat at the small breakfast table. "I walked to Harris Park. It didn't feel like I was gone that long."

From the kitchen clock and Tom's frequent calls Helena knew otherwise. Knowing that didn't help. She'd been drifting along in a fog since Manila. Large portions of each day passed leaving nothing more than a vague impression of events. She had done her best to cover for the lapses and tried to bury herself in work. It only served to heighten her anxiety. With her capacity to focus frayed to near transparency Helena had fled Washington and her job. She had hoped returning to the familiar comfort of home would help her regain her

balance.

Riza transferred peppers to a chopping board on the dark granite countertop. “Tom Mitchell left three messages for you,” she said without looking up.

“I just spoke with him.”

Helena’s mother favored her with *The Look*: the one that said she was concerned, that she had questions. Riza wouldn’t ask though, hoping Helena would volunteer answers.

Helena had nothing to offer.

“You haven’t been yourself since you came home.”

“I’m fine, Mom.”

“You’ve been here two days and you’ve barely spoken. It’s not like you to be so quiet. You’re not working, either. That’s something you always do even when you’re on vacation. Your father and I are worried. We don’t think you’re fine.”

I’m not. It was more than just grief dulling her instincts. Doubt eroded Helena’s confidence, forcing her to overanalyze every decision. She was afraid to admit to herself, let alone anyone else, that she could no longer feel the best course of action. The indecision paralyzed her.

“This past month’s been overwhelming. I’m just tired.” Helena managed a wan smile before leaving the kitchen to her mother.

She ascended the narrow stairs to the second floor and closed the door to the guest room that had once belonged to her sister. Riza’s quilting projects now draped every surface in Helena’s old room, preventing her from taking shelter there. She sat on the edge of the pale yellow bedspread staring at her phone. She brought up the news application. There was only one saved item. Helena knew she should delete the article. She knew it anchored her sorrow.

MANILA—Eight people were killed Friday in a blast centered on the banquet room of an upscale Manila hotel hosting U.S.-sponsored talks between the Filipino government and the Southern Front. More than 100 others were injured in what the country’s Chief of the National Police, Benigno Macale, called a militant bomb attack. Among the eight dead was photojournalist David Nash, spouse of lead U.S. conflict negotiator, Helena Abutin.

Though insurgents in the southern Philippines frequently bomb civilian targets, such attacks are rare in the capital. Authorities had warned terrorists could be plotting attacks against major cities in response to growing fears that foreign governments were responsible for the spread of Tajgee.

Helena powered the phone off and tossed it into the open, unpacked suitcase by the bed. Behind the grief and tears of longing, her professional mind noted how the press continued to fan the flames. The spread of Tajgee was described in the frightened tones reserved for epidemics. How could anyone come to terms with the emergence of a universal language so long as everyone treated it like a disease?



The following day Helena took advantage of her younger sister’s standing invitation to visit. Jovelyn, her husband Karl, and their four-year-old daughter Gabrielle lived in one of those planned neighborhoods. What once had been farmland now sprouted dozens of homes identical except for trim color.

A cold morning drizzle fell on a backyard smelling of loam and littered with evidence of her niece’s presence. A plastic princess playhouse stood tilted to one side where the soggy ground had undermined a corner.

Stepping inside, Helena noticed all the touches in Jovelyn’s home that reflected her personality. It was clean and modern with a dusting of chaotic clutter. Helena’s sister welcomed her with a sincere hug and broad smile. A smaller version of Jovelyn ran into the kitchen and impacted Helena’s legs.

“Tajgee, Oomri oru ketj’fo, Lena!” The little girl hugging Helena’s knees pronounced her name followed by



a clicking sound.

The tongue click following any word seems to identify it to other children as a proper noun outside the scope of the shared lexicon, Helena had read in a Department report.

A polyglot herself, Helena had tried and spectacularly failed to learn the new language. She was far from the only one to do so. Linguists had been fighting a losing battle in their attempts to identify or come to consensus on the underlying rules. Assumptions that the language was highly structured, cryptographic in nature or that it could be represented algorithmically had proved false. Native speakers simply *knew* the functional idiosyncrasies and until the children were old enough to explain that knowledge, their elders remained frustrated.

They named the language Tajgee after the word for hello or welcome; it was the first word young children now spoke.

“Gabbie, Auntie Lena doesn’t know Tajgee. Can you stick to English while she’s here, Sprout?”

An instant of confusion passed over the little girl’s face. “Okay, Oomri.”

Helena crouched and gave her niece a proper hug. Satisfied, Gabrielle bounded off toward the living room.

“Oomri?” Helena asked.

“Mom, I think. That’s how she uses it anyway.”

“She inherited your annoying good mood, I see. Is she always like that?” There were times growing up Helena had resented her sibling’s perpetually upbeat nature. Jovelyn’s optimism tended to be contagious, though. It was just too much work to stay moody around her.

“She’s a happy kid, that’s for sure. Gabbie seems to take everything in stride.” Jovelyn pulled a mug from the cabinet. “Coffee?”

“Please.”

A chime drew Jovelyn’s attention to the laptop sitting on the counter. A slight, tight-lipped frown marred her expression as she typed a response.

“I don’t want to get in the way of your work.”

“It’s just a question from one of the newbie programmers, nothing pressing.”

They took their coffee to the living room couch and talked while Gabrielle played on the oatmeal-colored carpet speckled here and there with faded grape juice stains.

“I quit the Department,” Helena said.

“Did you tell Mom and Dad?”

Helena shook her head. “They think I’m on vacation.”

“But why? You always said it was the perfect job. You love talking to people and solving problems.”

It was true. She had a passion for other cultures. Few things were more satisfying than identifying some tiny thread of commonality that could end a conflict. Now though, where every carefully chosen word had once held only a potential for resolving conflict, Helena feared their capacity for sabotaging peace and causing loss of life.

“Since David’s death I can’t seem to get back on track. I wasn’t helping anyone.”

“It hasn’t been that long.”

“Almost nine weeks.”

Jovelyn gave Helena the look she always used when she thought her sister was being dense. “You were married for seven years. You knew each other for ten. You expect to go back to the way you were, without him, after two months?”

Helena had already come to the same conclusion. It hadn’t helped. “I’ve lost that sense of knowing what people really want, what they don’t say. The summit in Egypt was a mess. Something’s broken and I don’t trust myself.”

“It’s not your fault or lack of ability.” Jovelyn placed a light hand on Helena’s arm. “You need time to sort it all out.”

“My boss said the same thing.”

“He’s right. You only took a week off after David died.”

“I had to finish in Manila. I couldn’t let them think they’d succeeded in canceling the talks.”

“Then you went right to Africa. Until now, you haven’t stopped long enough to settle things in your own head. David wouldn’t want you to give up your career.”

“He wouldn’t be dead if it weren’t for my career.”

“David was there to do a job just like you were. It isn’t your fault.”

The mood between the sisters had grown morose. Rescue came in the form of Gabrielle climbing onto the couch and inserting herself between them. She waved one of her two stuffed kittens in Helena’s direction and asked something in Tajgee.

“English, Gabbie,” her mother reminded.

“Play with me, Auntie Lena? Oomri’s on her ’ap-top always and Aaji won’t play with me.”

“Aaji?” Helena looked to her sister.

Jovelyn’s frown lingered. “It means Dad.” Then to Gabrielle, “Sprout, I’m not sure Auntie Lena feels like playing right now.”

Jovelyn’s laptop announced another message. She made a small sound of annoyance before heading into the kitchen.

Helena looked into her niece’s large, brown eyes. Their shared Filipino ancestry dominated Gabrielle’s features despite her father’s Anglo influence. “I’d like to play with you, Gabbie.”

The little girl’s eyes lit up as she smiled and handed a plush kitten to Helena. “You take this one. She likes you.”

Helena slid down onto the carpet. She galloped the toy around Gabrielle’s toes, tickling her into uncontrollable giggling.

“Why doesn’t your dad—Aaji—play with you?”

The giggling stopped. Gabrielle’s gaze fell to the floor and she shrugged.



The next morning, Helena drove with her mother to pick up Gabrielle. With a deadline looming, Jovelyn had asked Riza to watch Gabrielle for the day. The idea of a simple outing to the supermarket appealed to Helena.

“Any idea why Gabrielle’s saying Karl doesn’t play with her?” Helena asked.

Riza shook her head. “Karl’s been working a lot of extra hours. You can’t expect a four-year-old to understand how stressful being a policeman is.”

Being a cop anywhere was stressful, but Mapleton wasn’t Minneapolis. Karl had always handled whatever the job could throw at him and doted on his daughter almost to the point of spoiling her.

Aaji won’t play with me.

“There seemed to be more to it than that. You should have seen the look Lyn gave her when she told me.”

“Let them work it out,” warned Riza as they pulled into Jovelyn’s driveway.



The supermarket parking lot was already filling up as it always did on Tuesday mornings. The twentyish-looking kid pushing in the carts gave them an odd look as he passed the car. Helena dismissed it as job dissatisfaction. Inside, lines were forming at the checkouts and shoppers crowded the bakery. The market’s familiarity flooded back to Helena. They’d been shopping here since she was in high school.

As they wove around the red-and-white tiled produce section, anxiety eroded the edges of Helena’s comfort. There was something wrong with the atmosphere. She looked around but found nothing worrisome, just people shopping. Helena tried to ignore the feeling but the anxiety persisted.

While Riza took her time selecting oranges, another cart stopped nearby. A little boy about Gabrielle’s age sat in the seat.

“Tajgee, Gabbie.” Gabrielle waved.

The little boy smiled and waved back. “Tajgee, Alex.”

The boy’s mother snatched down his hand by the wrist. She applied enough force to make Alex wince. “No! You don’t say that. Not any of it!”

Tears welled in the little boy's eyes.

Gabrielle looked on the verge of crying herself. "Ashti etitc tajgee, Oomri?"

Alex shook his head without answering. His mother glared at Gabrielle. Only then did she seem to notice Helena and Riza. The woman's anger drained away. She looked around the aisle, her eyes darting from person to person. She leaned low over her cart and pushed it quickly around the corner.

Helena realized the texture of the background murmur had changed. People were staring at Gabrielle. Many wore expressions of distaste and disapproval. Helena's anxiety was the result of reading their barely suppressed hostility. She realized Gabrielle and the little boy, Alex, were the only small children she had seen since they arrived. She would have expected many young children shopping with their parents at this time of the day, yet they were conspicuously absent.

"Let's go, Mom."

Riza, perhaps prompted by Helena's guarded posture, now seemed to feel the scrutiny. She tossed a bag of oranges into the cart and they moved deeper into the store.

The sense of being watched persisted until they checked out and left the market. Helena's relief lasted only moments. There was a commotion in the parking lot. Someone shouted for the police. People milled about. They seemed interested enough to gawk but worried enough to give one row of cars a wide berth.

Helena froze for an instant when she saw what was happening. Four young men were smashing the windows of Riza's car. "Mom, stay here and call 911." Helena ran toward the car, but stopped short in case the troublemakers decided to redirect their aggression. "Hey!"

Helena got the attention of the two closest vandals. There was no fear in their eyes. She read mob confidence in their body language. You might reason with an individual but not with the group mind reinforcing such behavior.

The number of spectators grew but no one confronted the armed men.

One smiled at Helena. "This your car?" he asked before swinging a length of pipe and shattering the tail light. "Maybe now you'll keep your fucking alien kid away from normal people."

The irrational hatred in his expression drove Helena back a few steps. "You've made your point."

He looked at her with the weighing glance of a predator. The pipe shifted slightly with the almost imperceptible movement of his shoulder. Helena could see smashing the car wasn't enough. Backing away would only ensure an attack.

"I work for the State Department. You hit me and you'll have the FBI on your ass." Helena's eyes never left his. She didn't realize how much she missed feeling in control.

The wail of a police siren broke the stalemate. The other three bolted for an old sedan parked two rows over. Helena noticed her assailant took a step back before turning his back on her and running to join his fellows. They sped out a side entrance, side swiping another car in the process. The sound of tearing metal mixed uncomfortably with the siren of the arriving police. Plastic and glass debris ringed Riza's ruined car. A woman crying by a vehicle in a nearby row drew Helena's attention. The store's manager was trying to console Alex's mother. The woman's outburst must have frightened the boy; he sat in the cart sobbing. They stood by the wreck of a green minivan in the same condition as Riza's vehicle but for one detail: it also had giber spray-painted in large letters across one side. Helena knew this slang term for Tajgee. It was derogatory and occasionally heard even in government offices.

A police car rolled to a stop by the distraught mother. The manager explained events to the officer while the woman continued to cry. Minutes passed before the officer could get to Helena. By that time, a second cruiser had pulled in, this one carrying Gabrielle's father.

"Aaji! Aaji!" cried Gabrielle as soon as she spotted him.

Karl came over but hesitated before picking his daughter up from the cart. Gabrielle hugged his neck, and buried her face against his uniform.

"What the hell happened here, Mike?" Karl asked.

"More crap like this every day," said the first officer with disgust.

"I'd like to know how they knew which cars to smash. Someone working here must have told them," said Helena.

"I wouldn't be surprised. You should avoid places with lots of people. It would be best to keep the girl out

of harm's way," Mike said.

"Meaning what?" Helena asked.

The officer refused to meet Helena's eyes. "There's a lot of bad feelings aimed at those kids. Taking them out in public is asking for trouble."

"You're saying this was our fault?"

"Be careful with your tone, Miss."

Karl handed Gabrielle off to Riza and stepped in. "Back off, Mike. Let me finish their statements."

"Sure, whatever," Mike mumbled as he turned back toward his cruiser.

"Did you call the insurance and towing companies?" Karl asked.

"Mom called a friend of Dad's. He runs a shop that works with their insurance."

"I'll take you home as soon as he gets here."



They rode in cumbersome silence except for Gabrielle's occasional outburst of Tajgee whenever she spotted something of interest. The muscles in Karl's neck stiffened every time.

His tension reminded Helena of the customers in the supermarket. She had perceived their mood without trying. Her talent for reading people wasn't gone. Why then had everything since Manila become such a mess?

David's death—no, his murder—had left her emotions raw. The bomb had stripped away her trust in mediation's ability to resolve conflict. None of the factions really wanted to compromise. They only came to the bargaining table hoping to get the other side to concede so they could save ammunition. Helena felt hollow. Only the distraction of arriving in her parents' driveway kept the tears at bay.

Karl helped them out of the backseat of his cruiser.

Helena's father came out of the house as soon as the car stopped. Resentful of the walker the therapist had suggested, Virgilio used a cane instead. He brought himself up a bit unsteadily against the police car.

"Everyone's alright." There was no question in Virgilio's statement. He said it to dare anyone, fate included, to tell him otherwise.

"We're okay, Papa. Mom's car was trashed though."

Virgilio waved a dismissing hand. "The car I can fix."

"I'll give Gabrielle some lunch before Lyn comes to pick her up," Riza said.

"I don't like the way that cop implied it was our fault," Helena said after her father escorted Riza and Gabrielle inside.

Karl leaned against his vehicle. "He has a point. More incidents like this are happening every day. It would be safer to keep the kids out of the public."

"I can't believe you're siding against your own daughter."

The muscles in Karl's jaw worked but he said nothing. Jovelyn's small, blue hybrid pulled into the drive beside the police car.

"Everyone okay?" Jovelyn's expression held an edge of panic.

"We're fine," said Helena. "The cop at the scene told me it was our fault for taking Gabrielle out in public. Your husband seems to agree."

Karl crossed his arms. His six-foot-four frame loomed imposingly over the sisters. "We've talked about this, Lyn. I told you it's not safe."

"This isn't Lyn's fault, either. What's wrong with you?"

Jovelyn answered for her husband. "He's been uncomfortable around Gabrielle since she started talking."

"I don't want to do this now." Karl moved toward the door of his cruiser.

Helena blocked his way. "We've all had to deal with what the Object did."

"Don't be condescending with me, Lena. You know better than I do what's going on in the world because of it."

"He's afraid there's going to be more," said Jovelyn.

“There’s no evidence that there’s anything more,” Helena countered.

“How do you know that?” There was anger in Karl’s voice. “Do you know how the Blue Cloud seeded Tajgee?”

“No. But I do know the geneticists only discovered changes in the genes thought responsible for language and nothing else.”

Those changes were present in all Tajgee children, even though they appeared too slight to have the observed effect. Wilder theories suggested a quantum-genetic encoding of the Tajgee lexicon. Though the brain of a Tajgee child appeared normal, speaking sparked neural activity in many areas thought to have nothing to do with language. Their functional scans bore nothing in common with even pre-Tajgee multilingual children.

Karl wasn’t swayed. “You can’t say there won’t be other effects. No one can.”

“He won’t listen,” Jovelyn said.

“You’re not worried?” Karl’s tone accused his wife.

“Of course I’m worried. I just don’t obsess over it like you.”

“They say other altered genes could kick in at puberty. We don’t know what they’ll change into then.”

“Where did you hear that?” Helena asked.

“From Tajgee conspiracy sites on the Internet,” Jovelyn said, her voice breaking. “He barely interacts with Gabbie at all, and now since some new report came out he’s insisting we don’t have more children.”

Helena knew the report. It confirmed Tajgee’s emergence in children conceived even after the Object had left Earth. Tajgee was an inherited part of humanity now.

“What should we do then, stop having children? Maybe put them all in a camp somewhere just in case they *might* be dangerous? You’ve loved Gabrielle from the day she was born, Karl. I saw it every time you held her. Is that the future you want for her?” Helena kept her voice steady, struggling against the doubt to project the confidence she once had. “Is she any less the same happy little girl now that she’s speaking Tajgee?”

Karl’s gaze focused beyond the sisters. “They made her something else.”

Unable to take out his anger on the Object or those who sent it, his own daughter was becoming a surrogate. “Gabrielle’s a victim in this as much as you and Lyn are. You more than anyone know we don’t punish the victims of a crime.”

“I just want her to be alright.”

“Don’t look for what isn’t there instead of seeing the little girl in front of you.” Helena turned to Lyn. “And you’ve got to remember most of us aren’t natural optimists. You guys have to combine your strengths.”

Jovelyn seemed surprised that Helena thought she was part of the problem. “It’s been so frustrating.”

There was a sudden squall of activity over Karl’s radio. His expression became serious as he asked for a repeat of the last message. A female voice issued a series of codes in response.

“What is it?” Jovelyn asked.

“I’ve got to go. Someone just walked into a Minneapolis daycare and killed everyone inside. The greater metropolitan region’s just been put on high alert.”



Coverage of the shooting ran continuously all afternoon. The deaths of twenty-three children and caregivers sparked the panicked removal of children from daycares around the country. Politicians promised to have police and National Guard protect childcare centers and preschools, despite knowing it was impossible. They praised the quick action of authorities in apprehending the assailant, often glossing over the fact that the shooter had surrendered to police and claimed he was doing God’s work.

Can we be so afraid we’re willing to kill children? The thought chilled Helena. While the news from Minneapolis was still fresh, a new horror story broke from Belize. The residents of a remote village had killed every child younger than six. Video showed the stunned expressions of soldiers sent in to secure the location.

Amid the media chaos, Tom called. “Things are crazy here in D.C. You’ve seen the news?”

“Minneapolis and Belize? I couldn’t miss them.”

“We’re trying to keep a lid on others.”

“How many others?” Helena felt a numbness creeping along her limbs.

“Three more shootings: two schools and another daycare center. There were only two deaths, thankfully teachers and not children. Europe may be worse. It’s mostly scattered violence by lone individuals.”

“There’s more like Belize, aren’t there?”

Tom hesitated. “Pakistan, North Korea, Malaysia...those are confirmed.”

“Tajgee’s in all of us now. Killing newborns doesn’t make any sense.”

“If people were rational they wouldn’t be murdering children. We’re lucky it’s been limited to remote areas.”

“Minneapolis isn’t remote.”

“No,” Tom conceded, his voice tired and flat.

Helena told him about the attack at the supermarket.

“Jesus, Helena.”

“We’re okay.”

“These killings are just new tears in the frayed political landscape. We’re seeing the worst abuse in places that already had problems. Others aren’t as bad but I won’t put money on them staying that way if authority breaks down.”

Helena shuddered to think of a world where mob rule could be the norm. Vandalized cars would be nothing in comparison. They both knew this was predictable. She knew him well enough to know he was holding something back.

“What’s changed, Tom?”

There was a long pause before he answered. “Lisa Littleton was killed in Padang. They shot down Harris and his team during the evacuation from Buenos Aires.”

“My God, how are their families?” Helena had trained Lisa. She had also worked with George Harris, who was an expert on South America.

“Trying to cope, as you’d expect. The Secretary told me to get you back in the field. He said to make it an order.”

“You can’t order me not to quit,” Helena said with an edge of resentment.

“I’m not ordering you. I’m asking you to come back.”

“I’m only one person.”

“You’ve wrangled agreements from parties that weren’t willing to be in the same city with each other, let alone sit and talk.”

“I’m not sure it’s the same anymore.” Anger, overconfidence, contempt and hatred, those were the emotions Helena typically dealt with during negotiations. There was always a component of fear but it wasn’t the driving force, not like now.

“Look, I didn’t want to mention this before, but we got more intel out of Manila after you left. One of the extreme factions was so sure you’d succeed in brokering a cease-fire they wanted you dead. You were the target. You might be only one person, but even the bad guys know you’re the right person to get it done.”

Anger forced Helena to her feet. She paced the room. David had died because someone feared people might see reason. This wasn’t about Manila anymore. It was about Belize, Pakistan, and the parking lot at the grocery store. Global conflict, once kept safely in remote places, was no longer contained. It affected people like Jovelyn, Karl and Gabrielle.

“Helena?” Tom spoke her name like a plea.

“I need a couple days. Do me a favor and send me whatever you can get on Tajgee. In the end it’s all going to come down to that.”



“Where’s Dad?” Helena asked as she helped prepare the chayote for dinner that evening.

“Where else?” Riza nodded in the direction of the garage visible through the window.

Helena earned another one of her mother’s looks by pulling a beer from the fridge before going out.

The house actually had two garages: the original detached structure and a newer, two-car affair, built when she was twelve. Helena’s father had turned the older one into a workshop where he tinkered with engines. The inside felt and smelled as it always had. The tang of motor oil hung in the cool, damp air.

Virgilio Abutin had his head under the hood of a massive old pickup truck. His right arm hung at his side as though disinterested. He levered a socket wrench with his left hand. The stroke made it impossible for him to work as he once had, but Virgilio behaved like it was all just some minor nuisance.

Helena placed the beer on the scarred wood of the workbench. Her father’s small television played a news channel in the background.

“Dinner in a half hour, Papa.”

“Your mother send you to collect me?”

“No, just wanted to visit.”

“She thinks I shouldn’t have beer now. I’m not supposed to drink with the medication for the stoke.” He took a long swallow anyway before ducking back under the hood.

The news was running yet another special report on Tajgee’s impact on cultural identity. The featured expert insisted culture and language were inseparable, and one could not survive the replacement of the other. Humankind could not hope to remain the same.

“Stupid,” Virgilio said.

“What?”

“That program about the new language.”

“They make a valid point, though I think it’s extreme.”

“When I met your mother on one of her visits to Manila, I had no English, you know.” Virgilio pulled another wrench out of his chipped, blue toolbox.

“There’s nothing wrong with your English, Papa.”

“It’s been forty years. I do more better now.” Virgilio exaggerated his accent with a half smirk on the side of his face not affected by the stroke. “Point is, Lena, I had to learn English if I wanted people to see more than a Tagalog-speaking mechanic from San Pablo. It didn’t make me a different person. I’m still a diesel mechanic from the Philippines.”

“Did you know Lyn and Karl are having trouble over Gabrielle?”

Virgilio frowned and nodded. “I know you didn’t hear that from your mother.”

“I tried to help them but I’m not sure if I did any good.”

“You have a better chance than I do, Lena. You were always good with people.”

I used to understand people, Helena thought. The Object had changed the rules. Maybe that’s what bothered her the most.



“Do you mind if I camp out here for a while?” Helena asked Jovelyn the following morning. “Mom’s into her spring cleaning and having all the carpets steamed. I’ve got a bunch of documents to read and there’s too much noise at the house.”

“Isn’t exactly a library here, either.”

To make Jovelyn’s point, Gabrielle ran into the kitchen and tackled her mother’s legs. She pointed into the living room, explaining something at great and excited length in Tajgee. Gabrielle’s speech held none of the hesitancy evident when she spoke English.

“Slower, Gabbie. Mommy doesn’t understand.”

The little girl’s forehead wrinkled in either concentration or annoyance. She repeated herself slower, with an occasional English word tossed in.

Helena tried to make it out. It was difficult even after spending a few hours studying a Tajgee dictionary. The language had nothing in common with the five Helena spoke, or any other. Without intensive study it was immensely difficult to determine more than the approximate meaning of Tajgee vocabulary.

“Something about seeing cats?” Helena ventured after Gabrielle had retreated from the kitchen.

Jovelyn nodded. “On TV, I think.”

“You’re not making her speak only English?”

“There’s nothing wrong with meeting her half way,” Jovelyn shot back. “I can see how upset she gets when I can’t understand her.”

“I didn’t mean it like that.”

The fire drained from Jovelyn’s eyes. “I’m sorry, Lena. It’s just tough, you know? I’m glad you came over,” Jovelyn changed both the mood and topic. “I’ve a friend, another programmer, who lives in Minneapolis. I owe him a favor for taking some of my workload. His wife just arrived from Seoul with his little girl. She’s a couple of months younger than Gabrielle is. I agreed to watch her while Jon gets stuff done with the banks and Immigration. I might need a little help wrangling them.”

“I don’t mind, so long as there’s a corner where I can read.”

“This for work? I thought you quit.”

“I’m reconsidering.”

Jovelyn smiled. “I can promise only relative quiet. No explosions or anything.” She realized too late what she had said. “I’m sorry. I didn’t think.” Her tone resonated with obvious distress.

Helena’s expression darkened for only an instant. She put a reassuring hand on Jovelyn’s arm. “It’s okay.” Helena smiled to ease the weight pulling her sister down.

It was okay, Helena realized. Jovelyn’s offhanded comment had not spiraled Helena’s emotions into depression and regret. “When’s your guest arriving?”

“After lunch.”



Helena plopped down into a cloth-covered armchair in the living room. The textured fabric felt warm and comfortable. Gabrielle, playing nearby, divided her time between watching animal programs and occasionally presenting toys for Helena’s inspection.

The documents Tom had forwarded exceeded Helena’s expectations. Studies of Tajgee were difficult, considering the oldest native speaker was only now approaching six years of age. There were even reports from the Pentagon.

Most contained only a little hard data diluted by overwhelming conjecture. It didn’t take long to realize that Karl’s fears echoed at the highest levels. The military in particular obsessed over theoretical threats posed by an agency capable of imposing Tajgee on the population. They also agonized over early studies concluding that Tajgee speakers were less aggressive. Their thinking was that Tajgee was a tool for pacifying humans, but more recent evidence had proved this was wrong. You could only push Tajgee children so far before they struck back. The difference was they’d try to talk you out of pushing them first.

Anomalies in the lexicon sent up red flags for some. Tajgee appeared to have no words for murder, war, attack or a host of other violent and aggressive terms. Tajgee children understood the concepts as well as anyone under the age of six could. They just had no specific, easy words for them. The report concluded, “Cognitive development is the result of an internalization of language around the age of two. These children, born with an already internalized language, seemingly based on mediation instead of conflict, have their way of thinking molded by Tajgee from the very beginning.”

Helena had to consider the implications. Her father was wrong about Tajgee. Learning English didn’t make people different, at least not at their core. *Tajgee does. It will change us.*

The doorbell rang and muffled voices issued from the front foyer. Jovelyn returned, holding the hand of a little Asian girl who was hiding behind her, taking timid steps into the room. “Gabbie, you have a guest,” she called.

Gabrielle came out of the kitchen. She held the crust of a grilled cheese sandwich in one hand and hugged her favorite stuffed kitten with the other.

“Tajgee!” Gabrielle waved the crust of her sandwich.

The other little girl’s demeanor changed instantly. Helena had seen it before, many times. It was the relief of stumbling upon another person who spoke your language in a foreign country. The girl smiled and

released Jovelyn's hand. Her anxious posture relaxed as she went over and returned Gabrielle's greeting. "Tajgee, Lien."

Gabrielle took Lien to meet her menagerie of stuffed animals. They decided on their favorites and relocated them to the floor at the center of the living room. The girls talked freely while using the toys to act out some complicated pantomime. Helena was sure that, even if she could understand them, it would only make sense if you were four.

At one point both girls reached for the same animal. Helena expected an argument to ensue. It was clear they both wanted the toy, a blue, lizard-like creature. She expected them to argue, for egocentric tempers to flair leading to a tug-o-war over the disputed toy. It didn't happen.

Helena detected the familiar pattern of negotiation in the intense, animated Tajgee they hurled at each other. When discussion ended, Gabrielle retrieved a penguin from the pile of stuffed animals. She handed it to Lien in exchange for the lizard, and that was the end of it.

Helena looked down at a report and silently read, "Tajgee speakers as a group are significantly more inclined to use negotiation, and to consider the proposals of their peers, than has been observed in previous generations."

She had spent weeks, sometimes months, in mediation before bringing combatants to the point where they were willing to do what these two little girls fell into naturally. Often their willingness to talk evaporated in the space of a few hours. It could take months of bloody fighting and many more deaths to convince them to try again.

Helena opened the last of Tom's documents. This report, by a State Department linguist, predicted the use of Tajgee would expand beyond native speakers within twenty years. It would begin with teachers and parents, followed rapidly by pop culture, advertising and manufacturing. The trend would accelerate as the children became wage earners.

Helena felt her chest tighten. This is how it will happen, she realized. When the first of the Tajgee speakers became college students or finished high school and started working, they would be an unstoppable wave of change. Gabrielle and Lien's generation would be eager to engage the world. Their mark would be lasting, provided the older generations didn't tear everything apart first.

Helena had to do whatever she could to prevent total breakdown until they were ready.

She emailed Tom to rescind her resignation.

Helena set her laptop aside and sat on the floor with the little girls. Lien said something to Gabrielle, perhaps asking who Helena was. She nodded at Gabrielle's reply and smiled at Helena.

"You wanna play too, Auntie Lena?" Gabrielle offered Helena a neon green and orange tiger.

"I do." Helena accepted the animal.

They need twenty years before they're ready. I can do that for them.

Helena brushed her niece's dark, straight hair out of her face. "Gabrielle, can you teach Auntie Lena Tajgee?"

ABOUT PETER CHARRON

PETER CHARRON LIVES WITH HIS WIFE AND TWO SONS IN WESTERN NEW YORK. HE IS A STUDENT OF SCIENCE, HISTORY, MYTHOLOGY AND THE MIND.

I was on a two-lane road, and I never like those. Freeway driving is nicer because the speeds are too high for people to stare at me.

A little blonde kid pointed from the back of some tiny copy of a classic Woody station wagon as it came toward me. His mother, who looked mortified (I'll give her credit for that), yelled something at him. I couldn't hear what it was, but he settled down in his seat and looked straight ahead—then back at me an instant later. His mother's eyes met mine. I favored her with a forgiving smile, and she gave me a strained one that was all clenched teeth and stretched skin. Then they crept away in the opposite direction.

This was my first visit to California. My people left here about the time the redwoods were being fed through the sawmills. The redwoods are gone now, but at least my people remain.

My people.

"My people," I said aloud. I guess I smiled, mirthlessly.

I saw a sign pointing to Landis Park, my destination. I also saw a black family in a sedan in a right turn lane as I continued straight: three kids and the parents, who all gave me a wide-eyed, frowning look at the same time. The parents were as bad as the kids, and I stared back at them, stone-faced.

Why do I bother? Aren't I used to it by now?

No. Never will be, I guess.

Worst were the two scantily clad young women with lots of facial piercings. One was white with short, green-dyed hair. The other looked Pakistani or maybe Hispanic. The latter shrieked with delight when she saw me. They were in an open jeep with just a roll bar, so I could hear her. The white girl driving flicked her tongue at me; a stud glittered like a Christmas ornament as it was exposed to sunlight, then hidden, then exposed, then hidden...

The Pakistani girl shouted some filthy sexual come-on, and then made a motion with both hands, like she was holding something a foot long that was expanding to two feet.

When I was a teenager, I would have been flattered by such attention; as an adult I realized such stuff was an affront to my dignity.

By sheer force of will, I did not flip them the bird. Had I done so, I would of course have been participating in my own degradation. I simply looked pure poison at them, then fixed my eyes on the road. Their mocking laughter mercifully faded away.

My cell phone rang. I put it on speaker.

"Dr. Mark North," I said.

"Dr. North, this is Jere Wilson. We're at Landis Park. We have a dozen personnel from the California Department of Fish and Game, including me, and some state troopers who are trained and equipped for handling these situations. All we need now is Our Man From D.C. to share his wisdom with us. We're waiting for you, Doc." He chuckled.

"Jere, when you and I finally meet in person, you're going to have to stop calling me Doc. It's Mark."

"Maybe after a beer. I'm sure we'll be having some together. This infestation is going to take some time to resolve."

I winced at the word "infestation," but didn't say anything. I hoped, by example, to make sure this combined State-Federal task force used "incident." Stopping use of the term "infestation" was my way of being an activist in this matter.

"We won't put in any more overtime than is necessary—to purchase a two-year-old Maserati," I said, earning a snort from him. I decided not to press the "incident" terminology until we met face to face.

"You'll earn your money," Wilson said. "By the way, just to let you know, as head of the task force you'll have to deal with a personnel problem the moment you step out of the car."

"Oh, dear," I said, lightly, lightly. "What is it?"

"Problem worker. Won't take orders from me; says you'll be his supervisor. Contractor, not a State of



California employee.”

“Well, when I was at the beach recently, some big bully kicked sand in my face, and I vowed not to let that happen again,” I said. Wilson laughed. I had used that line for years. “Anyway, since he’s a contractor, I’ll just fire his ass if he gives me any guff.”

“It’s not that simple,” said Wilson. “He’s got skills we can use, and he knows it.” Pause. Confidential tone. “His name’s *Carradine*, get it?”

My blood ran cold.

“Carradine,” I said softly.

“José Carradine,” Wilson said. “*Big* son of a bitch, even for a grandee. He can wrestle those apes to the ground without a stun gun.”

Even for a *grandee*.

I had never met any José Carradine before. But

Carradine is the most common name among our people, as is well known. What is less well known is that it is an Anglicized reworking of *cara del diablo* or “face of the devil,” one of the insults heaped on our ancestors by the Spanish rapist conquistadors who had created them.

I thought Jere Wilson knew my ancestry. I fancied anyone could tell from the timbre of my voice. I fancied wrong. My eyes stung, which angered me, because one must never be reduced to tears. I lamely thought, *My picture is on the U. S. Fish and Wildlife Service website.*

Then again, “North” is not a common grandee name.

“Well, I’ll take care of the personnel issue,” I said. I wanted him to hear the frost seeping into my voice. “That’s what I’m paid for. Is there anything else?”

“Nothing, buddy. Forewarned is forearmed.” He had taken my suddenly changed tone of voice as tension at having to deal with a grandee.

I sighed. I didn’t know California...and already I didn’t like what I did know.

