EDITED BY JOHN JOSEPH ADAMS

CATHERYNNE M. VALENTE
HOW TO BECOME A MARS OVERLOAD

PAMELA GAY
MARS IS DEAD, BUT WILL IT LIVE AGAIN?

MATT LONDON
BUILDING THE SIX MILLION DOLLAR MAN

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Welcome to issue three of *Lightspeed*. I want to thank all of you readers again for all of your support. We’ve had a great run so far, and the enthusiastic feedback of readers like yourself goes a long way toward letting us know what’s working and what’s not.

With that in mind, before I get to this month’s teasers, I just wanted to suggest a way for our loyal readers to help spread the gospel of *Lightspeed*. We love it when you leave comments on lightspeedmagazine.com, but I would also like to invite you to post a review of any of our issues on Amazon.com (where it is available on Kindle) or in the iBooks store (for iPhone and iPad), or wherever else you might find the ebook edition available. Or if you don’t want to spend time writing a review, just giving any of our issues a positive “star rating” might encourage other readers to try the magazine.

With that out of the way, on to this month’s teasers! Catherynne M. Valente teaches us “How to Become a Mars Overlord,” with her step-by-step program that enables each and every one of us to find the right Mars for us to rule over.
Tananarive Due tells the tragic story of “Patient Zero” in her chilling account of a child being raised in isolation, ignorant of an apocalyptic infection raging in the outside world.

In the audacious “Arvies,” author Adam-Troy Castro tells the story of a post-poverty utopia in which everybody lucky enough to be plugged into the society’s opportunities gets to do whatever the heck they want to do with their lives, indulging their slightest whims—including living their lives inside a living womb.

And for our final fiction selection of the month, we present “More Than the Sum of His Parts” by Joe Haldeman, an examination of one man’s transformation from human to cyborg that asks the question: As a person becomes less and less organic, might they become less and less human?

On the nonfiction side of things this month, in addition to author spotlights on all four of our fictioneers, we’re starting off with “Dead Mars,” a fascinating article by Astronomy Cast’s Dr. Pamela Gay in which she tells us how Mars, now dead, once lived, and how we might make it live again. (August 3)

Carol Pinchefsky, meanwhile, brings us “Bangs & Whimpers: A Look at the Top Five Doomsday Scenarios” and explains why we may or may not have to worry about
them.

You won’t want to miss *Lightspeed* nonfiction editor Andrea Kail’s interview with multiple award-winning author Robert J. Sawyer, in which he discusses the possibility of the internet becoming sentient, religion’s place in science fiction, and what it was like watching his novel *FlashForward* adapted into a television program.

And last, but not least, we have an exploration of the cutting-edge science being done today in the field of prosthetics and cybernetics from author Matt London, in which he tells of an amputee mountain climber who designed and built his own bionic legs and explains how the Six Million Dollar Man would have been a bargain at that price if he were (re)built today. (August 24)

So that’s our issue this month. I hope you enjoy it. And remember, if you don’t want to wait for the content to be released on the site throughout the month, or you’d just like a handy, downloadable version of the magazine on your favorite handheld electronic reading device, *Lightspeed* is available directly from our publisher, Prime Books, in DRM-free ePub format, and is also available in Kindle, iBooks, and Mobipocket format from external vendors, or from Fictionwise, which offers a variety of formats.
Fiction editor **John Joseph Adams** is the bestselling editor of many anthologies, such as *Wastelands*, *The Living Dead* (a World Fantasy Award finalist), *By Blood We Live*, *Federations*, and *The Improbable Adventures of Sherlock Holmes*. Barnes & Noble.com named him “the reigning king of the anthology world,” and his books have been named to numerous best of the year lists. Prior to taking on the role of fiction editor of *Lightspeed*, John worked for nearly nine years in the editorial department of *The Magazine of Fantasy & Science Fiction*. In addition to his editorial work, John is also the co-host of Tor.com’s *Geek’s Guide to the Galaxy* podcast.
Welcome, Aspiring Potentates!

We are tremendously gratified at your interest in our little red project, and pleased that you recognize the potential growth opportunities inherent in whole-planet domination. Of course we remain humble in the face of such august and powerful interests, and seek only to showcase the unique and challenging career paths currently available on the highly desirable, iconic, and oxygen-rich landscape of Mars.

Query: Why Mars?

It is a little known fact that every solar system contains Mars. Not Mars itself, of course. But certain suns seem to possess what we might call a habit of Martianness: In every inhabited system so far identified, there is a red planet, usually near enough to the most populous world if not as closely adjacent as our own twinkling scarlet beacon, with proximate lengths of day and night. Even more curious, these planets are without fail named for war-divinities. In the far-off Lighthouse system, the orb Makha turns slowly in the dark, red as the
blood of that fell goddess to whom cruel strategists pray, she who nurses two skulls at each mammoth breast. In the Glyph system, closer to home, it is Firialai glittering there like a ripe red fruit, called after a god of doomed charges depicted in several valuable tapestries as a jester dancing ever on the tip of a sword, clutching in each of his seven hands a bouquet of whelp-muskets, bones, and promotions with golden seals. In the Biera-biera system, still yet we may walk the carnelian sands of Uppskil, the officer’s patron goddess, with her woolly dactyl-wings weighted down with gorsuscite medals gleaming purple and white. Around her orbit Wydskil and Nagskil, the enlisted man’s god and the pilot’s mad, bald angel, soaring pale as twin ghosts through Uppskil’s emerald-colored sky.

Each red planet owns also two moons, just as ours does. Some of them will suffer life to flourish. We have ourselves vacationed on the several crystal ponds of Volniy and Vernost, which attend the claret equatorial jungles of Raudhr—named, of course, for the four-faced lord of bad intelligence whose exploits have been collected in the glassily perfect septameters of the Raudhrian Eddas. We have flown the lonely black between the satellites on slim-finned ferries decked in greenglow blossoms, sacred to the poorly-informed divine
personage. But most moons are kin to Phobos and Deimos, and rotate silently, empty, barren, bright stones, mute and heavy. Many a time we have asked ourselves: Does Mars dwell in a house of mirrors, that same red face repeated over and over in the distance, a quantum hiccup—or is Mars the master, the exemplum, and all the rest copies? Surely the others ask the same riddle. We would all like to claim the primacy of our own specimen—and frequently do, which led to the Astronomer’s War some years ago, and truly, no one here can bear to recite that tragic narrative, or else we should wash you all away with our rust-stained tears.

The advantages of these many Marses, scattered like ruby seeds across the known darkness, are clear: In almost every system, due to stellar circumstances beyond mortal control, Mars or Iskra or Lial is the first, best candidate for occupation by the primary world. In every system, the late pre-colonial literature of those primary worlds becomes obsessed with that tantalizing, rose-colored neighbor. Surely some of you are here because your young hearts were fired by the bedside tales of Alim K, her passionate affair with the two piscine princes of red Knisao, and how she waked dread machines in the deep rills of the Knizid mountains in order to possess them? Who among us never read of the mariner Ubaido
and his silver-keeled ship, exploring the fell canals of Mikto, their black water filled with eely leviathans whose eyes shone with clusters of green pearls. All your mothers read the ballads of Sollo-Hul to each of you in your cribs, and your infant dreams were filled with gorgeous-green six-legged cricket-queens ululating on the broad pink plains of Podnebesya, their carapaces awash in light. And who did not love Ylla, her strange longings against those bronze spires? Who did not thrill to hear of those scarlet worlds bent to a single will? Who did not feel something stir within them, confronted with those endless crimson sands?

We have all wanted Mars, in our time. She is familiar, she is strange. She is redolent of tales and spices and stones we have never known. She is demure, and gives nothing freely, but from our hearths we have watched her glitter, all of our lives. Of course we want her. Mars is the girl next door. Her desirability is encoded in your cells. It is archetypal. We absolve you in advance.

No matter what system bore you, lifted you up, made you strong and righteous, there is a Mars for you to rule, and it is right that you should wish to rule her. These are perhaps the only certainties granted to a soul like yours.
We invite you, therefore, to commit to memory our simple, two-step system to accomplish your laudable goals, for obviously no paper, digital, or flash materials ought to be taken away from this meeting.

**Step One: Get to Mars**

It is easier for a camel to pass through the eye of a needle than for a poor man to get to Mars. However, to be born on a bed of gems leads to a certain laziness of the soul, a kind of muscular weakness of the ambition, a subtle sprain in the noble faculties. Not an original observation, but repetition proves the axiom. Better to excel in some other field, for the well-rounded overlord is a blessing to all. Perhaps micro-cloning, or kinetic engineering. If you must, write a novel, but only before you depart, for novels written in the post-despotic utopia you hope to create may be beloved, but will never be taken seriously by the literati.

Take as your exemplum the post-plastic retroviral architect Helix Fo. The Chilean wunderkind was born with ambition in his mouth, and literally stole his education from an upper-class boy he happened upon in a dark alley. In exchange for his life, the patriarch agreed to turn over all his books and assignments upon completion, so that Fo could shadow his university years. For his
senior project, Fo locked his erstwhile benefactor in a basement and devoted himself wholly to the construction of the Parainfluenza Opera House in Santiago, whose translucent spires even now dominate that skyline. The wealthy graduate went on to menial labor in the doctoral factories much chagrined while young Fo swam in wealth and fame, enough to purchase three marriage rights, including one to an aquatic Verqoid androgyne with an extremely respectable feather ridge. By his fortieth birthday, Fo had also purchased through various companies the better part of the Atlantic Ocean, whereupon he began breeding the bacterial island which so generously hosts us tonight, and supplies our salads with such exquisite yersinia radishes. Since, nearly all interplanetary conveyances have launched from Fo’s RNA platform, for he charged no tariffs but his own passage, in comfort and grace. You will, of course, remember Fo as the first All-Emperor of Mars, and his statue remains upon the broad Athabasca Valles.

Or, rather, model yourself upon the poetess Oorm Nineteen Point Aught-One of Mur, who set the glittering world of Muror letters to furious clicking and torsioning of vocabulary-bladders. You and I may be quite sure there is no lucre at all to be made in the practice of poetry, but the half-butterfly giants of Mur are hardwired for rhyming
structures, they cannot help but speak in couplets, sing their simplest greetings in six-part contratenor harmonies. Muror wars exist only between the chosen bards of each country, who spend years in competitive recitings to settle issues of territory. Oorm Nineteen, her lacy wings shot through with black neural braiding, revolted, and became a mistress of free verse. Born in the nectar-soup of the capital pool, she carefully collected words with no natural rhymes like dewdrops, hoarding, categorizing, and collating them. As a child, she haunted the berry-dripping speakeasies where the great luminaries read their latest work. At the age of sixteen, barely past infancy in the long stage-shifts of a Muror, she delivered her first poem, which consisted of two words: *bright. cellar*. Of course, in English these have many rhymes, but in Muror they have none, and her poem may as well have been a bomb detonated on the blue floor of that famous nightclub. Oorm Nineteen found the secret unrhyming world hiding within the delicate, gorgeous structures of Muror, and dragged it out to shine in the sun. But she was not satisfied with fame, nor with her mates and grubs and sweetwater gems. That is how it goes, with those of us who answer the call. Alone in a ship of unrhymed glass she left Mur entirely, and within a year took the red diadem of Etel for her own. Each rival she assassinated
died in bliss as she whispered her verses into their perishing ears.

It is true that Harlow Y, scion of the House of Y, ruled the red planet Llym for some time. However, all may admit his rule frayed and frolicked in poor measure, and we have confidence that no one here possesses the makings of a Y hidden away in her jumpsuit. Dominion of the House of Y passed along genetic lines, though this method is degenerate by definition and illegal in most systems. By the time Harlow ascended, generations of Y had been consumed by little more than fashion, public nudity, and the occasional religious fad. What species Y may have belonged to before their massive wealth (derived from mining ore and cosmetics, if the earliest fairy tales of Vyt are to be believed) allowed constant and enthusiastic gene manipulation, voluntary mutation, prostheses, and virtual uplink, no one can truly say. Upon the warm golden sea of Vyt you are House Y or you are prey, and they have forcibly self-evolved out of recognizability. Harlow himself appears in a third of his royal portraits something like a massive winged koala with extremely long, ultraviolet eyelashes and a crystalline torso. Harlow Y inherited majority control over Llym as a child, and administered it much as a child will do, mining and farming for his amusement and personal
augmentation. Each of his ultraviolet lashes represented thousands of dead Llymi, crushed to death in avalanches in the mine shafts of the Ypo mountains. But though Harlow achieved overlordship with alacrity and great speed, he ended in assassination, his morning hash-tea and bambun spectacularly poisoned by the general and unanimous vote of the populace.

Mastery of Mars is not without its little lessons.

It is surely possible to be born on a red planet. The Infanza of Hap lived all her life in the ruby jungles of her homeworld. She was the greatest actress of her age; her tails could convey the colors of a hundred complex emotions in a shimmering fall of shades. So deft were her illusions that the wicked old Rey thought her loyal and gentle beyond words even as she sunk her bladed fingers into his belly. But we must assume that if you require our guidance, you did not have the luck of a two-tailed Infanza, and were born on some other, meaner world, with black soil, or blue storms, or sweet rain falling like ambition denied.

Should you be so unfortunate as to originate upon a planet without copious travel options, due to economic crisis, ideological roadblocks, or simply occupying a lamentably primitive place on the technological timeline —have no fear. You are not alone in this. We suggest
cryonics—the severed head of Plasticene Bligh ruled successfully over the equine haemovores of A-O-M for a century. He gambled, and gambled hard—he had his brain preserved at the age of twenty, hoping against hope that the ice might deliver him into a world more ready for his rarified soul. Should you visit A-O-M, the great wall of statues bearing her face (the sculptors kindly gave her a horse-body) will speak to what may be grasped when the house pays out.

If cryonics is for some reason unpopular on your world, longevity research will be your bosom friend. Invest in it, nurture it: Only you can be the steward of your own immortality. Even on Earth, Sarai Northe, Third Emira of Valles Marineris, managed to outlive her great-grandchildren by funding six separate think tanks and an Australian diamond mine until one underpaid intern presented her upon her birthday with a cascade of injections sparkling like champagne.

But on some worlds, in some terrible, dark hours, there is no road to Mars, no matter how much the traveling soul might desire it. In patchwork shoes, staring up at a starry night and one gleaming red star among the thousands—sometimes want is not enough. Not enough for Maximillian Bauxbaum, a Jewish baker in Provence, who in his most secret evenings wrote poetry describing
such strange blood-colored deserts, such dry canals, a sky like green silk. Down to his children, and to theirs and theirs again, he passed a single ruby, the size of an egg, the size of a world. The baker had been given it as a bribe by a Christian lord, to take his leave of a certain maiden whom he loved, with hair the color of oxide-rich dust, and eyes like the space between moons. Never think on her again, never whisper her name to the walls. Though he kept his promise to an old and bitter death, such a treasure can never be spent, for it is as good as admitting your heart can be bought.

Sarai Northe inherited that jewel, and brought it with her to bury beneath the foundations of the Cathedral of Olympus Mons.

In the end, you must choose a universe that contains yourself and Mars, together and perfect. Helix Fo chose a world built by viruses as tame as songbirds. Oorm Nineteen chose a world gone soft and violet with unrhyming songs. Make no mistake: every moment is a choice, a choice between this world and that one, between heavens teeming with life and a lonely machine grinding across red stone, between staying at home with tea and raspberry cookies and ruling Mars with a hand like grace.
Maximillian Bauxbaum chose to keep his promise. Who is to say it is not that promise, instead of microbial soup, which determined that Mars would be teeming with blue inhuman cities, with seventeen native faiths, by the time his child opened her veins to those terrible champagne-elixirs, and turned her eyes to the night?

Step 2: Become an Overlord

Now we come to the central question at the core of planetary domination: just how is it done? The answer is a riddle. Of course, it would be.

You must already be an overlord in order to become one.

Ask yourself: What is an overlord? Is he a villain? Is she a hero? A cowboy, a priestess, an industrialist? Is he cruel, is he kind, does she rule like air, invisible, indispensable? Is she the first human on Mars, walking on a plain so incomprehensible and barren that she feels her heart empty? Does she scratch away the thin red dust and see the black rock beneath? Does he land in his sleek piscine capsule on Uppskil, so crammed with libraries and granaries that he lives each night in an orgy of books and bread? What does she lord over? The land alone, the people, the belligerent patron gods with their null-bronze greaves ablaze?
Is it true, as Oorm Nineteen wrote, that the core of each red world is a gem of blood compressed like carbon, a hideous war-diamond that yearns toward the strength of a king or a queen as a compass yearns toward north? Or is this only a metaphor, a way in which you can anthropomorphize something so vast as a planet, think of it as something capable of loving you back?

It would seem that the very state of the overlord is one of violence, of domination. Uncomfortable colonial memories arise in the heart like acid—everyone wants to be righteous. Everyone wishes to be loved. What is any pharaonic statue, staring out at a sea of malachite foam, but a plea of the pharaoh to be loved, forever, unassailably, without argument? Ask yourself: Will Mars be big enough to fill the hole in you, the one that howls with such winds, which says the only love sufficient to quiet those winds is the love of a planet, red in tooth, claw, orbit, mass?

We spoke before of how to get to Mars if your lonely planet offers no speedy highway through the skies. Truthfully—and now we feel we can be truthful, here, in the long night of our seminar, when the clicking and clopping of the staff has dimmed and the last of the cane-cream has been sopped up, when the stars have all come out and through the crystal ceiling we can all see one (oh,
so red, so red!) just there, just out of reach—truthfully, getting to Mars is icing. It is parsley. To be an overlord is to engage in mastery of a bright, red thing. Reach out your hand—what in your life, confined to this poor grit, this lone blue world, could not also be called Mars? Rage, cruelty, the god of your passions, the terrible skills you possess, that forced obedience from a fiery engine, bellicose children, lines of perfect, gleaming code? These things, too, are Mars. They are named for fell gods, they spit on civilized governance—and they might, if whipped or begged, fill some nameless void that hamstrings your soul. Mars is everywhere; every world is Mars. You cannot get there if you are not the lord and leader of your own awful chariot, if you are not the crowned paladin in the car, instead of the animal roped to it, frothing, mad, driven, but never understanding. We have said you must choose, as Bauxbaum and Oorm and Fo chose—to choose is to understand your own highest excellence, even if that is only to bake bread and keep promises. You must become great enough here that Mars will accept you.

Some are chosen to this life. Mars itself is chosen to it, never once in all its iterations having been ruled by democracy. You may love Mars, but Mars loves a crown, a sceptre, a horn-mooned diadem spangled in ice opals. This is how the bride of Mars must be dressed. Make no
mistake—no matter your gender, you are the blushing innocent brought to the bed of a mate as ancient and inscrutable as any deathshead bridegroom out of myth. Did you think that the planet would bend to your will? That you would control it? Oh, it is a lovely word: Overlord. Emperor. Pharaoh. Princeps. But you will be changed by it as by a virus. Mars will fill your empty, abandoned places. But the greatest of them understood their place. The overlord embraces the red planet, but in the end, Mars always triumphs. You will wake in your thousand year reign to discover your hair gone red, your translucent skin covered in dust, your three hearts suddenly fused into a molten, stony core. You will cease to want food, and seek out only cold, black air to drink. You will face the sun and turn, slowly, in circles, for days on end. Your thoughts will slow and become grand; you will see as a planet sees, speak as it speaks, which is to say: the long view, the perfected sentence.

And one morning you will wake up and your mouth will be covered over in stone, but the land beneath you, crimson as a promise, as a ruby, as an unrhymed couplet, as a virus—the land, or the machine, or the child, or the book, will speak with your voice, and you will be an overlord, and how proud we shall be of you, here, by the sea, listening to the dawn break over a new shore.
Born in the Pacific Northwest in 1979, Catherynne M. Valente is the author of over a dozen works of fiction and poetry, including Palimpsest, the Orphan’s Tales series, and the crowdfunded phenomenon The Girl Who Circumnavigated Fairyland in a Ship of Own Making. She is the winner of the Tiptree Award, the Mythopoeic Award, the Rhysling Award, and the Million Writers Award. She was a finalist for the World Fantasy Award in 2007 and 2009, and the Lambda, Andre Norton, and Hugo Awards in 2010. She lives on an island off the coast of Maine with her partner, two dogs, and an enormous cat.
We’ve learned so much about Mars, with so many successful exploration missions in recent years. How do you think our new knowledge will change the way we write about Mars? Do you see Mars becoming more of a fantasy setting than a science fictional one?

I think Mars is just one of the dominant images and metaphors of SF. So the question is, if you write about a Mars that is different from the one we know from probes and images sent back to earth, is that still SF, or does it become a willful kind of fantasy, creating a world that never did and never will exist? After all, much of fantasy consists of alternate Earths. I don’t know. I’d like Mars to be an interstitial space, one which is still the focus of so many longings and dreams, and yet is unavoidably a real place, and one which is not perhaps as writers 70 years ago hoped it would be.

Much of your recent work has been in the realm of fairy tales and folklore; “How to Become a Mars Overlord” reads almost like the future folklore of
Mars. Was that your approach to writing it? Do you think there are larger stories to tell about any of the characters and events on your alternate versions of Mars?

Are you trying to lure me into writing my own Martian Chronicles? Temptress! I love the characters I created for this story and could write more about any of them. With, really, the slightest provocation. I especially became enamored of Oorm Nineteen, the revolutionary poet. But to be honest, it was a delight to spin all of their micro-histories into this macro-tale. I approached it more as a combination of historiography and ad-copy, suggesting this massive history and the possibilities of Mars in a small space, almost a brochure.

Does the “seminar” frame have a back story? Where did that idea come from?

So, the Mars Overlord thing is actually a joke between my husband and myself, one of those metaphors married couples develop, only he had this one before he married me and I sort of picked it up—the idea that of course Mars is the ultimate SF object of affection, and so for my husband, an avowed SF fan, to be a Mars Overlord
is this tremendous metaphor for being in control of your life, and aiming it toward a more perfect future. One day I asked him if I could write a story about it, and he said I could if I promised to do it right. Hopefully I have. The seminar frame seemed natural to me—every day I see self-help gurus online promising not much less than the rule of Mars.

**Which version of Mars would you want to be overlord of, and what kind of overlord would you be?**

Oh, I would be a gentle dictator. All of you would love me and despair. In all seriousness I would probably be some kind of Mons Olympus zen hermit, sending poems down with blue-skinned sherpas. The sherpas would trade them for champagne and earth-mangos, and we’d all be happy. But secretly I would be building an army of poetry-loving champagne-addicts.

**Is there anything else you would like our readers to know about your story?**

It is a strange little beast, but I hope it will be loved. It is a very large metaphor, but also a future history of
Mars. It is science fiction, but it is also a wistful kind of fantasy. Mars is contradictory—any story about it must also be.

**For those readers who loved “How to Become a Martian Overlord” what other stories—of your own or others—would you recommend?**

Definitely “Golubash, or Wine-War-Blood-Elegy,” in the *Federations* anthology, and “The Radiant Car Thy Sparrows Drew” at *Clarkesworld*. Those are my big SF stories to date, and they have a bit of the same historian-tone of Mars Overlord.

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Dead Mars
Pamela L. Gay

Once upon a time—four point six billion years ago—a thick atmosphere surrounded Mars, perhaps even coloring its sky blue. Once upon a time—three to four billion years ago—an ocean covered thirty percent of the Red Planet’s surface, and deltas formed as water rushed from the land to the sea. Once upon a time—as recently as 2 million years ago—Mars’ volcanoes, the largest in our Solar System, erupted, spilling lava down one hundred kilometer long slopes.

Once upon a time, Mars was lush and vibrant and geologically alive. But no more. Today, it hangs above us, red and dead in our dark, winter sky.

Time has been cruel to the Red Planet. Like Earth, Mars formed in the blast furnace of a much hotter, younger Sun, scorched dry by violent solar storms and radiation. It formed without water, but comets bombarded the young world, bringing rain pelting down from space. Images from the European Space Agency’s Mars Express spacecraft and NASA’s Mars Reconnaissance Orbiter show that the water carved out more than forty thousand riverbeds all across the Martian surface, and work lead by
University of Colorado Boulder researcher Gaetano Di Achille indicates that it may have pooled into an ocean approximately one tenth the size of those on Earth.

But the ocean didn’t last. Mars, only about half the size of Earth, was born too small to stay wet or to hold onto its atmosphere. The angry, young Sun, raging against its planets, blasted them with cosmic rays and solar winds. Like the shields in a science fiction spacecraft, planets are protected from their suns by magnetic fields bending away the winds and rays. Mars’ magnetic field, however—generated by its molten core—was weak, as was its gravitational pull, which couldn’t stop the lightest atmospheric particles from leaving. One good collision—hydrogen on carbon dioxide—and these low-mass elements accelerated to escape velocities. Whoosh! Away they flew, depriving Mars of what little atmosphere it had. And the problem only escalated as the small planet quickly cooled, freezing out the molten core and further diminishing its already-anemic magnetic field.

The vicious cycle continued. Liquid water requires air. Without the pressure of air, water can boil away at room temperature, so as its atmospheric conditions shifted, Mars’ ocean soon began to disappear. Some of the water was locked up as ice underground. Some
became part of the Martian atmosphere, freezing out each year to build the Red Planet’s distinctive icy poles. The water is still there, yes, but the seas are empty, now, and the riverbeds are nothing more than dry and desolate canyons.

But as we look at this desiccated world from our safe, verdant perch here on Earth, the question has to be asked: can Mars be revived? Can we bring back its youthful splendor through application of the proper, planetary treatments for aging? Can we make it habitable for humans?

Books like Kim Stanley Robinson’s *Red Mars* imagine the necessary steps: first, we’d need to create plants capable of surviving Mars’ horrible cold, horrible radiation, and its horribly thin atmosphere. Once that’s achieved, these plants would have to be cultivated across the planet’s surface so they could convert carbon dioxide to oxygen and carbon-sequestering plant matter. Also, we’d somehow need to melt the pole ice so that its carbon dioxide and water could supplement the still too-thin atmosphere.

But despite all this, despite whatever biological or botanical or chemical lengths we go to, the sad fact is that these measures can only do so much. Even if we could make Mars livable, we can never change its size. Mars,
unfortunately, will always be too small to gravitationally keep an atmosphere and too cold internally to generate enough of a magnetic field to help it defend what little gas it has.

While some lichens might survive this re-loss of atmosphere, any plants adapted to the Martian geology would likely wilt away. Any newly planted greenery would die as the lack of atmospheric pressure allowed unconstrained water molecules to boil out. Over time, Mars would become an abandoned garden, withered gray and filled with desiccated crops.

So there it is: Mars is and will remain dead, geologically speaking, and any attempts to revive it would result only in a temporary resurrection.

However...

That’s not the whole story, because despite all the evidence to the contrary, this dead world may still be able to support life, though perhaps not the kind we’re used to.

In an exciting development, scientists working with data from *Mars Express* reported in August 2009 the presence of methane (a gas most commonly equated with cow flatulence) in the atmosphere of Mars. One particularly interesting property of methane is that it breaks down in sunlight, meaning that in order for it to be detected in the present, something must be generating it
in the present. And the only two known possible sources for methane? Volcanism and life.

As mentioned earlier, Mars’ volcanoes are epic. They make Iceland look like a slightly smoky lump of rock. The largest mountain on Mars is Olympic Mons, a volcano that stands twenty-seven kilometers above the Martian surface. That’s sixteen miles high, three times the height of Everest. This geologic behemoth, the largest in our Solar System, offers us tantalizing hints at the possibility of both lava and life.

This shield volcano is geologically identical to the volcanoes of Hawaii, only, like Alice in Wonderland, it ate the cake and grew and grew and grew to gigantic proportions. Its caldera stretches across fifty-four lava-filled miles and shows evidence of eruptions as recently as two million years ago. In geologic terms, that’s recent history and means that it’s conceivable that present day volcanic activity, such as the venting of gases like methane, could be going on.

But let’s face it, as exciting as volcanoes are, alien life is a much more interesting possible explanation for the methane.

Here on our world, small bacteria called methanogens once ruled the surface of early Earth. These microorganisms rabidly metabolized carbon dioxide with
molecular hydrogen to produce energy and methane waste. While not particularly cute or cuddly, these rod and ball shaped early life forms started off the long process of filling our world with life. Today on Earth, they are extinct, but maybe, just maybe, their cousins continue to live, output methane (without so much as an “excuse me”) and die on Mars.

However, like us humans, whatever form of alien life exists would probably need protection from radiation as well. But on atmospherically-challenged, magnetically-weak Mars, where could that shelter be found?

In those volcanoes, of course. Specifically, the lava tubes—long, hollow, underground stretches that once carried molten rock hundreds of kilometers down the mountains’ gently sloped flanks. Dirt and rock provide a remarkably good shield against radiation, and as the Martian surface became progressively more inhospitable, some scientists theorize that life could have retreated to the lava tubes, and other underground recesses, to survive.

So as far as any colonization plans go, those lava tubes could be the key to our future on Mars. The Red Planet’s surface is harsh and its atmosphere wispy, but underground, humans may find the safety we need to finally make our home on a planet other than Earth—
provided, of course, that we’re willing to share the space with flatulent microbes.

While this isn’t quite the glorious, terraforming future dreamed of by generations of science fiction writers and readers, it is an achievable goal. And with a little luck, and a whole lot of hard work, it is, in fact, a dream we could conceivably make a reality within our lifetimes. So...Mars-ward ho!

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September 19

The picture came! Veronica tapped on my glass and woke me up, and she held it up for me to see. It’s autographed and everything! For you, Veronica mouthed at me, and she smiled a really big smile. The autograph says, TO JAY—I’LL THROW A TOUCHDOWN FOR YOU. I couldn’t believe it. Everybody is laughing at me because of the way I yelled and ran in circles around my room until I fell on the floor and scraped my elbow. The janitor, Lou, turned on the intercom box outside my door and said, “Kid, you gone crazier than usual? What you care about that picture for?”