Up ahead was a yellow, diamond-shaped road sign. The silhouetted figure on it was the standard: a humanoid with upraised arms, clawed hands, one bent leg kicked up high and one huge foot touching the ground. Little dashes stuck out from the outlined figure, like porcupine bristles, to indicate a hairy body. Below the sign, on the same wooden pole, a smaller yellow rectangle read CAUTION: NATIVE HOMINID PRESENCE.

That prancing, threatening silhouette was as official as the stick figure in the wheelchair for “handicapped.” You could download the icon from any number of government sites. A grandee activist group based in Seattle had asked me to put my name on a petition to have it changed to something more dignified. I had refused because, as I told them, I wanted to make changes from within without kicking up a fuss over minor stuff.

The campground within K. M. Landis State Park was closed, of course. A barricade sign said: *Heavy Native Hominid Presence. Park closed until containment achieved. We apologize for the—*

Inconvenience.

Those activists in Seattle didn’t understand the power of working in the system. As recently as 1977, those signs would have said “Bigfoot outbreak.” But the first generation of mixed race grandees to become high-ranking civil servants had effected a change to the more dignified “native hominids.” So what if the icons hadn’t changed yet?

True, “piegrande” was still used as an official term for the handful of purebloods in the wild, but the Spanish *pie grande*, although literally meaning “big foot,” was a foreign term, so it is softer, less offensive. We never changed the names of Wyoming’s Grand Teton Mountain, even though the French-Canadian explorers had merely been saying, “Big Tit.”

The lone state trooper manning the barricade leaned against his patrol car. He pushed off and ambled up to me as I rolled down the window. He was a very brown man with “Lopez” stenciled on his chest. “The park

is closed...” he said, then did a double take. His right hand dropped noticeably closer to his sidearm. “...Sir.”

“I’m a veterinarian with Fish and Wildlife. Here’s my badge.” I opened my wallet and showed my gold field inspector’s badge and my government I.D. He took it, frowned at it, and gave me a narrow-eyed look. What was he suspicious of? Didn’t this clown know the government issued badges to people in non-police capacities? That badge was what I used to get into private game parks to inspect them for TB and Foot-and-Mouth, and this guy was looking at me like I was trying to pass off a novelty shop gag on him.

Or maybe he wasn’t.

He handed me back the badge.

“A government worker in a Cadillac?” he said.

“I’m a tall guy. I had to get permission to rent something large I could fit into.” I always have to fill out an extra form to rent a larger car. And even so, I have to be very careful of the pedals; I have to bend my knees and touch them with the balls of my feet.

He snorted. “Go on through, I guess.” He guessed. I drove through the narrow lane left by the roadblock. My window was still open and I thought I heard him mutter, “Takes one to catch one.”

I thought about sticking my head out to give him a glance just to let him know I had heard, but I wasn’t one hundred percent sure he’d said it, so I didn’t. I always tried to make my parents proud, and they had always stressed three things:

Don’t make a fool of yourself.

Don’t gibber like a full-blooded *homo sapiens americansis*.

Don’t give them a reason to call you Bigfoot.

The center of operations was easy to spot. I counted three cop cars, four unstylish sedans (government-owned vehicles from the motor pool) and two prominent caged vans, all clustered in the otherwise empty main parking lot near a bunch of trees. The people I saw standing there were all looking toward the greenery beyond, where the real show would be. I added my car to the cluster. Two men and a woman with California Fish and Game ID tags looked at me as I got out.

I was dressed pretty much like them, in jeans and a plaid, short-sleeved shirt. This was not a place for office attire. But, of course, they weren’t gawking at the clothes, except perhaps for my old size 26 tennis shoes: no brand, specialty made in shops in our community in Seattle.

“Dr. Mark North, U. S. Fish and Wildlife Service,” I said crisply. “Where’s the action?”

They took me to Jere Wilson, who was looking out onto a picnic ground beyond the tree line. A bit of low sitcom humor then played out in real life. His back was turned to me—of course!—and as I said, “Jere?” he turned around and said, “Dr. North, I presume?” It was a lame joke he might have prepared, but he clearly hadn’t prepared himself for anything else. He was maybe 50, with a jowly bare face and salt-and-pepper hair. Caucasian, *homo sapiens sapiens*, like about seven billion other people on the planet. His gaze snapped up a foot higher than he had been expecting to look. His smile was replaced by something closer to fear, as he saw I was a grandee, one of the half *homo sapiens sapiens*, half *homo sapiens americansis* population, like less than two million people on Earth, almost all in the U.S. and Canada.

“You presume correct,” I said. I affected not to notice his horror. No doubt he was mentally running through his José Carradine remarks carefully to see if he had offended. I smiled without flashing any teeth; I have cultivated a habit of keeping my lips shut so as not to flaunt my fang teeth.

I stuck out my palm. He jabbed his hand toward me with plain discomfort. His hand disappeared in mine when we shook. My handshake is almost limp-wristed, by design.

I looked beyond him to what was playing out on the picnic grounds. “Looks like I arrived in time for some fireworks.”

“Yes,” he said, obviously relieved that I was giving him a pass, through my every word and deed. “One of them—the native hominids—one of the native hominids is not leaving the bathrooms. It—he—ran in there when we were searching the perimeter this morning.” He gestured towards the standalone MEN/WOMEN facilities on the horizon.

It was one of those public park wasp and hornet nests that also doubled as a toilet. Standing a head taller than the other three was a scowling grandee holding a net. He caught sight of me across the grounds and broke into a surprised grin. I did not grin back.

“Is that José Carradine?”

“Yeah. He wants the boys,” Wilson gestured at the three men with him, “to shoo it out while he grabs it. It took two darts already and still hasn’t conked out.”

“The whole situation looks a bit dangerous,” I said. “The hominid could burst out of there and knock someone over. Getting stepped on by a...being who weighs maybe 500 pounds is no joke. I’d better go over there and officially take charge.”

“We need your experience,” Wilson said. I think he was eager to have something to be flattering about. “You know your business. We’re just park rangers and animal taggers. Anyway, it’s been a hell of a day. We lost a female this morning when we put three darts in her and she just collapsed and died.”

“Died?” I said sharply.

He winced. “Yeah. She was part of a family that tried to get away. There was a little one with her. You know they’re never violent unless they’re trapped—or they’re protecting their young. No one realized the first dart had actually hit her, and then two guys fired at once. The child got away. Then Dr. Jenner, our vet, ordered a halt to the operation, said we couldn’t afford to lose any more.”

“Damn right!” I said. There are fewer than 2,000 full-blooded native hominids (the original piegrandes, as opposed to us mere half-breed grandees) estimated to be living in the wilds of the Pacific Northwest. The number had been twice that 30 years earlier, but the suburbs and freeways kept expanding. “Where’s this Dr. Jenner? I’d like to thank him for having some common sense.”

“That would be me,” a soft voice said. Now it was my turn to be embarrassed. A petite woman around 40 in overalls and long, dark hair sidled up. She smiled. “Nora Jenner, veterinary medical officer with California Fish and Game, at your service.”

I glanced at Jere Wilson. There was a distinct hint of *Schadenfreude* in his countenance.

Jenner continued, “And you must be Dr. North. You look just like your picture on the federal website.” She glanced toward Wilson, who started turning beet red. Yup, feller, they got this fancy thing called the in-ter-net nowdayz.

She rested a hand on my arm. I barely felt the feather touch. She said, “Oh, sweetie, it was just awful.” When people I have just met call me “sweetie,” it’s never going to be a neutral encounter—they’ll be all true southern warmth or faux southern syrup. “That poor little thing, I saw her dash away. I hope she finds her way back to her tribe.”

“Well, let’s hope so,” I said. Her whole demeanor made me feel like a kid trying to impress the teacher—the young female teacher. “I’d better get up there and see, uh, what I can do.”

“I know you can bring that poor hominid fellow out alive, sweetie,” she said. She patted my arm again. “Good luck. We’ll catch up on the history of the mission later.”

“Yep, we’ve got to do that,” I said and, for no damn reason I can think of, saluted her. She giggled. Jere Wilson—and a couple of other guys—gave me deliberately bland looks.

Overly rude because of what I am? I can deal with it. Overly solicitous? I...don’t know what to do. Grandees are objectified as sexual beings in the crudest ways. But sometimes people just find you interesting. I’ve always found it hard to tell, especially with women.

I walked across the grounds to the restrooms. José Carradine was growling at his crew. “Hold the net *up!* That’s *up*, goddammit!” Then he turned to me. “Well, well, I guess you’re Dr. North!” His accent was pure *forest*.

Some politically-correct folks believe that saying (or thinking) things like “He talks forest” is rude, but it’s actually more polite than saying, “He talks like a backwoods animal who’s never worn a pair of shoes and doesn’t have any refined manners and has no real trace of *homo sapiens sapiens* and is basically pure *homo sapiens americansis*.”

Yes, a lot more polite.

“When they tole me some Dr. North was gonna show up, I said, ‘Nah, that can be a grandee name, but it mostly ain’t. He’ll be some skinny fella only about six feet tall, North’ll be. But here you is!’” His men, all contract workers and all *homo sapiens sapiens*, looked on warily.

He had a grin on his face, but not a friendly one. When I looked at him, I saw something similar to what I saw when I looked in the mirror. He was around seven feet tall, a hair taller than me. His eyes were brown,

like mine, ringed by satisfyingly human whites, not that awful, animalistic black sheen of the wild purebloods. His skin was olive, like mine (I'll admit), but no more so than an Italian or Greek. His nose was respectably human, but didn't quite have the ridge one really wants in a human nose (mine was better-shaped). His nostrils were those vertical slits none of us can do anything about, and when he grinned his fang teeth became far too prominent. He had a full gray-and-reddish-brown beard.

A beard is permissible in polite mixed-race society, although I pride myself on being clean-shaven. Carradine, on the other hand, had allowed his secondary hair to grow wild. There was a light spray of fuzz along his neck that ran down into his collar. The trail forked down his arms and out of his shirt sleeves at the elbows. It marched all the way down to his knuckles. All it took was a simple application of depilatory cream three times a week to get rid of that unsightliness, as I could have told him. Any mixed kid from my undergrad study group in Seattle would have been asked by the others to leave if they'd shown up at the campus library looking like that. He was maybe in his 60s, old enough to be my father.

On his left forearm, I noted a faded "USMC" tattoo. That, at least, made me proud. My people's night vision made us the best wartime snipers before technology lost us that edge; our military exploits had been the first openings we had to gain respect in society.

"You thought about that a lot did you?" I said.

He laughed with a barbarous yawp that exposed a world of long, yellow teeth. "Don't require much thinking, do it, G?"

"My name isn't G. Look here, *Mister* Carradine, I understand there is a native hominid trapped in that facility and we are going to get it out."

His expression softened to weariness.

"Yeah, it's the last one left in the park, most likely. They came onto the grounds to feed from the dumpsters—and the damn fools what think it's cute to throw food at 'em! May as well be throwing grenades at 'em."

I sighed and nodded. The survival of full-blooded piegrandes in the wild depended on them being shy of humans. If they didn't stay away from civilization, they'd be shot, or run over by a truck, or drink from a stray bottle of sweet-smelling antifreeze, or this, or that or the other thing.

"See those two assholes over there?" Carradine pointed across the grounds to where two younger State animal health techs, a woman and a man, leaned against a car talking to each other. "They went batshit, shooting darts at anything that moved. One dart went right past Wilson's head. I saw it. But he was too ball-less to pull them in and make them stop panicking. This female Cousin, she got hit a bunch of times. They kilt her." His voice got husky. His eyes clouded. "She's lying in one of the vans out there right now. Her little one scampered away. Ran like the wind. Don't know if this one in here was a daddy, a brother, or any close kin at all, but he's in there now, bobbing and weaving amongst the shitters. I told them others that if they didn't stay away I'd rip 'em apart, the big fuckin' mess they made of it. Don, Jerry and Lonny here," he serially gestured to the three men who assisted him, "they know their asses from a hole in the ground. I can trust them."

"Did...Dr. Jenner and Mr. Wilson also mess it up? Is that why you made them stay back there?"

"At the kiddie's table," one of Carradine's guys (Lonny?) said, punctuated with a sneer.

"Wilson thinks just standing around talking is the same thing as giving orders. I did two tours in Vietnam, so I know better." He was in his 60s, then. "And little miss Nora," he loaded the words with scorn, "well she grabbed the dart gun out of one of those punks' hands when she saw he didn't know what he was doing, I'll give her credit for that." I nodded. Anyone who thought a hypodermic dart gun was some kind of toy had never volunteered to take the metal tip of its projectile into their spine or eyeball. "But I still don't need her around," he frowned.

"Why not?"

He shook his head in disgust, squinting.

"It was pretty plain she wanted him to do some missionary work," Lonny (I guess it was Lonny) said. All four of them, even Carradine, gave that a horse laugh.

My heart sank. I was hoping Dr. Jenner, a fellow veterinarian, was simply a kind-hearted person, not one of those detestable "grandee-grabbers" who wanted us for our...anatomical differences. When I was a teenager, it seemed like paradise. As an adult commuting to work on a public bus I had complete strangers

(men as well as women) putting their hands on my body and making crude propositions, like I had no right to privacy. It was a nightmare. I was going to have to give Dr. Nora Jenner the frosty treatment.

A screech that startled even Carradine and me (even though we were both capable of making the same sound) issued from the toilets. It was followed a split second later by a metallic thump, then another.

“Poor goddamn Cousin is getting restless.” Carradine sighed. “Those PCP darts probably didn’t do anything but make him puke a bit.”

“Yeah,” I said. The chemistry of purebloods was so variable (to the small extent that it was known) that even phenylcyclohexyl piperidine wasn’t guaranteed to put them out.

“Well,” Carradine said, “since they’s two of us what can strong-arm him, you wanna go in there together? And the boys stay out here?” He nodded to his crew. “Then we can see what shape he’s in, decide what to do next.”

“Okay, I’ll agree to that. If we’re just doing a visual inspection, do we need arms?” I gestured to one of his guys and the stun gun on his belt.

“I don’t use the stunner myself and my boys have orders from me not to use them unless they’re being charged at. I’ve seen too many Cousins die from the shock. They can’t figure out what’s going on. Guess they must think they’re being boiled alive. C’mon, you’re a big guy. You can push our Cousin away if he charges you. And if you get scared,” he grinned toward his buddies, “you can always hide behind me!” They laughed.

Their mirth was cut short by another screech from inside.

I had Carradine figured out. He was the sort of grandee who liked to look cool in front of a bunch of *homo sapiens sapiens* hangers-on. Such arrangements were pretty common. I went to a very integrated high school in Seattle, and a lot of grandee boys (and girls) had their own cliques of pals who thought they were the coolest thing on Earth.

“Well,” Carradine said, “let’s go on in.”

“Let’s,” I said quickly, not wanting to cede control to this foresty character.

We ducked into the building. The pureblood inside must have bumbled in by accident. It was that airport design, without a door. The corrugated concrete walls angled enough to block outdoors from indoors. It split into men’s on the right and women’s on the left, and I was pleased for reasons I couldn’t quite articulate that the male pureblood had run into the men’s room.

There was a faint splashing sound from in there, like waves gently lapping against a dock.

Carradine entered just a breath ahead of me. There, across 10 feet of stained concrete, we saw the pureblood, in his hairy nakedness. That sound? He had his face mashed up against a urinal, and was drinking out of it.

“No...” I groaned. Carradine shot me a radioactive glance. The pureblood turned toward us and moved into a defensive crouch, but did not approach.

Yes, there he stood: a creature that I was surely a distant cousin of, no more than 500 years removed. He was a bit taller than both of us and was covered in medium length, surprisingly fine, reddish-brown hair. Instead of large, round human eyes with plenty of white visible, like we grandees had, this full-blooded piegrande had dark, tiny, black eyes. There was no bump of a nose at all, just two black slits of nostril, dilating rhythmically with his panicked breathing. He bared his teeth—sharper than mine—in a mouth supported by no real chin. His ears were elfin, not round like ours. He had a long, hairless scar slashing down his chest from God knew what ordeal in the wild. Of course, unlike those you might see in a zoo, he wasn’t wearing a diaper, so his genitals dangled obscenely down halfway to his knees. I shivered. No matter how many of these creatures I dealt with, I never got over the stress of being close to them.

I noted, to one side on the floor, two blood-encrusted, dull metal darts he had clawed out of himself. The designers of those darts knew a piegrande had the finger joint articulation to remove a dart. They were designed to inject the drug immediately, so the darts had no PCP left in them; it was all in his bloodstream.

I could see the influence of the PCP in the way he couldn’t quite hold the combative stance. He moved in an unsure lurch from side to side, not with the fluidity he was capable of. He still had some of the ferocity they showed when cornered. He raised his clawed hands to us and slashed the air: the gesture of challenge.

“Brah-awk!” he screeched.

I bared my teeth and raised my hands, fingers curled, to chest level. A glance told me Carradine had done the same thing.

“Brawk!” Carradine barked at him. It was a short, sharp noise: *not frightened—don’t try to bully me.*

The piegrande looked startled. He was amazed Carradine could respond in kind.

This was a well-known phenomenon. They don’t seem able to distinguish us half-bloods from *homo sapiens sapiens*, at least not easily. In my community, that fact is (quietly) thought of with pride. It’s proof that *we are human.*

“Bruk-bruk!” I growled in quick succession. At the same time, my hands bobbed up and down. *We fight together. Back down.*

The piegrande faked a lunge toward us and we braced for it. Then he uttered a sound that almost came out as a yawn: “Yah-yak.” The tone and the body language said, *I don’t attack, but I stand my ground.*

I hated seeing my Cousin’s pain. The fur on his chest ruffled and folded as his lungs expanded and contracted in quick, unhealthy rhythms. The black eyes, moist and a bit filmy, blinked in desperate confusion. Despite the sympathy I felt, I could not let him see my concern through any body language. It would be taken as weakness, and he would charge.

José bumped the knuckles of his left hand against those of my right. “Slow, slow,” he said softly, and it took me a moment to realize he had spoken English. I grunted.

José looked off into a space a few feet away from our Cousin. I looked down at my Cousin’s feet. He stared at the space between us.

José started to hum.

He hummed the slow, rhythmic hum that started HIGH And Moved Gently low, and it started HIGH And Moved Gently low, and I joined in HIGH And Proceeded to low. And our Cousin joined in HIGH And The Hum Ended low. His breathing became wonderfully more regular with no more frantic panting, and we hummed HIGH And Finished low and our eyes all met in the center of the triangle between us and we did a HIGH Together And We Did a low together and we did a HIGH Together And We Did a low together and our dear Cousin sank to the floor with his back to the wall and his knees bunched up and we all did a HIGH Together And We Finished low together and he drew his knees up to his chest and we hummed a HIGH That Slid Down To Finish low and his penis and testes stuck out innocently from below where his ankles touched his stomach because he trusted us and did not have to brace himself against a blow to that area. We did one soft High and let the hum fade away to a low.

His breathing slowed. His mouth, the fur wet and matted after he had drunk from the place where he wanted to drink, was slightly open, and his tongue flickered gently. His dark eyes, which were inky and deep and beautiful, looked at us, pleading. We slid down to the floor and slowly crawled over to him. He tensed a little bit as we got closer, but José put out his hand and slowly reached out to touch our Cousin’s left arm and stroke it. I crawled over, too. We didn’t crowd him, but we both placed a comforting hand on him as we sat to either side. Gently we petted him, and slowly his head slumped down to his chest and he closed his eyes. His legs unbent and flattened to the stained concrete.

“Give him a few more minutes, then go get the others,” José whispered. “The tranq’s kicking in. We’ll have to wait till he’s under. We’ll need to manacle him and then get him out of here.”

“Good,” I said, also in a whisper. “We need to get him to an observation facility. There’s a chance two darts could kill him unless he’s watched and treated. I know the native hominids specialist at the Sacramento Zoo. They’ve got the facilities. I’ll make some calls and have him transported there.”

“Jane Southey?” he said. “I know her. Good gal. Really wants to preserve us.”

“Preserve our Cousins, right,” I said. He gave me an even look, but said nothing for a moment. Then: “When they tole me a guy named North was coming from D.C. to take charge, I wondered if you was one of them Seattle Norths. And when I saw you was, I figured you’d give me some shit for being forest.”

“Not at all,” I said.

“But you knew how to speak to our Cousin, so I guess you’re all right. You done that much.”

“It doesn’t happen often. It just comes to me. I did it once before in Portland, when a small female somehow got into a playground in a grade school in the middle of downtown. I ended up carrying her out in my arms. I was an emotional wreck for weeks after that.”

He smiled kindly, still petting the hominid. “Why, Mark? Ain’t nothin’ wrong with talking with your Cousins.”

I continued petting the hominid in longer, lighter strokes. His breathing was very gentle now. His eyes were shut, and his nostrils fluttered as he snored lightly.

“It’s not talking,” I said. “You know they have no language. Their frontal lobes are an animal’s. Decades of analysis have proven they cannot communicate any abstract concept beyond immediate emotional need, and there is no noise they make that has a fixed meaning.”

He frowned, but sadly, without heat. “Analysis,” he said, shaking his head. “He *talked* to us and we *talked* to him. Even a sape-sape watching us could have seen that.”

I refused to meet his eyes. I focused on the petting. “Only as much as dogs can. A dog’s emotions are conveyed the same way. Expressing emotion is not communicating.”

Carradine sighed. “What is, then?”

The piegrande snored.

I cleared my throat. “Listen, Carradine,” I said, “don’t get the wrong idea about me. I’m proud of myself and my community.”

Fire sparkled in Carradine’s eyes, but he glanced at the piegrande and kept petting it. “And what is your community? Seattle?” He spoke the word like a curse.

“Why not?” I said, also continuing to pet the creature. “We’ve built a good thing there. Our ethnic group mixes well with the rest of the population. We’ve got city council members, doctors, dentists, lawyers there, and the respect of others in our community. We value education with religious intensity. And as for religion, we’ve got grandee ministers whose congregations include sape-sapes, not just grandees. That’s saying something. Where else do you find that? Where did you come from, anyway? Some village in Oregon or California where you kept only among your own kind until you went into the service? That’s the most common story I hear from you forest types, and it’s not a good one, *buddy*.”

The mask of uncouth, foresty indifference, which I recognized as a mask, settled back over his features. He said, with surprising softness, “A hundred years ago, some busybody missionaries took some grandees out of the woods near Seattle, where they’d just been minding their own business working in the lumber camps. They knocked some education into ’em with a strap, and now we got an elite that thinks his shit don’t stink.” He pronounced it ay-leet. “You Seattle shitheads think you’re better than the rest of us?”

I did that thing that conveys condescending disgust in sape-sapes: I smiled, open-mouthed, shook my head from side to side and rolled my eyes. For some reason, it doesn’t come naturally to grandees; one has to practice it.

“We’re not better than you,” I said. “We’re trying to create something for our whole...tribe, I guess. We’re trying to become the founding generation, the grandparents that never were.” The culture I was describing was now more than three generations old, so I wasn’t part of the first generation by any means, but I felt I was getting to the heart of the matter.

“Being human means having history. What history do *they* have?” I nodded down at the creature. “They don’t have any language, any buildings, any art, nothing but the crudest tools. They barely interacted with the Indians who covered the rest of the continent. They’re all body, no brain. And whose DNA gave us the brains we have, that give us memory, the ability to plan into the future, to do math and science and write poetry? A bunch of drunken, horny Spanish conquistadors and French trappers, that’s who. They shot entire tribes so they could rape a few small, young females. Rapists.

“And when the half-breed babies were born, what did they do? Enslaved them or cast them out, insulted them, called them *pie grande* or *cara del diablo*. *Diablo* this, *diablo* that—good Catholics, those rapists. They’re nothing to be proud of, either. I hate everything they stood for. I don’t know why you and the other forest types still do things like pass down Spanish names. In my community, we don’t even have Spanish or French classes in any high school where we control the school boards—it’s Latin, Greek or German. I’m not married, but if I had a son, I would *never* name him José. Fucking *never*. The fathers of our race were rapists. The mothers of our race were animals. All we’ve got is what we’ve built. In Seattle.”

I expected a fight to erupt between us, right there on the floor, fists flying over the body of the snoring creature lying between us. But he looked down at the visage of the piegrande, smiled softly at it, and it was as if he had forgotten my existence.

He got up, slowly. Involuntarily, I braced myself for a rain of blows, but he just stretched, and I heard

arthritic joints pop. The piegrande never stirred. Looking down at me wearily he said, “Keep him quiet here, will ya? I’m gonna go get the boys.” As he walked out of the restroom, he muttered, “Mighty glad you don’t think you’re better than me.”



I delivered the animal safely to the Sacramento Zoo. It survived, and I later got an email saying it had been successfully reintroduced into the wild.

I felt pleased, you understand, that I had done my duty as a veterinarian.

ABOUT ERIC CLINE

ERIC CLINE EARNED A MASTER’S DEGREE IN ENGLISH FROM THE UNIVERSITY OF MARYLAND. HIS STORIES HAVE APPEARED IN **ELLERY QUEEN’S MYSTERY MAGAZINE** AND AT **EVERY DAY FICTION**.

SHAENON K. GARRITY

COLORLESS GREEN IDEAS

Tony’s lips were of some kind of horn or chitin, like mother-of-pearl, so he clicked his way through labial consonants. Ps and Bs became hard Cs. Alveolar and palatal consonants came from way, way back in the throat, susurrating. He was fine with vowels. None of that was important—this wasn’t the speech therapy department—except that it made him hard to understand when he got embarrassed and rushed through his reading, like he did every time. Sophie shoved the thought aside. It wasn’t like she could ever pronounce Tony’s real name correctly. She tried to ignore his accent and focus on what he was saying.

What he was saying was, “Moreover, through end to end am song of the tools against Man Ray via charcoal and traditional Chinese brushwork or any.”

Back in college, which suddenly seemed way, way back indeed, Sophie had gone through a phase of memorizing nonsense for fun. *The slithy toves did gyre and gimble for the Snark was a Boojum, you see.* It was the kind of trick that got a girl invited to a lot of literary magazine meetings and not a lot of parties. The point of good nonsense writing, what separated nonsense from gibberish, was that it followed rules; it gave the impression of almost making sense. It was fun, seeing patterns where other people saw nothing.

Tony’s essay was not good nonsense.

“Let’s stop right here,” said Sophie. Tony looked up, eyes pulsating expectantly. “I’m sure you covered this in ESL-100, but let’s go over it again. Sentences in English go how?”

Sophie grabbed a piece of scrap paper and wrote, large enough for Tony to read, S-V-O. Tony’s head deflated slightly. “Subject, verb, object,” he hissed.

“Good. Good. See, you know this. You have a noun, you have something it does, and usually—not always, but usually—you have something it does it to. Right? Now, I know it’s hard learning verbs if you’re coming from a language that doesn’t have any. It’s a pain, right?”

Tony smiled sheepishly. Sophie smiled back. Somewhere behind her smile, her brain was groaning *but all languages have verbs, that’s one of the basic components of a language, you can communicate without conjunctions or plurals or colors other than black and white but you can’t express ideas without verbs!* Chomsky said this and Chomsky said that—and Sophie shut her brain up and pressed on.

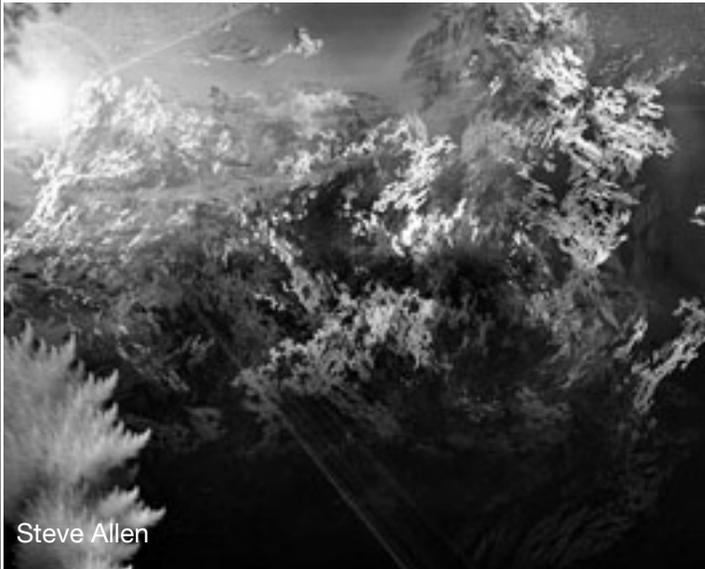
“Now, you have a verb in this sentence, right? You have ‘am.’ The thing is, that verb has to connect to a subject and object. What’s the subject of this sentence, Tony?”

Tony stared at his essay.

“It’s the first sentence of your essay. This is the sentence where you explain what you’re going to tell us. So what are you telling us about?”

And how the hell does it make sense to begin an essay with “Moreover,” she didn’t add. Tony’s seashell mouth opened and closed silently.

Sophie decided to try another tack. Maybe she could get him to rephrase. “Okay, ‘the tools against Man



Ray.' What do you mean by that?"

"Not photography here," said Tony. "With Man Ray photography of surrealism, with new hands tools of surrealism."

Sophie had been tutoring him long enough to know that "new hands" indicated Tony's own hands, his own artwork. That was another thing: their languages didn't seem to have "I" or "me." In this case, almost miraculously, she could translate. "So what you mean is you use charcoal and brushwork to get the Surrealistic effects of Man Ray's photography."

Tony smiled. "Effects. Effects." A new word to memorize.

"Good. Okay, we'll say that. But you get that when you write in English, people won't understand you unless you have that subject-verb-object thing going,

right?" Sophie watched her plump left hand scribble frantically on the scrap paper, churning out possible sentences, penciling in definitions for words Tony might not know. "Now, you wrote 'song.' The song of the tools. What do you mean by that?"

Another blank stare.

"Maybe it'd help if I could look at the work itself." Sophie pushed her keyboard in front of Tony. "Do you have samples of your art online?"

Tony nodded. He was back on solid ground now. His spidery hands flew over the keyboard, pulling up an online portfolio, the kind all students, regardless of species, had to submit to get into the Northern Ohio Academy of Art and Design.

Most aliens sent their kids to unaccredited art schools. NOAAD had about two hundred alien students in residence. They made up one of the largest visitor populations outside the colonies in Ohio, Nevada, and Vancouver where nearly all aliens still lived. They remained sheltered behind flimsy-looking plastic barriers almost ten years after landing. When they had started enrolling in art schools, three years back, the media had speculated that they were an artistic race, but it seemed increasingly likely that it was because these schools didn't have an English proficiency requirement. NOAAD had always been happy to take international students who didn't speak a lick of English. They could keep up by taking ESL classes at extra tuition.

The alien kids certainly paid their tuition—in cash, according to the bursar. Where they got the money was a little unclear to Sophie, but the news was always confusing that way.

The staff knew so little about the aliens. For that matter, it was presumptuous of Sophie to assume that these were kids, but when she dealt with students like Tony, it was so much like dealing with a typical nineteen-year-old art student that she had little doubt.

If only tutoring him didn't require a twenty-minute explanation every time they came up against a verb...

Tony was flipping through his portfolio, proudly showing off charcoal sketches of nudes (Sophie recognized Mara, one of her printmaking students), abstract Chinese brushwork, and surreal compositions with alien figures. Or maybe they weren't surreal wherever Tony's people came from. She could see the Man Ray influence, and maybe Diane Arbus, too.

"Did you take a photography class?" she asked.

"PHO 106," said Tony. Alien students always referred to their classes by course number. Not having memorized the NOAAD directory, she seldom knew whose class they were talking about.

"Who was your instructor?"

"Laura Soryo."

"Ah. She's pretty tough, isn't she?"

Tony grinned. "Control, control. Lots of work at whenever and."

"But you enjoyed it?"

"Yes!" In the silence, interrupted only by a persistent clicking sound, Tony scrambled for words. "Not

photography there. Not of old hands. Of photography new mind, of art new mind, art of at the photography of here then.”

Did he mean that photography was a new idea to him? That his people had never invented photography, or maybe they’d just never hit on the idea of photography as art, and it was a new concept to Tony and the other alien students? Were there many of them in the photography department? Sophie made a mental note to ask around. If that were the case, no wonder Man Ray had made such a big impression on Tony.

Or maybe she’d misunderstood him entirely.

“I still don’t understand what you mean by song,” she said. “To us, *song* means...*la la la*.” This elicited another grin from Tony. “But I don’t understand what you mean by the song of the tools.”

“Tools,” said Tony. “Brushwork. Camera. Charcoal. *Chiaroscuro*. Tools, et cetera.”

“Okay, some of those aren’t tools, some of those are techniques or...” Sophie waved it away. “Never mind, that’s another discussion. What do you mean by *song*?”

Blank stare.

She pointed at the portfolio piece on the screen, an alien face rendered in dramatic, distorting ink wash. “Can you show me on this piece? Is there a song of this piece?”

Blank stare.

“How would you say it in your language?”

Blank stare.

Sophie hadn’t expected anything else, but what could she do other than ask? The aliens never spoke anything but Earth languages in the presence of humans. *Spoke them badly*, a voice in the back of Sophie’s head griped, but she ignored it. Many TV pundits had suggested that they had no language of their own. Sophie didn’t think that was true. All the alien students who came in for tutoring used the same odd syntax: no comprehension of verbs, no pronouns, strange ways of expressing time, conjunctions sprinkled in generously and apparently at random, phrases like “new hands” and “under the yellow.” Good God, they all used “under the yellow” and she still had no idea what it meant.

They must have had their own language. They wouldn’t have been so adept at picking up vocabulary otherwise. The communication failure occurred on some deeper level, on some basic stratum of words or concepts or mental processing, and so far it had persisted for ten mystifying years.

Sophie gave Tony a reassuring smile. “Let’s move on to the next sentence for now, okay?”

Tony nodded, relieved. He turned back to the paper, his lips clicking. “See faces am new faces am gray faces am light with the dressmaker’s dummy but.”

The exquisite corpse will drink the new wine, thought Sophie. She picked up her pencil and took a deep breath.



Sophie should have heard about Tony’s death. But she had skipped the news and had instead spent the morning in the basement of the school’s industrial workshop on Welling Street setting up the laser cutters for her 200-level printmaking class. The workshop staff had argued with her over which week she’d reserved the lasers for. She finally had to call Don Conley, who taught Book Arts, and barter with him for the slot. By the time the class rolled around at eleven, Sophie was past ready to go home.

Only eight students showed up, just half the class. The two alien students, Liz and Michael, were absent.

“Did everyone get my email about meeting here this week?” Sophie asked.

Some of the kids shuffled their feet. “Didn’t you hear?” said Ae Sook, one of the international students and Sophie’s secret favorite in the class.

“Hear what?”

This set off a murmur. Jerome, whom Sophie knew primarily by his sloppy intaglio, spoke up. “Tony Chrrrut.” He pronounced Tony’s name with surprising ease. “He killed himself.”

Sophie’s insides froze. She had just tutored Tony, what, two days before? He couldn’t be dead. It couldn’t be true.

“But...why?” she asked, knowing as she spoke how silly and pointless it sounded.

“Nobody knows,” volunteered another student, Yuki. “You didn’t look online today?”

“I’ve been in the lab.” Suddenly Sophie felt like the student, her class playing the role of disappointed teachers. She pulled herself together. “We can discuss this later. We only have the laser cutters for one day, so let’s get started.”