Don’t they know Dan Marino is the greatest quarterback of all time? I taped the picture to the wall over my bed. On the rest of my wall I have maps of the United States, and the world, and the solar system. I can find Corsica on the map, and the Palau Islands, which most people have never heard of, and I know what order all the planets are in. But there’s nothing else on my wall like Dan Marino. That’s the best. The other best thing I have is the cassette tape from that time the President
called me on the telephone when I was six. He said, “Hi, is Jay there? This is the President of the United States.” He sounded just like on TV. My heart flipped, because it’s so weird to hear the President say your name. I couldn’t think of anything to say back. He asked me how I was feeling, and I said I was fine. That made him laugh, like he thought I was making a joke. Then his voice got real serious, and he said everyone was praying and thinking about me, and he hung up. When I listen to that tape now, I wish I had thought of something else to say. I used to think he might call me another time, but it only happened once, in the beginning. So I guess I’ll never have a chance to talk to the President again.

After Veronica gave me my picture of Marino, I asked her if she could get somebody to fix my TV so I can see the football games. All my TV can play is videos. Veronica said there aren’t any football games, and I started to get mad because I hate it when they lie. It’s September, I said, and there’s always football games in September. But Veronica told me the NFL people had a meeting and decided not to have football anymore, and maybe it would start again, but she wasn’t sure, because nobody except me was thinking about football. At first, after she said that, it kind of ruined the autograph, because it seemed like Dan Marino must be lying, too.
But Veronica said he was most likely talking about throwing a touchdown for me in the future, and I felt better then.

This notebook is from Ms. Manigat, my tutor, who is Haitian. She said I should start writing down my thoughts and everything that happens to me. I said I don’t have any thoughts, but she said that was ridiculous. That is her favorite word, ridiculous.

Oh, I should say I’m ten today. If I were in a regular school, I would be in fifth grade like my brother was. I asked Ms. Manigat what grade I’m in, and she said I don’t have a grade. I read like I’m in seventh grade and I do math like I’m in fourth grade, she says. She says I don’t exactly fit anywhere, but I’m very smart. Ms. Manigat comes every day, except on weekends. She is my best friend, but I have to call her Ms. Manigat instead of using her first name, which is Emmeline, because she is so proper. She is very neat and wears skirts and dresses, and everything about her is very clean except her shoes, which are dirty. Her shoes are supposed to be white, but whenever I see her standing outside of the glass, when she hasn’t put on her plastic suit yet, her shoes look brown and muddy.

Those are my thoughts.
September 20

I had a question today. Veronica never comes on Fridays, and the other nurse, Rene, isn’t as nice as she is, so I waited for Ms. Manigat. She comes at one. I said, “You know how they give sick children their last wish when they’re dying? Well, when Dr. Ben told me to think of the one thing I wanted for my birthday, I said I wanted an autograph from Dan Marino, so does that mean I’m dying and they’re giving me my wish?” I said this really fast.

I thought Ms. Manigat would say I was being ridiculous. But she smiled. She put her hand on top of my head, and her hand felt stiff and heavy inside her big glove. “Listen, little old man,” she said, which is what she calls me because she says I do so much worrying, “You’re a lot of things, but you aren’t dying. When everyone can be as healthy as you, it’ll be a happy day.”

The people here always seems to be waiting, and I don’t know what for. I thought maybe they were waiting for me to die. But I believe Ms. Manigat. If she doesn’t want to tell me something, she just says, “Leave it alone, Jay,” which is her way of letting me know she would rather not say anything at all than ever tell a lie.
The lights in my room started going on and off again today, and it got so hot I had to leave my shirt off until I went to bed. Ms. Manigat couldn’t do her lessons the way she wanted because of the lights not working right. She said it was the emergency generator. I asked her what the emergency was, and she said something that sounded funny: “Same old same old.” That was all she said. I asked her if the emergency generator was the reason Dr. Ben took the television out of my room, and she said yes. She said everyone is conserving energy, and I have to do my part, too. But I miss my videos. There is nothing at all to do when I can’t watch my videos. I hate it when I’m bored. Sometimes I’ll even watch videos I’ve seen a hundred times, really a hundred times. I’ve seen *Big* with Tom Hanks more times than any other video. I love the part in the toy store with the really big piano keys on the floor. My mom taught me how to play Three Blind Mice on our piano at home, and it reminds me of that. I’ve never seen a toy store like the one in *Big*. I thought it was just a made-up place, but Ms. Manigat said it was a real toy store in New York.

I miss my videos. When I’m watching them, it’s like I’m inside the movie, too. I hope Dr. Ben will bring my TV back soon.
October 22

I made Veronica cry yesterday. I didn’t mean to. Dr. Ben said he knows it was an accident, but I feel very sorry, so I’ve been crying too. What happened is, I was talking to her, and she was taking some blood out of my arm with a needle like always. I was telling her about how me and my dad used to watch Marino play on television, and then all of a sudden she was crying really hard.

She dropped the needle on the floor and she was holding her wrist like she broke it. She started swearing. She said Goddammit, goddammit, goddammit, over and over, like that. I asked her what happened, and she pushed me away like she wanted to knock me over. Then she went to the door and punched the number code really fast and she pulled on the doorknob, but the door wouldn’t open, and I heard something in her arm snap from yanking so hard. She had to do the code again. She was still crying. I’ve never seen her cry.

I didn’t know what happened. I mashed my finger on the buzzer hard, but everybody ignored me. It reminded me of when I first came here, when I was always pushing the buzzer and crying, and nobody would ever come for a long time, and they were always in a bad
mood when they came.

Anyway, I waited for Ms. Manigat, and when I told her about Veronica, she said she didn’t know anything because she comes from the outside, but she promised to find out. Then she made me recite the Preamble to the Constitution, which I know by heart. Pretty soon, for a little while, I forgot about Veronica.

After my lessons, Ms. Manigat left and called me on my phone an hour later, like she promised. She always keeps her promises. My telephone is hooked up so people on the inside can call me, but I can’t call anybody, inside or outside. It hardly ever rings now. But I almost didn’t want to pick it up. I was afraid of what Ms. Manigat would say.

“Veronica poked herself,” Ms. Manigat told me. “The needle stuck through her hot suit. She told Dr. Ben there was sudden movement.”

I wondered who made the sudden movement, Veronica or me?

“Is she okay?” I asked. I thought maybe Ms. Manigat was mad at me, because she has told me many times that I should be careful. Maybe I wasn’t being careful when Veronica was here.

“We’ll see, Jay,” Ms. Manigat said. From her voice, it sounded like the answer was no.
“Will she get sick?” I asked.

“Probably, yes, they think so,” Ms. Manigat said.

I didn’t want her to answer any more questions. I like it when people tell me the truth, but it always makes me feel bad, too. I tried to say I was sorry, but I couldn’t even open my mouth.

“It’s not your fault, Jay,” Ms. Manigat said.

I couldn’t help it. I sobbed like I used to when I was still a little kid. “Veronica knew something like this could happen,” she said.

But that didn’t make anything better, because I remembered how Veronica’s face looked so scared inside her mask, and how she pushed me away. Veronica has been here since almost the beginning, before Ms. Manigat came, and she used to smile at me even when nobody else did. When she showed me my picture from Dan Marino, she looked almost as happy as me. I had never seen her whole face smiling like that. She looked so pretty and glad.

I was crying so much I couldn’t even write down my thoughts like Ms. Manigat said to. Not until today.

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**November 4**

A long time ago, when I first came here and the TV
in my room played programs from outside, I saw the first-grade picture I had taken at school on TV. I always hated that picture because Mom put some greasy stuff in my hair that made me look like a total geek. And then I turned on the TV and saw that picture on the news! The man on TV said the names of everyone in our family, and even spelled them out on the screen. Then, he called me Patient Zero. He said I was the first person who got sick.

But that wasn’t really what happened. My dad was sick before me. I’ve told them that already. He got it away on his job in Alaska. My dad traveled a lot because he drilled for oil, but he came home early that time. We weren’t expecting him until Christmas, but he came when it was only September, close to my birthday. He said he’d been sent home because some people on his oil crew got sick. One of them had even died. But the doctor in Alaska had looked at my dad and said he was fine, and then his boss sent him home. Dad was really mad about that. He hated to lose money. Time away from a job was always losing money, he said. He was in a bad mood when he wasn’t working.

And the worse thing was, my dad wasn’t fine. After two days, his eyes got red and he started sniffling. Then I did, too. And then my mom and brother.

When the man on TV showed my picture and called
me Patient Zero and said I was the first one to get sick, that was when I first learned how people tell lies, because that wasn’t true. Somebody on my dad’s oil rig caught it first, and then he gave it to my dad. And my dad gave it to me, my mom and my brother. But one thing he said was right. I was the only one who got well.

My Aunt Lori came here to live at the lab with me at first, but she wasn’t here long, because her eyes had already turned red by then. She came to help take care of me and my brother before my mom died, but probably she shouldn’t have done that. She lived all the way in California, and I bet she wouldn’t have gotten sick if she hadn’t come to Miami to be with us. But even my mom’s doctor didn’t know what was wrong then, so nobody could warn her about what would happen if she got close to us. Sometimes I dream I’m calling Aunt Lori on my phone, telling her please, please not to come. Aunt Lori and my mom were twins. They looked exactly alike.

After Aunt Lori died, I was the only one left in my whole family.

I got very upset when I saw that news report. I didn’t like hearing someone talk about my family like that, people who didn’t even know us. And I felt like maybe the man on TV was right, and maybe it was all my fault. I screamed and cried the whole day. After that, Dr. Ben
made them fix my TV so I couldn’t see the news anymore or any programs from outside, just cartoons and kid movies on video. The only good thing was, that was when the President called me. I think he was sorry when he heard what happened to my family.

When I ask Dr. Ben if they’re still talking about me on the news, he just shrugs his shoulders. Sometimes Dr. Ben won’t say yes or no if you ask him a question. It doesn’t matter, though. I think the TV people probably stopped showing my picture a long time ago. I was just a little kid when my family got sick. I’ve been here four whole years!

Oh, I almost forgot. Veronica isn’t back yet.

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**November 7**

I have been staring at my Dan Marino picture all day, and I think the handwriting on the autograph looks like Dr. Ben’s. But I’m afraid to ask anyone about that. Oh, yeah—and yesterday the power was off in my room for a whole day! Same old same old. That’s what Ms. M. would say.

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**November 12**
Ms. Manigat is teaching me a little bit about medicine. I told her I want to be a doctor when I grow up, and she said she thinks that’s a wonderful idea because she believes people will always need doctors. She says I will be in a good position to help people, and I asked her if that’s because I have been here so long, and she said yes.

The first thing she taught me is about diseases. She says in the old days, a long time ago, diseases like typhoid used to kill a lot of people because of unsanitary conditions and dirty drinking water, but people got smarter and doctors found drugs to cure it, so diseases didn’t kill people as much anymore. Doctors are always trying to stay a step ahead of disease, Ms. Manigat says.

But sometimes they can’t. Sometimes a new disease comes. Or, maybe it’s not a new disease, but an old disease that has been hidden for a long time until something brings it out in the open. She said that’s how nature balances the planet, because as soon as doctors find cures for one thing, there is always something new. Dr. Ben says my disease is new. There is a long name for it I can’t remember how to spell, but most of the time people here call it Virus-J.

In a way, see, it’s named after me. That’s what Dr. Ben said. But I don’t like that.
Ms. Manigat said after my dad came home, the virus got in my body and attacked me just like everyone else, so I got really, really sick for a lot of days. Then, I thought I was completely better. I stopped feeling bad at all. But the virus was already in my brother and my mom and dad, and even our doctor from before, Dr. Wolfe, and Ms. Manigat says it was very aggressive, which means doctors didn’t know how to kill it.

Everybody wears yellow plastic suits and airtight masks when they’re in my room because the virus is still in the air, and it’s in my blood, and it’s on my plates and cups whenever I finish eating. They call the suits hot suits because the virus is hot in my room. Not hot like fire, but dangerous.

Ms. Manigat says Virus-J is extra special in my body because even though I’m not sick anymore, except for when I feel like I have a temperature and I have to lie down sometimes, the virus won’t go away. I can make other people sick even when I feel fine, so she said that makes me a carrier. Ms. Manigat said Dr. Ben doesn’t know anybody else who’s gotten well except for me.

Oh, except maybe there are some little girls in China. Veronica told me once there were some little girls in China the same age as me who didn’t get sick either. But when I asked Dr. Ben, he said he didn’t know if it
was true. And Ms. Manigat told me it might have been true once, but those girls might not be alive anymore. I asked her if they died of Virus-J, and she said no, no, no. Three times. She told me to forget all about any little girls in China. Almost like she was mad.

I’m the only one like me she knows about for sure, she says. The only one left.

That’s why I’m here, she says. But I already knew that part. When I was little, Dr. Ben told me about antibodies and stuff in my blood, and he said the reason him and Rene and Veronica and all the other doctors take so much blood from me all the time, until they make purple bruises on my arms and I feel dizzy, is so they can try to help other people get well, too. I have had almost ten surgeries since I have been here. I think they have even taken out parts of me, but I’m not really sure. I look the same on the outside, but I feel different on the inside. I had surgery on my belly a year ago, and sometimes when I’m climbing the play-rope hanging from the ceiling in my room, I feel like it hasn’t healed right, like I’m still cut open. Ms. Manigat says that’s only in my mind. But it really hurts! I don’t hate anything like I hate operations. I wonder if that’s what happened to the other little girls, if they kept getting cut up and cut up until they died. Anyway, it’s been a year since I had any operations. I
keep telling Dr. Ben they can have as much blood as they want, but I don’t want anymore operations, please.

Dr. Ben said there’s nobody in the world better than me to make people well, if only they can figure out how. Ms. Manigat says the same thing. That makes me feel a little better about Virus-J.

I was happy Ms. Manigat told me all about disease, because I don’t want her to treat me like a baby the way everybody else does. That’s what I always tell her. I like to know things.

I didn’t even cry when she told me Veronica died. Maybe I got all my crying over with in the beginning, because I figured out a long time ago nobody gets better once they get sick. Nobody except for me.

November 14

Today, I asked Ms. Manigat how many people have Virus-J.

“Oh, Jay, I don’t know,” she said. I don’t think she was in the mood to talk about disease.

“Just guess,” I said.

Ms. Manigat thought for a long time. Then she opened her notebook and began drawing lines and boxes for me to see. Her picture looked like the tiny brown lines
all over an oak-tree leaf. We had a tree called a live oak in our backyard, and my dad said it was more than a hundred years old. He said trees sometimes live longer than people do. And he was right, because I’m sure that tree is still standing in our yard even though my whole family is gone.

“This is how it goes, Jay,” Ms. Manigat said, showing me with her pencil-tip how one line branched down to the next. “People are giving it to each other. They don’t usually know they’re sick for two weeks, and by then they’ve passed it to a lot of other people. By now, it’s already been here four years, so the same thing that happened to your family is happening to a lot of families.”

“How many families?” I asked again. I tried to think of the biggest number I could. “A million?”

Ms. Manigat shrugged just like Dr. Ben would. Maybe that meant yes.

I couldn’t imagine a million families, so I asked Ms. Manigat if it happened to her family, too, if maybe she had a husband and kids and they got sick. But she said no, she was never married. I guess that’s true, because Ms. Manigat doesn’t look that old. She won’t tell me her age, but she’s in her twenties, I think. Ms. Manigat smiled at me, even though her eyes weren’t happy.
“My parents were in Miami, and they got it right away,” Ms. Manigat said. “Then my sister and nieces came to visit them from Haiti, and they got it, too. I was away working when it happened, and that’s why I’m still here.”

Ms. Manigat never told me that before.

My family lived in Miami Beach. My dad said our house was too small—I had to share a room with my brother—but my mother liked where we lived because our building was six blocks from the ocean. My mother said the ocean can heal anything. But that can’t be true, can it?

My mother wouldn’t like it where I am, because there is no ocean and no windows neither. I wondered if Ms. Manigat’s parents knew someone who worked on an oil rig, too, but probably not. Probably they got it from my dad and me.

“Ms. Manigat,” I said, “Maybe you should move inside like Dr. Ben and everybody else.”

“Oh, Jay,” Ms. Manigat said, like she was trying to sound cheerful. “Little old man, if I were that scared of anything, why would I be in here teaching you?”

She said she asked to be my teacher, which I didn’t know. I said I thought her boss was making her do it, and she said she didn’t have a boss. No one sent her. She wanted to come.
“Just to meet me?” I asked her.

“Yes, because I saw your face on television, and you looked to me like a one-of-a-kind,” she said. She said she was a nurse before, and she used to work with Dr. Ben in his office in Atlanta. She said they worked at the CDC, which is a place that studies diseases. And he knew her, so that was why he let her come teach me.

“A boy like you needs his education. He needs to know how to face life outside,” she said.

Ms. Manigat is funny like that. Sometimes she’ll quit the regular lesson about presidents and the Ten Commandments and teach me something like how to sew and how to tell plants you eat from plants you don’t, and stuff. Like, I remember when she brought a basket with real fruits and vegetables in it, fresh. She said she has a garden where she lives on the outside, close to here. She said one of the reasons she won’t move inside is because she loves her garden so much, and she doesn’t want to leave it.

The stuff she brought was not very interesting to look at. She showed me some cassava, which looked like a long, twisty tree branch to me, and she said it’s good to eat, except it has poison in it that has to be boiled out of the root first and the leaves are poisonous too. She also brought something called akee, which she said she used
to eat from trees in Haiti. It has another name in Haiti that’s too hard for me to spell. It tasted fine to me, but she said akee can never be eaten before it’s opened, or before it’s ripe, because it makes your brain swell up and you can die. She also brought different kinds of mushrooms to show me which ones are good or bad, but they all looked alike to me. She promised to bring me other fruits and vegetables to see so I will know what’s good for me and what isn’t. There’s a lot to learn about life outside, she said.

Well, I don’t want Ms. Manigat to feel like I am a waste of her time, but I know for a fact I don’t have to face life outside. Dr. Ben told me I might be a teenager before I can leave, or even older. He said I might even be a grown man.

But that’s okay, I guess. I try not to think about what it would be like to leave. My room, which they moved me to when I had been here six months, is really, really big. They built it especially for me. It’s four times as big as the hotel room my mom and dad got for us when we went to Universal Studios in Orlando when I was five. I remember that room because my brother, Kevin, kept asking my dad, “Doesn’t this cost too much?” Every time my dad bought us a T-shirt or anything, Kevin brought up how much it cost. I told Kevin to stop it because I was
afraid Dad would get mad and stop buying us stuff. Then, when we were in line for the King Kong ride, all by ourselves, Kevin told me, “Dad got fired from his job, stupid. Do you want to go on Welfare?” I waited for Dad and Mom to tell me he got fired, but they didn’t. After Kevin said that, I didn’t ask them to buy me anything else, and I was scared to stay in that huge, pretty hotel room because I thought we wouldn’t have enough money to pay. But we did. And then Dad got a job on the oil rig, and we thought everything would be better.

My room here is as big as half the whole floor I bet. When I run from one side of my room to the other, from the glass in front to the wall in back, I’m out of breath. I like to do that. Sometimes I run until my ribs start squeezing and my stomach hurts like it’s cut open and I have to sit down and rest. There’s a basketball net in here, too, and the ball doesn’t ever touch the ceiling except if I throw it too high on purpose. I also have comic books, and I draw pictures of me and my family and Ms. Manigat and Dr. Ben. Because I can’t watch my videos, now I spend a lot of time writing in this notebook. A whole hour went by already. When I am writing down my thoughts, I forget about everything else.

I have decided for sure to be a doctor someday. I’m going to help make people better.
November 29

Thanksgiving was great! Ms. Manigat cooked real bread and brought me food she’d heated up. I could tell everything except the bread and cassava was from a can, like always, but it tasted much better than my regular food. I haven’t had bread in a long time. Because of her mask, Ms. Manigat ate her dinner before she came, but she sat and watched me eat. Rene came in, too, and she surprised me when she gave me a hug. She never does that. Dr. Ben came in for a little while at the end, and he hugged me too, but he said he couldn’t stay because he was busy. Dr. Ben doesn’t come visit me much anymore. I could see he was growing a beard, and it was almost all white! I’ve seen Dr. Ben’s hair when he’s outside of the glass, when he isn’t wearing his hot suit, and his hair is brown, not white. I asked him how come his beard was white, and he said that’s what happens when your mind is overly tired.

I liked having everybody come to my room. Before, in the beginning, almost nobody came in, not even Ms. Manigat. She used to sit in a chair outside the glass and use the intercom for my lessons. It’s better when they come in.

I remember how Thanksgiving used to be, with my
family around the table in the dining room, and I told Ms. Manigat about that. Yes, she said, even though she didn’t celebrate Thanksgiving in Haiti like Americans do, she remembers sitting at the table with her parents and her sister for Christmas dinner. She said she came to see me today, and Rene and Dr. Ben came too, because we are each other’s family now, so we are not alone. I hadn’t thought of it like that before.

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**December 1**

No one will tell me, not even Ms. M., but I think maybe Dr. Ben is sick. I have not seen him in five whole days. It is quiet here. I wish it was Thanksgiving again.

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**January 23**

I didn’t know this before, but you have to be in the right mood to write your thoughts down. A lot happened in the days I missed.

The doctor with the French name is gone now, and I’m glad. He wasn’t like Dr. Ben at all. I could hardly believe he was a real doctor, because he always had on the dirtiest clothes when I saw him take off his hot suit outside of the glass. And he was never nice to me—he
wouldn’t answer at all when I asked him questions, and he wouldn’t look in my eyes except for a second. One time he slapped me on my ear, almost for nothing, and his glove hurt so much my ear turned red and was sore for a whole day. He didn’t say he was sorry, but I didn’t cry. I think he wanted me to.

Oh yeah, and he hooked me up to IV bags and took so much blood from me I couldn’t even stand up. I was scared he would operate on me. Ms. Manigat didn’t come in for almost a week, and when she finally came, I told her about the doctor taking too much blood. She got really mad. Then I found out the reason she didn’t come all those days—he wouldn’t let her! She said he tried to bar her from coming. *Bar* is the word she used, which sounds like a prison.

The new doctor and Ms. Manigat do not get along, even though they both speak French. I saw them outside of the glass, yelling back and forth and moving their hands, but I couldn’t hear what they were saying. I was afraid he would send Ms. Manigat away for good. But yesterday she told me he’s leaving! I told her I was happy, because I was afraid he would take Dr. Ben’s place.

No, she told me, there isn’t anyone taking Dr. Ben’s place. She said the French doctor came here to study me in person because he was one of the doctors Dr. Ben had
been sending my blood to ever since I first came. But he was already very sick when he got here, and he started feeling worse, so he had to go. Seeing me was his last wish, Ms. Manigat said, which didn’t seem like it could be true because he didn’t act like he wanted to be with me.

I asked her if he went back to France to his family, and Ms. Manigat said no, he probably didn’t have a family, and even if he did, it’s too hard to go to France. The ocean is in the way, she said.

Ms. Manigat seemed tired from all that talking. She said she’d decided to move inside, like Rene, to make sure they were taking care of me properly. She said she misses her garden. The whole place has been falling apart, she said. She said I do a good job of keeping my room clean—and I do, because I have my own mop and bucket and Lysol in my closet—but she told me the hallways are filthy. Which is true, because sometimes I can see water dripping down the wall outside of my glass, a lot of it, and it makes puddles all over the floor. You can tell the water is dirty because you can see different colors floating on top, the way my family’s driveway used to look after my dad sprayed it with a hose. He said the oil from the car made the water look that way, but I don’t know why it looks that way here. Ms. Manigat said the
water smells bad, too.

“It’s ridiculous. If they’re going to keep you here, they’d damn well better take care of you,” Mrs. Manigat said. She must have been really mad, because she never swears.

I told her about the time when Lou came and pressed on my intercom really late at night, when I was asleep and nobody else was around. He was talking really loud like people do in videos when they’re drunk. Lou was glaring at me through the glass, banging on it. I had never seen him look so mean. I thought he would try to come into my room but then I remembered he couldn’t because he didn’t have a hot suit. But I’ll never forget how he said, They should put you to sleep like a dog at the pound.

I try not to think about that night, because it gave me nightmares. It happened when I was pretty little, like eight. Sometimes I thought maybe I just dreamed it, because the next time Lou came he acted just like normal. He even smiled at me a little bit. Before he stopped coming here, Lou was nice to me every day after that.

Ms. Manigat did not sound surprised when I told her what Lou said about putting me to sleep. “Yes, Jay,” she told me, “For a long time, there have been people outside who didn’t think we should be taking care of you.”
I never knew that before!

I remember a long time ago, when I was really little and I had pneumonia, my mom was scared to leave me alone at the hospital. “They won’t know how to take care of Jay there,” she said to my dad, even though she didn’t know I heard her. I had to stay by myself all night, and because of what my mom said, I couldn’t go to sleep. I was afraid everyone at the hospital would forget I was there. Or maybe something bad would happen to me.

It seems like the lights go off every other day now. And I know people must really miss Lou, because the dirty gray water is all over the floor outside my glass and there’s no one to clean it up.

February 14

6-4-6-7-2-9-4-36-4-6-7-2-9-4-36-4-6-7-2-9-4-3

I remember the numbers already! I have been saying them over and over in my head so I won’t forget, but I wanted to write them down in the exact right order to be extra sure. I want to know them without even looking.

Oh, I should start at the beginning. Yesterday, no one brought me any dinner, not even Ms. Manigat. She came with a huge bowl of oatmeal this morning, saying she was very sorry. She said she had to look a long time
to find that food, and it wore her out. The oatmeal wasn’t even hot, but I didn’t say anything. I just ate. She watched me eating.

She didn’t stay with me long, because she doesn’t teach me lessons anymore. After the French doctor left, we talked about the Emancipation Proclamation and Martin Luther King, but she didn’t bring that up today. She just kept sighing, and she said she had been in bed all day yesterday because she was so tired, and she was sorry she forgot to feed me. She said I couldn’t count on Rene to bring me food because she didn’t know where Rene was. It was hard for me to hear her talk through her hot suit today. Her mask was crooked, so the microphone wasn’t in front of her mouth where it should be.

She saw my notebook and asked if she could look at it. I said sure. She looked at the pages from the beginning. She said she liked the part where I said she was my best friend. Her face-mask was fogging up, so I couldn’t see her eyes and I couldn’t tell if she was smiling. I am very sure she did not put her suit on right today.

When she put my notebook down, she told me to pay close attention to her and repeat the numbers she told me, which were 6-4-6-7-2-9-4-3.

I asked her what they were. She said it was the
security code for my door. She said she wanted to give the code to me because my buzzer wasn’t working, and I might need to leave my room if she overslept and nobody came to bring me food. She told me I could use the same code on the elevator, and the kitchen was on the third floor. There wouldn’t be anybody there, she said, but I could look on the shelves, the top ones up high, to see if there was any food. If not, she said I should take the stairs down to the first floor and find the red EXIT sign to go outside. She said the elevator doesn’t go to the first floor anymore.

I felt scared then, but she put her hand on top of my head again just like usual. She said she was sure there was plenty of food outside.

“But am I allowed?” I asked her. “What if people get sick?”

“You worry so much, little man,” she said. “Only you matter now, my little one-of-a-kind.”

But see I’m sure Ms. Manigat doesn’t really want me to go outside. I’ve been thinking about that over and over. Ms. Manigat must be very tired to tell me to do something like that. Maybe she has a fever and that’s why she told me how to get out of my room. My brother said silly things when he had a fever, and my father too. My father kept calling me Oscar, and I didn’t know who
Oscar was. My dad told us he had a brother who died when he was little, and maybe his name was Oscar. My mother didn’t say anything at all when she got sick. She just died very fast. I wish I could find Ms. Manigat and give her something to drink. You get very thirsty when you have a fever, which I know for a fact. But I can’t go to her because I don’t know where she is. And besides, I don’t know where Dr. Ben keeps the hot suits. What if I went to her and she wasn’t wearing hers?

Maybe the oatmeal was the only thing left in the kitchen, and now I ate it all. I hope not! But I’m thinking maybe it is because I know Ms. Manigat would have brought me more food if she could have found it. She’s always asking me if I have enough to eat. I’m already hungry again.

6-4-6-7-2-9-4-3
6-4-6-7-2-9-4-3

February 15

I am writing in the dark. The lights are off. I tried to open my lock but the numbers don’t work because of the lights being off. I don’t know where Ms. Manigat is. I’m trying not to cry.

What if the lights never come back on?
February 16

There’s so much I want to say but I have a headache from being hungry. When the lights came back on I went out into the hall like Ms. M told me and I used the numbers to get the elevator to work and then I went to the kitchen like she said. I wanted to go real fast and find some peanut butter or some Oreos or even a can of beans I could open with the can opener Ms. M left me at Thanksgiving.

There’s no food in the kitchen! There’s empty cans and wrappers on the floor and even roaches but I looked on every single shelf and in every cabinet and I couldn’t find anything to eat.

The sun was shining really REALLY bright from the window. I almost forgot how the sun looks. When I went to the window I saw a big, empty parking lot outside. At first I thought there were diamonds all over the ground because of the sparkles but it was just a lot of broken glass. I could only see one car and I thought it was Ms. M’s. But Ms. M would never leave her car looking like that. For one thing it had two flat tires!

Anyway I don’t think there’s anybody here today. So I thought of a plan. I have to go now.

Ms. M, this is for you—or whoever comes looking
for me. I know somebody will find this notebook if I leave it on my bed. I’m very sorry I had to leave in such a hurry.

I didn’t want to go outside but isn’t it okay if it’s an emergency? I am really really hungry. I’ll just find some food and bring it with me and I’ll come right back. I’m leaving my door open so I won’t get locked out. Ms. M, maybe I’ll find your garden with cassavas and akee like you showed me and I’ll know the good parts from the bad parts. If someone sees me and I get in trouble I’ll just say I didn’t have anything to eat.

Whoever is reading this don’t worry. I’ll tell everybody I see please please not to get too close to me. I know Dr. Ben was very worried I might make somebody sick.

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Tananarive Due is a winner of the American Book Award and a two-time finalist for the Bram Stoker Award. Her novels include the My Soul to Keep series, The Between, The Good House, and Joplin’s Ghost. Her short fiction has been published in The Magazine of Fantasy & Science Fiction, and in anthologies such as Dark Delicacies II, Voices from the Other Side, Dark Dreams, Dark Matter, and Mojo: Conjure Stories. She is a frequent collaborator with SF writer Steven Barnes: they’ve produced film scripts,
short stories, and three Tennyson Hardwick detective novels, the latest of which is *From Cape Town With Love* (written with actor Blair Underwood). They also collaborate in another way: they’re married.
Is there any real-life disease that inspired Virus-J? What kind of research did you do while you were working on “Patient Zero”?