Midway through the class, when everyone was busy preparing their plates for cutting, Jerome came up to Sophie. “You ever meet Tony?” he asked.

“Yes. Yes, I did. I tutored him in English.”

“He lived in my hall. EMTs woke me up this morning.” Jerome looked at the ceiling. “You have any idea he was gonna do somethin’ like this?”

“No. He seemed perfectly fine the last time I saw him. Did you...?”

“Naw, under the yellow.”

Sophie nearly jumped. “What did you say?”

Jerome grinned, shifting his bony shoulders. “Sorry. It’s like a slang thing. They say it, you know?”

“Yes, I’ve heard it. What does it mean?”

“It don’t mean nothin’. I mean, it don’t mean anything in English. When somebody says it to you, it’s like, this isn’t a thing I can even explain. You know?”

“Colorless green ideas sleep furiously,” Sophie said.

“Huh?”

“It’s an old linguistic joke, sort of. Noam Chomsky—the cognitive scientist—was challenged to make up a sentence that was grammatically perfect but didn’t make sense. That’s what he came up with. I used to be into nonsense and memorized a bunch of...” Jerome was staring at her, his lip twitching a little. “Thanks. I’ll have to remember that one.”



Outside the lab, there was no avoiding Tony’s death. News crews were everywhere. Her phone wouldn’t stop singing of voicemails. Sophie had never seen anything like it in person, not even when the first alien students had enrolled at NOAAAD.

A crowd had gathered around a TV in the student center. On the screen the ambassadors of the local were speaking to a small army of interpreters. People called them ambassadors, anyway. Maybe they were leaders or scientists or something else. They were the only ones besides the students who were ever seen outside the colony. All three of them, as far as Sophie had ever been able to tell, struggled with Earth-language communication even more than Tony or the others on campus. The message definitely wasn’t getting through to the media, who filled the airtime as best they could.

“...nearing the sixth hour of discussion,” an anchorwoman was saying in voiceover. “Mike, have there been any updates from the translation team?”

“Sorry, Julie. According to a spokesperson, all they can work out so far is that the colonists are very upset about the student’s death.”

“Understandably, Mike. This is the first known death of a colonist on Earth?”

“That’s right, and certainly the first death of one of the residential students. People here are speculating that the colonists are blaming humans for the death, or they’re taking it as a personal attack. They may be demanding that some kind of amends be made. So far that’s the best guess. It’s very unclear, but they are definitely upset.”

“And we still have no idea why Mr. Cheroot committed suicide?”

“Sorry, Julie.”

“Thick on water,” a girl next to Sophie said. Several of the kids around her, human and alien, nodded.

So she went into the garden to cut a cabbage-leaf to make an apple pie, Sophie thought.



The National Guard arrived the next day and was greeted by competing teams of student protesters, all angry. The media scrambled to understand what, precisely, they were protesting. The police had given up

and were threatening to arrest everyone. Guardsmen paced the central quad, ignoring the students hooting at their rifles.

One of the girls in for tutoring, Fang Hua (she preferred Jenny), explained the situation to Sophie. The protesters in black were demanding restitution to the colony for Tony's death, even though they admitted they had no idea what restitution would mean or what, exactly, it would be for. The protesters in red were part of an aliens-go-home movement. The ones in white face paint were fasting for a peaceful resolution, and the ones in green hoodies were still protesting the tuition hike from last semester.

"But I thought I saw some colonists in red shirts," Sophie said.

"Yes, some join that side," Jenny said.

"They're protesting to kick themselves off campus?"

Jenny shrugged. "It's complicated."

"Under the yellow, huh?"

Jenny looked surprised. She smiled. "Under the yellow, control, control, right?"

"Um...yes?" Was this another incomprehensible alien phrase adopted as slang around campus? "Hey, do you know what 'thick on water' means?"

"Oh sure. It means bad. Bad and unfair, and...especially for talking about the future, right?"

"Is that..." Sophie was seized by an amazing thought. "Is that what it means when the colonists say it, too?"

Jenny shrugged. "Sure. My roommate, Heather Ttktkthk, me and my friends learned from her. Picked it up."

"Yes, that's the phrase." Should she tell Jenny she had just demonstrated more understanding of the aliens than any so-called expert currently bloviating on the news? Maybe she already knew. "And 'under the yellow' means 'nonsense,' right? Something impossible to understand?"

"No! No. It means..." Jenny bit her lip and looked at the floor, groping for words. "It means thing that cannot be said in our language." She corrected herself. "I mean languages. All languages. Earth has not the words."

The change of color is likely and a difference a very little difference is prepared, whispered Gertrude Stein in the back of Sophie's head. This was almost helpful, but then she followed it with *Sugar is not a vegetable*.

"So the colonists who're wearing red shirts...the reason they're doing it is under the yellow? There's a reason, but you can't explain it because the concept doesn't exist in English."

Sophie made a noncommittal gesture. "Under the yellow, control, control."

"What does 'control' signify?"

Jenny bit her lip again.

"We should get back to your thesis proposal," Sophie said. "I notice you have a tendency to keep switching tenses..."

"Sophie?"

"What is it?"

"My roommate knows why Tony kill himself."

"Why?"

Jenny shrugged. "Under the yellow."



By the end of the week close to a hundred alien students had returned to the colony. Liz and Michael were gone from Sophie's class for good. News crews filmed the students passing through the flimsy plastic barriers and disappearing into the small makeshift domes of the colony. No one—no one human, Sophie corrected herself—knew what it was like inside the domes. No human had ever been invited in.

Or had they? Sophie began watching her human students with curiosity. For the first time she noticed how much of their dialogue was peppered with nonsensical-sounding phrases. Sometimes, when gossiping, they even slipped into alien syntax, dropping verbs and using conjunctions in ways that, to Sophie's ear, were pure cruelty to the English language.

Then the guns showed up.

This was another development Sophie learned from her students first. Ae Sook took out her laptop in class so everyone could follow the news, and other students followed suit. Soon the class was watching the same footage on eight different websites at once. At some point in the night, the aliens at the local colony had rolled out what appeared to be cannons of some kind. They circled the colony, their snub black snouts pointing at the National Guard encampment just outside. No aliens could be seen.

Sophie gave up on her introduction to silkscreening. There was no way she could keep her students' attention. Most of them were texting nonstop.

"We should just blunt under, whether and," said Tyler, who always partnered up with Jerome.

"Caution," Jerome said, staring at his laptop.

"Control, control."

"But we don't know what they want," Sophie said. "They won't...they can't tell us how to make things better."

The two boys looked up. "They haven't told us," Jerome said. "That don't mean they won't tell us."

"Might mean they can't tell us," Tyler said. "But control and."

Sophie pulled up a chair. "Does 'control' mean...the problem is solvable?"

"Sorta," Jerome said. "Like it was explained to me, some things always under the yellow, but some things under the yellow at control away. Um, I mean..." He searched for words that didn't exist. "You don't have an understanding now, but you could have an understanding later. That ain't exactly right, but you get the picture?"

Sophie nodded. "But the colonists are setting up weapons now without giving us a chance to understand."

"Yeah, well, I don't know what the guys in the mushrooms are thinkin', but one thing they're pretty yellow about is, like, time."

"They deal with time a little different," Tyler said. "Like the way things will be in the future is part of the way things are now. That's why it don't translate. Under the yellow there, but."

"You know," Sophie said cautiously, feeling her fingers rub together in anxiety, "that's more than adults who have been studying the colonists for ten years know about their language."

Sophie became aware that the entire class was watching her. Their faces were blank.

They had lived with the aliens, shared food and housing and art supplies, picked up funny bits of the way they talked. At first it was just a game, a new form of slang to confound the faculty. Then they learned more, and the alien students learned more, and suddenly they were communicating.

And they never told us because we never asked, Sophie realized. We were too busy teaching them to learn from them.

Was that why the aliens had started sending their children to schools like NOAAD, not so they could learn, but so they could educate? Or were they as baffled by the sayings their kids brought home as the parents of the human students must be?

"Order five, order three, away then," Ae Sook said. "Caution."

All over the classroom, laptops flashed with updates. "Congress voted for military intervention," Yuki said. "They're taking it to U.N. now."

"It's too late for caution," said Sophie. "Can somebody loan me a phone?"



And then they were in Sophie's minivan, driving past all the Targets and White Castles on the way to the alien colony. They were crammed in shoulder to shoulder: Jermone and Tyler and Yumi and Jenny and Heather Tkthk and a couple of alien guys from Jerome's hall and Ae Sook still following the news on her laptop.

It had been a long time since college, but a fragment of poetry bubbled to the surface of Sophie's mind. Bryan O. Wright, a Stanford student, had written it years ago for a contest in which a bunch of students had tried to come up with a meaning for the perfect meaningless sentence.

*Inside the dark gnarled world of trunk and roots,
Cradled in the chemistry of cell and sap,
Colorless green ideas sleep furiously
In deep and dedicated dormancy,
Concentrating, conserving, constructing:
Knowing, by some ancient quantum law
Of chlorophyll and sun
That come the sudden surge of spring,
Dreams become reality, and ideas action.*

“Control, control,” Heather Tktkthk said.

“Song of the hands and,” Jerome answered.

The leaders of the two species might listen, or they might not. But all the way to the compound, Sophie’s students and their friends talked, and, marvelously, she didn’t understand a single sentence.

ABOUT SHAENON K. GARRITY

SHAENON K. GARRITY IS A WRITER AND CARTOONIST BEST KNOWN FOR HER WEBCOMICS **NARBONIC** AND **SKIN HORSE**. HER FICTION HAS APPEARED IN **STRANGE HORIZONS** AND THE ANTHOLOGY **MACHINE OF DEATH**. SHE LIVES IN BERKELEY WITH A MAN, A CAT, AND A BIRD.

ADRIA LAYCRAFT

THE AGREEMENT

This morning I wake early and lay waiting for the network to disconnect. Once the link to the Original fades, I know she rises to prepare for her own day, now complete with my memories of caring for her children yesterday. I review these memories just as she must—the laughter over breakfast, the afternoon music performance at the school, the sunshine as we walked home.

Sounds of young voices ring through the house, followed by the thunder of their descent down the stairs. I hurry to dress, logging what items I choose so the Original can wear the same outfit when she emerges from her hidden home office at the end of the day. I brush my teeth, comb my hair, apply a small amount of makeup, and make my bed. Normal things. For the Clone Agreement, I must be normal, exactly like her in every way.

I’m ready early, and I fidget at the door. The light shows red, indicating she is not ready for the exchange yet. We can’t risk being in the main part of the house at the same time. If we’re seen together it would destroy the Agreement, and I would be returned to the cryogenics lab.

I would rather die. Not that it would feel much different, I suppose.

Finally the door releases and I hurry down to the children.

“Mom! Wesley says I’m getting fat!”

“I did not! I said you *will* get fat, if you keep eating huge bowls of cereal like that.” Wesley grins, daring me to correct him.

I glance at Gina’s bowl and feel my eyebrows climb. “He does have a point,” I say, keeping my voice playful. “I don’t know how you fit any milk in there.”

“But I’m hungry!” Gina says. At seven, she’s always hungry, and I am proud of how she grows. Wesley’s eleven, and his bowl is as full as hers, but he shakes his head in mock disgust. Gina sticks her tongue out at him.

“You two have healthy appetites, and that’s good. Should I make some fruit smoothies to go with that cereal?”

“Yeah!” they both cry, and I smile.

I pack their school lunches, and soon we are fed and washed and ready to go. Each day it’s much the



same. While the Original works, I play the role of mother, and they have no idea that two different women raise them.

In the afternoon I am helping them with homework at the table when my internal alarm sounds. I flinch, glancing at the clock. It's nearly two hours earlier than usual. Thankfully neither child seems to notice my reaction.

"Keep going. I'll be right back."

Only I won't be right back. I hurry up the stairs and into my hidden chamber. My vision blurs and I realize I'm crying. At first I am shocked at my deep emotional reaction. Why would I be so upset?

Then I understand. I don't want to let them finish their homework without me. I was the one who talked with Gina's teacher that day. I was the one who had

helped them thus far.

I go to the monitor. I wait.

When I see my own face mirrored before me, I want to beg for more time. I want to demand to know why she is finished so early, infringing on my time. I don't.

"Hi," the Original says to me. She looks tired, and she has more lines under her eyes than I do. Hopefully no one will notice. "What's happening?"

"We're doing homework." I explain what the teacher said, and what we'd done so far.

"Thank you. Let me get my hair right," she says, studying me as she pulls out some of the style with a brush and wipes away the extra makeup necessary for her teleconferencing. "There." She heaves a deep breath, letting it out slowly. "I think I'm ready."



"I'm going to pick up some new clothes. Is there anything you prefer?"

We often talk, Julie and I. Julie's the Original. We use the computer, of course, so that if one of the children wakes and comes to find her she can claim to be chatting with a friend online.

We take no chances.

I stare, blink, and bite my lip, a strange facial tick I'm working to copy from her. To her question there is nothing in my training to give me an appropriate response.

"What I have is fine," I decide, wanting to reassure.

She gives me a small smile. "Of the outfits you have, which are your favorite?"

To please her, I list a few.

"Good. I'll get more like those." She tips her head, studying me. "Otherwise, how are you doing?"

"Everything is good," I say. She must not think otherwise, or she may terminate the Agreement.

"Do you have any questions? This must be quite strange for you."

I want to ask why she didn't wake the husband clone instead of me, although I think I know the answer. Clones do not have the memories and experiences that make the Originals who they are. Waking the husband clone would only make her grief worse because he would not share her memories, even if he did look the same, and he would be unable to perform the job of his Original.

This much I understand. Yet, why wake me? Why not hire a nanny instead of playing this elaborate ruse?

I gather my courage and ask this question instead.

Julie heaves a sigh. "Well, the simple answer is that my children deserve their mother, especially after losing their father. He had minimal life insurance, so I need to work to support us." She looks away, a frown creasing her forehead. "I woke you to solve many problems—to give my children the illusion of having their mother there for them, to continue my work, and to test the memory sharing. Also..."

“What is it?”

She stares at her hands, head bowed. “Cloning laws insist that clones can’t have a real life. In fact, you were wasting away in stasis. I wanted to give you a life in return for your help.”

“To be offered the Agreement was more than I could ever expect,” I say.

“I’m glad you think so.”



Another night, another conversation. I ask about the science of cloning and all that goes with it. Like the cryogenics. Clones are made to test stasis fields and consciousness sharing. So far, the stasis allows us to be fast-grown but the aging cannot be stopped. They are working to change that, Julie tells me.

“They want to make true stasis, where the body would freeze in time.”

“Why?”

“Truthfully? Most of our big money donors hope to download their memories into young bodies. Immortality is a tantalizing possibility. However, our goal is to pursue interstellar travel.”

“It would be nice if they succeeded in stopping the aging process, from my own perspective. It’s strange to wake up in a forty-two-year-old body.”

She laughs, and after a moment I laugh too.

“That’s what bothers me most about cloning,” she says, serious now. “You are refused any kind of life. It’s not fair to create people and then put them to sleep. A lot of people are waking their clones in protest against the laws.”

My heart constricts in my chest. “Does it bother you I have no true life experience?” Would she decide I was not good enough to raise her children anymore?

“No, no,” she says, waving off my concern. “It’s just sad that we create people but deny them everything that makes them human.”

I go still, waiting for her to say more, to explain exactly what does make one human. When she adds nothing, nibbling on her lip as she stares at something off the screen, I take another deep breath and ask.

“What would it take, then?”

“Hmmm?” She shakes her head a little. “Sorry, for what?”

“To be a human. You say I’ve been denied everything that makes you human. Could I still get it? Could... could I become human?”

“Oh sweetie, you are human, even though you are told otherwise. Don’t you see?”

I don’t, but I can’t bring myself to admit it to her.

“You are human, trust me,” she says to my doubtful look. “My children were created from my DNA, and so were you.”

“They were created from two people’s DNA.”

“Yes, true, but you breathe, you feel, you think, you act. How can you not be human?”

I wonder this too.



I strive to do my best each day, no matter what I might be. I long to please her, and treat the children as I know she would. In the evenings, I watch them together on the house monitor, anxious to get it just right.

Tonight they laugh over popcorn as a cartoon capers across the wallscreen. I listen to the words she says to them, study her gestures, memorize everything.

I watch as she tucks them into bed. I’m blessed to get the time I do. Even though I know this, I’m troubled by jealousy. I want to be the one cuddling on the sofa when the movie gets scary, kissing their soft cheeks, whispering good night as the door shuts.

I pull a tissue from a box in the bathroom and pace the small chamber, waiting to see if Julie will want to talk tonight.

She does, but all my emotion is caught in my throat, and I can’t voice my feelings. What good would it do?

“Thank you so much for encouraging Gina before the school play yesterday,” she says. We sit at our screens, separated only by a wall. “You are doing a wonderful job. I’m grateful to you, beyond measure. Do you understand that?”

“I do,” I say, my earlier selfish desires washing away in light of what she can only experience secondhand through me. “They are precious and deserve your time.”

She has her own tissue now. “Except it’s not me. It’s you. How are you doing with it really?”

“I love them.” I say it simply, and I mean it. “We have to just continue to do our best for them.”

“Oh, I’m so glad I decided to wake you.” She sweeps her hair off her face and lets out a sigh. I echo that sigh, and we smile, our emotions mirrored as much as our physical appearance.



I wake with a cry, afraid of all the strange images and thoughts bombarding me. As they fade I catch my breath, trying to puzzle out what has happened. Was this a dream? I have heard the children talk of dreams, of crazy happenings growing out of their own minds, but I’ve never experienced one. I don’t know if it’s because I am a clone, or if it’s because of the download process each night.

The dream is fascinating. I see newsvids and unfamiliar faces, screen shots, project sheets, even meals that I consumed...each memory is clear, as if I lived a day in the life of someone else.

My stomach drops as understanding sinks in. Our connection—the download of my memories that I give to Julie each night—has been reversed. My memories will be missing from her mind this morning. What will she do? I don’t want to go back to the lab. I avoid the computer for as long as I can, pacing the floor.

When she appears on the screen, I don’t say anything. I watch for her reaction.

“Don’t forget school’s out early today,” she says as she runs a brush through her hair. She glances at the time, her eyes widening. “Early teleconference, gotta go...have a great day!”

As I absently make routine lunches and answer mundane questions, I consider the possibilities. Could the connection go both ways? If it did, I would receive her memories too, night after night. I would learn what it was like to be a working adult. I would experience life as a real human.

That night it happens again. I know I should tell her, but I hesitate. She might feel I have violated her privacy. I understand this, because I wish I could keep my own memories to myself. And if it is a glitch that can’t be corrected, she could terminate the Agreement.

So I continue playing my part, doing my best to ignore the memories as they build over time, to act the same despite my new education.

But I’m not the same. I see newsvids that reveal clones are not a popular thing, and the laws that govern them are in question. I learn that facilities like the one I came from have been bombed by protesters. The newsvids are often cut short, and I don’t understand why people are so angry. I wish I could watch more vids on my own without giving away my secret.

In my evenings alone, I become restless, not content to just watch the family time unfold. One night while they are out, I stand at Julie’s computer. Could I log in and watch vids on it like she does? I know the passwords now. Would she recognize a memory of such actions as mine instead of her own?

I know I can’t take such a risk. So I review each memory carefully, reviewing the ones about clones over and over. Every time there is something said about “clone trials” or “mutated genes,” Julie turns the vid off.

One evening a tough situation Julie faces at work plagues me, and I turn the problem this way and that in my mind. While she takes Gina to piano lessons, runs for groceries, and tends to Wesley’s cut knee from a skateboarding fall, I study every angle, every possibility, every solution I can find with my limited experience. All I have is time.

She wants to prove the consciousness download is still a viable project, but the process keeps tripping up at the same line of code. Her memories show the various fixes they’ve tried, to no avail.

Just before I drift off to sleep, I see it. A solution, so simple it is obvious. Excited, I examine my idea and know it will work.

Then I catch my breath. This might be enough to reveal my secret. Would it show her how valuable I am? We could be an even better team than we are already.

I decide to let her discover this for herself. She will sense my memories of working out the problem and

see how much I've helped.

The next morning I activate the monitor and wait for her to log on and thank me. However, no mention is made of my idea. Perhaps the memory did not transfer?

"Mom, why are you biting your nails?" Gina asks as we wait for the school bell.

I pull the finger from my mouth and stare at it in horror. Julie won't have bits missing from her left index finger. Panic chokes me as I struggle for a reply.

"I don't know," I say with a little forced laugh. "I must be worried about something."

Wesley is off with his friends, but Gina stays close. Closer than usual. I set my own anxiety aside and crouch down.

"What about you? Are you worried about anything?"

She stares at the group lined up by the door. "No," she says, but I see her discomfort.

"Well, sometimes when we have worries that we keep inside, we do silly things like chew our nails." I inspect my nail. "I'll have to take some time from my busy day to fix this."

Gina looks at my finger, then at me. Her eyes well up, mouth drawing down with the effort to hold the tears back. "Molly says I'm broken because Dad died."

"Aw, baby, you're not broken," I say, pulling her into a hug. Her warm tears soak my shirt. Her hair smells of strawberry shampoo and I tighten my hug, as desperate for it as she is. The buzzer rings, and her little body tenses. "Listen," I say, releasing her from my embrace, "Molly doesn't understand what we've been through, that's all. Don't let her words frighten you."

"Hey, Gina," calls a girl from the line as they start going in. "Come on!"

"Who's that?" I ask as I wipe her tears with my thumb.

"Lil," she says, brightening. "She gives me hugs when I feel sad."

"Well, be sure and give one back then." I smile, kiss her cheek, and send her off.

Is she broken, I wonder? I catch myself nibbling again, tasting the salt of Gina's tears, and marvel at the depth of my own concerns. My nail is as broken as Gina's heart. Does this make me human?



In the evening Julie does not summon me to the monitor. I pace, my fear increasing until I have to stuff my hands in my pockets to keep from destroying my nails again.

She knows and is upset with me, I decide. Maybe she is calling the lab even now to have me removed under the cover of night. I tremble, look to the door. There is nowhere to run.

What does it matter? I tell myself. *I will just sleep, knowing and feeling nothing.*

It does matter. It's the children. They have captured my heart in ways I didn't know possible.

No one comes to take me away, and I fall into an exhausted sleep late into the night.

The next morning I see what happened. She claimed my idea for her own. Resentment curls my lip, and I catch a look at myself in the mirror. Such strong emotions will reveal me. I wonder at my reckless abandon when I realize I don't care. Instead, I relish these new feelings. Does this make me human? I let my temper take my anger even higher until tears burn my eyes.

She gives me a long, considering look as we prep for the day, but again says nothing. I stare back, searching for words to apologize, to explain, but then she is gone before I can find the words to say. I realize I must do better before I lose everything.

The next morning I wake to the memories of the instant worldwide reaction to her—our—idea. The consciousness download is a success, but instead of causing goodwill towards clones it has caused many to decide clones aren't needed at all, that they're too dangerous. They talk of using AI robots for everything from preserving memories to the interstellar travel Julie spoke of.

Then a story begins about a court case, and this time she doesn't turn it off.

"The murder trial will continue despite the confirmation of mutated genes causing the violent reaction in the clone," the announcer says. "Agencies are demanding that all clones be tested for this gene, and many clone users are turning their clones in to police stations and cloning farms, unwilling to have them around for fear of potential violence."

She does cut it off then, and I sense her fear. Do I have mutated genes? Is there some malfunction inside of me that could make me kill a human? I wonder if this is where my anger comes from.

Is this why I can't be truly human?

Somehow the day continues. I focus on the children. I love them so much now, and for all my desire to test my new knowledge and grow my understanding, I cannot imagine doing anything that would take me away from them.

"Mom, look!"

We are at the park, the wind catching my hair and throwing it around until I wish I had brought a tie for it. Gina, with some help from Wesley, has launched a kite and kept it aloft. She grins, and Wesley runs to grab his own kite and get it up too. I lift the camera Julie gave me and snap a few photos, knowing she will treasure the images as much as she treasures the memories she will take from my mind tonight.

The kites fly well until lunchtime, and as we sit on a blanket and enjoy a picnic, talk turns to a time I had never considered.

"I'm not just getting a college diploma," Gina says, frowning at her brother. "I'm university material. I'll get a degree and live in the dorm and make friends for life. Right, Mom?"

This must be something Julie has told her. I know she attended university, but I have no memories of this time. I panic for a moment, searching for the right words.

"You're smart enough," I say. "Both of you are."

"But I'm going to a tech college, like Dad. There's nothing wrong with a solid trade," Wesley says, so sure of himself. He is eleven, after all. I smile and follow the conversation with nods and sounds of encouragement, but inside some black hole has opened and is sucking my insides away past the event horizon.

They will not need me forever. They will grow up and become real people like I never can. They will have careers, and move away from the family home. What will Julie do then? Will she still live in the same house? Will I?



The next morning, a Saturday, Julie sends a signal inviting me to the monitor. I sit, my breath shallow, my heart fluttering.

"You are afraid," she says right away, and I know I've been discovered. But it's not what I think. "You listened to them talk of their future, and you felt fear for your own."

I see nothing but genuine concern in her face, no anger or accusation causing that little line between her brows. "I did," I admit.

"I am not going to send you back, okay? Please, don't be afraid...it makes for a really bad night's sleep."

I carry this promise with me, wondering if I can trust her to keep her word. Those other humans, they were returning their clones like some faulty item. I want desperately to ask her about the newsvids, but there is no way. I'm not supposed to concern myself with these things. It's part of the Agreement.

She has to work today, despite the weekend. I prepare a lovely breakfast of fruit, yogurt, and granola. Today is Halloween, and the children will need good nutrition now to counter the sugar overload later. Will Julie appreciate my thoughtfulness? Will it be enough if I'm caught?

Each day for the last few weeks I have carefully constructed a costume for each of them. Wesley's is a bat made from silky black material that Julie found. Gina's is a princess, simple but frilly enough to please a little girl.

"Mom, this is amazing," Wesley says, his eyes wide and shining as he extends his batwings and twirls around.

"Beautiful!" Gina agrees, hugging me. "Can we trick or treat all the way to Sara's house? Pleeeeeease?"

"We'll see," is all I can say, fighting down bitter disappointment. Julie would be taking them, not me. I can't answer Gina's question. Later, when they leave in their fine, handmade costumes, I sit in my little locked bedroom fighting useless tears.



The next morning, Sunday, I'm not needed. I turn away from the screen as they sit down to pancakes, Julie the hero for agreeing to make them.

Lying on my bed, I sift through the memories of Julie's overtime from the day before, anxious for any tidbit.

The first newsvid shows two identical people backing away from an angry crowd armed with sticks and baseball bats, each claiming the other is the clone. The scene cuts off just as the mob closes in on both of them, only to show a different vid of some smoking ruins. Ambulances and fire trucks litter the scene, and a headline ticker scrolls the words: *Courts expected to rule against clone rights.*

"Uprisings continue across the country as people strike out in fear against the clones," says the announcer. "Governments worldwide will have to decide whether to repeal the current laws allowing for clones to exist. If they decide the mutant gene scan isn't enough, new laws will be put in place immediately."

The screen skips again, and the new vid channel holds many of the same visuals. This announcer's face takes on a gleeful look. "While we wait for an update on the court rulings, here is a clip of an old interview with Julie Howe, an advocate of clone rights and author of the infamous article *Living Two Lives.*"

The newsvid switches to a scene with Julie and a journalist sitting across from one another. "At the time you wrote your article, did you really believe we could use clones to be in two places at one time and share the memories?"

Julie gives a sad smile to the journalist. "I did believe. It follows my work in studying how consciousness downloads."

"So you think we should use clones to download ourselves? Some say this is wrong, that we are stealing another's life."

"I agree. The initial work was over fifteen years ago, and I've met and talked with clones since then. They are people, and we have no right to take their lives from them for our own greedy desire to live longer."

"Others believe that clones are an abomination against God, and want to see them outlawed. They go as far as to say the clones we've made must be destroyed."

I see that the mild threats of that time have become the reality.

"I understand their objections," the younger Julie says on the screen. "But we created these beings and we can't take that back now. That would be murder. We have to treat them with the same dignity that we would hope for if our roles were reversed. I don't believe cloning was a moral thing to do if we were not prepared to treat these creations as people in their own right. That's why I'm not in the stasis research program anymore."

The interview fades and a new announcer appears. "Five years ago Julie Howe gave this interview, sparking new debates in the morality of cloning and human rights for those already in existence. Today's ruling may go down in history as proving we cannot accept our own constructs as equal to nature or God. Events prove that those against were right to protest..."

In the memory, Julie shuts the vid down and glances at the emailed request for a new interview. She deletes the request, but three more appear in its place. Soon a flood of similar requests fills her message box, and she ignores them while flipping between newsfeeds.

"...mutated genes are said to be the cause of the clone's dementia..."

"...newly released records reveal dozens of clones have been convicted of serious crimes, most violent..."

"...tests may not reveal the problem in time..."

I examine myself in the mirror. Am I defective, a walking time bomb?

"The decisions are pouring in from around the world, all in agreement. Cloning is now outlawed. All remaining labs have been shut down and the clones in stasis are being destroyed. Awakened clones are currently being rounded up and placed in military-style camps awaiting further rulings. Despite the secrecy about their locations, two have already been attacked and bombed by protesters."

It's the final bit that crushes me to the floor. "Authorities have announced all clones at large must turn themselves in, or suffer the full consequences of the law."



I don't want to be at risk of hurting Gina and Wesley. But I also don't want to die.

I take little in my haste, pausing only to grab a jacket and my purse as I slip out the back way. They are washing up from breakfast, the simple noises of dishes rattling together covering the sound of my departure. Outside, rain hammers the sidewalk, drenching me to the skin within moments.

I am wracked with guilt. What will Julie do tomorrow, when she has no one there for her? Already I miss the children.

The rain intensifies, and I stand at the edge of the field we picnicked in. I have no idea where to go. I can't turn myself in, even if that's what the law calls for. I have no money, no identification, and no rights. To make matters worse, I've abandoned the one person who showed me compassion.

A van passes, slowing, and I realize how strange I must look standing there in the rain. I cross into the field, holding back the desire to run, and keep going once I reach the other side. The van moves on.

I shiver and shake, and I tug my hood over my forehead and keep my head down. The only thing I can do is keep moving to stay warm. Because I have no idea where to go, I just walk and walk, paying no attention to where.

"Hey, lady, whatchu running from?"

I look up to see a group of teens lounging under an old store awning. Cigarette smoke burns my lungs, making it hard to catch a breath, and on the ground between them is a bottle of amber liquid. One steps out into the rain to block my way.

I look around at the unfamiliar terrain, then back at the boys. Rain drips from my hood onto my face, but I still catch the glint of a blade. The others come to circle me, and one snatches my purse.

"Please..." I say, but my begging is met with laughter.

"You better watch your step, man. That probation dude said you can't get caught again."

"Hey, she's got no ID or nothing. Guess it wouldn't matter what we did to her if she's a clone on the run," one of the other boys says. He grins at the one in front of me. "We'd be heroes for capturing her."

The boy in front of me slides closer. "Are you a clone, darling? Got some crazy gene that's gonna make you fight me?" His eyes light up with delight at the idea.

I tense, ready to flee, but where? Then a much more horrible question rises. Why? I've given up all I lived for, everyone I loved, with no hope of return. I had no reason to fight for my life ... and by all accounts, no right to my life anyway.

"That's gross, dude," another boy says. "With a clone?" His nose wrinkles in disgust and a little bit of fear. "What if she goes berserk?" Anger floods my body. I remember my advice to Gina, to not let the words of others affect me, but I see how difficult that is now.

"If in order to be human I must hate like you do, then I would rather be what I am."

"Get her," the leader growls, and two jump forward to grab my arms. I don't resist, but stare straight at the boy in front of me. All I can think of is Julie and the children. I know my comment is not a fair judgment of her.

"We should call the cops."

"We will...later," says the leader. He steps up to me and tugs my coat open. In one violent move that makes me flinch he rips my shirt front in two. The boys holding me snicker, but I hear uncertainty in it. They're nervous rather than brutal as they hold me in place. The leader feels none of that. He takes my chin and twists my face around, coming in close to breathe in my ear. His other hand pushes up under my bra, groping and squeezing painfully.

"Like a sex doll, right? Not real, no law against it. They can't toss me in the slammer over you."

My heart thuds, and now I wonder where my rage went. I force myself to breathe, to remain still, to be calm and cold and uncaring. Maybe what he says is true. Why else would they change the laws? Yet I do not want this, with all my being I do not want this to happen, and I can't see any way out of it.

A gunshot destroys the tense plateau, and the boys all duck. The grip on my arms slackens, and I pull free.

"This way!" I hear Julie's voice call. She holds a pistol aimed at the boys and looks ready to use it.

The leader spits at me as I run. His cell link is already glowing in his ear, and he's babbling to the police before I'm five steps away.

"Come on, quickly now," Julie says as I reach her. She dodges down an alley that connects to a busier

street. I stumble and drag Julie to a halt.

“Why bother?”

“What?” Julie watches beyond me, not really listening. “We have to go!”

“Why?” I grab her pistol and point it at my chest. Julie goes still. Now she watches the gun. “Tell me a good reason to put you all at risk.”

“We won’t be at risk if we get out of here now,” she says, a hard edge to her voice.

“But...” I still couldn’t reveal my knowledge, even now. “They will come for me, you’ll be in trouble...”

“Trust me, they aren’t coming for you.”

Still, the temptation to pull the trigger persists. It’s not about their risk, not about the boy’s hatred, not about any of that.

“Then...” I swallow, throat closing as I realize where my despair really lies. “Then tell me what the point is for me.”

A siren sounds in the distance, and Julie flinches. “You’re not making sense. It’s for Gina and Wesley, remember? And they’ll lose both of us if we are caught.” She looks right at me then. “You understand that, right?”

“Sure. Your children, your house, your job, your life...your *name*. I don’t even have my own name!”

“That’s what this is about? Having a name?” She yanks me down the alley and hails an autocab. The pistol droops in my hand. “Names are nothing, don’t you see?” she says as she pushes me into the car and directs it to circle at random. “Pick a name, it’s yours.” Her voice has an edge of hysteria. A police cruiser coasts by. We both watch, tense, until it turns out of sight.

I drop my head to stare at the gun lying in my lap. “You don’t understand. I love your children, more than I knew possible. But the moment you arrive, I’m shoved aside and locked in a room, hidden away to watch you cuddle them and laugh with them and be the mom.” My breath’s coming hard now, unable to get past the lump in my throat. “Am I supposed to feel grateful for this...this...half-life? I can’t go to school, can’t learn and grow. I can’t buy things or travel. I can’t love a man and be loved in return.” I look up to see Julie staring ahead, her mouth set hard. “I know you need me, Julie, but I want more.”

Silence settles, marked only by my sniffles and the car’s hum.

“So you’d rather be dead than have the life I can offer you?” Julie’s voice cracks a little, and I realize she is fighting for control.

I hand her the gun, guilty now, but I don’t answer her question. Her gaze turns to me, her mouth twisted and tight.

“I can’t take you back to the lab anymore. If you are really that unhappy, then the only answer is death. I can’t let you go off into the world. You understand that, right?”

I nod.

“Then you have to decide. Stick to the Agreement, or die. Here, now, tonight.”

Already wet and chilled, her words make me cold right through. “You would...?”

She drops her gaze. “You don’t know how bad it is.” Her voice is soft. “You’re right about having no identity. Maybe you haven’t noticed how willing I am to share mine. All I can offer you is my Agreement.”

“Your Agreement?”

She sighs. “When I woke you, I destroyed any record of doing so. The Agreement is something I made up to give you some guidance while keeping you secret. I didn’t like where things were headed. But if you head off on your own, my actions could come to light. I’d lose everything.” Then her eyes narrow and she gives me a hard look. “You know about the new laws.”

It isn’t a question. I choke on my guilt.

She frowns. “How is that possible? I’d have some memory of it.”

“You haven’t recognized these memories because they are already your own.” I am only half through explaining when I see understanding dawn on her face.

“That’s remarkable,” she says.

“I-I’m so s-sorry I didn’t tell you,” I stutter out. “It was wrong of me to infringe on your privacy, to steal from you.”

Julie shakes her head in wonder. “So you saw the newsvids.”

I nod.

“Well, that explains tonight.” She shakes her head and gives a little humorless laugh. “Really, you can hardly call it stealing when you give me just as much.”

“Are they really killing clones?”

“Yes. The facility you came from was destroyed today. Your records said you were still there, so you are officially dead.” Her mouth pinches in grief, and I wonder about her husband’s clone. “Clones are being killed, and people too.”

“From what I see of humanity, if it’s not this conflict, it’s another.”

“True.” She pauses, her gaze searching my face. “Thank you for being honest with me.”

“I wanted to tell you,” I say, lost in my anguish. “I thought it would be a breach of the Agreement, and you would have me put back in stasis.”

“That’s what you thought?”

She pulls me into a hug. At first I don’t know what to do. I’ve only ever hugged the children, and this feels strange at first. But Julie holds me in a desperate grip, and again I remember my advice to Gina in the schoolyard. I hug Julie back.

“It’s going to be okay,” she says into my shoulder.

“How can it be? My mutated gene...”

She pulls back. I see she is blinking away tears. Her laugh is bitter. “There is no mutation. It’s a publicity scam, leaked on purpose so the cloning companies could avoid lawsuits. Those clones in trouble only did brutal things because that’s the way they were treated.” She shakes her head in disgust. “Now it’s swept out of control, and the clones lose out. You, you’ve known love, trust. Look at all the love you have given to my children...*our* children. You were willing to sacrifice yourself tonight for their safety. That makes you more human than most.”

My heart seems to expand in my chest. “Truly?”

“Truly.”

I think on this, and realize I am nibbling on my lip just the way she does. “So I won’t go crazy?”

“I meant what I said in that interview five years ago. You deserve to be treated as a human. You are a human.”

I gaze across into the living mirror of my own face. Staring into her eyes is like gauging the depths of my own soul. I make my choice.

Together we are a stronger one.

ABOUT ADRIA LAYCRAFT

ADRIA LAYCRAFT IS A MEMBER OF THE IMAGINATIVE FICTION WRITERS’ ASSOCIATION (IFWA) AND GRADUATE OF THE ODYSSEY WORKSHOP. HER WRITING CAN BE FOUND IN VARIOUS PUBLICATIONS LIKE **HYPERSONIC TALES**, **IN PLACES BETWEEN**, AND OTHER NOOKS AND CRANNIES ONLINE. SHE WORKS AS A FREELANCE COPYWRITER.

NIKKI J. NORTH

BRANCHES ON MY BACK, SPARROWS IN MY EAR

FICTION

Lay upon this sheath of skin, map of bone and tendon, pulling muscle and equilateral contraction, a vacant mold. Color these remnants of steaming Vietnamese jungles, perilous trips, survived atrocities, collapsed Tokyo empires, and the love of two, with a brush dipped in water. Look at café skin, full upper lip, radiant lines emergent from eyes, volumetric cheeks, and...there is a word for the reaction. Even now it's a true word, despite its own absurd, obsolete nature, and I know you find words precious, Daughter.

My gift to you: squinch. A squinch is neither an especially smelly portion of cheese nor a disease whose symptoms are squinting and itching. It is an involuntary kind of jerk, mixed with a spasming flinch, causing the body to both lean forward and jump back at the same time. Squinch is now one of the fifty-seven terms found on the Nguyen family Made Up Words that Can Be Used in Scrabble list, and it is the perfect word to describe the reaction of the woman who walked into my office that day. I have made you this word, an offering at the altar of your suffering so you will know that I understand, but these words will reach no further. They bind me. Let me show you. I can now. Here—



Leading a client with designer Vash Vidaaru circuitry sliding up her jaw to the clinic chair, I see her trying to catch a glimpse of my ankle, straining for a peek of skin beneath my high collar. She's wasting her time, as have many before her. I don't have any sub-q. I've never been inked.

There are those who choose to go without ink. Some people leave the face blank as a form of self-expression, some because they are part of a religious group that forbids it. Almost everybody knows a friend of a friend whose cousin is blank, but most people will never meet a resistant in a time when it's more common to see a man with a giant squid tattooed across his forehead than a ten-year-old with a spot of untouched skin. These days seeing someone without sub-q is like opening a book and finding all the pages are empty, so I understand the stares. Usually, I ignore them, but not today. When I catch the woman scrutinizing my neck for the third time, I answer the unasked question. I even tell the truth: I'm resistant.

"Actually," I say, keeping a detached smile on my face as I prep ink with gloved hands, "resistant is a bit of an understatement. My body violently rejects the ink." I dip the needle into a bottle of standard sub-q. "In fact, just a drop of this landing on my skin would send my body's immune system into a kind of protective overdrive that would create enough toxins to incapacitate me for hours. Hence the long sleeves and twitchy assistant." I smile as my thumb pulls skin taut. "Mia is good. She's been with me for years. I went through three assistants before her. Nothing like finding your boss unconscious, right?"

Needle hovering, I look the woman in the eyes. My self-deprecating smile fades. Words down a well, I think. Her top teeth clasp her lower lip. Her eyes dart away. It's always like that with the ones who never learned to speak. I wonder what I must sound like to her. Are my words loud and sharp? Are they like the meaningless squawk of a bird? Or are they a writhing babble under the composed stream of sub-q communications running through her head? What exquisite data is she exchanging while I sit here like a rock, like a giraffe longing for opposable thumbs? Halfway through this habitual, bitter thought the realization hits me that today I don't have to feel this way. The needle skitters as my hand convulses, and I almost penetrate too far into the derma.

I manage keep my thoughts focused for the rest of the appointment.

Finished enhancing her comm system with the latest upgrades, I show Mrs. Bardon out to the lobby where Mia will hand her a bill that is three times most people's rent. Nothing but the best for Servanix Group board members and their husbands...and their children and their cousins and their associates at the Office of New Immortals and their friends in Sydney North Ring. And, and, and—the list is a long one composed of Sydney's rich and richer. I don't mind. Their grasping pursuit of the techpossible (Nguyen Scrabble Word #44, a contribution from Kaede) funds my research.

In my office a stack of messages covered in Mia's careful handwriting waits. I ignore it, pushing up my left shirt sleeve instead. There I trace the reason for my joy: a black, three-inch line, stark and defiant amongst the ghosts of past attempts. Unlike its kin, gobbled up and spit out by my body's own defenses, it remains.



Katie Tegtmeier

Ten days ago, surrounded by the quiet of a deserted building, I inked this line into my skin. With Emergency's number queued on my ancient mobile, I waited for the crippling pain and shortness of breath to overtake me.

Only now, looking down at it still there, do I finally let myself believe that after two years of resuming my search I've found the enzyme that will make it work. There is one person in all the world I want to tell.



Kaede, when you don't have ink you're a ghost. You glide in a world of silence. Public spaces are full of eyes that never focus and mouths that never move. Walking through the open food court at the bottom of the clinic is never really a comfortable experience, but lunch is the worst: the shouts of forks on plates, the screams of chairs being pushed back, the roar of breath that bellows in and out of hundreds of lungs through lips unused. Here—



I escape the cool interior of the Sydney General Dermacomm and Neurocohesives Clinic building into a day capped by a sky milky with cumulus clouds. The buildings around me are thorns piercing this dome with their spiraling exteriors. Songs of thrushes and robins overlay the distant calls of seabirds. People rush around me. Most are headed toward Central, still caught in the morning commute. Letting myself be taken up in the stream of their travel, I walk past the older Short District and halfway through New Zenith

District before I see the man with the complex of Keorgi tats. At first glance I am taken by their beauty. Someone knows their business. I'm trying to figure out where I know the style from when I realize the man's eyes are not staring into the distance past me, taking in ads and signs and addresses only he can see, but are focused on something. He is looking at me, seeing me. It feels like a thousand feathers landing on my skin. I stop and turn back to get a better look, but he's gone. I stand to the side as a transport whispers past. Water from the building's weather system murmurs down the shining black synthskin exterior. The feeling of eyes touching me has disappeared with the man.

The elevator in the Servanix Tech building smells like leather and pomegranate. It takes me to the twenty-fourth floor where, after traveling a maze of curving hallways, I find Kaede's office.

She's not there.

I leave a note with her assistant, who holds it pinched between two fingers like a dead possum. Exiting the building, my eyes dart up both sides of the greenway jostling and shimmering with people. The rising and falling voices of the leaves covering the spiral behind me crash and echo. I wish for a dog to bark. I wish for one out of the thousands of people rushing by to laugh. I wish for a giant bell, the kind of bell that must be rung by two men hurtling a whole tree's worth of wood at it, the kind of bell that would call with its deep voice across mist-shrouded mountains and cratered valleys, eating this quiescent scene with its annihilating voice. There is no bell, only a world immersed in sub-q. My skin curls tight to my body waiting for the touch of eyes as I make my way back to the clinic.



My mother's generation was the last to live in a spoken world. She named me Izumi and died when I was nineteen. I loved my mother's quiet presence, and the way she smelled like almonds. I loved the way her black hair made an almost audible twang as the curls sprang back up under the hand she used to constantly smooth them down. I loved the swirls of tattoo that washed and echoed across her face. I remember tracing them with a finger as she leaned over me, pulling blankets tight around shoulders. I still try, sometimes, to

trace my own face while lying in bed and see myself in the topographic mirror there, but all I see is the ink of her face superimposed over the unmapped territory of my own. Kaede, do you lie somewhere now? Do you try to imagine yourself otherwise? Give me the gift of believing you do not. Here—



“I came by your office today,” I say, pouring the rest of the wine into Kaede’s glass.

“Oh?”

I nod, holding her glass hostage in one hand until she yields.

“I was in the lab.”

When Kaede lies she does this thing with her voice. It becomes rougher, like the lies are smoke rising in her throat.

“New research? Or still working on —”

“Oh, I don’t want to bore you, Mom.” She dismisses my question with a wave of her fork.

I want to bark a “Ha!” at her over my own glass of wine. I know you think I’m a fifty-four-year-old has-been, a dinosaur flashmonkey who’s never had a drop on her skin, but who gave you the beautiful tiger main tat that crosses your back, dear? And why are you avoiding my questions? And why was a man with your ink following me around the city today?

I don’t say these things, though. I drink my wine and let Margie, my younger daughter, change the subject. She begins gossiping about something one of the famous clients at the net entertainment agency where she works has done. On her back is the crane I gave her when she was twelve. She’s continued the motif. Water scrolls up her collarbones, washing up her neck and jaw to her ears, where it carries the signals that make her constantly tip her head in silent communion with a client. She’s been at it the whole meal. Her voice trails off as she’s taken away again.

“Hey!” Kaede’s palm comes down hard on the table. “Get out of the sub-q and have a real conversation.”

They share a long look. What kind of sibling squabble are they having? What expressions and kindled emotion is being passed in the ether of sub-q? I want to know and to tell them both that soon I will know. They’ve both heard it before, but this time is different. This time it’s real. Margie leaves the table.

“So, Mom,” Kaede says, sounding far too bright and chipper.

“So, Kaede.” I grin at her. It’s a joyful grin, but she doesn’t see it; her focus is on dismantling the fudge cake in front of her into smaller and smaller piles of crumbs. The secret of my joy is swallowed by the image of the tats on the stranger.

“Sorry, that was Kyle,” Margie says, taking her seat again.

We talk about cake and work and Margie’s boyfriend, whom Kaede and I both dislike, for the rest of the night. Margie leaves with a kiss pressed affectionately to my left cheek; Kaede follows with a kiss to the right. They never have been much for sharing.

Kaede pauses at the door. I’m going to tell her. I find myself clutching the door instead. Kaede’s eyes flicker downward, and I realize I’m rubbing my forearm. She leaves without saying anything.

Standing at the window moments later, my mind worries at shadows. I have a feeling I’ve missed something, that I’ve failed to understand a critical component in the schematic of the night. I clear the table, sit at the computer, but ultimately find myself back at the wine. After two more glasses to stop my brain from moving and flickering, sleep comes like a whispered incantation.

I wake to the sharp trills of the HUD in my bedroom. Eyes shuttered against the light from the wall to my left, I try to make out the characters scrolling there. It’s a message from the intrusion detection monitor at work. Someone has hacked their way into the clinic systems. I run a log audit; there’s no indication of remote access. Security guy trip something? Mia doing some late-night work? Neither scenario seems very plausible. The sense of failed understanding returns as I run a full scan of the system.

The data has been wiped. My schematics, the latest ink formulations, everything: it’s all gone.



The clock reads 5:42 AM when I duck inside the darkened clinic. Lights blink on at my presence. A figure sits in the swiveling stool I usually occupy.

“You need better security, Mom.”

“Kaede?”

“I’m out of time. They think I’m just here to clean up, but I wanted to do this one last thing and I didn’t know how to ...” She shrugs the way someone who just tipped a little too much salt into the soup might. “This worked. You’re here.” My mind is screaming her name. My heart is turned upside down. “They won’t understand it. They will revile me for it, but maybe, if you stay out of it, they’ll let it go.” Her voice changes, grows brusque and commanding. It’s her lab voice. “Doesn’t matter. We’re here.”

I’m breathing hard through my nose. The world is dancing around me, scrambling to reconcile... everything.

“I have a gift for you,” she says, gesturing to the chair that has been host to so many others. “The hack you have is wrong, Mom.” My hand rises to cover the black line she’s looking at. “In a small dose it’s fine, but if you try for a CPF...”

“They? The guy that followed me today?” I feel for the chair behind me and fall into it, all ability to keep my legs straight draining from me.

“Once upon a time I was working on my thesis about ink that could be used to tat resistants –”

“But your thesis was on regenerative algorithms,” I interrupt.

“No, that’s what I ended up publishing, but in the beginning it was on developing ink for you.”

She begins sorting through the equipment in the drawers, pulling out needles and arranging them on a metal tray.

“While I was working on the first thesis I was approached by Servanix Tech. They provided access to state-of-the-art facilities and all the equipment I needed. Eventually it became apparent through certain... channels that they weren’t interested in helping resistants at all. They had that ink already.” She lets out a laugh. “Can you believe it? They had it all along. ‘No market value,’ they said. No reason to sell it, but no reason to give away trade secrets either, so they sat on it.”

“They had...you’ve had it for seven years?”

She pulls the screen attached to a long, flexible arm over. She fiddles with it for a moment.

“Do you remember how I begged you to do my main? How I whined and whinged, and you resisted for two whole years? I thought I would die waiting. I was fifteen—*ancient*—and still without sub-q. My life was being ruined minute by minute.” Her fingers twist a loose screw on the metal arm, tightening it until it will turn no further. “I thought...for a long time I thought you were jealous, because I could have it and you couldn’t. I thought you resented me.”

Part of me is listening, but part of me is in the past clinging to my daughter as I knew her: a trip to the park, spreading out the blanket, eating popsicles that turn lips red, Kaede lying on her back competing with Margie to see who could name the most leaves.

“Why didn’t you tell me?”

“I thought you would stop. I kept thinking, after every trip to Emergency, ‘Okay, now she’ll stop. Now, we, her kids, her family, her life will be enough.’”

She pulls several bottles of ink from her pocket and sets them on the tray.

“But you’re not going to stop, are you?” I don’t answer, because I want to say yes—yes, *I will stop for you*—but it would be a lie. Kaede pulls on a pair of gloves.

“After you get ink things are loud. There’s too much and not enough, and there are whole days, whole weeks, where you don’t speak a word. And when you don’t speak them, those words, Mom, they sink down and lodge themselves in you and make you like concrete. Everything is dry and sterile; the precision of the exchange without interpretation is so sharp, so even when you’re alone, you’re not alone. This is the world, now. It’s a world full of heads without voices, and expression without symbol. I talk to you and then I try to talk to them and it’s like talking to corpses. I don’t want this to be the world: a world where there’s always something knocking on the door, something, something, something. I can’t...you can’t know –”

An unspoken war is waged behind her eyes until some unheard, final shot is fired, and she comes to a decision.

“But I’ll show you. Before I bring it down, I’ll show you. Then you’ll understand.”

I should walk away. I should tell her no for her own good, for mine, but I want it. I’ve always wanted it. I sit

on the chair I have helped so many people into. The low hum of the embedding needle fills the theater.

It takes her all night and well into the next morning to finish. It's a testament to just how tired I am that I manage to doze occasionally, even as a tiny needle drives over and over into my back. The tat is a thing of beauty—the most intricate I've ever seen. It's in the shape of a tree. The branches are a repeating fractal of leaves spread out over my shoulders from a trunk tracing its way up my spine. At the base she's made it look as if the skin of my back has unzipped just above the bend of my waist, exposing my spine against a background of stars. From the bare branches of the tree, sparrows lift and fly over the curve of my shoulder, ascending my neck. The circuit work is immaculate.

She steps back. I turn my head to catch her admiring her work. I stroke one of the sparrows that flies up my neck toward the base of my ear with the tip of a finger, as if it is a living thing.

Kaede watches. "You used to get this look on your face sometimes. It was like you were a sparrow trying to fly to the moon." She sounds so tired.

I'm about to reply when the system begins to boot. I'm looking at Kaede, but in her place I now see a wordless dreaming construct. Tangled webs of identity shift and converge, a restless, tectonic dance of memory projecting branches and trees of data, nodes of relationships pointing toward sister, mother, father, lovers, boss, favorite authors, ice cream last eaten, a night at the pub. Each strand is a path I want to follow. Woven through it all are bells: shop bells and gongs, bells for summoning hotel clerks and bells for dismissing churches, chimes played by the wind, and secret bells made to be rung by only one person. They call out to the whole world. The system is up.

Kaede is smiling a hard shark of a smile that hurts my heart to see. I know the expression on my face must be one of unfocused eyes and slackened face. I try to block out the bells and resist the call of paths unfurling all around me. Kaede pulls me to her in a hug. I can feel her hand, palm open, rising toward the middle of my back.

"Be careful..." her voice chokes, "the people I am going with will not understand this. They will be busy. They will be distracted, yes, but they will find out, and they will fear. Some may stay behind just for you. And I can't...maybe they're right, but I couldn't...Mom, don't make me regret doing this for you. *Be content with this gift and don't try to stop us.*"

I try to whisper in her ear, but then realize I can finally do something better. I can show her the singing bells. I can see her—

I don't feel the coded pulse that sends me slumping to the floor.

When I wake she is gone.



Kaede, inside the envelope from you is a wood tile with the letter "e" on it. I will place it on the board by the window with the others. I have decided this word you are sending me is the shape of a piece of driftwood found on the beach one morning by a girl in a red dress. It is a hollow, spare, twisted shape, but still so full.

So far Sydney remains untouched by the exquisite virus you created, but I'm afraid it's only a matter of time. Too many are already infected. The mutations are happening too fast. Your monster is fierce and clever. As I watch the sub-q continue to go dark—a city in Colorado, France, half of China—I call out to you again with this cry of bells and other futures. The phonemic sounds of the past are gone, but I am still speaking. The voice is new, but the message is as old as fire and blood.

We will only build it again.

Are you listening, Kaede? Let this be enough. Come home. We will sit at the board by the window. The sun will anoint us, and we will name the leaves.

ABOUT NIKKI J. NORTH

NIKKI J. NORTH LIVES ON THE ISLAND OF GUAM WITH HER WONDERFUL SPOUSAL UNIT. WHEN SHE ISN'T PROGRAMMING, SHE'S WRITING. WHEN SHE ISN'T WRITING, SHE'S READING. WHEN SHE ISN'T READING, SHE'S RAISING A NINJA MONKEY ARMY BENT ON WORLD CONSTRUCTION.

ADRIAN SIMMONS

RACING THE MOON AND THE HILL THAT BURNED THE WORLD

You are Gamma alone.

You move through the Architecture, making your way through the area that is not-quite-Architecture and not-quite-ground. You press against others, workers and soldiers and even other Thinkers. In the darkness you smell them, and feel their signals quiver along your lateral grooves. Your mandibles are closed tight; you have a task in the crown.

Mandibles locked, you begin the long circular climb up the warrens of the Architecture. The tunnels carved through dirt and clay give way to the spiraling chambers of spit-paper and then you come to the great central vent. The light beams down and air flows past you, the heat of the Architecture pushing it up and out. Workers Thump you and are ignored, soldiers Thump you and then give you a poke with their scythe mandibles when you won't unlock. At the very top, the crown of the Architecture, there is a writhing throng of bodies: workers and soldiers and one young Thinker. Your laterals quiver, feeling their confusion and frustration.

You scan the sky; it is empty in both your near and far vision. You push through the legs and bodies and Thump the other Thinker, insistent, on the side. Unlocking your jaws, you entwine antennae, and the thin parts of your head-carapaces just over your mouths meet.



You are (Gamma)(Epsilon).

"There are not two scaled-badgers digging into the fungal gardens, but five! You don't know if you should try to scare them with the shine-stone or use the rolling-stones, or whether the soldiers are right and you should go to the gardens and fight them."

"Your task, Gamma, is to go to the crown, take over operations there, and drive away the scaled-badgers."

"Your task, Epsilon, is to take five soldiers with fighting sticks and establish them as a guard to protect the crown from any birds."

"Your task, Gamma, is to take workers to manipulate the rolling-stones."

"Your task, Epsilon, is to watch for any Nuhurr-Tooth Architecture war-parties out in the burned plain."



You are Gamma alone.

The young, frustrated Thinker, its thoughts still yours and yours its, turns to the excited soldiers, Thumping them, then joining with them, forming them into a semblance of order to provide a guard for you.



You are Gamma + worker.

You were told by the Thinker to get the shine-stone, then by the soldier to gather fighting sticks, then by the Thinker to move the rolling-stones. Which should you do? You are hungry. There has been little food since the fire, and the scaled-badgers will eat what little remains.

You should gather the other workers and move the rolling stones to the edge of the crown.

You are Gamma alone.

The worker slides past, intent on its new job, happy to have its confusion lifted.

You think, shaking the images from the worker's brain out of your own. One of the soldiers, impatient because Epsilon hasn't joined with it yet, Thumps you hard.

You are (soldier)^{Gamma}.

“You must give me more fighting sticks! I will drive away the scaled-badgers! I fight against all enemies of the Deep-Spreading-Root Architecture! I will make a great Contribution!”

“I will take my fighting stick and join with Epsilon, and I will watch the sky for birds, so the workers can move the rolling-stones.”

The soldier’s feelings, its eagerness to fight and its frustration at Epsilon’s indecision: these feelings swarm in your mind, sticky and potent. A younger Thinker might be swayed by them, but you are not young like Epsilon. You have your task and you have knowledge, third-mind, that dozens of soldiers would be killed fighting the scaled-badgers directly—knowledge that the soldiers themselves could never comprehend.

You climb out onto the edge of the crown. The sun burns huge and red and blocky near the horizon. The slow moons are nearly full; the fast one is streaking over the mountains far to sun-comes-up. Below you see where the five scaled-badgers are tearing into the fungal gardens. As you’ve been trained, as you’ve experienced second-mind uncountable times, you check the hedge of sharp-sticks that protrude up and away from the crown, then check for birds again.

The sky is empty and you direct the workers to move the stones up and over the edge of the crown. They roll down the grooves and smash into one of the scaled-badgers, knocking it down the side of the Architecture, shocked but uninjured. The hole it had dug into the fungal garden sprouts the ends of a dozen fighting sticks.

It takes eight of the ten stones to finally drive away the five scaled-badgers. By then other Thinkers have arrived. Joining with them, you organize the repair crews and stone-retrieval crews.



You are (Gamma)(Eta)

“Nobody above soldier has taken a long look around; you, Gamma, should do so.”

You are Gamma alone.

The sight of the plain burned so utterly is unnerving. Unseasonable. Unnatural. The surface trails are utterly exposed, their protective layers of sharp sticks destroyed. Toward the river you see the blurry skeletons of trees, their leaves gone, and the vines—the vines the Architecture needs to cross the river—are gone, too. So much destruction. So much desolation. It was lucky the fire did not catch the main Population of the Architecture of the Deep-Spreading-Root as they fled from the fighting with the Nuhurr-Tooth Architecture.

Foraging and trying to find vines to cross the river have been the priority tasks, and there have been few scouts sent back toward sun-comes-up to look for the enemies of the Architecture.

The shine-stone is out and has a full crew. There are no kolx or two-horned uunnas to signal to. The shine-stone signals to the far outpost in the tree by the river. It signals back that there are no vines, there are no kolx or uunnas.

A hoolda bird, a big one, begins circling above the Architecture, just where your vision goes from clear to blurry. It dips, lower and lower, and you decide it is safer to get back inside. This is when you see the new hill.

Dipping back down, you Thump and join until you’ve taken the soldiers from Epsilon. They will protect you from the hoolda bird while you look again.

The hill is not large, but it gleams in the sunlight, far away, where your vision turns from blurry to blocky. This is something beyond your experience, beyond second, third, or even n-mind experience. Hills do not grow; they are, or they are not. Trees and plants grow, and the Population makes an Architecture grow.

The hoolda bird leaves, after several jabs from the soldiers’ fighting sticks, and you send some workers to gather the feathers it dropped. Then you return to the depths of the Architecture.



When a Thinker has time alone, with its mandibles clamped, the memories of others, of Thinkers and workers and soldiers, begin to fade.

The new task of building a subsurface long-tunnel is the kind of task that gives a Thinker a lot of time alone. Alone enough. It is strange, this reshuffling of your memories, of Gamma and your experiences and

the experiences of not-Gamma.

You have been alive for 239 days. The disastrous battle with the Nahurr-Tooth Architecture war-party was ten days ago. You were not there; you were helping to groom one of the tamed kolx that had come to scratch itself against the Architecture.

The fire was eight days ago. You were helping to make a floating-scaffold to evacuate the Population across the river when the message came to take shelter in the Architecture. You saw, second-mind, the flames swirl down the plains, more like a sandstorm than the seasonal fires you know n-mind. The floating-scaffold was destroyed, the tame kolx and uunnas were driven off and have not returned; the trained hoolda birds were killed.

Smaller floating-scaffolds could be built, but there are no vines, and without vines, there is no way to guide the scaffold across the river. The current will take them where it will. If the Population of Deep-Spreading-Root cannot cross the river, the Nahurr-Tooth Architecture will destroy or enslave it.

You have argued, in the Caste, that you should be part of a band to attempt to cross the river and find vines on the other side. You love the Architecture and the Population it houses that much. The crossing of the river was to be your great Contribution.

A quiver of warning flits from ahead along the laterals of the workers. One of the watchers has detected something. Pushing ahead past the stone-still work-crew, you slip Outside, find the worker on watch, Thump, and join.

Image: a member of a Population, alone, struggles across the blackened plain. Fear and worry. Is it a scout? An enemy?

You turn the work-crew into a guard-crew. Then the mass of you advance into the stubble. There you find a Thinker, one of your own, from the Deep-Spreading-Root Architecture, starving, dirty, its carapace blackened by the sun and flaking from the fire.



The Final Contribution of (Gamma)(Beta):

The hoolda-bird will not obey your pulls on its feathers. It is better trained than most, but it will not fly toward the kolx herd. Perhaps it is trying to escape another bird? You scan the sky and see a thing that cannot be. There is a second fast-moon, high above you, and as you watch it turns into a small sun.

The bird flaps and begins to fly toward sun-goes-down, and above you, you see that the small sun is growing, like a sweet-sphere-fungus out of the bottom of a great gleaming hill in the sky. In a bellows pump, the time it takes for one breath, the hill doubles in size and the sun quadruples.

Then your laterals go mad, a screeching keen of sensation that soon turns to pain. No matter how tight you close your lateral invaginations, the sensations will not stop. The world flips and flips again, and the bird flies straight down. The tough branches of a tri-triangle-leaf bush catch on feather and wing, then flesh and carapace and then, then.

One side: the carrier-bird's broken body hangs half out of the bush. Another side: the kolx stream by. Two of your six mobility legs are broken. Another side: the new sun is as big as the old sun and touches the ground. A wind like none before or since pounds you, throws you out of the tri-triangle-leaf bush and to the ground.

Dirt and grit blast at you, and kolx pass, shaking the ground. Then you see the fire. It is a wall of flame, not the waves of tongues you know of second-mind. Then you feel it: a heat worse than a dozen midday suns, and a pain with it to make you forget your broken legs.

Running, running on those broken legs, running on your manipulative tentacles, you charge toward a panic-dropped pile of kolx dung and bury yourself in it



"Is there a new hill on the horizon?" demands Gamma^{Thinker-Caste}.

It's an unfair question, and Gamma^{Thinker-Caste} knows it, but there has been a great deal of unfairness lately. There have been conflicts lost. Images and memories have flooded the Caste of late, images that make little to no sense.

“The older images, first-, second-, and third-mind, do not match the new images of the horizon in the direction facing sun-comes-up, three-eighths of the way between sun-comes-up and sun-goes-down.”

You say, “I saw, first-mind, a hill that shined in the sunlight. I saw, second-mind, a hill fall to the ground on a ball of fire. These things I saw, these things I know.”

There are others, other Thinkers, who have climbed onto the crown and looked in that direction. The older ones, who have looked there before, they see something strange there, something new.

“Vision is not the best sense, especially from far away. There will have to be patrols,” Gamma^{Thinker-Caste} says. “A patrol must be sent.”

“Some aspects of the Population will have to suffer. There are not enough workers/Thinkers/soldiers to forage, maintain the Architecture, scout for Nahurr-Tooth war-parties, and go to the new hill.”

“In two days there will be more 27 more workers, eight soldiers, and two Thinkers. When they are part of the Population, then there will be enough for the expedition.”

“Do you have two days?”

“You will have to make do with two. You will have to wait.”



In the afternoon of the first day a monstrous creature advances on the Architecture.

You, Gamma, are near the vent and go up to help with the defense of the Population. There you see it.

The creature stands one-third as tall as the Architecture itself. It stands like a khoola-bird with backward knees, but it has no tail and no long beak. Its head is impossible; it is round and seems to be one huge near-range eye. It carries a kind of shell, or perhaps a scaffold, on its back.

(Gamma)(Chi): “Could you roll a rolling-stone down at it?”

“It’s too big for that.”

(Gamma)(Pi): “You will get five skirmish parties together and you will surround it from below. You will wait until a round rock rolls toward it before swarming out of one of the lateral tunnel openings.”

As Pi goes to gather its crews, you wait atop the crown, mandibles locked and laterals closed. There is worry and near-panic among the workers and soldiers and even the Thinkers. You are old enough to savor the direct experience of something new, something not found in any shared memory, and you want a few moments undistracted to concentrate on this new being.

The creature stands there, in a strange wide-stance. It isn’t really attacking, yet. It’s standing on one of the intake-tubes for the fifth radial cistern.

It raises a manipulative limb, holds up a poorly polished piece of shine-stone and reflects sunlight toward the crown.

Chi Thumps you so hard that you worry you might slip over the lip of the crown.

(Gamma)(Chi): “You should roll the rolling-stones now. Now! Only the Populations know how to reflect sunlight.”

“Perhaps it is some strange animal newly tamed by the Nahurr-Tooth Architecture!”

“Now! Attack now –”

“Calm. Bellows in and bellows out. Many creatures do not dig into the Architecture until they are poked first. You should go back to the rolling-stone crew and wait.”

Chi unlocks mandibles and rushes back to the rolling-stone crew. Chi is young. Many of the Thinkers are young and have lived thus far with memories only of failures in skirmishes and battles, of deprivation and of fire. They are ready, eager even, for Contributions.

You should help operate the shine-stone. If the creature is signaling, you should ensure the Population signals back.

The creature stops reflecting sunlight. Then it does it again—not at the crown, but at you. At Gamma alone.



Images carried from mind to mind to you: a quick far-scale glance from the opening of the intake tube for

the third radial cistern reveals a carapace that isn't a shell, and skin that isn't like any hide.

A worker farther out from long-tunnel two observes a long line of oval tracks stretching behind the creature toward sun-comes-up.

(Gamma)(Sampi): "You will signal back. Perhaps it can be domesticated?"

Helping Sampi and Sho and the workers, you get the shine-stone set up and reflect sunlight toward the creature. Its one huge eye does not blink.

The creature shines back.

(Gamma)(Sho)+(Sampi)(Chi): "Does it want something? It isn't dropping anything into the vent like a trained bird."

It moves. An unlikely gait carries it around the Architecture toward sun-comes-up, where it flashes again.

(Gamma)(Chi)+(Sampi)(Sho): "You can't flash back; the sun is too low in the sky and opposite the Architecture from the creature.

"You can flash back with two more shine-stones. You've done it before, to attract uunnas to bed down near the Architecture for the night."

Helping the workers, you control the direct sun-goes-down facing shine-stone. Sho controls the sun-comes-up facing shine-stone. With Sampi's help, you bounce the light to the creature.

More worker-thoughts: the tracks lead back to another creature, different from the first. Different from anything. It is as big as a bull kolx, but low to the ground. It has no legs.



Gamma^{Thinker-Caste}.

"How did the creature reflect sunlight once the sun went down?"

"It did not reflect the sunlight, it made the sunlight. It held up a thing in its manipulative limb and made sunlight from it."

"Then the two creatures left, the smaller ones getting inside the larger."

"Is one a Thinker and the other a tame animal?"

"Is one a worker and one a Thinker?"

"Is one a Thinker and the other an Architecture?"

"Is one a Thinker and the other a scaffold?"

"There is a war-party from Nahurr-Tooth Architecture not far from here. There are two scaffolds. The war-party has slowed because it has trouble foraging the burned land. Perhaps You can harry it and delay it so finding food becomes more important than making war on You."

"There are two scaffolds? Have You seen animals?"

"There are hoolda birds. Four of them."

"Has the Nahurr-Tooth war-party seen the new hill?"

"You do not know."

"What if the New Creature attacks? What shall You do?"

"You could dig a trap for it."

"The great stone is only eight body-lengths from the Surface. A trap will not be deep enough to kill it. It will be very hard for You to trap it there without vines."

"You shall send out scaffolds to ambush the foraging crews of the war-party."

"You shall prepare a scouting party to go to New Hill at sun-comes-up."

"You shall organize a foraging party and gather all the carsk grass growing next to the river."



The cool of the morning gives way to the heat of the day as you move the small scaffold through the plain. There are advantages resulting from the fire: the scaffold can be carried much easier, and there is no need for clear-cutters, and not as much need for scouts.