I had a story I really wanted to tell about a child being raised in isolation, ignorant of an apocalyptic infection raging in the outside world, so my approach to “Patient Zero” was probably something like “A spoonful of science helps the narrative go down.”

Having said that, I was researching and writing The Living Blood at the time (or else I’d just finished it), a novel about blood that could heal any disease, and I’d done a lot of research into hot zones and Ebola and AIDS. Virus-J was created from my research for that novel, which went on to win an American Book Award.

It’s interesting that Jay tells us the virus came from the oil rig where his father worked. That’s got to have different implications for today’s readers than it did for the readers of ten years ago, when this piece was originally released. What inspired you to pick this
career and workplace for Jay’s dad?

I was exploring the notion that this virus was something ancient that we had unearthed—and oil drilling was fair game, since oil dependency is such an unhealthy practice for our planet overall.

One detail that really hits the reader is the very brief discussion of the little girls in China, girls who had also survived Virus-J. There was a definite sensation that something terrible had happened to them. What inspired that moment in the story?

One of the consistent philosophies that has come across in my work, especially in *The Living Blood* and *Blood Colony*, is the notion that our survival instincts would drive us to almost any acts. Jay is probably lucky that he lived such a gentle life, and clearly the girls in China did not. I do think that if this kind of virus were sweeping the globe, anyone who was immune would definitely be imprisoned and studied—if not outright studied to death for reasons that would have as much to do with envy as with science.
Have you ever imagined what happened to Jay after this story ends?

It’s hard to think of poor Jay let loose in that horrific world outside. That’s probably why this short story never became a novel. But as I think about it now, I would like to imagine that Jay meets another group of survivors and they begin a path toward rebuilding the population.

Even though we’re stuck in Jay’s hospital room, there are still all these gorgeous details that place the story in Florida. What influenced the setting, and how integral is it to the piece?

I grew up in Miami, although I had left Florida by the time I wrote “Patient Zero,” so I’m sure the Florida references are evidence of homesickness. Florida will always be home in my heart. I live in Southern California now, but it’s a setting I plan to return to again.

Now we just have to hope that Jay doesn’t get eaten by alligators roaming empty streets! (Oops. Sorry. That was the horror writer in me...)

Is there anything else you’d like to share about this
I’m especially proud of “Patient Zero” because it was included in two Best SF of the Year anthologies; *Year’s Best SF 6*, edited by David G. Hartwell, and *The Year’s Best Science Fiction*, edited by Gardner Dozois.

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Wendy N. Wagner’s first novel, *Her Dark Depths*, is forthcoming from the small press Virtual Tales. Her short fiction has appeared in the anthology *2012 A.D.* and in the online magazine *Crossed Genres*. Another is forthcoming in *The Way of the Wizard*, edited by John Joseph Adams. In addition to her fiction writing, she has conducted interviews for horror-web.com. She shares her Portland, Oregon, home with one painting husband, one brilliant daughter, and no zombies.
From 1945 to 1991, Americans woke up every morning to coffee, cereal, and the threat of a Ruskie-style, nuclear holocaust. But ever since the fall of the Soviet Union, the only thing we’ve had to fear is undocumented fruit pickers and people named Abdul.

Sure, terrorism is a threat, but it’s not the kind of bowel-weakening specter of doom we know in our hearts we ought to be worrying about. Luckily, science fiction is a rich source of improbable worst-case scenarios, any one of which is bound to suit all you paranoiacs out there who just can’t go to bed at night without the comfort of knowing that something, somewhere, somehow is going to get you.

Here are a few of our favorite end-of-world scenarios:

BIG ASTEROID STRIKE

Asteroids are so threatening that scientists have created the Torino Scale to measure the damage a possible impact event could inflict. The scale runs from 0
to 10 with 0 being no chance of collision and 10 being a Michael Bay film.

The asteroid that ended the Cretaceous period was a definite 10. Even the largest of dinosaurs didn’t stand a chance against a massive flaming rock slamming into the Yucatan and kicking up more sunlight-blocking dust than the last night at Burning Man.

According to people much smarter than you, large asteroids hit the earth every ten million years, which means, of course, that we’re probably due. So when that day does finally come (and you know it will), kiss it all goodbye, baby: your life, your family, your friends and that meticulously color-coded and cross-referenced porn collection we know you’ve got stashed in your basement.

**IN REALITY**

Given that the oldest human, Jeanne Calment, lived 122 years and was never hit by a single space rock, chances are pretty good that you’ll make it from cradle to grave completely asteroid free. And since, statistically, you aren’t likely to live as long as Jean, it means your odds are even better.

Oh, and that Torino scale we mentioned? In the almost three hundred known asteroids with the potential to smack Earth upside the head, all but one are rated as 0,
and only one is rated 1, which means, “extremely unlikely, with no cause for public attention or concern.” Or as they say in internet-speak, “Meh.”

ALIEN TAKEOVER

Well over a thousand people claim to have been abducted by aliens, and millions—millions!—believe that aliens have visited this planet. Toward that end, over four thousand people have purchased alien abduction insurance, because they really, truly believe that the aliens are coming to get them.

And what if they’re right?

Despite BP’s piddling in the Gulf, this is a cozy little planet we got here: water, oxygen, American Idol. Who wouldn’t want to be our overlords?

So tomorrow morning when you wake up to find the Plutons have parked their Superdome-sized spaceship over the Empire State Building and are blowing us all to kingdom come, remember it’s not personal. They’re just here for the resources.

Or maybe it’s their way of saying Simon Cowell’s a dick.

IN REALITY

As Douglas Adams sagely pointed out, “Space is
big. Really big,” so aliens likely are real. But before you start running to Walmart for shotguns (which, come on, wouldn’t do you any good against lasers, anyway), stop. Real aliens aren’t going to be those Grey, big-eyed-waifs we know and love from *Close Encounters* and elaborate autopsy hoax videos.

No, chances are, any aliens we do encounter will be the single-celled, microbial kind, not likely to be packing heat or trying to turn us into a slave race, forced to battle each other gladiator-style for their amusement.

So next time you’re paralyzed in bed, watching helplessly as that big-eyed, gray-skinned Dr. Kildare surgically implants a transmitter into the base of your skull, take consolation in the knowledge that you’re really just suffering from paranoid schizophrenia.

Or maybe it’s the government.

**SUPERBUG**

According to our very good friend Wikipedia, viruses “are the most abundant type of biological entity” on the planet. They’re too small to be seen by a standard microscope, they infect every organism, they’re found in every ecosystem, and they’re resistant to antibiotics. If this were a horror film, viruses would be cast as the slow-moving yet surprisingly effective chainsaw murderer.
Think we’re kidding? Smallpox: five hundred million dead; Spanish flu: fifty million dead; HIV, twenty five million and counting. And of course there’s the ever-present threat of viruses being “weaponized.” Scary thought, isn’t it? Some schmoe with a chip on his shoulder opens up a vial of pathogenic whoop-ass on a plane and next thing you know, the whole world’s bleeding out the eyeballs.

Course, none of this works if the terrorists are as unwilling as the rest of us to pay those new carry-on fees.

**IN REALITY**

You know that smallpox virus with the horrifically high body count? Eradicated. HIV? Slowed down. Spanish flu? Mutated into a less lethal form. And thanks to high-tech, modern hygiene techniques like hand washing and not hurling plague corpses and dung at our enemies, even viruses like Ebola can be curtailed.

And *Twelve Monkeys* aside, weaponizing viruses is not the simple procedure you might think it is. First, you have to manage to develop your bug bomb without killing yourself. In 1979, the Soviets tried it with Anthrax. All they managed to eradicate was a bunch of their own sheep.

And that, ladies and gentlemen, is what we call
karma. Karma with phlegm.

**GRAY GOO**

If the first thing that comes to mind when you hear the term Gray Goo is a horror film about a goopy mass of mindless metaphor eating its way through 1950s suburbia, you would be mistaken...and not just because The Blob is red.

To explain Gray Goo, we have to start with nanotechnology. Nanobots are tiny machines built on the molecular, even atomic level, that, theoretically, can be used for a variety of useful tasks such as cleaning up oil spills, coaxing stem cells to regenerate damaged organs, or helping us understand the ending of *Lost*. Pretty handy, especially when you know that they self-assemble.

But what if those helpful little nanos suddenly went wild? And, no, we don’t mean getting drunk and lifting their shirts for every sleaze ball with a camera.

When nanos go crazy they out-of-control self replicate, gobbling up everything around them while continuing to build more and more and more of themselves. Eventually, all matter on Earth is consumed, up to and including your tasty, carbon-based flesh. All that will be left is an undulating lump of metallic Gray Goo.
Or, as we call it here on the East Coast, New Jersey.

IN REALITY

Nanomachines don’t exist yet. The field of nantotechnology is relatively nascent, so rest assured, you’ll probably be dead before this civilization-ending event can ever come to pass.

In fact, one of the highlights of our current level of technology is a robot that can walk fifty paces. Impressive, until you find out each step is only half a nanometer long. No worries about this guy disassembling your DNA and rebuilding you in the form of a clown.

And besides, Gray Goo can only happen when nanos replicate out of control, and no self-respecting scientist would ever let that happen. Not because he gives a damn about the rest of us. No, it’s his grant money he’s worried about.

RISE OF THE MACHINES

Robots perform all sorts of useful functions: they vacuum our floors, they build our cars. In Japan, they even tend to our elderly. And best of all, they don’t care that we’re exploiting them. In fact, they don’t care about anything at all. They’re robots; they don’t have feelings.

And that pretty much sums up our biggest fear: cold-
hearted machines devoid of emotions and programmed to respond only to logic. And what’s the least logical thing on this planet? That’s right, it’s us.

One of these days, Asimo’s gonna realize exactly how useless we are to him, and then it’s no more mister happy dance. We’ll be crushed under his literal iron fist like the fragile meat-puppets we are. Driven like rats, we’ll be hunted to near extinction with nothing to protect us but Christian Bale and his rage issues.

Boy, are we screwed.

IN REALITY

Look, robots can only do what we program them to do. All this hand-wringing about Arnold going back in time to kill your mother is about as realistic as Pacific Northwest emo veggie vampires.

In the unlikely event that there is a robot coming to crush your windpipe, just toss a tin can into its path. The ensuing hilarity will generate enough hits to crash YouTube.

And if all else fails, there’s always Asimov’s Three Laws of Robotics to fall back on. We have to hope that the directive to preserve human life will be the base programming of any future artificial intelligence.

Course, Asimov might have changed his mind on
that one had he seen what Will Smith did to *I, Robot*.

**CONCLUSION**

Worrying about the future collapse of civilization as we know it is a great thought-experiment, but the fact is that the chances of us all getting snuffed in one cataclysmic, species-killing event are really pretty slim. But if stockpiling seeds and water and giant, Costco cans of tuna fish in the lead-lined bunker beneath your carport makes you happy, hey, knock yourself out. And maybe it’s for the best. Cause if all that paranoid busy work accomplishes nothing else, at least it’ll keep you from worrying about how you’re really gonna die. In a nursing home. Surrounded by alien-robot invaders, fending off a mass of gray goo and a viral infection. Watching the asteroids fly into view.

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When she is not freelance writing, Carol Pinchefsky is the editor of the *Space Future Journal* (www.spacefuture.com), a website dedicated to space tourism, as well as the humor competition editor for *F&SF*. To Serve Man is her favorite cookbook.
STATEMENT OF INTENT

This is the story of a mother, and a daughter, and the right to life, and the dignity of all living things, and of some souls granted great destinies at the moment of their conception, and of others damned to remain society’s useful idiots.

CONTENTS

Expect cute plush animals and amniotic fluid and a more or less happy ending for everybody, though the definition of happiness may depend on the truncated emotional capacity of those unable to feel anything else. Some of the characters are rich and famous, others are underage, and one is legally dead, though you may like her the most of all.

APPEARANCE

We first encounter Molly June on her fifteenth deathday, when the monitors in charge of deciding such things declare her safe for passengers. Congratulating her on completing the only important stage of her
development, they truck her in a padded skimmer to the arvie showroom where she is claimed, right away, by one of the Living.

The fast sale surprises nobody, not the servos that trained her into her current state of health and attractiveness, not the AI routines managing the showroom, and least of all Molly June, who has spent her infancy and early childhood having the ability to feel surprise, or anything beyond a vague contentment, scrubbed from her emotional palate. Crying, she’d learned while still capable of such things, brought punishment, while unconditional acceptance of anything the engineers saw fit to provide brought light and flower scent and warmth. By this point in her existence she’ll greet anything short of an exploding bomb with no reaction deeper than vague concern. Her sale is a minor development by comparison: a happy development, reinforcing her feelings of dull satisfaction. Don’t feel sorry for her. Her entire life, or more accurately death, is happy ending. All she has to do is spend the rest of it carrying a passenger.

**VEHICLE SPECIFICATIONS**

You think you need to know what Molly June looks like. You really don’t, as it plays no role in her life. But as
the information will assist you in feeling empathy for her, we will oblige anyway.

Molly June is a round-faced, button-nosed gamin, with pink lips and cheeks marked with permanent rose: her blonde hair framing her perfect face in parentheses of bouncy, luxurious curls. Her blue eyes, enlarged by years of genetic manipulation and corrective surgeries, are three times as large as the ones imperfect nature would have set in her face. Lemur-like, they dominate her features like a pair of pacific jewels, all moist and sad and adorable. They reveal none of her essential personality, which is not a great loss, as she’s never been permitted to develop one.

Her body is another matter. It has been trained to perfection, with the kind of punishing daily regimen that can only be endured when the mind itself remains unaware of pain or exhaustion. She has worked with torn ligaments, with shattered joints, with disfiguring wounds. She has severed her spine and crushed her skull and has had both replaced, with the same ease her engineers have used, fourteen times, to replace her skin with a fresh version unmarked by scars or blemishes. What remains of her now is a wan amalgam of her own best-developed parts, most of them entirely natural, except for her womb, which is of course a plush, wired palace, far safer for its future occupant than the envelope of mere flesh would
have provided. It can survive injuries capable of reducing Molly June to a smear.

In short, she is precisely what she should be, now that she’s fifteen years past birth, and therefore, by all standards known to modern civilized society, Dead.

HEROINE

Jennifer Axioma-Singh has never been born and is therefore a significant distance away from being Dead.

She is, in every way, entirely typical. She has written operas, climbed mountains, enjoyed daredevil plunges from the upper atmosphere into vessels the size of teacups, finagled controlling stock in seventeen major multinationals, earned the hopeless devotion of any number of lovers, written her name in the sands of time, fought campaigns in a hundred conceptual wars, survived twenty regime changes and on three occasions had herself turned off so she could spend a year or two mulling the purpose of existence while her bloodstream spiced her insights with all the most fashionable hallucinogens.

She has accomplished all of this from within various baths of amniotic fluid.

Jennifer has yet to even open her eyes, which have never been allowed to fully develop past the first trimester and which still, truth be told, resemble black marbles.
behind lids of translucent onionskin. This doesn’t actually deprive her of vision, of course. At the time she claims Molly June as her arvie, she’s been indulging her visual cortex for seventy long years, zipping back and forth across the solar system collecting all the tourist chits one earns for seeing all the wonders of modern-day humanity: from the scrimshaw carving her immediate ancestors made of Mars to the radiant face of Unborn Jesus shining from the artfully re-configured multicolored atmosphere of Saturn. She has gloried in the catalogue of beautiful sights provided by God and all the industrious living people before her.

Throughout all this she has been blessed with vision far greater than any we will ever know ourselves, since her umbilical interface allows her sights capable of frying merely organic eyes, and she’s far too sophisticated a person to be satisfied with the banal limitations of the merely visual spectrum. Decades of life have provided Jennifer Axioma-Singh with more depth than that. And something else: a perverse need, stranger than anything she’s ever done, and impossible to indulge without first installing herself in a healthy young arvie.

ANCESTRY

Jennifer Axioma-Singh has owned arvies before,
each one customized from the moment of its death. She’s owned males, females, neuters, and several sexes only developed in the past decade. She’s had arvies designed for athletic prowess, arvies designed for erotic sensation, and arvies designed for survival in harsh environments. She’s even had one arvie with hypersensitive pain receptors: that, during a cold and confused period of masochism.

The last one before this, who she still misses, and sometimes feels a little guilty about, was a lovely girl named Peggy Sue, with a metabolism six times baseline normal and a digestive tract capable of surviving about a hundred separate species of nonstop abuse. Peggy Sue could down mountains of exotic delicacies without ever feeling full or engaging her gag reflex, and enjoyed taste receptors directly plugged into her pleasure centers. The slightest sip of coconut juice could flood her system with tidal waves of endorphin-crazed ecstasy. The things chocolate could do to her were downright obscene.

Unfortunately, she was still vulnerable to the negative effects of unhealthy eating, and went through four liver transplants and six emergency transfusions in the first ten years of Jennifer’s occupancy.

The cumulative medical effect of so many years of determined gluttony mattered little to Jennifer Axioma-
Singh, since her own caloric intake was regulated by devices that prevented the worst of Peggy Sue’s excessive consumption from causing any damage on her side of the uterine wall. Jennifer’s umbilical cord passed only those compounds necessary for keeping her alive and healthy. All Jennifer felt, through her interface with Peggy Sue’s own sensory spectrum, was the joy of eating; all she experienced was the sheer, overwhelming treasury of flavor.

And if Peggy Sue became obese and diabetic and jaundiced in the meantime—as she did, enduring her last few years as Jennifer’s arvie as an immobile mountain of reeking flab, with barely enough strength to position her mouth for another bite—then that was inconsequential as well, because she had progressed beyond prenatal development and had therefore passed beyond that stage of life where human beings can truly be said to have a soul.

PHILOSOPHY
Life, true life, lasts only from the moment of conception to the moment of birth. Jennifer Axioma-Singh subscribes to this principle, and clings to it in the manner of any concerned citizen aware that the very foundations of her society depend on everybody
continuing to believe it without question. But she is capable of forming attachments, no matter how irrational, and she therefore felt a frisson of guilt once she decided she’d had enough and the machines performed the Caesarian Section that delivered her from Peggy Sue’s pliant womb. After all, Peggy Sue’s reward for so many years of service, euthanasia, seemed so inadequate, given everything she’d provided.

But what else could have provided fair compensation, given the shape Peggy Sue was in by then? Surely not a last meal! Jennifer Axioma-Singh, who had not been able to think of any alternatives, brooded over the matter until she came to the same conclusion always reached by those enjoying lives of privilege, which is that such inequities are all for the best and that there wasn’t all that much she could do about them, anyway. Her liberal compassion had been satisfied by the heartfelt promise to herself that if she ever bought an arvie again she would take care to act more responsibly.

And this is what she holds in mind, as the interim pod carries her into the gleaming white expanse of the very showroom where fifteen-year-old Molly June awaits a passenger.

INSTALLATION
Molly June’s contentment is like the surface of a vast, pacific ocean, unstirred by tide or wind. The events of her life plunge into that mirrored surface without effect, raising nary a ripple or storm. It remains unmarked even now, as the anesthetician and obstetrician mechs emerge from their recesses to guide her always-unresisting form from the waiting room couch where she’d been left earlier this morning, to the operating theatre where she’ll begin the useful stage of her existence. Speakers in the walls calm her further with an arrangement of melodious strings designed to override any unwanted emotional static.

It’s all quite humane: for even as Molly June lies down and puts her head back and receives permission to close her eyes, she remains wholly at peace. Her heartbeat does jog, a little, just enough to be noted by the instruments, when the servos peel back the skin of her abdomen, but even that instinctive burst of fear fades with the absence of any identifiable pain. Her reaction to the invasive procedure fades to a mere theoretical interest, akin to what Jennifer herself would feel regarding gossip about people she doesn’t know living in places where she’s never been.

Molly June drifts, thinks of blue waters and bright sunlight, misses Jennifer’s installation inside her, and
only reacts to the massive change in her body after the incisions are closed and Jennifer has recovered enough to kick. Then her lips curl in a warm but vacant smile. She is happy. Arvies might be dead, in legal terms, but they still love their passengers.

AMBITION

Jennifer doesn’t announce her intentions until two days later, after growing comfortable with her new living arrangements. At that time Molly June is stretched out on a lounge on a balcony overlooking a city once known as Paris but which has undergone perhaps a dozen other names of fleeting popularity since then; at this point it’s called something that could be translated as Eternal Night, because its urban planners have noted that it looked best when its towers were against a backdrop of darkness and therefore arranged to free it from the sunlight that previously diluted its beauty for half of every day.

The balcony, a popular spot among visitors, is not connected to any actual building. It just sits, like an unanchored shelf, at a high altitude calculated to showcase the lights of the city at their most decadently glorious. The city itself is no longer inhabited, of course; it contains some mechanisms important for the
maintenance of local weather patterns but otherwise exists only to confront the night sky with constellations of reflective light. Jennifer, experiencing its beauty through Molly June’s eyes, and the bracing high-altitude wind through Molly June’s skin, feels a connection with the place that goes beyond aesthetics. She finds it fateful, resonant, and romantic, the perfect location to begin the greatest adventure of a life that has already provided her with so many.

She cranes Molly June’s neck to survey the hundreds of other arvies sharing this balcony with her: all young, all beautiful, all pretending happiness while their jaded passengers struggle to plan new experiences not yet grown dull from surfeit. She sees arvies drinking, arvies wrestling, arvies declaiming vapid poetry, arvies coupling in threes and fours; arvies colored in various shades, fitted to various shapes and sizes; pregnant females, and impregnated males, all sufficiently transparent, to a trained eye like Jennifer’s, for the essential characters of their respective passengers to shine on through. They all glow from the light of a moon that is not the moon, as the original was removed some time ago, but a superb piece of stagecraft designed to accentuate the city below to its greatest possible effect.

Have any of these people ever contemplated a stunt
as over-the-top creative as the one Jennifer had in mind? Jennifer thinks not. More, she is certain not. She feels pride, and her arvie Molly June laughs, with a joy that threatens to bring the unwanted curse of sunlight back to the city of lights. And for the first time she announces her intentions out loud, without even raising her voice, aware that any words emerging from Molly June’s mouth are superfluous, so long as the truly necessary signal travels the network that conveys Jennifer’s needs to the proper facilitating agencies. None of the other arvies on the balcony even hear Molly June speak. But those plugged in hear Jennifer speak the words destined to set off a whirlwind of controversy.

*I want to give birth.*

**CLARIFICATION**

It is impossible to understate the perversity of this request.

Nobody gives Birth.

Birth is a messy and unpleasant and distasteful process that ejects living creatures from their warm and sheltered environment into a harsh and unforgiving one that nobody wants to experience except from within the protection of wombs either organic or artificial.

Birth is the passage from Life, and all its infinite
wonders, to another place inhabited only by those who have been forsaken. It’s the terrible ending that modern civilization has forestalled indefinitely, allowing human beings to live within the womb without every giving up the rich opportunities for experience and growth. It’s sad, of course, that for Life to even be possible a large percentage of potential Citizens have to be permitted to pass through that terrible veil, into an existence where they’re no good to anybody except as spare parts and manual laborers and arvies, but there are peasants in even the most enlightened societies, doing the hard work so the important people don’t have to. The best any of us can do about that is appreciate their contribution while keeping them as complacent as possible.

The worst thing that could ever be said about Molly June’s existence is that when the Nurseries measured her genetic potential, found it wanting, and decided she should approach Birth unimpeded, she was also humanely deprived of the neurological enhancements that allow first-trimester fetuses all the rewards and responsibilities of Citizenship. She never developed enough to fear the passage that awaited her, and never knew how sadly limited her existence would be. She spent her all-too-brief Life in utero ignorant of all the blessings that would forever be denied her, and has been
kept safe and content and happy and drugged and stupid since birth. After all, as a wise person once said, it takes a perfect vassal to make a perfect vessel. Nobody can say that there’s anything wrong about that. But the dispossession of people like her, that makes the lives of people like Jennifer Axioma-Singh possible, remains a distasteful thing decent people just don’t talk about.

Jennifer’s hunger to experience birth from the point of view of a mother, grunting and sweating to expel another unfortunate like Molly June out of the only world that matters, into the world of cold slavery, thus strikes the vast majority as offensive, scandalous, unfeeling, selfish, and cruel. But since nobody has ever imagined a Citizen demented enough to want such a thing, nobody has ever thought to make it against the law. So the powers that be indulge Jennifer’s perversity, while swiftly passing laws to ensure that nobody will ever be permitted such license ever again; and all the machinery of modern medicine is turned to the problem of just how to give her what she wants. And, before long, wearing Molly June as proxy, she gets knocked up.

**IMPLANTATION**

There is no need for any messy copulation. Sex, as conducted through arvies, still makes the world go round,
prompting the usual number of bittersweet affairs, tempestuous breakups, turbulent love triangles, and silly love songs.

In her younger days, before the practice palled out of sheer repetition, Jennifer had worn out several arvies fucking like a bunny. But there has never been any danger of unwanted conception, at any time, not with the only possible source of motile sperm being the nurseries that manufacture it as needed without recourse to nasty antiquated testes. These days, zygotes and embryos are the province of the assembly line. Growing one inside an arvie, let alone one already occupied by a human being, presents all manner of bureaucratic difficulties involving the construction of new protocols and the rearranging of accepted paradigms and any amount of official eye-rolling, but once all that is said and done, the procedures turn out to be quite simple, and the surgeons have little difficulty providing Molly June with a second womb capable of growing Jennifer Axioma-Singh’s daughter while Jennifer Axioma-Singh herself floats unchanging a few protected membranes away.

Unlike the womb that houses Jennifer, this one will not be wired in any way. Its occupant will not be able to influence Molly June’s actions or enjoy the full spectrum of Molly June’s senses. She will not understand, except in
the most primitive, undeveloped way, what or where she is or how well she’s being cared for. Literally next to Jennifer Axioma-Singh, she will be by all reasonable comparisons a mindless idiot. But she will live, and grow, for as long as it takes for this entire perverse whim of Jennifer’s to fully play itself out.

GESTATION (1)

In the months that follow, Jennifer Axioma-Singh enjoys a novel form of celebrity. This is hardly anything new for her, of course, as she has been a celebrity several times before and if she lives her expected lifespan, expects to be one several times again. But in an otherwise unshockable world, she has never experienced, or even witnessed, that special, nearly extinct species of celebrity that comes from eliciting shock, and which was once best-known by the antiquated term, *notoriety*.

This, she glories in. This, she milks for every last angstrom. This, she surfs like an expert, submitting to countless interviews, constructing countless bon mots, pulling every string capable of scandalizing the public.

She says, “I don’t see the reason for all the fuss.”

She says, “People used to share wombs all the time.”

She says, “It used to happen naturally, with multiple births: two or three or four or even seven of us, crowded
together like grapes, sometimes absorbing each other’s body parts like cute young cannibals.”

She says, “I don’t know whether to call what I’m doing pregnancy or performance art.”

She says, “Don’t you think Molly June looks special? Don’t you think she glows?”

She says, “When the baby’s born, I may call her Halo.”

She says, “No, I don’t see any problem with condemning her to Birth. If it’s good enough for Molly June, it’s good enough for my child.”

And she says, “No, I don’t care what anybody thinks. It’s my arvie, after all.”

And she fans the flames of outrage higher and higher, until public sympathies turn to the poor slumbering creature inside the sac of amniotic fluid, whose life and future have already been so cruelly decided. Is she truly limited enough to be condemned to Birth? Should she be stabilized and given her own chance at life, before she’s expelled, sticky and foul, into the cold, harsh world inhabited only by arvies and machines? Or is Jennifer correct in maintaining the issue subject to a mother’s whim?

Jennifer says, “All I know is that this is the most profound, most spiritually fulfilling, experience of my
entire life.” And so she faces the crowds, real or virtual, using Molly June’s smile and Molly June’s innocence, daring the analysts to count all the layers of irony.

GESTATION (II)

Molly June experiences the same few months in a fog of dazed, but happy confusion, aware that she’s become the center of attention, but unable to comprehend exactly why. She knows that her lower back hurts and that her breasts have swelled and that her belly, flat and soft before, has inflated to several times its previous size; she knows that she sometimes feels something moving inside her, that she sometimes feels sick to her stomach, and that her eyes water more easily than they ever have before, but none of this disturbs the vast, becalmed surface of her being. It is all good, all the more reason for placid contentment.

Her only truly bad moments come in her dreams, when she sometimes finds herself standing on a gray, colorless field, facing another version of herself half her own size. The miniature Molly June stares at her from a distance that Molly June herself cannot cross, her eyes unblinking, her expression merciless. Tears glisten on both her cheeks. She points at Molly June and she enunciates a single word, incomprehensible in any
language Molly June knows, and irrelevant to any life she’s ever been allowed to live: “Mother.”

The unfamiliar word makes Molly June feel warm and cold, all at once. In her dream she wets herself, trembling from the sudden warmth running down her thighs. She trembles, bowed by an incomprehensible need to apologize. When she wakes, she finds real tears still wet on her cheeks, and real pee soaking the mattress between her legs. It frightens her.

But those moments fade. Within seconds the calming agents are already flooding her bloodstream, overriding any internal storms, removing all possible sources of disquiet, making her once again the obedient arvie she’s supposed to be. She smiles and coos as the servos tend to her bloated form, scrubbing her flesh and applying their emollients. Life is so good, she thinks. And if it’s not, well, it’s not like there’s anything she can do about it, so why worry?

**BIRTH (I)**

Molly June goes into labor on a day corresponding to what we call Thursday, the insistent weight she has known for so long giving way to a series of contractions violent enough to reach her even through her cocoon of deliberately engineered apathy. She cries and moans and
shrieks infuriated, inarticulate things that might have been curses had she ever been exposed to any, and she begs the shiny machines around her to take away the pain with the same efficiency that they’ve taken away everything else. She even begs her passenger—that is, the passenger she knows about, the one she’s sensed seeing through her eyes and hearing through her ears and carrying out conversations with her mouth—she begs her passenger *for mercy*. She hasn’t ever asked that mysterious godlike presence for anything, because it’s never occurred to her that she might be entitled to anything, but she needs relief now, and she demands it, shrieks for it, can’t understand why she isn’t getting it.

The answer, which would be beyond her understanding even if provided, is that the wet, sordid physicality of the experience is the very point.