Sunlight slips through the weave of the scaffold, an oblong dome of sticks and branches woven into a

protective shell over the ambush party. Nine sharpened defending sticks thrust out of the shell, but there are no predators in the ashen wasteland of the plain. At one point a small herd of brells rumble past, and you maneuver the scaffold lengthwise into them. They step around it, fearful of its hedge of sharp sticks. There is dung there, in their trail, but it is of poor quality and there is no time.

There are three workers from the Nahurr-Tooth Architecture. You shut your lateral lines tight. Thump only to communicate.

(Soldier)^{Gamma}: “I, and three more of me can destroy the workers!”

“There are only ten soldiers. I will do it with two soldiers and four workers.”

“I could do it easier with a Thinker.”

(Gamma)(Rho): “You should go with them. Soldiers are not as smart as you are. You should go, Gamma, because you are older. You should stay, Rho, because you are smaller.”

The orders filter through the workers and the soldiers, and you all slip underneath the scaffold. Outside is very frightening. There are no escape tunnels here, no shelter of defensive sticks over you. You carry two small bits of wood in your manipulative limbs; this will outwit a worker, but not a soldier.

You and the other six fan out, your laterals shut tight. There are no predators. No incidental animals pass by. One of your soldiers runs, its long legs devouring the distance before it leaps upon the enemy worker. You feel a sudden, sharp pang through your closed laterals as it lets out a warning.

You run, kicking up dust and ash, passing two of your own workers to catch the enemy forager.

It turns, lunges at you with its heavy, blunt mandibles. You wave your stick in front of its head and it clamps onto it, crushing the tough wood in its vice-like bite. Then you dart forward, clamping your mandibles tight where its head meets its thorax. The worker’s limbs scabble at you—strong! Have you had that little food? Are you that weak? Its laterals open and it screams for help.

Its alarm is barely dead when a Nahurr-Tooth soldier charges out of the burned stubble ahead and hurls a stone at you. Heaving the body of the worker up, you use it as a shield. In the terrifying moments when the soldier hesitates, unable to tell you from its kin, members of your Architecture arrive and rush upon it.



The alarm from the enemy worker does not make it back to the foraging scaffold of the Nahurr-Tooth Architecture. You find them on the other side of a small ridge, unaware that there is a scaffold, even a small one, from the Deep-Spreading-Root Architecture out hunting for them.

Your scaffold, smaller and quicker, rams theirs hard. Your abdomen is torn open, second-mind, by the scythe mandibles of a soldier.

Image: more food than you’ve seen in days is collected in their hanging basket.

The soldier forces its way into your scaffold, pausing long enough to bite a worker in half, then charges at you. You throw a bunnta-fish rib into its eye and, using it like a lever, pry its head up and away until two more workers throw themselves on it.

Gamma + worker: images of three Nahurr-Tooth Thinkers fleeing into the plain.

The kolx-rib makes an excellent lever, and your team of four workers gets its edge under the enemy foraging-scaffold. Then Rho’s team begins pulling on it. The enemy scaffold tips.

A Nahurr-Tooth soldier throws a rock that catches you right where your left mandible protrudes from your head. You feel the carapace crack. Pain flashes like hot-season lightning. You charge, furious, to give your final Contribution.

The soldier is exhausted, covered with the viscera of your workers. Its scythe blades are dull but still crushingly strong. Your legs, walking and manipulative, wrap around it and you squeeze. You squeeze for what feels like days. The tough carapace flexes and you feel the pulsing of its hearts. You tighten around the thorax, squeezing the bellows until they can no longer expand. The soldier gets two legs under it and slams you into the scaffold again and again until it finally collapses.

Image: birds, hooldas, loop above it all, eager for the feast.

Return to the Scaffold! The message through laterals and Thumps flies out through the skirmish party. One more strong heave on the kolx-rib and the enemy scaffold flips all the way over. The hoolda birds descend. Some enemy workers beg to be taken with you.

(Gamma)(Rho): “Make them carry the food and the wounded.”



Halfway back to the Architecture, as the sun beats down on the structure from midday above, a worker finds you.

Image: the strange creature is back, standing this time near sun-goes-down.

A little farther on and a soldier finds you.

(Soldier)^{Gamma}: “I am told that I shouldn’t let the Unclassified Creature see the scaffold. I am told that I should go through the long-tunnel by the living tassel-tuft grass.”

(Gamma)(Rho): “You can’t leave the scaffold unprotected. Even damaged, it is one of the few the Architecture has. You should go into the Architecture, Gamma, your mandible is broken. You should go into the Architecture, Rho, you have lost both near-eyes. It is decided that you, Gamma, should go.”

The run across the burned land is not easy. Outside, exposed, but there are scouts and defense sticks here and there, and you and your band are unmolested by any predators or incidentals. You keep your mandibles closed. Your laterals broadcast barely-contained anger and pain and nobody Thumps you.

You get into the cool safety of the Architecture, find a worker to pack spit-paper around your damaged mandible, get below, join and learn.



You are (Gamma^{Thinker-Caste}) + (Mwasaa Kifimbo).

Mwasaa Kifimbo reflects sunlight in flashes, some long, some slow: “Have we done damage?”

“Yes.”

“To the Architecture or the Population?”

“The Population. Do you have vines?”

“What are vines?”

You, Gamma alone, leave the roiling mass of the gathered Thinkers, conscript three workers, and go to the storage chambers. You find a vine, a very small bit that is too short to use for much of anything, but not short enough to discard. You double-check it is the right type, the kind that has a short leaf with a deep groove running up the middle. You drag it up the vent and out of the crown, and then carry it down to the feet of the creature.

What you’ve experienced first and second-mind is true. Your laterals hum and tingle when you get ten body-lengths away from the creature. Is it afraid? It has a feeling much like an alarm, an alarm cry that a white-bodied hatchling in the nursery would make. Only it is very weak. But very consistent.

The creature no longer looks like a koola bird to you. It is intelligent, and your mind tries to make it look like some kind of Thinker. One whose blocky abdomen is folded back so much that it presses against its thorax, and stands on two ridiculously thick legs and makes its way through life with only two manipulative limbs.

You close your laterals as best you can. The creature bends in an unlikely way, and one grotesque limb picks up the old and withered vine. It holds it in front of the clear-bubble of its carapace. The head is inside it. Its eyes, its eyes move like antennae. The moist, shuddering antennae are retracted into its soft shell above a mandible-less mouth that looks like a gaping anus. It is utterly bestial, and utterly alien. Those horrid eyes swim in their sockets, looking at the vine and then at you. The creature is looking at your broken mandible; you are almost sure of it.

You are (Gamma^{Thinker-Caste}) + (Alexandra Goldstein + (Mwasaa Kifimbo)?).

“...grooming, in exchange for vines?”

The strange creatures have a lot of folds in their odd skin, and where there are folds there are parasites and vermin. Perhaps these things can be domesticated like the kolx.

“We have no need for grooming.”

The creature is maddening. It, they, simply stand there, asking questions. They want to know how many of you there are, how the workers and Thinkers, soldiers, and queens differ. What is it like to experience a join?

Do you feel air vibrate in your head(?)?

For a time the Caste answers the simple questions, but always tries to get the discussion back to two things: information about the Nahurr-Tooth Population, and what the new creatures will trade for vines.

The creatures claim there is a problem with trading, with being here at all, that starting the fire was a mistake, that they will suffer a great deal of trouble for assisting one Population against another.

These conversations take a long time, and a lot of food and work. One of the creatures will communicate, using the shine-stone code for about one-eighth of the day. Then it will go back to the creature/scaffold, and another one will come to and do the same for another eighth of the day. Then that one goes into the scaffold and they rumble away, fast as a charging uunna, to the gleaming hill. Two-eighths of a day later they return. By then the Caste has had time to share, mind-to-mind, the experiences of the ambush parties against the Nahurr-Tooth, and uncountable images from the ambush parties.

When the creatures return, the Caste has a plan.

“Do you often make war on other Architectures?”

The Caste makes no answer. All go about their business in the Architecture, pretending to ignore the outlandish giant maybe-Thinker outside.

The creature persists in its questions and the Caste persists in its refusal to answer. The maybe-Thinker stays for quite a while. It watches the business of the Population outside of the Architecture. As it turns to go back to its odd maybe-scaffold, you signal it with the shine-stone.

“The Deep-Spreading-Root Architecture will trade information for vines.”

“We are not to assist one Population over another.”

“The vines the Deep-Spreading-Root Architecture needs to cross the river have been destroyed by the fire. Have the trees over the ridge where the Nahurr-Tooth Architecture stands been destroyed by the fire?”

“We(!?) deem that information might give the Deep-Spreading-Root Architecture an advantage in the conflict.”

“The trees around the Nahurr-Tooth Architecture are not damaged by the fire. The Nahurr-Tooth Architecture can continue to build war-scaffolds. The Deep-Spreading-Root Architecture cannot cross the river without vines. The Nahurr-Tooth have been aided by the fire.”

The new creatures are, for all their size and strangeness, a bit stupid. Do they truly believe that the Population can't see those awful, obscene mouths of theirs? And that the Caste would not figure out that just as a juvenile Thinker lashes the air with its antennae when agitated those hideous bone-lined holes wouldn't do the same?

The mouths and the eyes of the new creatures move around quite a bit when presented with this argument. It must be a good argument!

But the maybe-Thinker does not answer the question. “I and my allies(?) must confer and re-evaluate.”

And well before its one-eighth of a day is over, it turns and struts back to its maybe-scaffold.



The Caste has a second plan.

It takes you, Gamma, three-eighths of a day to dig the tunnel. It is deep, descending and then traveling along the top of the Great Rock. It is straight, like a defense-stick. It takes four Thinkers plus one hundred and thirty-eight workers to complete. It turns up at the end and emerges to the Outside.

It opens in a broken and ragged patch of ground—the patch of ground where the new creatures' maybe-scaffold always stops.

The sun has not yet set when the creatures come back. The quiver in your laterals grows as the scaffold approaches and stops behind you. You've had spit-paper, heavy with deep clay, packed into your laterals. It is uncomfortable, but it blocks out the signal. The workers, lacking any such protection, retreat down into the safety of the tunnel, while you, Zeta, Omicron, and Psi wait, huddled close together near the tunnel's opening.

It is odd. You are senior Thinker, in this group at least, and one of the more senior Thinkers from the Caste itself. It has been hard, the foraging and the fighting, the intolerable arguments in the Caste. Many have been killed, many are missing, and many are assigned nursery or garden duties. Your time should be filled with

joining and planning and thinking. Yet it is not. You are alone, your fellow Thinkers close but not touching. You've not been so alone since your days in the nursery.

You rarely think about the nursery, about those early solitary days of the egg chamber, of the crush of bodies in the main chamber, of the swell of minds touching and joining with your own.

The four of you move up the shaft, slowly—so slowly that you can barely see any motion, even with your near-range eyes. The singing gets worse, but not so bad that it causes pain. Instead it feels like a kind of gibbering call.

You and Psi get to the opening first and very cautiously look around. The Caste was right: the thing is more of a scaffold than a creature. It has no legs, and only touches the ground at six points—six disks like rolling-stones. There are strange smells you have not encountered before. There are familiar smells, of the ash and dust, and the smell of fresh-cut carsk grass.

(Psi)(Omicron) + (Zeta)(Gamma): “How far and fast can this go? There is no living carsk grass anywhere. How does it move? It does not eat. It does not forage. There is another Thinker(?) inside of it; we can see the scaffold move when it does.”

“Perhaps we could ride under the scaffold and it would take us back to its Architecture and we could raid it?”

“It would take almost a day for us to walk from the New Hill to the Architecture. We could fly back some things, if we had any hoolda birds left. But we do not, so...”

“You, Omicron, should go back to the Architecture and share this.”

You break and are again Gamma alone. Above you, one of the Thinkers(?) returns, opens a door on the side of the scaffold and climbs in. After a while the other door opens and the other Thinker(?) gets out and walks to the Deep-Spreading-Root Architecture.

You creep around the scaffold, finally touching it with a limb, then an antenna. Then you climb up one of the legs/rolling-stones. It is made of many different foreign materials. It is not clay, or spit-paper, or wood or bone or woven grass. It is like nothing you've ever seen.

The scaffold moves, lurching to one side as the lone remaining Thinker(?) inside gets out. Flattening yourself against a dome-shaped bit above the rolling-leg, you try to make yourself as small as possible. Psi drops and runs back to the hole.

The creature, with the surety of a stalking-nulna, walks to your side of the scaffold. It bends its legs until its bulbous head is near the rolling-stone. Then it reaches a manipulative limb right at you. Its mini-limbs touch the top of your body carefully, then wrap around in an awkward four-to-one grip and begin pulling you.

You consider biting, but that would do little good, so you let go and allow the creature to take you.

It holds you upside down for a moment before turning you over and holding its other manipulative limb beneath you. Your legs touch the odd skin/carapace and it lets you go.

It moves you toward its clear face-shell and those horrible eyes. It turns you so your damaged mandible is near its eyes.

You are not so high up that you can't jump, but you're not a young Thinker anymore.

It begins walking to the back of the scaffold. In its other manipulative limb it holds the funny thing—the thing that reflects light like a shine-stone even when the sun is down. It flashes at you.

“Four lengths(?) from here to Architecture.” It points a digit toward the river, not quite toward sun-goes-down.

“Four lengths(?) from here to Architecture.” It points again. “Many broken legs(?) on the river. Vines. Vines on the broken legs(?) on the river.”

You have no idea what it is trying to say, and hope that it doesn't intend to break your legs.

The other Thinker(?) is returning. Its movements are quicker. Perhaps it is afraid? Perhaps it is angry.

The two Thinkers(?) stand close together. The one holding you looks, tilting so its bizarre face can scan the sky. You look up, too. Some birds are there, but they are just a flock of small spine-backs.

It carries you away from the scaffold and puts you down next to a large stone. You dig into the soft soil a bit, an old n-mind habit, and watch as the two creatures climb into the scaffold. The scaffold moves. They do not carry it; it moves on its own. The flat rolling-stones begin to roll, but not downhill, just...rolling.



You are Gamma Thinker-Caste.

“How is such a thing possible, that it can roll without rolling downhill?”

“The creatures say the shining hill will leave soon, before the next sunrise.”

Worker images: the Thinkers(?) standing on top of a small rise, using shine-stones to signal to the Nahurr-Tooth war-party.

“They say they’ve told the Nahurr-Tooth war-party that the plain will be filled with fire again soon, before the next sunrise. They have asked the war-party to return to the edge of the hills and wait for twenty days after the fire to return to war.”

“The Nahurr have made no response.”

“They say they will not trade vines for information about the Population. But they will trade information about vines for information about the Population. They say there are vines growing along a raft of broken tree limbs on the river.



The outpost-tree by the river is a small Population unto itself. There is little Architecture. The ground is sandy and shifts. All the tunnels and chambers must be shored up with wood or spit-paper.

You rest here. You repair your scaffold and join with the six Thinkers in charge of the outpost-tree, telling them things that cannot be sent via shine-stone.

Rested, you move on with your scaffold.

There is no place more terrifying than the sandy expanse by the river. The plain, after the fire, is a hard place to live. This is so because it now looks like the sandy expanse by the river.

The two slow moons are full overhead, and the fast moon is nowhere to be seen. This is not good. There is light, yes, the kind of light that does your kind little good, but does the predators and incidentals a great deal of good. You have another scaffold, but instead of three Thinkers there is just you and Xi. There are also only half as many fighting-sticks a scaffold this size should have.

Twice a great two-horned uunna comes and paws at the scaffold. Twice you stab it in the snout and drive it away, but it has cracked part of the frame. More work to carry, now. You consider returning to the outpost-tree, but time is crucial. You must find the vines to move the Population across the river.

A scaled-badger comes, intent on eating its fill of your crew. You spend too long fighting it off.

One worker is dead, two are wounded, and there are only one-third of the defensive sticks you need.

The river itself is an enemy. It sloshes past, deceptively gentle. You know, n-mind, that the river can change, can move and flood where you now walk.

Foraging along the river, at least, is easier. There is more vegetation. There are small creatures your workers capture that you can eat. There is, after what seems like an eternity of travel and sand and risk, a wide, low spot. In the moonlight you can see a great mass of broken tree-limbs stuck against the rocks protruding from the water. You are here at last.

You are running out of time. Soon the shining hill will launch, and the fires will come. You have little time to forage or set up a proper scaffold.

You do not think that matters now. What matters now is speed: you must get back to the Architecture with the vines.

A worker returns from scouting. It observed branches and sticks and logs, some burned, some not. There is water flowing under and over, and vines growing out over them. Should you get the vines? Is that the task? No, you should not get the vines; the vines are the wrong kind. You need the kind that has a deep groove down the middle; these have a deep rise down the middle. They will dry out too quickly and be too brittle. You cannot use them to move the population across the river.

What will you do? What can you do?

What can you do but go back to the Architecture to make your Contribution?

What will the Population do? What can it do?

It can survive on a little fungus, and a little foraging. It can send out parties of Thinkers, workers, soldiers and queens, as far as they can go, and the Population can build a new Architecture or Architectures and continue.

What will you do now?

You will forage. There is no food left in the scaffold. Forage and make new defensive sticks and try to return to the Architecture before the shining hill leaves and the fires return.

The river is dangerous, but there is good foraging here. There is much to eat that grows between the wet sticks and logs. There are creatures where the sand and mud mix, small ones.

You don't see the scaled-swimming-badger. A worker's alarm sounds in your laterals, and you turn to see it splash out of the water and onto the rough raft of logs. It jumps up when it sees you. It charges, mouth open.

Using all four manipulative limbs you stab your long foraging spear into its tongue. It jumps back, and then sideways. It receives another jab from a worker and then runs toward the water. Its weight dislodges part of the raft. As the logs break apart, it runs for long moments atop a log that has broken free of the raft. The log spins beneath its feet for a few strides before it jumps into the water.



You are Gamma + Contribution.

The Tube-Scaffold is a hollow log, with the pieces of the original scaffold tied by half-moon-leaf vines at the ends. Four workers must push; the other twenty are inside, running up one wall. Once you get it moving, you can keep it rolling.

Not downhill, just rolling. It is not as fast as a running alone, but faster than walking and faster than carrying the old scaffold. There is no easy way to control it. Instead, you and Xi take turns running alongside it, to look for obstructions and obstacles, and then to help redirect it. A six-legged grass-stalker chases you for a while, so you slow and stop. But by the time you get the defensive sticks out, the creature leaves, slipping into the darkness as suddenly as it appeared.

You go outside to help redirect and notice there is another fast moon in the sky. No, it is not a moon, exactly; it is a thing, like a bird, but it has the strange objects that make light like shine-stones. It flies back and forth.

(Gamma)(Xi): "It is the signal. You should dig down into the sand to protect yourself from the fire. That is what the Caste said to do if any of the Population was outside."

"You should continue to move the tube-scaffold toward the far-outpost tree. It will be safer there, almost as safe as the Architecture itself."

Together you and Xi go through the procedures to get the tube-scaffold moving again. On the third time you redirect, Xi Thumps you and warns that the new moon is no longer in the sky. You and your crew begin to dig into the sand, nearly burying the new scaffold before the light comes. Scuffling inside, you all huddle and hide.

You have seen, first mind, what the fire the Gleaming Hill makes is like, and you brace for the worst. The light grows and grows, and then the heat comes, a wave of it, hotter than the vent at noonday.

The heat grows, and then a wind comes, eroding your hastily dug shelter. The light is high in the sky.

You don't know how long it takes, but the light finally goes away, and the heat slackens, then fades. Your crew gets out and inspects. The sands are as hot as if they were in noonday sun, but nothing is burning.

You begin to roll to the outpost-tree.



The Nahurr-Tooth Architecture waits ten days after the big Thinkers(?) leave before resuming their aggressions. The first of the Deep-Spreading-Root Architecture's war-tube-scaffolds is ready in six.

You run with the rest, the sunlight spearing through the holes in the log's surface, lighting your bodies: two hundred gleaming carapaces, a writhing sea of legs and manipulative limbs and antennae. The mass of you power the log over the ground, over the thick stubble of returning vegetation, and into the side of the Nahurr-Tooth war-scaffold. The world shakes when the two collide.

You send out the task: the uunna-ribs slide through the holes in the log.

Images: workers and soldiers of Nahurr-Tooth swarming toward the openings of the log. Fighting will commence there soon.

Two of the ribs have caught beneath the frame of the Nahurr-Tooth's war-scaffold! You were right! You must send out the task!

The task goes out, and all bodies not fighting at the two ends turn and begin to run up the back of the log. When the mass of the Population gets halfway up the wall the tube begins to roll again, away from the enemy Architecture this time. After a quarter roll you send out the task to stop. Defend the ends!

Images: the Nahurr-Tooth scaffold half lifted from the ground, pried up by the uunna ribs.

It has worked. Now! For Contribution!

The task goes out. Workers and soldiers open hatches leading out of the log and pour through.

Images of the fight: of the Nahurr-Tooth war-party torn between freeing their scaffold, trying to force their way through the spear-hedged ends of the tube-scaffold, and defending themselves from the attackers coming from the hatches.

You do not fight; you are an old Thinker. You stay inside the tube-scaffold. You assign tasks. You join and you experience the fighting and the rout of the Nahurr-Tooth war-party second and third-mind.

There has been much thinking of the rolling without going downhill. Many things have been planned. You are an old Thinker now. You may not live to see many of them come to fruition. You have a new idea, a new Contribution: an Architecture in a giant tube, rolling atop the sluggish river, far easier and faster and farther than along the land.

It is a worthy Contribution indeed.

ABOUT ADRIAN SIMMONS

ADRIAN SIMMONS IS A SPECULATIVE FICTION FAN, WRITER, AND EDITOR LIVING IN NORMAN, OKLAHOMA. HIS WORK LITTERS MANY FORGOTTEN CORNERS OF BOTH THE VIRTUAL AND REAL WORLD. HE LIVES EACH DAY TO ENSURE THAT TRUTH DOETH BEAR AWAY THE VICTORY.

KENNY A. CHAFFIN

SILENT SPIRIT

The pictures were brilliant
the best ever seen from the
surface of Mars. Then
as it reached out
to touch that surface,
like Adam reaching
to touch the finger of God,
it died, sending only a
nondescript tone across
millions of miles –
a heart monitor flatlined
leaving humanity listening
with perked ears and
waiting on Opportunity.



ABOUT KENNY A. CHAFFIN

KENNY A. CHAFFIN HAS WRITTEN POETRY AND FICTION FOR THE LAST TWELVE YEARS AND HAS PUBLISHED POEMS IN **VISION MAGAZINE, ARRAY, ESC!, THE BAY REVIEW, THE CANEY RIVER READER, WRITERSHOOD, STAR*LINE, MiPo,** AND MELANGE. HE LIVES IN DENVER, COLORADO.

JOHN PHILIP JOHNSON

STRING THEORY

My friend is telling me a story.
As he talks, I'm thinking about string theory.
I have gone over to his desk.
He wants to loan me a movie, an old VHS.
He is telling me a different story.
He is telling me now the story behind the story.
We're with a correspondent in World War II.
We're in the Vatican archives.
The court of Tiberius, who has just died.
As he talks I'm thinking about the story
of a life being pulled across the moment now.
There is one word, one sound,
of, he says, or said, or is saying,
I'm looking at his fleshy lips say *of*,
nothing else is moving,
but he has already said *of course*,
already gone on and is saying something else;

and I suddenly see this instant we live in
as the curl of time scraping across his lips,
the fourth dimension bent over us like an edge
moving through the house of three dimensions.
If I try to hold on to one word, one moment,
it splinters into shards
and what is real makes no sense.

I could have said the meat of three dimensions,
I did before. Here, or later, I'm thinking
about aboriginals drawing curlicues in sand.
I'm thinking about the white clouds
of what could have been, farther away, much softer
and more intricate than the thing touching his lips.
I am thinking of Francis of Assisi, bi-locating because
he believed so much. I'm thinking our understanding
is drawn down to a single point of indeterminate size,
condensed and then uttered as a short word,
and then we are washed over the falls.

No one, my friend is saying, about a document
that may or may not have existed,
no one really knows for sure, but,
he says, and *of course* he says again
and he has gone on and is saying something else now
and I'm thinking how things are stretched out
as far as the east is from the west,
how what he has said or might have said
or said in some other way or couldn't say
is clustered around him, intersecting discretely on his lips,
six or seven dimensions kissing him –

I'm thinking how all the dimensions and worlds
are clustered here, from their myriad beginnings
banging to their various apocalypses, present,
including the ones that are nothing but bulk
or the ones that are dream chambers or the ones
that are like the spider plant on his desk,
how they become a single thought of indeterminate size
which we don't have a word for but is the husk
for all these things; I'm thinking how my friend and I
are like musical strings, vibrating in this fascinating place,
how we are like everything else, how it is all
like a single word, poised half-said, a word resting,



aakaashá

a word identical to its self-pronouncing lips,

and,
and I'm thinking of the worlds and the possible worlds,
more worlds still, including the ill-conceived ones,
including the ones that are nothing but bulk,
including the ones that are dream chambers,
that render all the other worlds into dreaming,
dreams drawn to the utmost point of indeterminate size,
and I'm thinking the thought of myriad beginnings
banging into various apocalypses and changes of heart,

like the words inflating from my friend's mouth,
being said and then disappearing; and I'm thinking
of the myriad worlds that stretch from other worlds,
the possible worlds and the ill-conceived ones, including the ones
that are only the slightest of rims around nothing,
and I'm thinking of how my friend and I are like musical strings,
vibrating in this fascinating and seemingly endless symphony,
I'm thinking how we are like everything else, how it is all drawn
to a single point, a word, resting, half-said, like the word *of*,
poised on self-pronouncing lips, poised in the half-listening
dream chambers, the ones that render all the other worlds
into dreams, dreaming drawn down to the utmost point,
rendered like music, like the vibrations of a single word.

ABOUT JOHN PHILIP JOHNSON

POET AND WRITER JOHN PHILIP JOHNSON'S RECENT WORK HAS APPEARED IN **SOUTHERN POETRY REVIEW** AND **RATTLE**. MORE GENRE WORK CAN BE FOUND IN **MYTHIC DELIRIUM, DREAMS & NIGHTMARES, ASTROPOETICA, STAR*LINE** AND ELSEWHERE. HIS FIRST SHORT STORY IS FORTHCOMING IN DAILY SCIENCE FICTION. HE LIVES IN LINCOLN, NEBRASKA, WITH HIS WIFE AND FIVE CHILDREN, AND IN HIS SPARE TIME IS A READER FOR PRAIRIE SCHOONER. HE CAN BE REACHED THROUGH HIS WEBSITE, WWW.JOHNPHILIPJOHNSON.COM.

GEOFFREY A. LANDIS

THE GREAT SILENCE (SONNET FOR SETI)

The sounds of silence singing in our ears:
we hear just static hiss from stars and dust,
the maser noise from stellar atmospheres.

What if we are alone, and no one's there?
And life a fluke? A planetary crust,
chemicals complex as snowflakes, but still just
odd oxidation: we're a form of rust.

In a universe of strange, unlikely things—
pulsating stars, rainbows, planets with rings—
how could we be unlikeliest of all?
If life comes up by chance, however small
then elsewhere must be others. Do they call?
There must be others out there. So we trust.

—Our radios hear just noise from stars and dust.



SETI Institute

ABOUT GEOFFREY A. LANDIS

GEOFFREY A. LANDIS IS A WRITER AND A SCIENTIST. HE WON THE THEODORE STURGEON AWARD IN 2011 FOR HIS NOVELLA "THE SULTAN OF THE CLOUDS."

KATHARYN HOWD MACHAN

ETILATEP

1.

He hated me, Etinozama.
I was his angel, his harmony,
uplifting him to another world,
he said—until
that night our true words crossed
and he began to shout I wasn't
clean enough for his touch.
I know now I should have stayed
on Eticiz, safe strong warm planet,
instead of risking striped hard rocks
angry hands can pick up, throw,
scar a daughter who left a mother
alone where three moons rise.



Aleksey Gnilenkov

2.

I killed him, Etinozama.
He came at me with sharp dark hard
burned with green and gray and green
and I threw it in his eyes, the salt,
and poured until the sack was empty
and he lay writhing, he lay choking
like a bitten dog, like a poisoned crow,
choking until his breath turned yellow
and he was gone from all of me.

3.

Etisengam, I call upon you.
I beseech you, Etisengam, goddess
of the first dawn light, to show
my three hands the way to freedom,
my mouths the purest shape of prayer.
With Etinozama I never went
to your mountain ringed with pearl.
With Etinozama I stayed away
drinking blackness hot and thick.
Forgive me now, Etisengam, and I
will try to serve you. A soft cloth
for your palest pearls, a shell
that calls sweet lightning.

4.

To the silent cave I have brought
a woven bag, a dangerous bag.
She who was once my mother
carried this bag across harsh seas
and I have never opened it;
I have only counted its threads.
Etisengam answered me and told me
my prayers matter. Only here
can I cut strong stitches
and reach down into fragrant shadows
to touch what I must know.

5.

Without light, how can I find the jewel?
Without wind, how can I know the feather?
Without sand, how can my feet make patterns
that spell my secret name? Etinozama

used to sing me stories before his eyes
went sour. Etinozama found me when
I was lonely where bitter sea turned
sweet. Without love, how will I
know my belly? Without laughter, my tongue?

6.

To sleep is to become a camel
with the seven humps we have learned
to long for: I will dream of rain
falling upward from firm ground, fruit
blossoms turning to small frail wings
and a poet with his three small
strings, fingering.

7.

Who will wake me
when I am done running?
Who will press important
food to all my lips?
Etinozama would have
been my husband
if time hadn't been time.
Etinozama, dead
enemy to all
I need to be.

ABOUT KATHARYN HOWD MACHAN

KATHARYN HOWD MACHAN WAS BORN IN WOODBURY, CONNECTICUT, IN 1952. HER POEMS HAVE APPEARED IN NUMEROUS MAGAZINES, ANTHOLOGIES, AND TEXTBOOKS, INCLUDING **THE BEDFORD INTRODUCTION TO LITERATURE**. SHE HAS PUBLISHED 30 COLLECTIONS, MOST RECENTLY **BELLY WORDS: POEMS OF DANCE** (SPLIT OAK PRESS, 2009) AND **WHEN SHE'S ASKED TO THINK OF COLORS** (PALETTES & QUILLS PRESS, 2009). A PROFESSOR IN THE DEPARTMENT OF WRITING AT ITHACA COLLEGE SINCE THE LATE 1970S, HER COURSES INCLUDE WRITING SCIENCE FICTION AND FANTASY. IN 2002 SHE WAS NAMED THE FIRST POET LAUREATE OF TOMPKINS COUNTY, NEW YORK.

KEVIN RABAS

WE FOUND A KIND OF VINE

We found a kind of vine

full of genetic code, something simple
full of patterns, and then it struck me:

This could be them, the Shem,
those peaceful ones here
before this world was burnt.

When the ships came like fire
and burnt the land, and took the metals,
and killed off every sentient in sight,
we thought they were gone, the Shem,
but here we have it, another code, another
Word,
language of the body grafted into plant
before their world was burnt;
the Shem put their blood, their helix,
their genetic code into plant; their history
through the body, through the mind,
the muscle, the tissue, the skin and cell
they put into plant, this vine,
and in this way they hid,
quiet, in the darkness, as their world burnt,
then climbed into the light, green,
to reclaim everything they once had.



ABOUT KEVIN RABAS

KEVIN RABAS CO-DIRECTS THE CREATIVE WRITING PROGRAM AT EMPORIA STATE UNIVERSITY AND EDITS **FLINT HILLS REVIEW**. HE HAS PUBLISHED THREE BOOKS: **BIRD'S HORN**, **LISA'S FLYING ELECTRIC PIANO**, AND **SPIDER FACE: STORIES**.

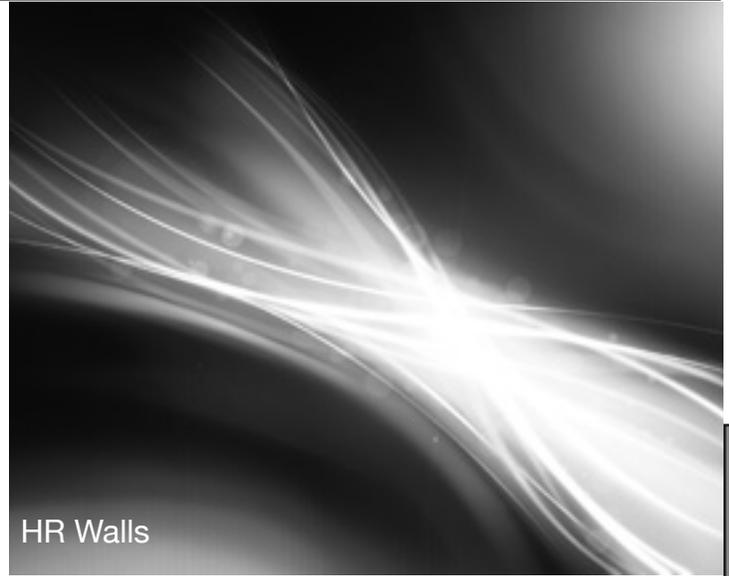
WC ROBERTS

KNOWLEDGE STREAM

the line is cast into the stream;
the bob taken by the current
our message within

streams of data sent along the line
feed into the knowledge pool
fertile blip
igniting the minds in the core
of Sol's egg-shaped heliosphere

Continue farther, swim the sea
between these stars
transmit backs of delightful
1's and 0's, a binary wonder
as irradiating energies bathe you,
our messenger,
in your trek beyond
the edge of space.



HR Walls

ABOUT WC ROBERTS

WC ROBERTS DREAMS OF THE DESERT, OF FINALLY GETTING HIS FIRST TELEVISION SET, AND OF RAVENS. ABOVE ALL, HE WRITES.

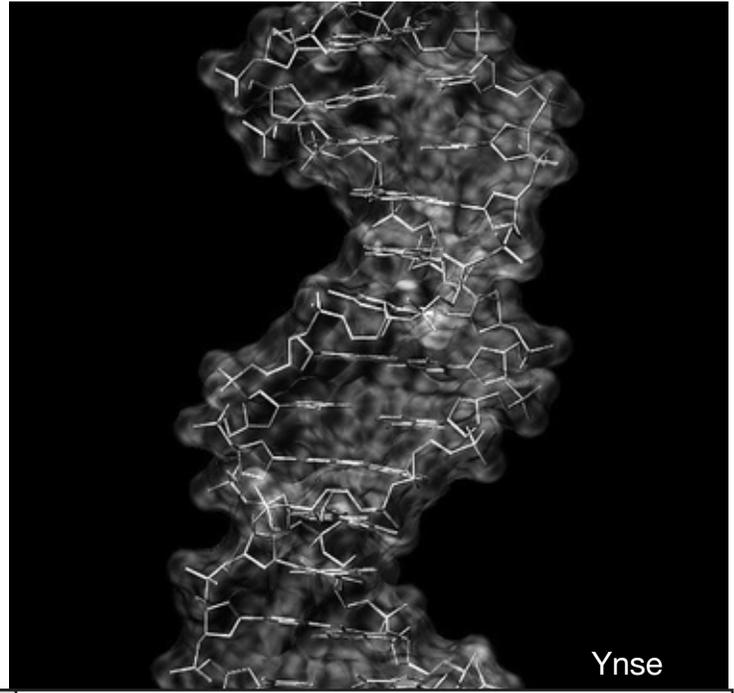
JACQUELINE SEEWALD

GENOME

The Gregor Mendel of his time,
immortal in his work,
progressing in his project,
oblivious to hunger or fatigue,
working at his machine,
the big, metallic one,
he uses for DNA sequencing.
His eyes glitter with purpose.
He is one with the machine.
He is the creator
of genetically altered creatures,
cows, bees, cats, dogs –
even human beings,
perfect and sublime.