**BIRTH (II)**

Jennifer Axioma-Singh is fully plugged in to every cramp, every twitch, every pooled droplet of sweat. She experiences the beauty and the terror and the exhaustion and the certainty that this will never end. She finds it resonant and evocative and educational on levels lost to a mindless sack of meat like Molly June. And she comes to any number of profound revelations about the nature of
life and death and the biological origins of the species and the odd, inexplicable attachment brood mares have always felt for the squalling sacks of flesh and bone their bodies have gone to so much trouble expelling.

CONCLUSIONS

It’s like any other work, she thinks. Nobody ever spent months and months building a house only to burn it down the second they pounded in the last nail. You put that much effort into something and it belongs to you, forever, even if the end result is nothing but a tiny creature that eats and shits and makes demands on your time.

This still fails to explain why anybody would invite this kind of pain again, let alone the three or four or seven additional occasions common before the unborn reached their ascendancy. Oh, it’s interesting enough to start with, but she gets the general idea long before the thirteenth hour rolls around and the market share for her real-time feed dwindles to the single digits. Long before that, the pain has given way to boredom. At the fifteenth hour she gives up entirely, turns off her inputs, and begins to catch up on her personal correspondence, missing the actual moment when Molly June’s daughter, Jennifer’s womb-mate and sister, is expelled head-first into a shiny silver
tray, pink and bloody and screaming at the top of her lungs, sharing oxygen for the very first time, but, by every legal definition, Dead.

AFTERMATH (JENNIFER)

As per her expressed wishes, Jennifer Axioma-Singh is removed from Molly June and installed in a new arvie that very day. This one’s a tall, lithe, gloriously beautiful creature with fiery eyes and thick, lush lips: her name’s Bernadette Ann, she’s been bred for endurance in extreme environments, and she’ll soon be taking Jennifer Axioma-Singh on an extended solo hike across the restored continent of Antarctica.

Jennifer is so impatient to begin this journey that she never lays eyes on the child whose birth she has just experienced. There’s no need. After all, she’s never laid eyes on anything, not personally. And the pictures are available online, should she ever feel the need to see them. Not that she ever sees any reason for that to happen. The baby, itself, was never the issue here. Jennifer didn’t want to be a mother. She just wanted to give birth. All that mattered to her, in the long run, was obtaining a few months of unique vicarious experience, precious in a lifetime likely to continue for as long as the servos still manufacture wombs and breed arvies. All that
matters now is moving on. Because time marches onward, and there are never enough adventures to fill it.

**AFTERMATH (MOLLY JUNE)**

She’s been used, and sullied, and rendered an unlikely candidate to attract additional passengers. She is therefore earmarked for compassionate disposal.

**AFTERMATH (THE BABY)**

The baby is, no pun intended, another issue. Her biological mother Jennifer Axioma-Singh has no interest in her, and her birth-mother Molly June is on her way to the furnace. A number of minor health problems, barely worth mentioning, render her unsuitable for a useful future as somebody’s arvie. Born, and by that precise definition Dead, she could very well follow Molly June down the chute.

But she has a happier future ahead of her. It seems that her unusual gestation and birth have rendered her something a collector’s item, and there are any number of museums aching for a chance to add her to their permanent collections. Offers are weighed, and terms negotiated, until the ultimate agreement is signed, and she finds herself shipped to a freshly constructed habitat in a wildlife preserve in what used to be Ohio.
AFTERMATH (THE CHILD)

She spends her early life in an automated nursery with toys, teachers, and careful attention to her every physical need. At age five she’s moved to a cage consisting of a two story house on four acres of nice green grass, beneath what looks like a blue sky dotted with fluffy white clouds. There’s even a playground. She will never be allowed out, of course, because there’s no place for her to go, but she does have human contact of a sort: a different arvie almost every day, inhabited for the occasion by a long line of Living who now think it might be fun to experience child-rearing for a while. Each one has a different face, each one calls her by a different name, and their treatment of her ranges all the way from compassionate to violently abusive.

Now eight, the little girl has long since given up on asking the good ones to stay, because she knows they won’t. Nor does she continue to dream about what she’ll do when she grows up, since it’s also occurred to her that she’ll never know anything but this life in this fishbowl. Her one consolation is wondering about her real mother: where she is now, what she looks like, whether she ever thinks about the child she left behind, and whether it would have been possible to hold on to her love, had it ever been offered, or even possible.
The questions remain the same, from day to day. But the answers are hers to imagine, and they change from minute to minute: as protean as her moods, or her dreams, or the reasons why she might have been condemned to this cruelest of all possible punishments.

Adam-Troy Castro’s seventeen books include *Emissaries from the Dead* (winner of the Philip K. Dick award), and *The Third Claw of God*, both of which feature his profoundly damaged far-future murder investigator, Andrea Cort. His next works will be the alphabetic primers *Z is for Zombie* and *V is for Vampire*, both illustrated by Johnny Atomic. His short fiction has been nominated for five Nebulas, two Hugos, and two Stokers. Adam-Troy, who describes the odd hyphen between his first and middle names as a typo from his college newspaper that was just annoying enough to embrace with gusto, lives in Miami with his wife Judi and a population of insane cats that includes Uma Furman and Meow Farrow.
Can you give us an idea of the class structure in the world of “Arvies”? What determines whether a fetus becomes an arvie or stays in the womb?

This is a post-poverty utopia where everybody lucky enough to be plugged into the society’s opportunities—the passengers or if you prefer “pilots” of the arvies—gets to do whatever the heck they want to do with their lives, indulging their slightest whims via the bodies whose wombs they occupy. I left unexplained what criteria determine who gets to enjoy all of this world’s vast opportunities and who becomes an enslaved recreational vehicle; that decision is made, from standards you and I can only guess at, long before any fetus is granted the gift of adult awareness. There must also be genetic and medical issues involved far beyond us. But no doubt, if some zygote possesses genetic gifts that promise vast talent in athletic pursuits, that’s a quality that would render their future body very very much in demand as athletic gear for some fetus interested in enjoying the ride from the safety of the amniotic fluid.
The story takes place after an apparent fetus uprising, any ideas as to how that came about?

The premise of a literal fetus uprising—man the pitchforks, Sparky!—is too risible to be borne. Even in the unlikely satirical world I posit, I refuse to believe that it happened in that precise way. I presume that, at some point in the story’s far, FAR future, an era that defines Clarke’s dictum about sufficiently advanced technologies being indistinguishable from magic, somebody said, “you know what? We have the medical technology to grant us all eternal lives living our wildest and most hedonistic dreams inside host bodies bred for the purpose,” and everybody else said, “yeah, you know what, I think you’re on to something there, let’s do that.”

The idea that an unborn child can have full lives, multiple even, is interesting. Would these humans ever actually be born or would they eventually die in the womb?

The entire point of the story is that they have no interest in being born; they can enjoy all of life’s opportunities without being born. As being born is a fate reserved for future arvies, it’s something nobody would
ever want. The ability to arrest the fetuses at a stage before birth presumes a tremendous capacity to retard aging, for many hundreds of years if not even longer. There would be deaths due to the occasional accident capable of killing both arvie host-body and fetus passenger alike—let’s say, in the case of some hypothetical cliff-climbing arvie taking the long fall and carrying its unlucky passenger along with it—but such occurrences would be relatively rare. Think of it as functional immortality. But the question of whether any would “ever” be born — that brings up a potential story idea; a hated criminal in this world, who is sentenced to birth...

Do you have any upcoming work you would like our readers to know about?

There’s plenty of stuff in the pipeline. Short stories: “Anteroom,” a zombie story for the John Joseph Adams anthology; *The Living Dead 2*; the downright vicious “Pieces of Ethan,” in the John Skipp anthology, *Werewolves and Shapeshifters*; and the very very very very very short (25 words) “Chance Encounter At the Insurance Office,” for the Robert Swartwood anthology
Hint Fiction. Later this year, the third Andrea Cort novel, *Fall of the Marionettes* (right now only available from a German publisher, but still an entirely new installment in that series). I am as of this writing almost done with a new Andrea Cort novella, not placed yet. There are a bunch of book projects I cannot announce yet, but there are two set for publication early next year that I can brag on: *Z is for Zombie* and *V is for Vampire* (both Eos), collaborations with leading artist Johnny Atomic that are wild-and-wacky alphabetic primers to those two titular monstrous icons. I predict that those volumes will pop a lot of astonished eyes from their sockets in 2011.

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**Jordan Hamessley** is a children’s book editor at Penguin Books for Young Readers where she edits the *Batman: The Brave and the Bold* and *Chaotic* publishing programs. In addition to developing original series, she occasionally writes books for children and performs voiceover work for promotional materials. She is also blogger for Tor.com and can be found on Twitter as thejordache.
Robert J. Sawyer hardly needs an introduction. The Hugo, the Nebula, the Campbell, he’s won them all, one of only seven writers in history to make that science fiction hat trick. And that’s not even mentioning the multiple Seiun and Aurora wins and his genre-crossing Arthur Ellis Award from the Crime Writers of Canada.

With the success of *Battlestar Galactica* and *Lost*, science fiction seems to be gaining in popularity in the mainstream media. Do you think the genre is experiencing a renaissance or is it just that people are beginning to feel like it’s ok to come out of the science fiction closet?

Well, you’re talking apples and oranges. In a really good week, *Battlestar Galactica*, on tiny cable channel Syfy, had one million viewers in the US—out of 300 million people. *Lost* had well over ten million in a good week, but most people watching *Lost* had no idea they were watching science fiction. So, it’s anything but
mainstream acceptance.

In fact, look at *FlashForward*, the ABC TV series based on my novel; the novel is unequivocally science fiction. All of the major changes made in adapting the book were to downplay any visual clue that it was science fiction for people flipping channels: instead of physicists working at CERN, you saw FBI agents working in L.A.; instead of flashing 20 years into the future, you never saw any futuristic skylines or technology.

So, I guess I reject the question’s premise. As much as we who love SF wish it were true, I feel that SF fans have come down with what used to be thought of as a purely Canadian disease. We Canadians go around saying stuff like, “Pamela Anderson? Oh, yeah—she’s Canadian” or “Jim Carey—did you know he’s from Toronto?” It’s a thing we do out of pride, but going around saying, “Hey, you like *Lost*—did you know it’s science fiction?” or “Oooh, your book club just did *The Time Traveler’s Wife*—are you going to do any more SF?” is just fooling ourselves. Sure, *Avatar* is the biggest grossing movie of all time, but, come on, we no more own the box office than Canadian athletes owned the podium in the winter Olympics.
Your own work tends to straddle the science fiction and mystery genres, but do you think we should even have labels? Do they help or hurt?

In the United States, they’re a necessary evil—so many books are published, they have to be organized somehow for browsing. But in general, they hurt. I’m proud to call myself a science-fiction writer—my website is sfwriter.com and my car’s license plate says SFWRITER—but in Canada, I’m mostly thought of as a writer, period, and my audience is much, much wider than it is in the States.

It’s similar to what we were talking about in your previous question: there are way, way, way more people who read Michael Crichton, Audrey Niffenegger, or J.D. Robb than there will ever be readers of any writer published as science fiction you care to name. A lucky few have left the category—William Gibson is no longer published as SF—but mostly if you start there, you’re stuck there. Oh, we may be able to see, and understand, the stars better than just about any other writers alive, but there’s a definite glass ceiling on our sales, imposed by the simple fact that 95% of book buyers never, ever go into the science fiction section, because they can’t imagine it holds anything of interest for them.
How was it watching your novel *FlashForward* made into a TV series? Changes always need to be made in order to adapt a novel into a movie or TV show. How do you feel about the changes that were made to *FlashForward*?

Before I optioned the rights to them, I sat down in Los Angeles with executive producers Jessika Borsiczky, David S. Goyer, and Brannon Braga. They told me what changes they felt would be necessary to make the show work for a major American TV series. If I hadn’t liked what they’d had to say, I could have said no, and turned down their offer. But I did understand the logic of what they felt needed to be done.

In retrospect, of course, we didn’t have the success we wanted: the show only lasted 22 episodes. But I’m not going to play Monday morning quarterback; despite our subject matter, we didn’t know what the future held. David Goyer and I used to have quite spirited discussions on some points, and I guess I won the arguments about half the time—which is fine. I consulted on every episode, wrote the nineteenth episode, made lots of friends, had a blast, had a lot of people discover my writing for the first time, and made a lot of money. What’s not to like?
Illegal Alien has also been optioned for TV. Will you have any involvement in the development of the miniseries?

I’m attached as Executive Producer. I won’t be writing the script—I wrote that novel in 1996, and going back to re-do it as a script after all these years would, in some ways, feel like a step backward for me. But I’m super-enthusiastic about the project, and really hope it will come to fruition. The director attached to the project, Michael Robison, is terrific, as is producer David Coatsworth.

Your current trilogy, WWW, is about the awakening of an internet sentience. In your novel, the Webmind seems benign. Do you believe that any future artificial intelligence will be a benign creation or is the machine dystopia of the Terminator movies more likely?

“Any” is the loaded word in your question. No, of course I don’t believe that; it’d be foolish to take that position. What intrigued me was that SF—especially in film and TV—had taken as a given that future AI will be malevolent, and that there’s no way for humanity to survive the advent of things more intelligent than we are.
Well, SF is supposed to be about offering choices for tomorrow—and if we don’t have a positive blueprint, then the negative one becomes a self-fulfilling prophecy. Works of science fiction don’t exist in isolation; they’re in dialogue with each other. That my novels *Wake*, *Watch*, and *Wonder* say something different than what everyone else is saying on this topic is precisely what made them worth writing.

Religion plays a large part in a lot of your fiction. What early religious experiences (if any) influence your repeated return to the theme of science vs. religion? What is it about religion that is so fascinating to the scientific mind?

Actually, the experience came when I was 23. Up until that point, I had a pretty simple worldview, one shared by a lot of SF fans: religious people are self-deluding and stupid. But then, in 1983, with a freshly minted bachelor’s degree in Radio and Television Arts, I was hired to edit the license application for what became Vision TV, Canada’s multi-faith TV channel. And instead of working alongside a bunch of rubes, I found myself working with some really intelligent, thoughtful, scientifically literate, socially aware, well-read people,
from across the faith spectrum—Christians, Jews, Sikhs, Muslims, Hindus, and more. These were guys I respected, in most cases, and they believed in something I didn’t believe (and still don’t). That made me want to understand religion not in the straw-man sense that you so often hear it dismissed, but in the sense that can and does attract great thinkers.

As it happens, yesterday I just finished reading Amir D. Aczel’s book *The Jesuit and the Skull: Pierre de Chardin, Evolution, and the Search for Peking Man*. It’s a great portrait of a deeply religious man who thinks very much outside the box, was a staunch evolutionist, and made real contributions to science; Chardin—or, for that matter, my friends Vatican astronomers Chris Corbally and Guy Consolmagno—are such interesting, intelligent guys; you can’t help but be engaged by what they have to say.

Novels like my *The Terminal Experiment*—which won the Nebula Award—and *Calculating God*—which was a break-out top-ten national mainstream bestseller in Canada—come out of not wanting to ridicule or dismiss those who have other ways of perceiving. We SF readers are supposed to want to explore alien minds; well, religious minds are alien to me, but I struggle to comprehend them. Sometimes it works, and sometimes—
well, as Stanley G. Weinbaum’s aliens said in “A Martian Odyssey,” “We are v-r-r-riends! Ouch!”

Immortality and cellular regeneration are also important themes in your novels. It’s been said that the current generation may be the last to age. Is significant life extension a reality you foresee?