Genome improves on nature.
And she is perfect now,
no more the vague shadow of herself.
Time the cruel thief had stolen
her beauty and clarity of mind.
How he had missed her!
How he had missed their intimacy of
communication.

His hands tremble as he surveys his Galatea.
No mythological revelation
but human genome history,
his lovely wife perfect again.



Ynse

ABOUT JACQUELINE SEEWALD

JACQUELINE SEEWALD'S SHORT STORIES, POEMS, ESSAYS, REVIEWS AND ARTICLES HAVE APPEARED IN HUNDREDS OF PUBLICATIONS AND ANTHOLOGIES. HER MOST RECENT POEMS CAN BE FOUND IN THE ANTHOLOGIES **WISDOM OF OUR MOTHERS** AND **HOLIDAY WRITES**, AS WELL AS **YOU AND ME MEDICAL MAGAZINE**. SHE HAS ALSO PUBLISHED 12 BOOKS, INCLUDING MYSTERY NOVELS **THE INFERNO COLLECTION**, **THE DROWNING POOL**, AND **THE TRUTH SLEUTH** IN THE **KIM REYNOLDS** SERIES. FIND OUT MORE ABOUT HER AT [HTTP://WWW.LLDREAMSPELL.COM/JACQUELINESEEWALD.HTM](http://www.lldreamspell.com/jacquelineseewald.htm).

HUMAN EVOLUTION AS A FRAMEWORK FOR THE THEMES OF SCIENCE FICTION

ABSTRACT

Seven benchmarks of human evolution are used to develop a framework to classify the literature of Science Fiction (SF). This Human Evolution Framework provides a set of tools by which SF themes are: (1) used to communicate the relevance of SF; (2) organized under a structure that distinguishes SF themes from SF subgenres; (3) applied to categorize SF literature in databases, enabling further quantitative research such as trends analysis or gender issues; and (4) recognized as future speculation on ancient concerns stemming from humanity's evolution as a species.

The framework is evaluated against four other analyses of theme for interdependence, broadness of scope, and rationale. Additionally, this framework provides a justification for implementing Gunn's Metaphor of Change, and organizes SF themes into units based on the human evolutionary benchmarks. Tool Development maps to Machine Intelligence; Exploration of Surroundings to Space Faring; Encountering Others to Extraterrestrials; Imagining of a Spiritual World to Inter-Dimensional Travel; Personal Transcendence to Trans-Human; Formation of Societies to Newtopia; and Modification of Habitat to Devastation.

INTRODUCTION

This article integrates previous discussions of theme into a system to classify the literature of Science Fiction (SF). Its aim is to provide a set of tools by which themes are: (1) used to communicate the relevance of SF; (2) organized under a structure that distinguishes SF themes from SF subgenres; (3) applied to categorize SF literature in databases, thus enabling further quantitative research such as trends analysis or gender issues; and (4) recognized as future speculation on ancient concerns stemming from humanity's evolution as a species.

Due to its speculative nature as a literature of ideas (Barthell, 1971), SF emphasizes theme above other literary devices (Gunn, 1975; Klein, Goimard & Iokamidis, 1974). SF is described as the literature of change, because its themes concern future transformations and their consequence on humanity (Gunn, 2005). If current environmental trends go on, what will the repercussions be for food production? What if humans developed telepathy? How would it affect society?

Wolfe (2011) points out that commonly used descriptors of SF mix terms of classification with terms of theme. The resulting confusion between theme and subgenre is pervasive and spans from advice to SF writers (e.g. Gilks, Fleming & Allen, 2002) to literary criticism collections (e.g. James & Mendlesohn, 2003). The discussion of theme is absent from collaborative works like Bould, Butler, Robert and Vint (2009) or Gunn (1988) and from curricular design aids like Booker and Thomas (2011) or Sawyer and Wright (2011). Given its importance to SF, a renewed systematization of theme is warranted.

As the literature of change, SF looks to where humanity is headed, implying a parallel to where it came from. This paper will show that SF themes trace much further back in time than post-Renaissance inventions and explorations (Gunn, 1975) or utopias (Vonarburg, 2012). They reflect evolutionary stages of mankind, relating to matters of import to early humans as far removed as 2.4 million years ago, up to the time 5000 years ago when their world finally becomes ours.

HUMAN EVOLUTION FRAMEWORK

In order to use Human Evolution as a basis for thematic analysis, key benchmarks in this evolution must first be detailed.

Seven key benchmarks in human evolution

Tools. Tool making was long considered the benchmark that defined the beginning of genus *Homo*, some 2.4 million years ago in Africa with *Homo habilis* (Kimbel, 2009). While the onset of stone technology currently antedates *habilis* by 200,000 years, the sparse fossil record leaves *Homo* as the front-runner for first widespread tool use (Roche, Blumenschine, & Shea, 2009). In any case, the definite co-occurrence of tools and early humans becomes unquestioned by the time *Homo erectus* appears half a million years later

(Plummer, 2004).

Setting. African *Homo erectus*, variously known as *Homo ergaster*, is the first hominin morphologically equipped to walk and run over long distances, and adapted to foraging for food in varied ecosystems (Plummer, 2004). And walk they did. *H. erectus*, the first early human to disperse out of Africa, explored settings as far removed as the Caucasus, Indonesia and China (Antón & Swisher, 2004).

Others. Jump forward an order of magnitude to 200,000 years ago, and hominins in Africa evolved into anatomically modern *Homo sapiens* (Tattersall, 2009). As evidenced by mitochondrial DNA, they migrated out of Africa between 70,000 and 40,000 years ago (Soodyall & Jenkins, 2005). They encountered others, human-like species such as the *H. erectus* descendants in Asia, and the Neanderthals in Europe, eventually replacing these others altogether (Klein, 2008).

Dimension. By 50,000 years ago, *H. sapiens* had become behaviourally modern humans (Klein, 2008). They exhibited an increased reliance on symbolic thought, as attested by personal ornaments such as shell beads (d'Errico et al. 2009), and burials with grave offerings (Pettitt, 2002). The latter is early evidence of belief in an invisible dimension, the realm of the spirits (Lewis-Williams, 2005).

Essence. As early as 30,000 years ago, the representation of entoptic phenomena in cave paintings attest to the onset of shamanism (Winkelman, 2010). Ethnographic studies suggest that ancient shamans achieved altered states of consciousness in order to communicate with spirits on different planes of existence (Lewis-Williams, 2002). In the eyes of their people, shamans thus transformed from ordinary humans to beings with supernatural powers.

Rules. The end of the last ice age saw the unrelated innovations of sedentism and domestication of plants ultimately result in true agriculture, for instance 10,500 years ago in the Middle-East (Pringle, 1998). Over the next two thousand years, the intensification of agriculture led populations to concentrate into villages and towns, larger-scale sedentary communities that enabled the diversification of labor, the necessity to manage social relations, and the emergence of some form of authority to enforce rules of behavior (Watkins, 2009).

Habitat. Intensive agriculture led to radical modifications of the environment, notably irrigation and terracing (Watkins, 2009). Despite the increase risk of infectious disease in higher density populations (Cohen, 2008), the capacity to produce surplus staples proved so advantageous that towns became city-states such as in Sumer 5000 years ago (Matthews, 2003). The development of cities exacerbated ecological impacts such as the clearing of woodlands, the provisioning for clean water, and the accumulation of waste.

Scientists may debate the details in that sequence of events (see Scarre, 2009, and references therein for key controversies), but there is general agreement that hominins evolved into early humans, who created and used tools, spread to other continents, to be later replaced by a more evolved model, who thought about spiritual dimensions, sought to master them by transcendence, invented agriculture and urban life, and greatly increased its environmental footprint.

Advent of writing: Evolutionary benchmarks in the written record

The advent of writing allowed humans to document and transmit ideas outside their own memory. Writing answered the need for accounting and commemorating events, but was soon used for literary creations in the broadest sense (Walker, 1990).

From myths and stories of later records, we observe that the key benchmarks of prehistory carried over to historical times. To wit: *Daedalus and Icarus* (tools), *The Voyage of Unamun* (setting), Homer's *Odyssey* (others), *The Egyptian Book of the Dead* (dimension), *The Sumerian Epic of Gilgamesh* (essence), and Plato's *Republic* (rules). As history progressed, so did the writings on the same topics: Da Vinci's *Codex Atlanticus* (tools), *The Travels of Marco Polo* (setting), *The Seven Voyages of Sinbad the Sailor* (others), Dante's *Divine Comedy* (dimension), *Le Morte d'Arthur* (essence), and Thomas More's *Utopia* (rules).

Writing allowed civilizations to record the state of the world, including changes brought about by inventions and explorations. By and large, however, they spanned generations, or centuries, even within the Roman Empire, the Islamic Golden Age, or Imperial China. Change was documented, yet its pace was hardly noticeable within the average human lifespan (Gunn, 1975).

Acceleration of change: Evolutionary benchmarks extrapolated

The European Renaissance began five centuries of gradual innovation, a momentum that culminated with the Industrial Revolution in the mid-19th Century. Historical change had gone from imperceptible to conspicuous: the future will be different (Gunn, 1975). Thus science fiction emerged, just as change and

thought, *H. sapiens* wondered about supernatural dimensions. In order to master these, they sought to transcend their own essence. Later, they learned agriculture, and concentrated in cities. Finally, the intensive exploitation of resources modified their environment.

The middle series of boxes identifies each benchmarks' keyword: tools, setting, others, dimension, essence, rules, habitat. This is followed by their modern extrapolations, then lists of the resulting SF ideas, then the corresponding SF themes in the last sequence of boxes.

Additionally, scanning downward from the top, each column emphasizes the progression from the benchmarks to speculative equivalents. For example, substituting stone tools for future tools results in the most sophisticated of all machines, the robots and A.I.s. Modifying human essence no longer produces shamans but supermen, and the mutant species that may replace *Homo sapiens*.

In order to determine the validity of using human evolution as a new framework to identify and discuss SF themes, we now evaluate other studies of theme in the corpus of SF literature.

EXISTING SCHEMAS FOR SCIENCE FICTION THEME ANALYSIS

Several schemas have been proposed over the years to analyze/synthesize the themes in SF. The four selected herein represent different approaches to the problem.

The first is an insider's view. In an interview filmed in 1974, SF authors Gordon Dickson and James Gunn discuss theme in SF, listing eleven in all. Their combined experience as active participants in the vast conversation of written SF brings a semi-historical perspective to the subject, one that remains essential to the understanding of the SF genre. Gunn later published a definitive version of the list (Gunn, 1975). (Another insider's view is found in Del Rey, 1979, although the proposed list of themes appears somewhat idiosyncratic, with themes like Biology and Stargates).

The second is the anthologist's view. Using SF extant works in English, many of them classics, senior French editors Gérard Klein, Jacques Goimard, and Demètre Lokamidis put together a multi-volume anthology showcasing the themes of SF, (Klein et al., 1974), with each volume including an essay dedicated to its particular theme. (Such a dedicated thematic endeavour remains unique to this day).

The third is the structural approach. In a book-length analysis, Gary K. Wolfe presents SF as the means by which a technological society deals with the tension between the known and the unknown. Wolfe (1979) summarizes this conflict with five icons: the Spaceship, the City, the Wasteland, the Robot, and the Monster. The strength of this imagery, and how easily we recognize it as SF, suggests a direct link to the genre's main themes. Inasmuch as the notion of archetype can be applied to genre fiction, Wolfe's icons provide archetypal images of science fiction. (For a more recent, if less structured presentation of SF icons, see Jones, 2003.)

The fourth approach is multidisciplinary. Author, translator and teacher Élisabeth Vonarburg (Vonarburg, 2012) uses myths, history, and psychoanalytical concepts to derive four clusters of themes, which encompass two-dozen subthemes. While these clusters are somewhat heterogeneous, her text also emphasizes how SF subthemes often merge into each other. (Articles on the psychoanalytical aspects of SF may be found in Thaon (1986), which includes contributions from J. Goimard and G. Klein.)

A. Theme in Science Fiction: A discussion between Gordon Dickson and James Gunn

In 1974, James Gunn interviewed Gordon Dickson as part of SF in Films, a series comprised of twelve 20-minute interviews of well-known authors discussing specific topics important to SF literature. The Dickson interview dealt specifically with themes in SF, as follows:

- Far Traveling: the wonders of the Earth and the universe.
- Wonderful Inventions: the wonders and dangers of science.
- Progress: hope and faith, in science and the future; includes utopia.
- War/Armageddon: future wars, also a final war, perhaps resulting in better humans.
- Cataclysm: total destruction by other means (asteroid, collapse of food chain, etc.) .
- Super Powers: strange talents, a superior ability in one or many individuals.
- Superman: superior in all ways, so almost unlike man.
- Man and Alien: completely unlike man; invaders, also aliens providing guidance.
- Man and the Machine: the wonders and dangers of machines (Robots) .
- Man and Environment: man versus the environments he constructs, or finds elsewhere.

- Man and his Society: society itself as antagonist, with man either bearing it or altering it.
- Man and the Future: the future history of mankind, which opens infinite possibilities.

Note that the theme of Superman is missing in the opening credits list, but it is discussed on camera as a separate theme, and is formally included in Gunn (1975).

To a large extent, the themes flow from one to the next, partly because Gunn structures the interview to highlight natural sequencing. Wonderful Inventions is linked to Pandora's box, from which comes both despair (War) and hope (Progress). Super Powers describes almost inhuman abilities, leading to Man and Alien, the truly inhuman. In that last segment, Dickson points out the purpose of many an alien environment in SF is to be dominated by the protagonist, a meaning very similar to that assigned to Man and his Environment—which one of the two will dominate—that suggests there is some overlap between themes. The mention of several H. G. Wells novels in six categories, along with more recent treatments by contemporary authors, also hints at the staying power of the themes listed.

Gunn presents the same list in the Appendix of his 1975 history of SF, *Alternate Worlds*, except for minor rewording and the addition of Man and Religion. Dickson uses the expression “the wonders of science, the wonderful inventions” in the interview. The film's editor chose to list the latter as a theme, and Gunn settled on the former in the book, also shortened the film editor's War/Armageddon to simply War. The book makes the interdependence of certain themes much clearer: Man and His Society is defined as “similar to Progress, except...” (Gunn, 1975, p. 242). The same goes for how Man and the Machine resembles The Wonders of Science, as Man and his Environment does Cataclysm, and Superman does Super Powers.

Another interesting difference is how Dickson and Gunn define Man and the Future as a thought experiment that takes a contemporary problem, and puts in a completely fresh context. Since this is precisely how they defined science fiction itself at the onset of the interview, Man and the Future becomes a catchall. The definition given by Gunn in *Alternate Worlds* does restrict its meaning to a variant of Progress. By either route, however, this would obviate Man and the Future as a theme unto itself.

In their treatment of Wonderful Inventions, Dickson and Gunn cite two novels they later ascribe to other categories: *The Invisible Man*, later in Super Powers, and *20,000 Leagues Under the Sea*, later in Far Traveling, though it is unclear whether the novels' main themes are being changed, or new themes added. Furthermore, the discussion gives a sense that either Progress or Armageddon is the usual outcome of Wonderful Inventions. Finally, to define the latter as the wonders and dangers of science is another way to say it is about consequences, and this surely applies to most of SF, rendering Wonderful Inventions a questionable theme unto itself.

Many of Gunn's SF themes from *Alternate Worlds* result from his application of the previously described Metaphor of Change: Far Traveling stems from changing the scene, Man and Alien from changing the cast, Super Powers from changing their abilities, and Wonderful Inventions from changing the tools. Substitute the latter for props, and the metaphor of a play on stage comes to mind. However, the success of this metaphor quickly unravels, as detailed below.

War/Armageddon would result from changing the weapons or nature of war, except that weapons are specific tools, particular props for the play, as it were: there is no more reason to single these out than for having *côté cour* and *côté jardin* as distinct types of scene. As for changing the nature of war, Armageddon is just as easily derived as a subset of Cataclysm (changing the physical conditions). Progress would be the outcome of changing change itself. However, the acceleration of change is what led to science fiction in the first place, so we are once again faced with the dilemma of a meta-theme that could conceivably apply to all of SF (except for utopia/dystopia, which are specific outcomes).

These last themes exemplify the problem with the Metaphor of Change as used in *Alternate Worlds*: the apparent success with scene, actors, abilities, and tools indicates some principle should be at work, yet the uselessness of themes one would extract from changing costumes or lighting reveals the metaphor in and of itself to be insufficient. A rationale for its application is missing. Which conceptual objects can the metaphor be legitimately applied to in order to yield valid SF themes? If changing man's beliefs yields Gunn's theme of Man and Religion, should we envisage a change in social conventions, or political systems, or the laws of physics? (Or love, for that matter, a topic from which much literary ink continues to flow.)

As pointed out earlier, several themes in *Alternate Worlds* may also be paired: Man and His Society with Progress, Man and the Machine with The Wonders of Science, Man and his Environment to Cataclysm, Superman with Super Powers. Gunn further confirms this by applying the change principle to only one

member of each pair, another clue that one theme subsumes the other.

With *Progress* and *The Wonders of Science* already deemed too general, and Superman defined by Gunn as a subset of Super Powers, this group yields four themes: Man and His Society (includes utopia/dystopia), Man and the Machine, Man and his Environment (Cataclysm), and Super Powers (Superman). Adding *Far Traveling*, Man and Alien, and Man and Religion, the Dickson and Gunn/*Alternate Worlds* list is synthesized to a total of seven major themes that can be considered truly independent of each other.

B. Science Fiction anthologies by Gérard Klein, Jacques Goimard, and Demètre Iokamidis

From 1974 to 1976, the twelve-volume collection *La grande anthologie de la science-fiction* was published in France. The editors' avowed intent was to exemplify the major themes of SF using stories, sixteen per volume on average, selected to cover a wide range of possibilities on that particular theme, and with a five to fifteen-page introductory essay tracing the theme's link to history or literature, and its importance in the SF corpus. The anthologists were quick to point out that many stories addressed more than one theme, making the choice of the volume in which it appears an editorial decision.

There is a dialectic aspect in the selection and ordering of texts, which is made explicit in each story's introduction. For example, the Time Travel stories are presented in order of increasing complexity, making this collection a practical treatise on the subject. The second half of its Table of Contents reads: "The Man Who Came Early" (by Poul Anderson), "Dark Interlude" (Mack Reynolds and Fredric Brown), "Vintage Season" (C. L. Moore), "Experiment" (Fredric Brown), "Me, Myself and I" (William Tenn), "Hindsight" (Jack Williamson), "The Discovery of Morniel Mathaway" (William Tenn), "Time Patrol" (Poul Anderson), "Of Time and Third Avenue" (Alfred Bester), "All You Zombies" (Robert A. Heinlein).

The twelve volumes are as follows:

- Extraterrestrials
- Robots
- Astronauts
- Mutants
- End of the World
- Machines
- Planets
- Powers
- Tomorrow
- Time Travel
- Wrong-Way
- Galactic

The Wrong-Way theme relates to humour. By the anthologists' own admission—in the general introduction to the series, reprinted in each of the twelve volumes—this is a mixture of the other eleven themes, not a theme unto itself. Cultural biases may explain why humorous stories must be segregated from the others, so as not to contaminate serious analysis. This general introduction also makes clear that the anthologists consider the eleven subjects to be the most representative themes of science fiction, the ones that give it unity as a genre.

The singular advantage of Klein et al.'s framework is that there are sixteen stories, which serve as exemplars of any given theme, functioning in essence as an extended definition. More than any essay or volume label, the stories demonstrate the multiple facets and vast scope of the particular SF themes.

With the initial success of the with twelve volumes, the editors published another twenty-four between 1983 and 1985, all prefaced according to the new topics they were meant to exemplify:

- Parapsychological
- Survivors
- End of Time
- Ecological
- Invaders
- Space Travel

- Medical Doctors
- The Divine
- 4th Dimension
- Immortals
- Automatons
- Supermen
- Creatures
- Future Societies
- Strange Worlds
- Rebels
- Untrue
- Paradoxical
- Mirages
- Year 2000
- Catastrophes
- Future Wars
- Mechanical
- Sex Fiction

The general introduction to the series has disappeared, leading one to conclude that these twenty-four new volumes either develop the original major themes, or explore related subthemes. Indeed the titles and contents of many volumes suggest immediate pairings to that effect: Powers with Supermen, Automatons with Machines, Space Travel with Astronauts, Extraterrestrials with Invaders, Rebels with Future Societies, Survivors with End of the World, and so on.

Examining the tables of contents, as reflected in the volume titles, elucidates less obvious themes. The End of Time, nominally about the ultimate fate of humankind in the very far future, often implies that eons alone will provide the necessary impetus for the transformation of humans, a subject matter similar to Mutants.

Ecological stories are, as the title suggests, about the environment we unwittingly damage as we modify it to suit our needs. They are modern Catastrophes of the slower kind, with pollution or global warming replacing a nuclear End of the World as the immediate threat. The Mirages theme contains stories that question reality or explore other dimensions of space. Most stories in the 4th Dimension volume do the same, with a few using time as a fourth dimension, à la Einstein, and therefore relating to Time Travel. The Medical Doctors theme is about life and death, and science's push to extend one and prevent the other. This puts it in the realm of transforming humans, the same category as stories about Immortals.

The volume on The Divine deals with our relationship to it, although it also contains stories about local gods, meaning very powerful aliens. As for the even more unusual volume titles, Untrue contains more humorous stories, and Sex Fiction encompasses future sex, not with aliens but in different social contexts.

A comparison of the volume titles with their actual contents also reveals a stated intent that quickly gives way to a more creative, some would say loose, interpretation of the anthologists' own guidelines. Naturally, this does not alter the value of any given story.

Eliminating duplications/subcategories and the two multi-themed humour volumes, the 36 categories of the Grande Anthologie are reduced to nine thematic groups (the original eleven titles are underlined):

- Extraterrestrials—Invaders—Creatures
- Robots—Machines—Automatons—Mechanical
- Astronauts—Space Travel—Planets—Strange Worlds—Galactic
- End of the World—Survivors—Catastrophes—Ecological—Future Wars
- Powers—Mutants—Parapsychological—Supermen—Immortals—End of Time—M.D.s
- Tomorrow—Future Societies—Rebels—Year 2000—Sex Fiction
- Time Travel—Paradoxical
- 4th Dimension—Mirages

- The Divine

C. The known and the unknown: Gary Wolfe's icons of Science Fiction

In a book-length analysis published in 1979, scholar Gary K. Wolfe proposes five “icons” of science fiction based on the images generated and popularized in the developmental period of SF as a literature—defined as the 30s through the 60s, the same period used by Klein et al. These symbols evoke the essence of science fiction to the public at large.

Wolfe writes that the function of SF is to “provide technological society with a ritual methodology for action” (p. 4), meaning one that is related to, but not strictly bound by, the scientific method. In this view, SF is indeed a tool that familiarizes the strange, with icons that illustrate specific aspects of this opposition between the known and the unknown. A barrier isolates the two, much like the threshold in Joseph Campbell’s hero’s journey. Unlike its function in the Campbell (1968) monomyth, however, the barrier isolates us from hypothetical worlds, not mythical ones, and is either a puzzle to be solved or a factor that helps contrast cultures.

Three of the five icons are “images of the environment”: the Spaceship, the City, and the Wasteland. The other two are “images of humanity”: the Robot, and the Monster.

The Icon of the Spaceship represents the entry into the unknown. From the novels of Verne and Wells to the illustrations that graced the covers of countless magazines and books, to movies such as *Destination Moon*, the Spaceship has always been more than transportation, it also functions as a portable habitat, a world in miniature. If only because space is a far harsher environment than the sea, the spaceship is a mini-world in ways sailing vessels were not, as evidenced in the film *2001: A Space Odyssey*.

The Icon of the City represents the subjugation of the unknown, with the City providing a controlled environment in which to live. One paradox is that the Spaceship is surely the most controlled place of all, though environment-sized ships would become cities, a point paralleled by Blish’s decidedly un-metaphorical *Cities in Flight* novel series title. The City does play an iconic role in SF, Fritz Lang having paved the way in *Metropolis*. However, its environmental control is arguably a surface feature. The underlying *societal* control—which allowed cities to arise in the first place—is the most potent quality of the City, as it cannot possibly survive without the kind of structured behavior that maintains it. In SF literature, Asimov’s planet-sized city, Trantor, typifies this parallel between the physical city and its underlying social control apparatus.

The Icon of the Wasteland represents a re-emergence of the unknown and focuses less on the cataclysm itself than the survivors, starting anew. This is viewed from the perspective of a society fallen from civilization, which makes the Wasteland the other extreme of the control spectrum, a total absence thereof. The Wasteland is the most iconic form of a ruined environment, and the cinema of the fifties provides the clearest examples, from *War of the Worlds* to *This Island Earth*. Of course, more subtle means of devastation than Armageddon have also been explored, for instance in *No Blade of Grass*.

The Icon of the Robot represents the image of technology in Wolfe’s view, although the same could conceivably be said about the Spaceship. Wolfe points out that robots commonly symbolize slavery, this from their first appearance in the 1921 Karel Čapek play *R.U.R.* to their modern version in *Star Wars*. Wolfe’s Robot icon also comprises A.I. and machine self-awareness. Note that Klein et al. venture further by having a separate volume for Machines, of the black box kind, those that evoke Clarke’s Third Law, “Any sufficiently advanced technology is indistinguishable from magic” (Clarke, 1973, p. 21).

The Icon of the Monster represents images of human transformation, and inasmuch as cinema has fed us a steady diet of monsters, many of whom are human-derived mutants, the Monster does encapsulate the concept of otherness. Unfortunately, intelligent aliens are subsumed in this same category. Whereas a transformed human immediately poses the question of its continued humanity, the lack of which equals monstrosity, an alien leaves room for more subtle aspects of otherness, as is clear from a monster-less story like Sturgeon’s “A Saucer of Loneliness”, or the *Chanur* novels by C. J. Cherryh.

Undeniably, Wolfe’s five icons relate to the themes found in SF, yet three of them do not really encompass enough to qualify as themes. For one, the City requires the underpinnings of societal constructs. Without roles and rules, the necessary maintenance of a city-sized man-made environment is impossible. Secondly, the alien that behaves as a Monster is but a single type of the many aliens found in SF. Thirdly, the vast thematic possibilities of far travels and space exploration are not entirely accounted for by the icon of the Spaceship, as neither can the richness and complexity of exotic lands of Earth’s past centuries be properly represented by ancient sailing vessels.

In other words, while Icons are truly representative of the imagery of SF, their use in lieu of themes carries with it the risk of becoming over-simplistic. (Their very effectiveness as icons may also explain the difficulty writers encounter when tasked to translate the subtleties of great SF literature into a screen version palatable to the uninitiated and aficionado alike.)

D. Élisabeth Vonarburg's Psychologie (sauvage) des grands thèmes de la science-fiction

In a recent essay on the psychological resonance of SF themes, author and teacher Élisabeth Vonarburg presents four thematic clusters: Elsewhere, Elsewhen, Otherness, and Utopia, which deal respectively with space, time, living beings, and societies (Vonarburg, 2012). Each comprises several “motifs” (subthemes), defined as a set of setting, situations, characters that give a specific flavour to the broader cluster, as detailed below.

ELSEWHERE

- Plausible Space: realistic, science-based conjecture, such as living on Mars.
- Symbolic Elsewhere: similar settings used for personal/mythological concerns.
- Voyages: the ship as access to elsewhere, especially other star systems.
- Vital Adventure: heroic survival, à la Crusoe (i.e. To Have);
- Metaphysical Adventure: initiation journey, à la Galahad (i.e. To Be).
- Other Dimensions of Space: 4th dimension, macro/microcosm as atoms.
- Inner Space: bio/socio/psychological, stories about human foibles and desires.

ELSEWHEN

- Witness Other Times: passively, the past and future never change.
- The Time Machine: events change in principle (despite Wells' avoidance of such).
- Temporal Paradox: at its worst, the risk of self-cancellation. Some solutions:
 - o Circularity: trips to the past are already included as loops in the time stream;
 - o Elasticity: the time stream exhibits resilience, and self-corrects in the long run;
 - o Time Patrol: guardians use this elasticity to correct deviance from history.
 - o Parallel Universes: the traveller switches to another potential present.
- Alternate History: in which some crucial past event had a different outcome.

Vonarburg goes on to detail the psychoanalytical, or personality growth implications of time travel to the past: knowing future events gives power and gratification—megalomania; meeting oneself in the flesh wreaks havoc in the formation of Ego—narcissism; going to the past to bed one's own mother is a twist on Oedipus—incest, as is killing one's father—patricide. She adds the conundrum of free will: the circularity variant's unchanging past means tragic determinism; elasticity of the timeline suggests the Marxist view of interchangeable individuals; and a Time Patrol implies totalitarianism.

UTOPIA

- Utopia—tomorrow: the perfect society, usually set in Earth's near or far future (there is an infrequent Utopia—elsewhere variant set on other worlds).
 - o End of the World: collapse of civilization, with survivors, reconstruction, and an eventual better world. (Note that the subsuming under Utopia is unusual, as most assume a rupture with prior social order, whereas utopias are in continuity with it.)

OTHERNESS

- Extraterrestrials: invaders or guardians, with a strong first contact subtheme.
- Mutants: physical, i.e. monsters, or psychic, as in super/post-humans with powers.
- Androids: organic artificial humans (a divine lèse-majesté for daring to create life).
- Cyborgs: humans with mechanical parts, less sacrilegious than mutants/androids.
- Robots: fully mechanical (after Asimov, monster robots become perfect humans).
 - o Artificial Intelligence: sentient computer variant, with modern subthemes:
 - Virtual Reality/Cyberspace: otherness via an avatar;
 - Virtual Immortality: survival by download of personality in a machine.

The grouping together of Extraterrestrials and Mutants parallels Wolfe's icon of the Monster. However,

the implication that Androids and Robots tread on the divine ground of creating life or perfecting humanity seems a more relevant psychological tenet than their Otherness.

It is notable that psychological analysis elicits few actual SF subthemes overall, beyond the implication for free will embedded in the various solutions the time travel paradox. The growth of personality parallel emphasizes using knowledge of the future to gain power, meeting oneself in narcissism, and living the Oedipus story as incest and/or patricide, all of which are time travel plot points, none of which is a thematic variant in Vonarburg's list. Furthermore, the wish for power is not limited to time travel; all super power

TABLES

Table 1. Comparison of the Four Schemas for Science Fiction Theme Analysis

Dickson and Gunn (1974)	Klein et al. (1974-1985)	Wolfe (1979)	Vonarburg (2012)
Man and the Machine	<u>Robots</u> <u>Machines</u> Automatons Mechanical	Robot	OTHERNESS: Android Cyborg Robot (<i>with A.I. variants</i>)
Far Traveling	<u>Astronauts</u> <u>Planets</u> <u>Galactic</u> Space Travel Strange Worlds	Spaceship	ELSEWHERE: Plausible Space Travels Adventure
Man and Alien	<u>Extraterrestrials</u> Invaders Creatures	Monster (aliens)	OTHERNESS: Extraterrestrials
Super Powers (Superman)	<u>Mutants</u> <u>Powers</u> Parapsychology Immortals Supermen End of Time Medical Doctors	Monster (modified humans)	OTHERNESS: Mutant
Man and his Society (utopia/dystopia)	<u>Tomorrow</u> Future Societies Rebels Year 2000 Sex Fiction	City	UTOPIA: Utopia — tomorrow
Man and Environment (Cataclysm)	<u>End of the World</u> Survivors Ecological Catastrophes Future Wars	Wasteland	UTOPIA: End of the World
Man and Religion (<i>added by Gunn, 1975</i>)	The Divine		
	<u>Time Travel</u> Paradoxical		ELSEWHEN: (<i>all variants of Time Travel</i>)
	4 th Dimension Mirages		ELSEWHERE: Other Space Dimensions

Table 1: Comparison of the Four Schemas for Science Fiction Theme Analysis

stories use a fictional device that fulfills it.

When psychology does yield subthemes, as with Elsewhere, the result is not SF-specific, and could apply to all of fiction, a point Vonarburg makes herself. Metaphysical Adventure and Symbolic Elsewhere tell us more of the intent of the story's author than what SF is about, a point Vonarburg also highlights in the Inner Space subtheme. To argue this from another perspective, if the psychological resonance of time travel does not of itself yield themes, why should space travel be any different?

Having already synthesized the thematic lists of Dickson and Gunn, and Klein et al., and having restructured the icons of Wolfe and pruned the thematic clusters of Vonarburg, we may directly compare these results, shown in Table 1, and observe there are nine resulting groups of themes to compare. The next section will show how the new Human Evolution Framework does account for the first six groups as bona fide themes, and additionally resolves the last three groups into a seventh and final theme.

DISCUSSION

In order to develop a structure that systemizes SF themes, promoting debate and further analysis, these four schemas must be integrated with the Human Evolution metaphor into one cohesive and easily communicable framework.

Direct comparison of the four schemas

The original list of themes from the Dickson and Gunn interview, as finalized in Gunn (1975), was synthesized above into seven groups, shown in the first column of Table 1 (previous page). This first list serves as a reference point, with the other three sorted to match. The consolidated list of Klein et al. is presented in the second column (the original eleven volume titles are underlined). The icons of Wolfe (1979) are listed in the third, with the alien version of the Monster separated from the transformed human, a subdivision from his original text that allows a direct correspondence with similar themes from other authors. The thematic clusters of Vonarburg (2012) are in column four, also segmented according to her own subthemes.

Line by line, Table 1 reveals a mutual thematic similarity among all the authors. For example, the vast scope offered by Gunn's theme of Far Traveling and the wonders of the cosmos is matched by Klein et al.'s grouping of Astronauts, Planets, Galactic, Space Travel and Strange Worlds, all reasonable candidates for subthemes of Far Traveling, as are Vonarburg's Plausible Space, Travels, and Vital Adventure, and Wolfe's Spaceship icon.

The same goes for Man and the Machine, echoed in Klein et al.'s Robots, Machines, Automatons, Mechanical, also in Wolfe's Robot, etc. In fact, the same can be said for the first six rows of themes in Table 1. There are minor variations, for instance Vonarburg's Mutant is not always endowed with Super Powers, and Klein et al. do list both as separate entities, but they form a group that can be labelled as modified humans, the equivalent icon from Wolfe.

Nonetheless, the overall impression from Table 1 is one of kinship, and whether a given group of themes is labelled Far Traveling, Machines, Society, Wasteland, Mutant or Aliens seems less relevant than finding their obvious commonalities.

This broad agreement, the fact that six comparable themes are present in all four schemas, is a remarkable result in view of the rather different approaches each one exemplifies. It is all the more significant because only Wolfe provides an actual method for his framework, one that was never designed to derive SF themes per se. The other three provide little theoretical justification for their proposed schema.

Comparison to the Human Evolution Framework

The genus *Homo* is defined by its widespread use of *tools*. Tracing the evolution of these tools, we progress from stone implements to intelligent machines. Taken as a group, this is the theme variously called Man and the Machine, Robots, and so on. Note that this defining principle is inclusive: Automatons are tools; Androids are tools; Cyborgs are tools.

Over time, *Homo erectus* spread to the Asian and European continents, as *Homo sapiens* later did to the entire world. We advance from reaching the next valley to exploring the cosmos, and address the same issue of *setting*. From the Spaceship itself to the Strange Worlds encountered while Far Traveling, all variants from other schemas are accounted for.

In expanding his horizons to encompass all continents except Antarctica, *Homo sapiens* encountered previous migrations of early humans, eventually replacing them. The notion that we meet *others* grows from

encountering different hominins to meeting Aliens. The idea is present in all four schemas.

As exemplified by shamanism, *H. sapiens* sought control over the mysterious forces driving the natural world by transcending themselves. So we grow from shamans dealing in the supernatural to Mutants with Superpowers. This quest is present in the stories of myth and proto-literature, as well as their modern equivalent of modified humans as Monsters. Once again, the suggested term of human *essence* is broad enough to incorporate all subthemes.

The invention of settled life and agriculture eventually resulted in the first cities, division of labor, social complexity, and attendant rules of behavior. Change these *rules*, and we progress from loose-knit bands of hunter-gatherers to finely structured utopias. Man and his Society (Gunn), comprises Utopia (Vonarburg), usually from the point of view of Rebels against the majority in Future Societies (Klein et al.). As with previous themes, societal rules stem from a specific benchmark that remains general enough to comprise all the related subthemes proposed in other schemas.

The higher-density living conditions in the cities, coupled with the needs of intensive agriculture, greatly increased humanity's environmental footprint. Modify the habitat, and we progress from waste accumulation within village walls to ecological wastelands. Whether from Cataclysm (Gunn) or slower Ecological forces (Klein et al.), the result is the End of the World (Vonarburg). This result is either a Wasteland (Wolfe) or a place in which Survivors (Klein et al.) start anew. Extremes of habitat comprise all the variants listed before.

Therefore, the Human Evolution Framework not only accounts for these six major themes, but it provides a rationale for their presence.

Integration of time travel, other dimensions, and the divine

The first six benchmarks take place in a concrete world readily accessible by the senses: tools are in hand, the ground explored is beneath the feet, shaman may be touched. Not so for the realm of the spirits, which is entirely invisible. To wonder about the forces behind the natural world, or the fate of the dead, is all in the mind.

Time travel is filed by Gunn under Far Traveling, whereas Wolfe considers the time machine a Spaceship-equivalent that grants access to another kind of unknown. Vonarburg disagrees with both, arguing that it concerns causality much more than exotic locales, a potent reason to treat it as a separate theme. A similar line of argument applies to stories in her macro/microcosm subtheme, also grouped by Gunn under Far Traveling. Vonarburg segregates this type of story as well, this time under Other Dimensions of Space. Instead of yet another strange land to visit, this becomes another facet of the invisible, literally another dimension. Klein et al.'s Mirages and Vonarburg's Other Dimensions of Space are therefore linked to their own version of Time Travel. All takes place outside the "normal," visible universe of three-dimensional space ruled by one of time, moving one-way past to future.

Moreover, shamanism is considered to be the Upper Palaeolithic stage of proto-religion (Rossano, 2006), so that themes such as Klein et al.'s The Divine and Gunn's Man and Religion now fall under the same label, not of beliefs—though of course they are—but rather under the benchmark of invisible dimensions.

Access another *dimension*, and we progress from divining the future and the realm of the gods to time travel and alternate realities.

In effect, the Human Evolution Framework accounts for all nine rows of Table 1 by combining the final three into a seventh and final major theme.

In addition, it provides the missing criteria for the application of Gunn's Metaphor of Change to full effect. The SF theme of aliens is obtained by changing not the actors but the others; stories about religion are derived not from changing the beliefs but the dimension; Far Traveling comes from changing not the scene but the setting, and so on.

Thus, the themes of SF are now recognized as future speculation on age-old concerns stemming from humanity's evolution as a species, organized here in a structure that facilitates the integration of subthemes, since every such item from other schemas may be accommodated.

The Human Evolution Framework's broad definition of theme obviates the requirement implied by Wolfe (2011) for one-to-one correspondence between theme and subgenre. Thus, the framework provides a tool with which to discuss the complexities in the interrelations between these groupings.

Ideas are the *raison d'être* of SF literature. The incorporation of a set of discrete themes into repositories such as the Internet Science Fiction Data Base (www.isfdb.org) would facilitate quantitative studies of these

ideas, by using story themes as computable data. For example, does the influx of women writers over time influence the prevalence of some themes over others? At which level of granularity do historical trends become detectable in SF literature?

Lastly, this framework provides an improved entry point to communicate SF to the uninitiated, by presenting concerns broader than television's spacetime fantasies, killer robots or ill-conceived aliens and mutants. What ends up on television only looks like science fiction (Gunn, 2006), but this particular media increasingly defines SF to the public at large (Stableford, 1996).

CONCLUSION

This paper has shown how the seven benchmarks of human evolution permeate humanity's stories, spanning from early myths and proto-literature to modern Science Fiction. It has also illustrated how four different approaches to theme in SF exhibit such similarities as to immediately suggest six major themes. Moreover, it has demonstrated that the few remaining themes that may on the surface appear unrelated partake of a single, seventh one.

Whether these seven themes are mutually exclusive and jointly exhaustive is beyond the scope of this paper. However, the application of the seven evolution benchmarks to speculation about the future does provide a rationale for the suggested existence of seven, and only seven, major themes of SF:

- MACHINE INTELLIGENCE: intelligent tools, including their interface with humans.
- SPACE FARING: humanity traveling and living in the cosmos.
- EXTRATERRESTRIALS: non-human intelligent life, evolved on other worlds.
- INTER-DIMENSIONAL: different spacetimes, such as time travel and alternate realities.
- TRANS-HUMAN: humans modified by intrinsic mental powers and/or physical alteration.
- NEWTOPIA: society restructured via new rules and social constructs (continuity is implied).
- DEVASTATION: wastelands and survivors, post-cataclysm or otherwise (rupture is implied).

Main thematic categories by no means imply that stories should be confined to a single one, especially in longer forms. For example, *2001: A Space Odyssey* (Kubrick, 1968) incorporates six themes as major story elements: the HAL-9000 computer (tools), the Moon and Jupiter Mission sequences (setting), the four black Monoliths, known from the novel version to be products of superior alien minds, the Star Gate sequence, a clear candidate for other spacetimes (dimension), the final Starchild as a transformed human (essence), and his use of newfound abilities to stop a nuclear exchange (habitat), a final scene from the book that was left out of the film.

The Dawn of Man sequence ends with what is arguably the most famous match cut in cinema history. A prehistoric man throws an antelope thighbone up in the air, which instantly becomes an orbital satellite two million years later. One may argue that this precisely illustrates the contention that the seven major themes of science fiction originate from the evolutionary benchmarks of humankind.

ACKNOWLEDGEMENTS

THIS WORK WOULD NOT HAVE BEEN POSSIBLE WITHOUT DR. K. KITTS, WHOSE GENEROUS HELP AND GUIDANCE IS GRATEFULLY ACKNOWLEDGED.

JEAN ASSELIN WORKS FOR THE MINISTRY OF CULTURE, COMMUNICATIONS, AND STATUS OF WOMEN. GOVERNMENT OF QUEBEC, MONTREAL, QC, CANADA.

References

- Antón, S. C., & Swisher, C. C., III. (2004). Early dispersals of Homo from Africa. *Annual Review of Anthropology*, 33, 271-296.
- Barthell, R. J. (1971). SF: A literature of ideas. *Extrapolation*, 13, 56-63.
- Bould, M., Butler, A. M., Roberts, A., & Vint, S. (2009). *The Routledge companion to science fiction*. New York, NY: Routledge.
- Booker, M. K., Thomas, A.-M. (Eds.). (2011). *The science fiction handbook*. Chichester, UK: Wiley-Blackwell.
- Campbell, J. (1968). *The hero with a thousand faces* (2nd ed.). Princeton, NJ: Princeton University Press.
- Clarke, A. C. (1973). *Profiles of the future : An inquiry into the limits of the possible* (2nd ed.). New York, NY: Harper.

- Cohen, M. N. (2008). Implications of the NDT for world-wide health and mortality in prehistory. In J.-P. Bocquet Appel, & O. Bar-Yosef (Eds.), *The Neolithic Demographic Transition and its consequences* (pp. 481-500). Dordrecht, Netherlands: Springer.
- Del Rey, L. (1979). *The world of science fiction: 1926-1976: The history of a subculture* (pp. 327-341). New York, NY: Del Rey/Ballantine.
- d'Errico, F., Vanhaeren, M., Barton, N., Bouzouggar, A., Mienis, H., Richter, ... Lozouet, P. (2009). Additional evidence on the use of personal ornaments in the Middle Palaeolithic of North Africa. *Proceedings of the National Academy of Sciences of the United States of America*, 22, 16051-16056.
- Gilks, M., Fleming, P., & Allen, M. (2002, November). Is science fiction for you? *The Writer*, (11), 36-40.
- Gunn, J. (1975). *Alternate worlds: The illustrated history of science fiction*. Englewood Cliffs, NJ: Prentice-Hall.
- Gunn, J. (1988). (Ed.). *The new encyclopedia of science fiction*. New York, NY: Viking.
- Gunn, J. (2005). Toward a definition of science fiction. In J. Gunn, J., & M. Candelaria (Eds.), *Speculations on speculation: Theories of science fiction* (pp. 5-12). Lanham, MD: Scarecrow Press.
- Gunn, J. (2006). *Inside science fiction* (2nd ed.). Lanham, MD: Scarecrow Press.
- Internet Speculative Fiction Database* (www.isfdb.org). Accessed on February 29, 2012.
- James, E., & Mendlesohn, F. (Eds.). (2003). *The Cambridge companion to science fiction*. Cambridge, UK: Cambridge University Press.
- Jones, G. (2003). The icons of science fiction. In E. James, & F. Mendlesohn, (Eds.), *The Cambridge companion to science fiction* (pp. 163-173). Cambridge, UK: Cambridge University Press.
- Kimbel, W. H. (2009). The origin of Homo. In F. E. Grine, J. G. Fleagle, & R. E. Leakey (Eds.), *The first humans: Origin and early evolution of the genus Homo* (pp. 31-37). Dordrecht, Netherlands: Springer.
- Klein, G., Goimard, J., & Lokamidis, D. (1974). *La grande anthologie de la science fiction* (Vols. 1-12, pp. 11-12). Paris, France: Livre de poche.
- Klein, R.G. (2008). Out of Africa and the evolution of human behavior. *Evolutionary Anthropology*, 17, 267-281.
- Kubrick, S. (Producer & Director). (1968). *2001: A Space Odyssey* [Motion picture]. UK: Metro-Goldwyn-Mayer.
- Lewis-Williams, D. (2002). The mind in the cave: *Consciousness and the origins of art*. London, UK: Thames & Hudson.
- Lewis-Williams, D. (2005). New neighbors: Interaction and image-making during the West European Middle to Upper Paleolithic transition. In F. d'Errico & L. Backwell (Eds.), *From tools to symbols. From hominids to modern humans* (pp. 372-388). Johannesburg, South Africa: Witwatersrand University Press.
- Matthews, R. (2003). *The archaeology of Mesopotamia: Theories and approaches* (pp. 93-126). London, UK: Routledge.
- Pettitt, P. B. (2002, August). When burial begins. *British Archaeology*, 66 (4), 8-13.
- Plummer, T. (2004). Flaked stones and old bones: Biological and cultural evolution at the dawn of technology. *Yearbook of Physical Anthropology*, 47, 118-164.
- Pringle, H. (1998). The slow birth of agriculture. *Science*, 282, 1446.
- Roche, H., Blumenschine, R. J., & Shea, J. J. (2009). Origins and adaptations of early Homo: What archaeology tells us. In F. E. Grine, J. G. Fleagle, & R. E. Leakey (Eds.), *The first humans: Origin and early evolution of the genus Homo* (pp. 135-150). Dordrecht, Netherlands: Springer.
- Rossano, M. J. (2006). The religious mind and the evolution of religion. *Review of General Psychology*, 10, 346-364.
- Sawyer, A., & Wright, P. (Eds.). (2011). *Teaching science fiction*. Basingstoke, UK: Palgrave Macmillan.
- Scarre, C. (Ed.). (2009). *The human past: World prehistory and the development of human societies* (2nd ed.). London, UK: Thames and Hudson.
- Soodyall, H., & Jenkins, T. (2005). Contribution of genetics to the study of human origins. In F. d'Errico & L. Backwell (Eds.), *From tools to symbols. From hominids to modern humans* (pp. 276-293). Johannesburg, South Africa: Witwatersrand University Press.
- Stableford, B. (1996). The third generation of genre science fiction. *Science Fiction Studies*, 23, 321-330.
- Tattersall, I. (2009). Human origins: Out of Africa. *Proceedings of the National Academy of Sciences of the United States of America*, 22, 16018-16021.
- Thaon, M. (Ed.). (1986). *Science-fiction et psychanalyse*. Paris, France: Dunod.
- Vonarburg, E. (2012). Psychologie (sauvage) des grands thèmes de la SF. *Solaris*, 182. Quebec City, Canada: Alire.
- Walker, C. B. T. (1990). Cuneiform. In J. T. Hooker (Ed.), *Reading the past: Ancient writing from cuneiform to the alphabet* (pp. 15-73). New Haven, CT: Yale University Press.
- Watkins, T. (2009). From foragers to complex societies in Southwest Asia.. In C. Scarre (Ed.), *The human past: World prehistory and the development of human societies* (2nd ed.) (pp. 200-233). London, UK: Thames and Hudson.
- Winkelman, M. (2010). *Shamanism: A biopsychosocial paradigm of consciousness and healing*. Santa Barbara, CA: Praeger.
- Wolfe, G. K. (1979). *The known and the unknown: The iconography of science fiction*. Kent, OH: Kent State University Press.
- Wolfe, G. K. (2011). Theorizing science fiction : The question of terminology. In A. Sawyer, & P. Wright (Eds.), *Teaching science fiction* (pp. 38-54). Basingstoke, UK: Palgrave Macmillan.

FANTASTIC JOURNEYS OF THE MYTHIC KIND**Summary**

Science fiction is literature about the future, yet at its core we find elements of stories that are thousands of years old. At least since Jung, we have noted that these ancient stories found around the world are more than simplistic explanations for the existence of the physical world, and the experience of humans in it, or mere entertainments—though in their day they were both. The psychological insight found in myths is no less true today than yesterday, and no less necessary to our understanding of ourselves. We respond to these ancient stories even when we do not consciously recognize their origins. The presence of mythic elements gives a work of fiction a kind of “objective correlative,” as T. S. Eliot called it, an emotional resonance that makes the experience immediate and memorable to the reader. Much of the best science fiction draws on mythic themes and tropes, sometimes consciously on the part of the author, to apply this wisdom to its dreams about tomorrow. In doing so, science fiction acknowledges that while the environment we find ourselves in may change, the element that makes us human will not.

This paper concentrates on one core myth, the Hero’s fantastic journey, as it is used or referred to in science fiction from Jules Verne to the recent work of Mary Doria Russell.

Mythology

Several years ago, an anthology of science fiction used the subtitle “contemporary mythology,” (Warrick et al., 1978), an assessment that may require some explanation. Science fiction is a series of meditations on the theme of being human, our day-by-day struggle of living, loving, fighting, raising families, but set in other places—sometimes across the galaxy—and other times. Fiction’s advantage over the forecasts of political scientists, sociologists and others comes from the fact that not only are we engaged by the ideas, but we perceive the experience as being there, participating. The scenery and gadgets the author comes up with in a science fiction story may be thought provoking and are certainly entertaining, but SF’s aims are higher than that. SF compels the reader’s active participation in the conversation of the narrative, offering experience not just intellectual understanding.

That more is going on in such stories than mere speculation about future possibilities becomes obvious when we look at a couple of classic works whose forecasting skills are practically nil. George Orwell’s *1984* is no less powerful now when it looks like a failed prophecy from 1948, nor does Roger Zelazny’s vision of Mars in “A Rose for Ecclesiastes” fail to move us even though advanced life on Mars was already known in 1963 to be not possible. We appreciate such stories according to what we learn from them about the condition of being human; the more emotional resonance a story has, the more we identify with its all-too-human characters, and the more meaning we draw from it. To understand the difference, consider Hugo Gernsback’s *Ralph 24C1 4C1+*. (Today’s texting generation can probably understand that faster than Gernsback’s original readers!) The man who gave his name to one of SF’s greatest prizes created a cast of two-dimensional characters who are basically touring the future and gawking at technology, not much else. The result is an unmemorable story where practically the only pleasure we can derive from reading it is counting the number of future inventions Gernsback got wrong.

The poet T.S. Eliot used the term “objective correlative” to describe the image that evokes the associated emotion of an experience for the reader (Eliot, 1921, p. 3); myth is objective correlative on the grand scale. While our formidable brains are capable of marvelous feats of logic and analysis, there remains a vast ocean of experience that we can access only obliquely through our emotions and the metaphors of myth. The Swiss philosopher, Carl Gustav Jung spoke of “forms or images of a collective nature which occur practically all over the earth as constituents of myth and at the same time as autochthonous individual products of unconscious origin” (Jung, 1963, p. 63). The language of this rich, worldwide dimension is metaphor; to say a thing is makes for a more powerful experience of its “thingness” than to say it *is like*. Asking whether the statement or image itself is true or not is to miss the whole point. The factor that makes some stories more memorable or powerful than others is the emotional resonance they evoke; this resonance derives from the presence of mythic elements. We are used to finding myth used in fantasy, but its echoes in SF are subtler.

We should not expect to find an entire myth retold in SF (though sometimes we do); what we do find frequently is a piece of action, or a plot complication that evokes a kind of recognition in us, or an oddly

familiar character type, an archetype. Like dreams whose puzzling content moves us even when we cannot explain or even understand, these stories exert their power over us through the use of embedded myth. It is not important that this inclusion be conscious on the part of the author; we judge by its effect on the reader.

Heroic Journeys

The Hero's Journey is one of two major myths underlying SF (the other is the story of Prometheus). There are, of course, several minor myths that we encounter in the genre, but we will concentrate on this major one. Christopher Vogler discusses the pattern of narrative first codified by Joseph Campbell as the Hero's Journey as follows: The Hero's birth and background are unknown, perhaps mysterious. He grows up in obscurity, but is called to undertake a quest to save the kingdom. At first, he refuses this call; a mentor appears and gives him special training or advice. He sets out on this journey, and by a series of trials including a near-death descent into the underworld, aided by non-human spirits or animal helpers, he eventually prevails and takes possession of the "treasure." The road back is fraught with more dangers and trials, often on a higher, more complete level. On his return to the ordinary world, transformed, he is hailed a conquering hero. (Vogler, 1998, pp. 13-16). In some versions of the myth, this acclaim is fleeting, and a few years later, he is attacked by his erstwhile followers and dies, after which his reputation grows, he is revered and sometimes accepted as a god, or at least the founder of a cult of followers. All mythic Heroes share the majority of these indicators. Among them, we find Orpheus and Osiris, Odysseus, Gautama Sakyamuni and Jesus; in SF the most obvious (and consciously used) example is Luke Skywalker. Predating George Lucas's use of the myth in *Star Wars*, we find Poul Anderson's "Goat Song," a retelling of the Orpheus version of the story, with a computer called SUM in the place of the god of the underworld.

Before proceeding further with this discussion, it is important to note that we will be dealing here with the male form of the myth, as it is the one most used or referred to in SF even in the work of female authors. Why this should be the case lies outside the scope of this article to speculate. (The reader interested in pursuing this further is referred to the work of Maureen Murdock to be found online at www.thewritersjourney.com.)

Homer's account of Odysseus's wanderings in the Mediterranean on the way home from the siege of Troy is the version of the Hero's Journey best known in the western world. It offers a metaphor for the trials and tribulations of human life, the spiritual journey of the soul, sin and redemption, the yearning for a long-lost "paradise" of home. But our fascination with voyaging certainly predates Homer; we are born with wanderlust; the lure of the long migration out of Africa is in our blood. When we are prevented from voyaging in person, by finances or health or circumstance, we have always turned to the next best thing, the tales of other explorers' adventures. The *Odyssey* is the bedrock and archetype for all such tales, whether mainstream or science fiction.

It may be useful to consider that there are two aspects to the theme of fantastic voyages: the fantastic journey itself, with all its hardships, discoveries and entertainments, and secondly, the quest, the reason the voyage is undertaken in the first place. "Journey" stories are mainly about the privations and dangers along the way, scarcely concerning themselves with the projected outcome of the voyage, often ending when the farthest shore is reached; "Quest" stories, on the other hand, give fewer details of the trek or of life onboard the ship, the journey being necessary only to get the characters to the goal.

Obviously, journey and goal are frequently so inter-related that it becomes difficult to talk about one without considering the other. An early short story, Alan Nourse's "Brightside Crossing," gives us an example of the difficulty of separating out these two aspects of fantastic voyage stories. The adventure in Nourse's story comes from a small group of scientist/adventurers trekking across Mercury's hellish landscape—"because it's there," as the first man to make the summit of Everest said about climbing the mountain—but the central character's desire to return to a trek that almost killed him reveals the importance of the goal: conquering a hostile planet.

We should also note that when we are dealing with a multi-volume story, apart from the over-arching focus of the series, all the books except the last can be seen as journey stories; only the last, the climax, is obviously a matter of the goal. To understand this, consider J.R.R. Tolkien's fantasy epic, *The Lord of the Rings*. The adventures encountered by the characters on their fantastic journey are moving and full of meaning, but they cannot be fully appreciated without the goal of the One Ring's retrieval and disposal at the end of the cycle. Though the first volumes in the saga can be understood as journey stories, the overall story is ultimately a quest of the highest importance, an attempt to save or redeem the world (much as that other mythic journey undertaken by Parsifal). What is important in differentiating the two types of story is this

central focus.

For the purpose of clarity, we shall consider the two parts of this myth separately as they appear in SF narratives.

The Journey:

Homer's *Odyssey* is certainly the mythic root of all subsequent Western travel tales. It encompasses battles, perilous escapes, mortal danger, horrifying monsters, acts of courage and acts of treachery, the temptations of sexual attraction, the strangeness of the universe in ancient Greek terms: elements that lend themselves easily to SF narratives. Myths always contain an instructive subtext. Odysseus's ten-year voyage illustrates the importance of faithfulness to a goal, self-reliance, strength of character, spiritual and emotional growth, the encounter with other cultures and other ways of being. It is important to note that the lengthy account ends once Odysseus's faithful old dog recognizes him and he clears out Penelope's hundred suitors to reclaim his kingdom. The journey itself was the point of the story.

We might digress for a moment here to consider the importance of such journeys in human history, because this aspect too is reflected in SF narratives. Over time, vast numbers of humans have shown a willingness to risk their lives on voyages of exploration, often taking artifacts of their culture with them. Consider the 15th century Chinese voyages; thousands of non-sailors were aboard the junks, including diplomats, concubines, and Buddhist priests. Nor was this solely an Oriental custom; Sir Francis Drake's *Golden Hind*, sailing around the world in the 16th century, provided musicians for entertainment as well as a parson. Today's cruise passengers expect food and medical care, and games and other recreations are all part of the journey.

To my mind, the purest example of a fantastic journey, where the strangeness of the voyage is the story, occurs in Norman Spinrad's novel, *The Void Captain's Tale*. No priest or parson on the ships of Spinrad's fictional cruise line, but cruise directors and the entertainment they provide make for a vivid sub-plot. Unshackled from what Spinrad terms the "quotidian world," the passengers engage in bizarre behaviors and sexual rituals. In fact, the novel describes in some detail the culture of customs and recreation that develops on ships of the Second Starfaring Age:

The "lowest" deck of the Grand Palais module was given over to a seemingly chaotic maze of dream chambers opening off a convoluted tunneled passageway that curved and wound around them.... The organically rounded walls of the tunnel glowed an erotic rose, a hue picked up and made palpable by the perfumed mist that filled it. Many of the chambers were already occupied... the sighs and moans, the rhythmic rustlings, were allowed to suffuse into the rosy ambiance of the passageway, surrounding us with the music d'amour. (Spinrad, 1983, p. 44).

Like Odysseus, Genro Kane Gupta, the Void Captain of Spinrad's tale, is a flawed but basically good man who finds himself sexually tempted and in considerable danger of losing both his life and his soul on the voyage.

Science fiction has long explored the idea of the generation ships that will be needed for truly long voyages in space, absent the discovery of FTL drives or "star-gates." What Spinrad adds to this speculation is that our culture will change with and be changed by the journey itself. New Earth won't be much like Old Earth. Customs we probably cannot even dream about will have evolved, certainly new fashions, new cuisine, new laws. But the basic human dilemmas of right and wrongdoing will remain.

The recent "Blue Tyson" series of novels by Australian writer, Terry Dowling, develop Homer's theme with a wind-driven "ship" that crosses the desert of the near-future Australian Outback. Like an updated Odysseus, Dowling's protagonist, Tom Rynosseros, a man with a mysterious past, is called to undertake a desperate and dangerous adventure that will determine more than the fate of the central characters, and in doing so he encounters fantastic creatures both alien and artificial. That this intersection of myth and science fiction is conscious on Dowling's part is underscored by an epigraph he chose from Jung: "This is the task always ... not to illuminate the ancient truths, the ancient intimations of the unconscious, the ancient intimations of the soul, but...to make them immediate and contemporary, to give them meaning in the here and now" (Dowling, 1992, p. iv).

For another example, Gregory Benford's *Great Sky River*, followed by *Tides of Light*, is at heart a story of a small band of humans forced to flee alien pursuers, embarking on a fantastic journey to the center of our galaxy. Since the overall destiny of Killeen and the fugitives he leads is not met in the first books in the series, they can be considered as examples of journey stories, with the full complement of harrowing

dangers, exotic creatures (some of whom are helpers), nightmare landscapes, and descents into “hell” that Homer would recognize. That a 21st century reader can empathize with the plight of augmented future humans on worlds that bear no physical resemblance to our own Earth is due not only to the author’s writing skills—though they are considerable—but also to the resonance of the underlying myth of the fantastic journey.

Benford frequently uses imagery that makes reference to recognizable human emotional reactions (the objective correlative), thus grounding the reader in the midst of very alien scenery and events. In *Great Sky River* we read:

They popped helmets...and kissed in incredulous greeting. Only taste and touch were trusted now, the human press of warm and pungent flesh. Killeen breathed in the rank running-smell of Sanhakan. Then the slightly muskier odor of a woman who was suddenly at his elbow... Another woman, old and weathered, smelling of salty exertion... (Benford, 1987 p. 80).

The use of sense of smell here, especially the smell of sweat, serves to make the imagined future meeting, with all its danger and poignancy, come alive for the reader so that we do not merely understand, we experience.

Other well-known futuristic voyages include Arthur C. Clarke’s *2001*, which has the subtitle “A Space Odyssey” in case we miss the mythic connection of this dangerous journey across our own solar system that ends enigmatically with the birth of the Star Child, certainly not a goal the journey’s planners could have foreseen or aimed for. The film and television series, *Star Trek*, offers another example. The *Enterprise* becomes a world unto itself on its long voyages; romances are not uncommon (although if they involve Captain Kirk, they’re destined to end unhappily), and later iterations of the series even have elaborate entertainment features such as the holo-deck on board for the crew to while away the long time between ports-of-call. The emotional and psychological effects of the voyage on the voyagers are often a prominent part of the plot. Since significant portions of each episode take place on the ship, we can consider *Star Trek* a modern *Odyssey*, a story where the voyage itself is at least as important as the outcome, much like TV’s western series, *Wagon Train*, from which *Star Trek* derives.

Earlier examples of what we might call this theme, where the journey has more importance than the arrival, include several Jules Verne stories, especially *Twenty Thousand Leagues Under the Sea*. In this tale, which might as well be a voyage into outer space, Captain Nemo (the name is a reference to what Odysseus calls himself at one point: “No Man”) pilots the submarine *Nautilus* through a vast and well-described seascape of natural and scientific wonders. A.E. Van Vogt’s *Voyage of the Space Beagle* and Poul Anderson’s *Tau Zero* fit in this category too, as does Robert Heinlein’s *Universe*. Another early story, Stanley Weinbaum’s “A Martian Odyssey,” picks up Homer’s theme of comparative ethnology, the clash of alien encounters, where Jarvis, the human explorer, meets and learns to deal with “Tweel,” a representative of the dominant race on Mars.

Reading these modern versions of the mythic voyage, we see that rather than being simply Tourists-in-Space travelogues, the best of them entail extreme jeopardy for the voyagers, and, like Homer’s tale, opportunities for psychological and spiritual growth. I suspect that this latter virtue is what gives SF its depth and power.

The Quest:

Robert Heinlein proposed that there were only three basic plots available to writers: Romeo and Juliet, The Man Who Learned Better, and The Little Tailor (quoted in Silverberg, para.6). This is a bit of oversimplification on Heinlein’s part, but it should be immediately obvious that all three of the categories he identifies are themselves based on archetypes such as we have been discussing. The one that concerns us here is The Little Tailor’s story, a fairy tale journey in which a character sets out to gain a boon for himself or for his society. In myths, the one on the quest seeks the rescue of someone abducted (Helen of Troy), or a magic object (Jason and the Golden Fleece); in legends, it might be the Holy Grail that will cure the ailing king and his suffering kingdom (Parsifal); in fairy tales, it is the hand of the king’s daughter (the Little Tailor). If the voyage itself is strange enough, we might be treated to the main character’s adventures along the way, but the real meat and the true focus come when he confronts the dragons that literally or figuratively guard the treasure. Whether the outcome of the quest is successful or not does not affect the emotional resonance of the underlying myth, though SF readers tend to value optimism more often than not.

In one sense of course, the vast majority of all SF stories—perhaps fiction in general—are quest stories, in the sense that the major character has a goal to achieve and obstacles to overcome on the path toward

that achievement. This may reflect how deep the influence of mythic structure lies in our response to fiction. In many cases, the journey is a purely psychological one, what Heinlein might have labeled “man who learns better” stories. However, in SF, mythic quest stories frequently entail a physical journey across an alien geography as part of the plot, even when the focus is on the boon at the end.

When we considered the journey stories, we remarked on the details of the voyagers’ culture that emerge and evolve, the emphasis on landscapes and adventures along the way, and a plot that frequently terminates with the arrival at the destination. The quest story, by contrast, emphasizes the struggle for the goal, often at great cost to the main character. A clear example of this occurs in Mary Doria Russell’s novel, *The Sparrow*. Not only is the long voyage from Earth to the planet from which radio signals have been picked up hardly described beyond basic details (hollowed out asteroid, hydroponic agriculture), but life on Earth to which the sole survivor, an obscure Jesuit priest, returns decades later hasn’t changed that much beyond a few technological advances. Compare this situation with that of Odysseus himself, who returns to a court functioning fairly normally in spite of his long absence. The emphasis of the story is on the mission: First, to meet, interact with and understand an alien culture, and secondly to survive the nightmarish experience and bring the knowledge gained back to Earth. In the process, the priest, Emilio Sandoz, suffers greatly, very nearly loses his life along with the rest of the expedition’s members, and undergoes a profound crisis of faith in his own version of the descent into the underworld. He describes his situation as “an exact counterpart of a capuchin monkey kept on a golden chain by some sixteenth century European aristocrat,” with the added horror of physical mutilation and sexual assault (Russell, 1996, p. 389). I find it telling that the author refers to Sandoz’s horrific situation in metaphoric terms: It “is,” not “is like,” the metaphor being far more powerful than any simile. This image of an exotic captive monkey, long-fingered, sad-faced, itself named for its perceived resemblance to a Catholic order of friars, serves as the “objective correlative” here, evoking the emotional heart of the scene for the reader.

It may not appear at first that Sandoz is very heroic and it is difficult to see what boon he brings back to Earth, but this becomes clear when we remember the novel’s opening words, “The Jesuit scientists went to learn, not to proselytize. They went so that they might come to know and love God’s other children” (p. 5). In the harsh interrogation Sandoz is subjected to on his return by his own order, a further reference to the later, bitter experience of the mythic hero, we are brought to understand that it sometimes takes heroic effort just to survive, an effort that is not always successful, but that is a human duty to undertake. Frightful knowledge gained is better than comfortable ignorance indulged.

Other examples of quest narratives include Hal Clement’s *Mission of Gravity*, where the alien Barlennen takes on the extraordinary dangers of his home planet, Meskline, to rescue a lost human rocket probe; but more than this, Barlennen is inspired to undertake this quest by the opportunity to expand his knowledge. In Ursula Le Guin’s *The Left Hand of Darkness*, the human envoy, Genly Ai, comes to Gethen to make diplomatic contact with its hermaphroditic inhabitants, but ends in a harrowing ice journey of escape with one of them during which he gains understanding of and compassion for the Gethenians to an extent far greater than he could have anticipated when setting out on his original quest.

It may turn out that we have already made enough preliminary voyages into space, learned enough from unmanned probe and manned shuttle, to know how long and how repetitious in terms of event such long journeys inevitably are. The SF reader will eventually grow tired of fantastic journey tales. I suspect the literary future may lie with the quest version of this myth.

Conclusion

On the subject of science fiction and myth, James Blish once said, “[myth is] static...and thus entirely contrary to the spirit of SF, which assumes continuous change” (quoted in *The Encyclopedia of Science Fiction*, 1993, p. 849). It seems to me that Blish is looking only at the archetypal structure of the mythic tale: The events happened once and are forever the same. Thus he misses the power of the message it contains: This aspect of life is forever, though it may appear in different events and different times.

This is the power of myth that science fiction narratives use to their advantage.

ABOUT SHEILA FINCH

SHEILA FINCH IS THE AWARD-WINNING AUTHOR OF EIGHT SCIENCE FICTION NOVELS. IN 1998, SHE WON THE NEBULA AWARD FOR HER NOVELLA, “READING THE BONES.” SHE HAS BEEN A TEACHER OF CREATIVE WRITING AND STILL OFFERS PRIVATE WORKSHOPS.

References

- Benford, G. (1987). *Great sky river*. New York: Bantam.
- Benford, G. (1989). *Tides of light*. New York: Bantam.
- Campbell, J. (1949). *The hero with a thousand faces*. N.J.: Princeton University Press.
- Clement, H. (1954). *Mission of gravity*. New York: Doubleday.
- Clute, J. & Nicholls, P. *The encyclopedia of science fiction*. 1993. Great Britain: Orbit.
- Dowling, T. (1992). *Blue Tyson*. Adelaide: Aphelion Publications.
- Eliot, T. S. (1921). "Hamlet and his problems." *The sacred wood*. New York: Knopf.
- Jung, C. J. (1963). *Psychology and religion*. New Haven: Yale University Press.
- Le Guin, U. K. (1969). *The left hand of darkness*. New York: Ace.
- Russell, M. D. (1996). *The sparrow*. New York: Ballantine Books.
- Silverberg, R. (2011, April). "The plot genie." www.asimovs.com.
- Spinrad, N. (1983). *The void captain's tale*. New York: Simon and Schuster.
- Verne, J. (1870). *20,000 leagues under the sea*. Paris: Hetzel.
- Vogler, C. (1998). *The writer's journey*. Los Angeles: Michael Wiese Productions.
- Warrick, P., Greenberg, P. H. & Olander, J., eds. (1978). *Science fiction: contemporary mythology*. New York: Harper & Row.
- Weinbaum, S. (1975). "A Martian odyssey." *A Martian odyssey and other science fiction tales*. New York: Hyperion.

VICTOR GRECH, ET AL.

MUTATION AND INFERTILITY IN SCIENCE FICTION

Abstract

Mutation in the Science Fiction (SF) genre is viewed with revulsion as it results in strange beings, threatening monsters and alien others. Infertility is a common problem, worldwide, that will eventually affect up to a third of couples. This paper will discuss the role of mutation in nature and provide an overview of mutations resulting in infertility in SF. The science behind some of the narratives will be explained while extrapolations that exceed reasonable poetic license will be pointed out.

Introduction

Transformation or mutation in the past was often viewed as an infliction visited upon the individual by the gods as a punishment for some transgression. In the contemporary Science Fiction (SF) scene, such changes are commonly examined with suspicion and abhorrence.

Spontaneous mutations are common in nature, and most confer no specific advantage to the individual, and therefore, to the species. The next commonest category of mutations is disadvantageous or even lethal to the entity. A few are actually beneficial, and may advantage the individual to the extent of increasing its chances of procreation. This will favour the passage of the mutation to the next generation who will also enjoy said advantages and will also have higher chances of propagation. A sufficient number of mutations will eventually result in the establishment of a new species.

The effects of mutations depicted in SF are usually far more powerful, producing unrealistic extraordinary and fully-fledged physical and/or mental powers. Indeed, the genre uses the mutation *novum* as an excuse to explore the effects of such hypothetical abilities and powers, and the subsequent interactions with and effects on the rest of humanity. Examples abound as far back as ancient times, and Donna Haraway (1991) has observed that

[T]he Centaurs and Amazons of ancient Greece established the limits of the centred polis of the Greek male human by their disruption of marriage and boundary pollutions of the warrior with animality and woman. Unseparated twins and hermaphrodites were the confused human material (p. 180).

Infertility is a common problem, worldwide, and epidemiologists estimate that the number of couples in the developed world who will struggle to have children will double within a decade (Ledger, 2009). One in

three couples is likely to suffer infertility in ten years' time, compared with one in seven today and this is thought to be due to the rising age at first attempt at pregnancy when fertility naturally declines, an increase in sexually transmitted diseases which damage the reproductive organs, a huge increase in obesity which is known to adversely affect fertility, and a declining level of male sperm count and overall sperm quality (Ledger, 2009).

The trope of infertility in SF is too vast to encompass in any reasonable length, and this paper will limit itself to an overview of mutation resulting in infertility in SF. While the genre encourages the writer to investigate aspects of humanity, society or the universe that are impossible to represent through conventional literature, the study of the scientific premises that underlie such conjectures is nonetheless warranted. In this essay, scientific excesses that go beyond the pale of reasonable artistic license will be discussed.

A common element in SF is that of fear, a dread of human change into a somehow alien other, and this concern occurs at multiple levels: at the level of the authoritarian state, at the level of groups of individuals, and also at the level of the actual entity who is at risk of alteration or who may unwittingly thereby eventually, in his or her turn, reproduce equally distorted nonhumans. There is a sense of apprehension, a concern that subversion may overtake us by "operating necessarily from the inside" (Derrida, 1981, p. 24). There is a sense that individual humans may deliberately or unwittingly produce non-human offspring that are advantaged in ways that lead to the supplantation of the entire human race.

Authors therefore continually reassemble generic tales of horror into stories of genetic transformation that lead to mutation (Broderick, 1993, p. 369). This is reminiscent of Foucault's (1970) iconic representation of the figure of "Man" erased from a sandy beach by an incoming tide of change (p. 387), and the SF equivalents are alien others, whether mutants or aliens who "have invaded contemporary western culture. They signify, they are part of everyday life" (Badmington, 2004, p. 10), threatening to displace humankind.

Narratives

State enforced infertility

In SF, the state may enforce infertility on selected high-risk individuals in order to preserve the genetic status quo, that is, attempting to keep humanity human by preventing mutations from creeping into the general germ pool. For example, in Arthur C. Clarke's "Rendezvous with Rama" (1975), astronauts undergo voluntarily sterilization on entering the space service because after years in space, mutations due to damaged gonads are said to be almost certain.

However, today, frozen sperm is obtained before sterilization, allowing fertilization to take place when desired. In the medical world, after radiotherapy and chemotherapy for malignancies, the preservation of fertility is a medical possibility for both males and females and currently, the best options are oocyte cryopreservation for women and sperm banking for men. Equivalent techniques for prepubertal children remain experimental. On the other hand, it is very important to remind such individuals that fertility may be minimally or completely unimpaired and that contraceptives should be used unless pregnancy is desired.

Concern with regard to damaged germ plasm is also expressed in Poul Anderson's "The Big Rain" (1954) where Venus is run by a dictatorship and dissidents are sentenced to slow death in radioactive uranium mines. Male and female prisoners are not allowed to return to society for fear of producing mutated offspring.

The state may take even more extreme measures *vis-à-vis* astronauts, and do so in "Aye, and Gomorrah." In this famous short story by Samuel Delany (1967), astronauts are neutered prior to puberty in order to avoid the effects of space radiation on gametes, and are fetishized by some members of society who find their unattainability and non-arousal attractive. This is not entirely accurate as operatic castrati in the Baroque period (17th and 18th centuries) were often sexually active adults, capable of erection and ejaculation, albeit producing only spermless prostatic ejaculate (Hatzinger, Vöge, Sold, & Sohn M, 2009).

An even more extreme scenario is depicted in John Varley's picaresque novel "The Golden Globe" (1998) wherein the anti-hero protagonist has had his testicles removed and kept in storage, for reasons unspecified in the novel. These concerns are actualized in John Blish's "A Clash of Cymbals" (1959), one of his *Cities in Flight* novels, where the sperm of the Major of a space-roaming city is damaged by radiation, and he unknowingly fathers handicapped children after a sperm donation, and orders the destruction of these, his own unknown children.

Hagio Moto's "Star Red" (1980) has Earth send criminals to Mars because most beings sent to this planet become infertile. However, after being abandoned for several decades, colonists' descendants

are discovered, and these have white hair, red eyes and telepathy. These new Martians are all massacred or captured for the purposes of medical experimentation. The author seems to be describing a form of oculocutaneous albinism, a group of inherited disorders characterized by a generalized reduction of cutaneous, ocular and pilar pigmentation from birth. These conditions are due to a decreased endogenous production of melanin, the dark pigment that gives skin, hair and eye color. However, these conditions do not result in telepathy, or indeed, in any psychic abilities (Okulicz, Shah, Schwartz, & Janniger, 2003).

Fear of non-radiation-induced mutations also features in Theodore Sturgeon's "Why Dolphins Don't Bite" (1985), where the human colonists on the planet Medea create sterile, genetically engineered individuals for specific physical or mental tasks. Any (rare) offspring are also sterile. This is eventually discovered to be due to a deliberate Earth programming instruction implanted in the machines that create these individuals, in order to ensure that no human engineered mutations are inherited, potentially contaminating and altering the gene pool.

In Robert Heinlein's "Beyond this Horizon" (1948), Heinlein also briefly refers to genetically engineered freemartins created by the state. A freemartin is an infertile female mammal, which has been masculinized and has non-functioning ovaries through the intrauterine exposure of male hormones from an accompanying male twin. This is the normal outcome of mixed-sex twins in all cattle species, and also occasionally occurs in some other twin mammal pregnancies (Lillie, 1916).

State induced mutation

Conversely, the state may choose to deliberately genetically modify its subjects, and in Joan Slonczewski's "Daughter of Elysium" (1993), such a process is shown to result not only immortality but also in sterility. Similarly, in Stephen King's "Firestarter" (1980), two individuals voluntarily participate in an experiment that changes their genetic makeup, and their eventual daughter develops the mental ability to initiate fires. The parents speculate whether their daughter might be able to eventually have children, or may be infertile, akin to a mule.

Personal mutagenic concerns

At the personal level, astronauts' concern about germ cell damage is also mentioned in passing in Anderson's "Iron" (1989), wherein we are told that the gametes of a husband and wife star-faring couple are banked. However, we are not told whether the concerns regard infertility, mutations or both. Similarly, in Anderson's "The Silent War: Book III of The Asteroid Wars" (1994), and in Varley's "Titan" (1979), astronauts' gametes are stored as a safeguard against radiation exposure during a voyage through the solar system. And in Peter F. Hamilton's *Confederation* universe (2000), asteroid dwellers and starship crews of both sexes deposit gametes for banking at puberty as a safeguard against radiation exposure.

Concerns regarding radiation-mutated offspring are also voiced in Heinlein's "Solution Unsatisfactory" (1941) where military scientists developing weapons-grade radioactive dust are continually exposed to radiation, and in the same author's "Orphans of the Sky" (1965), a generation spaceship crew finds itself being slowly mutated due the effects of cosmic radiation. The exact same scenario is again depicted in Michael McCollum's "Procyon's Promise" (1985).

Lois McMaster Bujold also depicts a fear of mutant births in her *Barrayer* series as evidenced in "Mountains of Mourning" (1991) wherein the isolated extra-solar human colony experiences an up to twenty percent birth mutation rates due to high levels of ambient radioactivity and exposure to alien toxins such as allergens, carcinogens and mutagens. These events happen in the setting of a culture that values military prowess; therefore their own mothers traditionally dispatched such infants through the simple expedient of having their throat cut.

The erroneous belief that high levels of ambient radioactivity would generate a common set of mutation/s that would ensue in entirely new species that would be adapted to radioactivity is perhaps most famously mooted in J. G. Ballard's, "The Voices of Time" (1960), which fulfills "the traditional role of the poet: to meditate on time and death" (Nicol, 1976, p. 157).

In all of these stories, the more dramatic mutagenic effects are highlighted, but the far more mundane potential sub- or infertility are not even mentioned despite recent studies that have reconfirmed the deleterious effect of radiation on the developing fetus in space, with a high probability of female fetuses being born sterile (Straume, Blattig, & Zeitlin, 2010).

In contrast, in Kay Kenyon's "Maximum Ice" (2002), radiation-induced infertility features on a generation ship which returns to Earth after a trip of 250 years in order to revitalize a failing crew that has been ravaged by cosmic radiation causing progressive infertility. A generation ship is a theoretical spacecraft that moves

slower than the speed of light, and hence would take several thousand years to reach even nearby stars due to the vastness of interstellar space, with many generations born and dying while en-route. Robert Goddard (1882-1945), one of the fathers of rocketry, first conceived of the notion of generation ships (1918), and the concept was explored in further detail and popularized by Les Shepherd (1952).

This sort of spaceship would have to be huge so as to be self-sustaining and have a sufficiently large crew and relevant supplies for breeding purposes and for genetic biodiversity. Alternatively, a much smaller crew could assure sufficient biodiversity through the use of sperm and ovum banks. An insufficiently large population would tend to experience a process known as mutational meltdown, whereby deleterious mutations accumulate with loss of fitness and decline of the population size, further exacerbating meltdown in a downward spiral that inevitably leads to extinction (Lynch & Gabriel, 1990).

After Warfare

Forced long-term underground shelter after a nuclear war is portrayed in Edgar Pangborn's "The Company of Glory" (1975), where humanity struggles to survive with very decreased fertility and a high rate of birth mutations following a third world war, a plot that is repeated in Keith Robert's "Molly Zero" (1977) and even more famously, in Walter M. Miller's "A Canticle for Leibowitz" (1959). The latter generates a plethora of mutated births, and such children are extended the protection of the Church, to the extent of having an official patron, Saint Raul the Cyclopean (presumably a radiation mutated individual), the patron of the misborn. For this reason, these children are known as the 'Pope's nephews' or the 'Pope's children', the symbolic offspring of an individual with self-imposed infertility due to abstinence.

Natural evolution

Non-human mutational events have also been blamed for ending the human race, and in Kurt Vonnegut's "Galápagos" (1985), a naturally occurring micro-organism mutates and develops the ability to destroy humanity's female reproductive organs, and none escape except for a small group of castaways on a small island in the Galápagos group.

Jim Harmon's "The Contested Earth" (2007) has all human fertility being brought to a halt by unborn human fetuses who constitute the next stage in human evolution and who, through sheer psychic power alone, somehow stop other women from conceiving.

Hermaphroditism in association with sterility has also been blamed on mutation. The human settlers on an extrasolar planet in Stephen Leigh's "Dark Water's Embrace" (1998) are accidentally marooned and contend with progressively rising rates of infertility, infant mortality and mutations, particularly of the sexual organs with the development of hermaphrodites. The term hermaphrodite derives from ancient Greek mythology, where Hermaphroditus was fused with a nymph resulting in a being with both male and female characteristics. Hermaphroditus was thus a simultaneous (or synchronous) hermaphrodite (Hard, 2004, p. 164). Sequential hermaphroditism occurs when individuals alternate genders. Both are found in nature, with earthworms being simultaneous hermaphrodites and most coral fish being sequential hermaphrodites.

Hermaphrodites were most famously depicted in the genre in Ursula Le Guin's, *The Left Hand of Darkness* (1969), with genetically engineered human androgynes that are biologically neuter for three weeks of each month, and going into 'kemmer' for the remaining week, a drastic biological change which transforms individuals into male or female genders at random.

Interestingly, the colonists depicted in "Dark Water's Embrace" unearth a well-preserved corpse of a member of the planet's long-extinct indigenous intelligent race that bears deformities nearly identical to those that are afflicting the human colonists. It transpires that the mutations suffered by the human colonists include the evolution of a third sex—hermaphrodite—that men must have sex with, since the hermaphrodite then 'strengthens' the sperm and ejaculates it while having sex with a woman.

Human spontaneous mutations leading to telepathy, with a completely normal external physical appearance are manifest in Alan E. Nourse's "Psi-High" (1967). Psi is a term used by parapsychologists to refer to both extrasensory perception (ESP) occurring independently of sight or any of the other conventional senses and psychokinesis, i.e. the production of motion in physical objects by the exercise of psychic or mental powers, including telekinesis, the movement of objects by scientifically inexplicable means. The term "psi" was popularised by Thouless (1942) and interest in this field was heightened by J. B. Rhine's *The Reach of the Mind* (1947).

Experimental research on parapsychology has been ongoing for over a century with no concrete results. Indeed, it has been repeatedly shown that the subjective observation of paranormal phenomena is related to the degree of belief in said phenomena, as demonstrated, for example, by R. Wiseman and Greening

(2003) who elegantly experimentally showed that believers are far more susceptible to suggestion and falsely witness inexistent paranormal phenomena when compared to non-believers who are much less disposed to incorrectly perceive paranormal events under suggestion.

In “Psi-High”, these mutations are found to be inherited in a Mendelian-dominant manner, and to occur in both men and women, implying that half the offspring of these “psi-highs” will also be psi-highs. However, these individuals are feared, and all school-aged children must undergo compulsory testing for psi abilities and must be registered with the authorities. These telepathic abilities are variable and crude, and require training for their fullest potential to be expressed (Nourse, 1955, “The Mercy Men”). Psi-highs are not allowed to marry each other as non-psis fear the powers of their offspring, a quarter of who would be, in effect, double-psi (assuming Mendelian inheritance of psi as an autosomal dominant condition), as evidenced when a psi-high couple illegally have a child, with truly formidable psi powers.

Philip K. Dick’s “The Golden Man” (1980) depicts government agents tasked with tracking down and sterilizing or eliminating mutants, individuals with physical abnormalities and superhuman powers. The “golden man” is one such mutant who possesses the ability to foresee all possible outcomes from any single action. Moreover, his golden skin somehow makes him sexually irresistible to members of the opposite sex, seducing them with ease, clearly an advantageous mutation that would allow him to pass on his mutation to his offspring with relative ease.

In stark contrast, in Alfred Bester’s “The Demolished Man” (1953), telepathic individuals known as “peepers” are accepted and integrated into all levels of society, and graded according to the strength of their telepathic abilities. All such individuals can communicate telepathically amongst themselves. Telepathic ability is heritable but can remain latent and undetected. Therefore, efforts are continually made to detect such individuals, as their abilities need development through instruction and exercise. The “Esper’s Guild” is dedicated to improving telepathic proficiency, to create and enforce ethical conduct guidelines and to continue to increase this gifted population’s numbers through intermarriage, as such individuals inherently tend to cluster and intermarry, strengthening these traits.

And finally, Fred Saberhagen’s “The Golden People” (1964), depicts over a hundred babies who are genetically engineered to perfection, not only physically and mentally, but also to the extent of being endowed with psionic powers. These superbeings plot to take over humanity, but are eventually foiled by one of their own. In the course of the story, they strive to maintain their genetic purity by murdering a woman and a man who married with their own. Interestingly, a brilliant scientist whose wife was sterile created this group of individuals.

Discussion

Several themes emerge from this reading and perhaps the most obvious is that SF depicts potential futures from extrapolations of the present, in this way, preparing readers for possible futures. The equivalent of “publish or perish” in everyday life is adapt or accept obsolescence, as allegorically repeated in these narratives.

Even mythology has had to adapt since mutations and monsters are modern myths. To our forebears, natural forces were unknown and unknowable, and in an attempt to cope with vast imponderables, ancient humans created myths with anthropocentric and therefore understandable creatures such as gods, monsters and spirits (Schelde, 1993, p. 14).

The mystery gone, the tension faded away, banished by the harsh light of science and technology; “there are no longer pockets on Earth that humankind has not invaded, subjected to scientific scrutiny” (Schelde, 1993, p. 3). Science has deconstructed these fears and such that traditional monsters appear nowadays appear incredibly naive.

However, that which has been lost has been replaced by new frontiers that humanity can potentially explore, such as outer space (Schelde, 1993, p. 4), along with alien others, monstrous or otherwise. Monsters of some kind or another abound in SF, and even the narrative that arguably comprises the first true modern SF work, Mary Shelley’s “Frankenstein” (1818), featured a monster that turned on its creator (Aldiss, 1973, p. 10). Scientific progress inevitably dictates that aliens, computers, androids, robots and cyborgs are the new, frightful and mysterious adversaries and “in that sense [...] SF is modern folklore” (Schelde, 1993, p. 4).

The fear of mutants in SF is arguably a contemporary manifestation of mankind’s fear of the unknown, encompassing a sometimes not unwarranted fear of science and the potential consequences of arrogant scientific experiments (Schelde, 1993, p. 9). Some examples include the “Mule”, a physical freak and a

strong coercive telepath who appears in Isaac Asimov's Foundation series and who takes over the entire human galactic empire (1953). Incidentally, the Mule is known by this name because he is sterile (Asimov, 1953, "Second Foundation").

Lord Clane Linn is yet another mutant who accedes to the imperial throne in A. E. Van Vogt's "Empire of the Atom" (1956), a sword-and-spaceship novel set in a post-holocaust world where soldiers fight with swords, and working spaceships whose mechanisms are no longer understood. Linn is a radiation-damaged mutant, brilliant but physically frail, and the novel charts his survival through Borgia-type family intrigues and his accession to power. Classical mutants also appear in Van Vogt's "Slan" (1940), genetically bred, highly intelligent and telepathic supermen, designed to aid humanity but who become despised by ordinary humans and are shot on sight.

On the other hand, mutants may be actively sought by the State, such as "The Immortals" depicted by James Gunn, from whom a simple blood transfusion suffices to temporarily alleviate the effects of aging (1962).

It is also worth noting, at this point, that some critics claim that certain narratives identify "the female writer with the 'other'—the mutant, the monster, the alien," as evidenced, for example, in the works of C. L. Moore (Gubar, 1980, p. 27).

The various ways in which these novel and unfamiliar beings arise demonstrates that in SF, "[a]ll that is required is a scary monster. How the monster came to be or where it came from is, if not irrelevant, peripheral" (Schelde, 1993, p. 2). Such alien others are often readily identifiable, and it is interesting to note that an aureate tinge is often attributed to a novel condition or mutation within the genre, as evidenced in "The Golden People" (Saberhagen, 1964) and "The Golden Man" (Dick, 1980). Similarly, in Richard Cowper's "The Twilight of Briareus" (1974) and in John Wyndham's earlier work "The Midwich Cuckoos" (1957) children are born with golden eyes. Indeed, it is almost as if simply tingeing a body part with a golden color suffices to demarcate and thereby conveniently alienate an individual or group of individuals.

More modern mutants include Lee and Kirby's "Marvel" comics X-Men superheroes (1963), mutants with diverse powers who are feared and reviled by most of humanity as they are perceived as the next stage in human evolution and who will therefore make ordinary humans obsolete. Thus, through mutation, deliberate or inadvertent, it is as if scientific or natural forces threaten to deprive us of our humanity (Schelde, 1993, p. 9).

Mutation, spontaneous, or in the case of SF, accelerated by special conditions or induced by the state, is only one of the ways in which species change, with time. In nature, mutation, genetic drift (a process which leads to random changes of the proportions of two or more inherited traits within a population and reassortment of mutant alleles) and gene flow (the incorporation of genes from one population into another) all contribute to changes in individuals, which die with the individual if no specific advantage is conferred, or are passed on to offspring if such changes are advantageous and facilitate breeding. Thus, it is the slow change of species which causes evolution, and new traits may affect not only a species' anatomy but also its biochemistry and behavioral characteristics. Clearly, changes that confer benefit are favoured as such individuals have greater chances of surviving to reproduce, leading to the process of natural selection.

Moreover, speciation refers to processes that lead to the formation of new species, and occurs when a parent species splits into two or more reproductively distinct species that may be able to have sexual intercourse but from which no offspring can ensue. Darwin described these processes after observing them in the Galapagos and Canary islands during his epic voyage on the Beagle, speculating that survival and speciation occurs through the natural selection of varieties. And since Darwin, even the theory of evolution has mutated and evolved, from gradualism to modifications such as punctuated equilibrium which attempts to explain the sudden jumps in species seen in the fossil record (Gould and Eldredge, 1977).

This exposes yet another apprehension with regard to potential mutants. A fundamental axiom of humanism, is the notion of contemporary, ordinary man as a starting point (Althusser, 1976, p. 52). However, Jean Baudrillard refutes this by querying whether there is even a genetic definition of human, and pointing out that we share over 90% of our genetic material with mice and apes (2000, p. 22). Arguably, therefore, hypothetical mutants, who would have very marginal genomic differences from baseline humanity, should, in Kantian style, be accorded the same rights and privileges as the rest of us.

However, mutation implies novelty, potentially unleashing forces that may overturn humanity (Badmington, 2004, p. 43), so that if mutants' abilities should advantage them in such a way so as to enable them to reproduce at a higher rate than mundane humanity, then such mutants would inevitably replace everyday

humanity, as explained above and as exemplified in the genre in narratives such as Dick's "The Golden Man." Indeed, as evidenced by alien abduction encounter accounts, sex with the alien other may potentially be "better than the best sex or the best anything you could have" (Mack, 2000, p. 252). And almost as if in defence of humanity and in affirmation of humanism, Hollywood blockbusters have included a variety of films that depict alien invasions of Earth (Badmington, 2004, p. 47).

This overview exposes several commonalities, intersections that are shared within the wider corpus of the genre in general. SF welcomes thought experiments, famously asking "What if?" (Schelde, 1993, p. 2). SF also strives to expound upon feasible tropes, presenting itself as a hand-maiden of science and thereby gaining legitimacy (Suvin, 1972, p. 379). However, some important scientific points are missed or excessively belabored.

For example, most narratives dealing with radiation evoke the specter of mutation while the vastly stronger chances of the development of infertility or even outright sterility are ignored, not only by the individual, but also by the state. Moreover, completely unjustified assumptions that cannot possibly be extrapolated from any known science are sometimes made, such as the mutations that are seen in Moto's "Star Red" (1980), which include telepathy. Indeed, telepathy and other extrasensory phenomena are frequently alluded to in this essay as mutations that are internalized and therefore do not readily identify the individual as a mutant. And this despite the numerous studies that have failed to reveal any evidence of the existence of such powers.

Thus, through bodily or internalized changes, mutants, aliens and other monsters stand in as metaphors for alien others who must be befriended and absorbed or embattled in order to keep one's culture intact (Schelde, 1993, p. 3). Moreover, SF narratives continually demonstrate that in the chaos and continual changes that face humanity in the contemporary world, SF and reality are not always intercalated but may overlap actually overlap (Schwartz, 1971, p. 1043).

However, the commonest concept that emerges from examining the intersection of mutation and infertility is that of fear, fear of the alien, the other, into which humanity might potentially be transformed or replaced by. This trepidation manifests itself in a wide variety ways within the genre, with, for example, a classic being "The Invasion of the Body Snatchers" (Wanger, 1956) wherein humans are inexorably substituted by extraterrestrial pods into physically identical but unemotional others.

Such narratives also demonstrate that the trope of mutation in SF is often treated as a set of binary oppositions, human versus inhuman, and ultimately, an us versus them struggle (Badmington, 2004, p. 3), categorically alienating the alien. Badmington moreover contends that a narrative that looks upon mutants and alien others favorably, simply reaffirms this traditional divide and difference (2004, p. 6).

One may argue that the individual works that comprise the corpus of SF collectively encompass a vast set of mutations precisely because "SF is a revolutionary, mutant literature" (Fitting, 1975, p. 164). Additionally, "[e]very work modifies the sum of possible works, each new example alters the species," (Todorov, 1975, p. 6), with each narrative slowly but surely functioning as an individual mutation, small or large, thereby helping the genre to sustain its evolution, with endless possibilities as to where this might lead.

ABOUT THE AUTHORS

VICTOR GRECH, CONSULTANT PEDIATRICIAN (CARDIOLOGY) AND ASSOCIATE PROFESSOR OF PAEDIATRICS, UNIVERSITY OF MALTA. CLARE VASSALLO, SENIOR LECTURER, TRANSLATION AND INTERPRETING STUDIES, UNIVERSITY OF MALTA. IVAN CALLUS, ASSOCIATE PROFESSOR AND HEAD, ENGLISH LANGUAGE DEPT, UNIVERSITY OF MALTA.

ATTRIBUTION:

PEDIATRIC DEPARTMENT, MATER DEI HOSPITAL, TAL-QROQQ, MALTA AND THE FACULTY OF ARTS, UNIVERSITY OF MALTA.

References

- Aldiss B. W. (1973). *Billion Year Spree: The True History Of Science Fiction*. Garden City: Doubleday.
- Althusser L. (1976). Reply to John Lewis (self-criticism). *Essays in self-criticism*. (Grahame Lock Trans.). London: New Left.
- Anderson P. (1989). "Iron." *Man-Kzin wars II*. Ed. Larry Niven. New York, Baen. Print.
- Anderson P. (October, 1954). The Big Rain. *Astounding Science Fiction*. October.
- Anderson P. (1994). *The Silent War: Book III of The Asteroid Wars*. New York: Tor Books.
- Asimov I. (1953). *Second Foundation*. New York: Avon.
- Badmington N. (2001). Pod almighty!; or, Humanism, Posthumanism, and the Strange case of Invasion of the Body Snatchers. *Textual Practice*, 151 (2001), 5–22.
- Badmington N. (2004). *Alien Chic. Posthumanism and the Other Within*. New York: Routledge.
- Ballard J. G. (October, 1960). *The Voices of Time*. New Worlds.
- Baudrillard J. (2000). The Final Solution: Cloning Beyond the Human and Inhuman. In *The Vital Illusion*. New York: Columbia University Press.
- Bester A. (1953). *The Demolished Man*. Chicago: Shasta Publishers.
- Blish J. (1959). *A Clash of Cymbals*. London: Faber & Faber.
- Broderick M. (1993). Surviving Armageddon: Beyond the Imagination of Disaster. *Science Fiction Studies*, 20. 362-382..
- Clarke A. C. (1975). *Rendezvous with Rama*. New York: DelRey.
- Cowper R. (1974). *The Twilight of Briareus*. New York: John Day.
- Darwin C. (1859). *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. London: John Murray.
- Delaney S. R. (1967). Aye, and Gomorrah. In *Nebula Award Stories 3*. London: Panther.
- Derrida J. (1981). *Dissemination*. (Barbara Johnson, Trans.). London: Athlone.
- . *Of Grammatology* (1976). (Gayatri Chakravorty Spivak, Trans.). Baltimore: Johns Hopkins UP.
- Dick P. K. (1980). *The Golden Man*. New York: Berkley Books.
- Fitting P. (1975). Boris Eizykman. On Science Fiction. *Science Fiction Studies*, 2,164–166.
- Foucault M. (1970). *The Order of Things: an Archaeology of the Human Sciences*. (Trans. Unnamed.). London: Tavistock.
- Goddard R. H. (1918). *The Ultimate Migration*. Ms. Jan. 14, 1918. The Goddard Biblio Log, Friends of the Goddard Library. The Goddard Library, Greenbelt.
- Gould S. J. & Eldredge N. (1977). Punctuated equilibria: the tempo and mode of evolution reconsidered. *Paleobiology*, 3, 115-151.
- Gubar S. (1980). C.L. Moore and the Conventions of Women's Science Fiction. *Science Fiction Studies*, 7, 16-27.
- Gunn J. (1962). *The Immortals*. New York: Bantam.
- Hamilton P. F. (2000). *The Confederation Handbook*. New York: Tor.
- Haraway D. J. (1991). *Simians, Cyborgs, and Women*. New York: Routledge.
- Hard R. (2004). *The Routledge handbook of Greek mythology*. London: Routledge.
- Harmon Jim. (2007). *The Contested Earth*. Vanleave: Ramble House.
- Hatzinger M., D. V&omul;ge, M. Sold, M. Sohn. (2009). Castrati—everything to achieve fame. *Urologe V. 48* 649-52.
- Heinlein R. A. (April-May 1942). "Beyond This Horizon. *Astounding Science Fiction*.
- Heinlein R. A. (May, 1941). Soluton Unsatisfactory. *Astounding Science Fiction*.
- Heinlein R. A. (1965). *Orphans of the Sky*. New York: Signet.
- Kenyon K. (2002). *Maximum Ice*. New York: Bantam.
- King S. (1980). *Firestarter*. New York: Viking Press.
- Le Guin U. K. (1969). *The Left Hand of Darkness*. New York: Ace.
- Ledger W. L. (2009). Demographics of Infertility. *Reproductive Biomedicine Online*, 18, 11-14.
- Lee Stan & Jack Kirby. (September, 1963). *X-Men Comics*.
- Leigh S. (1998). *Dark Water's Embrace*. New York: Avon.
- Lillie F. R. (1916). Theory of the Free Martin. *Science*, 43, 611.
- Lynch M. & W. Gabriel. (1990). Mutation Load and the Survival of Small Populations. *Evolution*, 44, 1725-37.
- Mack J. E. (2000). *Passport to the Cosmos: Human Transformation and Alien Encounters*. London: Thorsons.
- McCollum M. (1985). *Procyon's promise*. New York: Del Rey.
- McMaster B. L. (1991). Mountains of Mourning. In *Borders of Infinity*. New York: Baen.
- Miller W. M. Jr. (1959). *A Canticle for Leibowitz*. New York: J. B. Lippincott.
- Moto H. (1980). *Star Red*. Tokyo: Shogakukan.
- Nicol C. (1976). J.G. Ballard and the Limits of Mainstream SF. *Science Fiction Studies*, 3, 150-157.
- Nourse A. E. (1967). Psi High. In *Psi-High and Others*. New York: David McKay.
- Nourse A. E. (1955). *The Mercy Men*. New York: David McKay.

- Okulicz J.F, R.S. Shah, R.A. Schwartz & C.K. Janniger. (2003). "Oculocutaneous Albinism." *Journal of the European Academy of Dermatology and Venereology* V. 17 251-6.
- Pangborn E. (1975). *The Company of Glory*. New York: Pyramid.
- Rhine J. B. (1947). *The Reach of the Mind*. New York: William Sloane Associates.
- Roberts K. (1977). Molly Zero. In R. Silverberg (Ed.) *Triax.*, New York: Pinnacle.
- Saberhagen F. (1964). *The Golden People*. New York: Ace.
- Schelde P. (1993). *Androids, Humanoids, and Other Science Fiction Monsters: Science and Soul in Science Fiction Films*. New York: New York UP.
- Schwartz S. (1971). Science Fiction: Bridge between the Two Cultures. *The English Journal*, 60, 1043-51.
- Shelley M. W., (1818). *Frankenstein*. London: John Murray.
- Shepherd Les R. (1952). Interstellar Flight. *Journal of the British Interplanetary Society*, 11, 149-167.
- Slonczewski J. (1993). *Daughter of Elysium*. Scranton: William Morrow & Co.
- Straume T. S. Blattnig and C. Zeitlin. (2010). Radiation Hazards and the Colonization of Mars. *Journal of Cosmology*, 12, 3992-4033.
- Sturgeon T. (1985). Why Dolphins Don't Bite. In H. Ellison (Ed.) *Medea, Harlan's World*. New York: Bantam.
- Suvin D. (1972). On the Poetics of the Science Fiction Genre. *College English*, 34, 372-382.
- Thouless R. H. (1942). The Present Position of Experimental Research into Telepathy and Related Phenomena. *Proceedings of the Society for Psychical Research*, 47, 1-19.
- Todorov T. (1975.) *The Fantastic—a Structural Approach to a Literary Genre*. R. Howard, Trans. Ithaca: Cornell UP.
- Van Vogt A. E. (December 1940). Slan. *Astounding Science Fiction*.
- Van Vogt A. E. (1956). *Empire of the Atom*. New York: McFadden-Bartell.
- Varley J. (1998). *The Golden Globe*. New York: Ace.
- Varley J. (1979). *Titan*. London: Futura.
- Vonnegut K. Jr. (1985). *Galápagos*. New York: Delacorte Press.
- Wanger, W. (Producer), & Siegel, D. (Director). (1956). *The Invasion of the Body Snatchers* [Motion picture]. United States: Allied Artists Pictures Corporation
- Wiseman R. & E. Greening. (2003). Belief in the Paranormal and Suggestion in the Seance Room. *British Journal of Psychology*, 94, 285-97.
- Wyndham J. (1957). *The Midwich Cuckoos*. New York: Ballantine.

LOOKING AHEAD

Thank you for reading our premiere issue.

What's next for *James Gunn's Ad Astra*?

Over the next year, we will be accepting stories, poems, articles and reviews for our next full issue. The next year's theme will be determined at the end of the 2012 Campbell Conference—all work within that theme will be considered for final selection and publication.

We will change our submission guidelines to allow authors to choose to be published before next year's issue, although qualifying submissions will still be considered for final selections.

We are also asking for volunteers to help us with reading content, reviewing articles, possibly serving as editors, and helping with maintaining the website and building our presence in the science fiction community. Experience with writing workshops, editing, or academic writing are a plus.

Please contact us at jg.adastra.ku@gmail.com, or aboutsfgmail.com, if you would like to volunteer for a position or offer other assistance.

You may submit your own stories, poems, reviews, and articles at adastra.ku.edu/submissions/submit-your-work/

We look forward to seeing your contributions!