Oh, for sure; it’s inevitable. Solving aging is an eminently tractable problem, as I said in my novel Rollback. Of course we’ll lick it. Now, will we lick it in what’s left of my life? Who knows; I just turned 50, and I’ve got good Swedish blood, so maybe am only at my half-way mark, even without breakthroughs. Maybe we will, maybe we won’t; I’m not counting on it. But I expect my youngest niece, Abigail, who is six, to make it to 150 at least, if not longer—assuming our civilization doesn’t fall.

You’ve written quite a bit about ebook readers. (I’ve recently started using the Kindle app for PC and iPhone and now I’m a total ebook convert.) How do you think (or hope) that ebook readers will evolve? Or do you think individual readers will be abandoned for
some iPad-type computer/internet/phone/book reader device?

The one advantage of the dedicated ebook reading device is that it doesn’t offer distractions. Reading a book is something you devote time to: we speaking of “settling in” to read a novel, or “curling up” with a good book. With an iPad, or some other general-purpose device, there’s always the temptation to check email, surf the web, play a game, watch a movie, or whatever.

That said, I do think e-ink, the most common display technology in dedicated readers, is a dead end: the slow page turns, the inability to backlight the display (which you wouldn’t want all the time, just some of the time), and so on, really turn out to be drags, especially after you’ve tried an iPad. The perfect display technology for long-term reading of text isn’t here yet.

Mostly, though, the introduction of ebooks is like the introduction of debit cards. You asked people twenty years ago if they wanted a debit card and everyone said no — why have something that takes the money out of your account right now when your existing credit card lets you buy now and pay later? But the banks were sneaky: everybody did want a card to use automated tellers and happily started carrying those around, and then the banks
said, oh, guess what, that card you’re already carrying? It doubles as a debit card. And today, debit cards account for a huge volume of transactions.

Same thing with ebooks: all those people who said they love the smell of paper and would never want to lug around a dedicated device are discovering that the phone they’re carrying around anyway is a great book-reading device. It’s a stealth invasion.

What’s your current project? What do you have coming up next?

I recently finished writing Wonderland, the third book in the WWW trilogy; it’ll be out in April 2011. It was the hardest book I’ve ever written—I agonized over it—but I think it turned out well, and, not to be grandiose, but I think it says something important.

I do a lot of keynote speaking at conferences, and that keeps me fresh and gives me lots of interesting travel opportunities. I recently did a keynote at the Toward a Science of Consciousness conference in Tucson, I’m off to the Googleplex—the international headquarters of Google—next month, and so on.

But first and foremost, I am a novelist. Earlier this
week, I gave Adrienne Kerr, my wonderful editor at Penguin Canada, a pitch for the next novel I want to write, and she was very, very enthusiastic about it; when my agent Ralph Vicinanza gets back from vacation, we’re going to be presenting it to my American and British editors, as well. I won’t tell you the premise, but the pitch began with these words: “I’ve recently gained a lot of new readers thanks to the TV series FlashForward, based on my novel of the same name, so it seems prudent to make my next novel one that will appeal not only to my traditional audience but also to fans of that series, incorporating a large cast with complex interrelationships; an intricate, puzzle-oriented plot; conspiracies; and ruminations on the nature of consciousness.”

That said, I do think the central conceit is one of the very best science-fictional notions I’ve ever had, and I can’t wait to dive in and begin writing it.

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and appeared in *Writers of the Future Vol. XXIII*. Since 2005, Andrea has also been writing lively film criticism for such venues as *Paradox Magazine* and *CinemaSpy*. 
21 August 2058

They say I am to keep a detailed record of my feelings, my perceptions, as I grow accustomed to the new parts. To that end, they gave me an apparatus that blind people use for writing, like a tablet with guide wires. It is somewhat awkward. But a recorder would be useless, since I will not have a mouth for some time, and I can’t type blind with only one hand.

Woke up free from pain. Interesting. Surprising to find that it has only been five days since the accident. For the record, I am, or was, Dr. Wilson Cheetham, Senior Engineer (Quality Control) for U.S. Steel’s Skyfac station, a high-orbit facility that produces foamsteel and vapor deposition materials for use in the cislunar community. But if you are reading this, you must know all that.

Five days ago I was inspecting the aluminum deposition facility and had a bad accident. There was a glitch in my jetseat controls, and I flew suddenly straight into the wide beam of charged aluminum vapor. Very hot. They turned it off in a second, but there was still plenty of...
time for the beam to breach the suit and thoroughly roast three quarters of my body.

Apparently there was a rescue bubble right there. I was unconscious, of course. They tell me that my heart stopped with the shock, but they managed to save me. My left leg and arm are gone, as is my face. I have no lower jaw, nose, or external ears. I can hear after a fashion, though, and will have eyes in a week or so. They claim they will craft for me testicles and a penis.

I must be pumped full of mood drugs. I feel too calm. If I were myself, whatever fraction of myself is left, perhaps I would resist the insult of being turned into a sexless half-machine.

Ah well. This will be a machine that can turn itself off.

22 August 2058

For many days there was only sleep or pain. This was in the weightless ward at Mercy. They stripped the dead skin off me bit by bit. There were limits to anesthesia, unfortunately. I tried to scream but found I had no vocal cords. They finally decided not to try to salvage the arm and leg, which saved some pain.

When I was able to listen, they explained that U.S.
Steel valued my services so much that they were willing to underwrite a state-of-the-art cyborg transformation. Half the cost will be absorbed by Interface Biotech on the Moon. Everybody will deduct me from their taxes.

This, then, is the catalog. First, new arm and leg. That’s fairly standard. (I once worked with a woman who had two cyborg arms. It took weeks before I could look at her without feeling pity and revulsion.) Then they will attempt to build me a working jaw and mouth, which has been done only rarely and imperfectly, and rebuild the trachea, vocal cords, esophagus. I will be able to speak and drink, though except for certain soft foods, I won’t eat in a normal way; salivary glands are beyond their art. No mucous membranes of any kind. A drastic cure for my chronic sinusitis.

Surprisingly, to me at least, the reconstruction of a penis is a fairly straightforward procedure, for which they’ve had lots of practice. Men are forever sticking them into places where they don’t belong. They are particularly excited about my case because of the challenge in restoring sensation as well as function. The prostate is intact, and they seem confident that they can hook up the complicated plumbing involved in ejaculation. Restoring the ability to urinate is trivially easy, they say.
(The biotechnician in charge of the urogenital phase of the project talked at me for more than an hour, going into unnecessarily grisly detail. It seems that this replacement was done occasionally even before they had any kind of mechanical substitute, by sawing off a short rib and transplanting it, covering it with a skin graft from elsewhere on the body. The recipient thus was blessed with a permanent erection, unfortunately rather strange-looking and short on sensation. My own prosthesis will look very much like the real, shall we say, thing, and new developments in tractor-field mechanics and bionic interfacing should give it realistic response patterns.)

I don’t know how to feel about all this. I wish they would leave my blood chemistry alone, so I could have some honest grief or horror, whatever. Instead of this placid waiting.

4 September 2058

Out cold for thirteen days and I wake up with eyes. The arm and leg are in place but not powered up yet. I wonder what the eyes look like. (They won’t give me a mirror until I have a face.) They feel like wet glass.

Very fancy eyes. I have a box with two dials that I can use to override the “default mode”—that is, the
ability to see only normally. One of them gives me conscious control over pupil dilation, so I can see in almost total darkness or, if for some reason I wanted to, look directly at the sun without discomfort. The other changes the frequency response, so I can see either in the infrared or the ultraviolet. This hospital room looks pretty much the same in ultraviolet, but in infrared it takes on a whole new aspect. Most of the room’s illumination then comes from bright bars on the walls, radiant heating. My real arm shows a pulsing tracery of arteries and veins. The other is of course not visible except by reflection and is dark blue.

(Later) Strange I didn’t realize I was on the Moon. I thought it was a low-gravity ward in Mercy. While I was sleeping they sent me down to Biotech. Should have figured that out.

5 September 2058

They turned on the “social” arm and leg and began pattern exercises. I am told to think of a certain movement and do its mirror image with my right arm or leg while attempting to execute it with my left. The trainer helps the cyborg unit along, which generates something like pain, though actually it doesn’t resemble any real
muscular ache. Maybe it’s the way circuits feel when they’re overloaded.

By the end of the session I was able to make a fist without help, though there is hardly enough grip to hold a pencil. I can’t raise the leg yet, but can make the toes move.

They removed some of the bandages today, from shoulder to hip, and the test-tube skin looks much more real than I had prepared myself for. Hairless and somewhat glossy, but the color match is perfect. In infrared it looks quite different, more uniform in color than the “real” side. I suppose that’s because it hasn’t aged forty years.

While putting me through my paces, the technician waxed rhapsodic about how good this arm is going to be —this set of arms, actually. I’m exercising with the “social” one, which looks much more convincing than the ones my coworker displayed ten years ago. (No doubt more a matter of money than of advancing technology.) The “working” arm, which I haven’t seen yet, will be all metal, capable of being worn on the outside of a spacesuit. Besides having the two arms, I’ll be able to interface with various waldos, tailored to specific functions.

I am fortunately more ambidextrous than the average
person. I broke my right wrist in the second grade and kept re-breaking it through the third, and so learned to write with both hands. All my life I have been able to print more clearly with the left.

They claim to be cutting down on my medication. If that’s the truth, I seem to be adjusting fairly well. Then again, I have nothing in my past experience to use as a basis for comparison. Perhaps this calmness is only a mask for hysteria.

6 September 2058

Today I was able to tie a simple knot. I can lightly sketch out the letters of the alphabet. A large and childish scrawl but recognizably my own.

I’ve begun walking after a fashion, supporting myself between parallel bars. (The lack of hand strength is a neural problem, not a muscular one; when rigid, the arm and leg are as strong as metal crutches.) As I practice, it’s amusing to watch the reactions of people who walk into the room, people who aren’t paid to mask their horror at being studied by two cold lenses embedded in a swath of bandages formed over a shape that is not a head.

Tomorrow they start building my face. I will be
essentially unconscious for more than a week. The limb patterning will continue as I sleep, they say.

14 September 2058

When I was a child my mother, always careful to have me do “normal” things, dressed me in costume each Halloween and escorted me around the high-rise, so I could beg for candy I did not want and money I did not need. On one occasion I had to wear the mask of a child star then popular on the cube, a tightly fitting plastic affair that covered the entire head, squeezing my pudgy features into something more in line with some Platonic ideal of childish beauty. That was my last Halloween. I embarrassed her.

This face is like that. It is undeniably my face, but the skin is taut and unresponsive. Any attempt at expression produces a grimace.

I have almost normal grip in the hand now, though it is still clumsy. As they hoped, the sensory feedback from the fingertips and palms seems to be more finely tuned than in my “good” hand. Tracing my new forefinger across my right wrist, I can sense the individual pores, and there is a marked temperature gradient as I pass over tendon or vein. And yet the hand and arm will eventually
be capable of superhuman strength.

Touching my new face I do not feel pores. They have improved on nature in the business of heat exchange.

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22 September 2058

Another week of sleep while they installed the new plumbing. When the anesthetic wore off I felt a definite something, not pain, but neither was it the normal somatic heft of genitalia. Everything was bedded in gauze and bandage, though, and catheterized, so it would feel strange even to a normal person.

(Later) An aide came in and gingerly snipped away the bandages. He blushed; I don’t think fondling was in his job description. When the catheter came out there was a small sting of pain and relief.

It’s not much of a copy. To reconstruct the face, they could consult hundreds of pictures and cubes, but it had never occurred to me that one day it might be useful to have a gallery of pictures of my private parts in various stages of repose. The technicians had approached the problem by bringing me a stack of photos culled from urological texts and pornography, and having me sort through them as to “closeness of fit.”

It was not a task for which I was well trained, by
experience or disposition. Strange as it may seem in this age of unfettered hedonism, I haven’t seen another man naked, let alone rampant, since leaving high school, twenty-five years ago. (I was stationed on Farside for eighteen months and never went near a sex bar, preferring an audience of one. Even if I had to hire her, as was usually the case.)

So this one is rather longer and thicker than its predecessor—would all men unconsciously exaggerate? —and has only approximately the same aspect when erect. A young man’s rakish angle.

Distasteful but necessary to write about the matter of masturbation. At first it didn’t work. With my right hand, it felt like holding another man, which I have never had any desire to do. With the new hand, though, the process proceeded in the normal way, though I must admit to a voyeuristic aspect. The sensations were extremely acute. Ejaculation more forceful than I can remember from youth.

It makes me wonder. In a book I recently read, about brain chemistry, the author made a major point of the notion that it’s a mistake to completely equate “mind” with “brain.” The brain, he said, is in a way only the thickest and most complex segment of the nervous system; it coordinates our consciousness, but the actual
mind suffuses through the body in a network of ganglia. In fact, he used sexuality as an example. When a man ruefully observes that his penis has a mind of its own, he is stating part of a larger truth.

But I in fact do have actual brains imbedded in my new parts: the biochips that process sensory data coming in and action commands going back. Are these brains part of my consciousness the way the rest of my nervous system is? The masturbation experience indicates they might be in business for themselves.

This is premature speculation, so to speak. We’ll see how it feels when I move into a more complex environment, where I’m not so self-absorbed.

23 September 2058

During the night something evidently clicked. I woke up this morning with full strength in my cyborg limbs. One rail of the bed was twisted out of shape where I must have unconsciously gripped it. I bent it back quite easily.

Some obscure impulse makes me want to keep this talent secret for the time being. The technicians thought I would be able to exert three or four times the normal person’s grip; this is obviously much more than that.
But why keep it a secret? I don’t know. Eventually they will read this diary and I will stand exposed. There’s no harm in that, though; this is supposed to be a record of my psychological adjustment or maladjustment. Let them tell me why I’ve done it.

(Later) The techs were astonished, ecstatic. I demonstrated a pull of 90 kilograms. I know if I’d actually given it a good yank, I could have pulled the stress machine out of the wall. I’ll give them 110 tomorrow and inch my way up to 125.

Obviously I must be careful with force vectors. If I put too much stress on the normal parts of my body I could do permanent injury. With my metal fist I could certainly punch a hole through an airlock door, but it would probably tear the prosthesis out of its socket. Newton’s laws still apply.

Other laws will have to be rewritten.

24 September 2058

I got to work out with three waldos today. A fantastic experience!

The first one was a disembodied hand and arm attached to a stand, the setup they use to train normal people in the use of waldos. The difference is that I don’t
need a waldo sleeve to imperfectly transmit my wishes to the mechanical double. I can plug into it directly.

I’ve been using waldos in my work ever since graduate school, but it was never anything like this. Inside the waldo sleeve you get a clumsy kind of feedback from striated pressor field generators embedded in the plastic. With my setup the feedback is exactly the kind a normal person feels when he touches an object, but much more sensitive. The first time they asked me to pick up an egg, I tossed it up and caught it (no great feat of coordination in lunar gravity, admittedly, but I could have done it as easily in Earth-normal).

The next waldo was a large earthmover that Western Mining uses over at Grimaldi Station. That was interesting, not only because of its size but because of the slight communications lag. Grimaldi is only a few dozen of kilometers away, but there aren’t enough unused data channels between here and there for me to use the landline to communicate with the earthmover hand. I had to relay via comsat, so there was about a tenth-second delay between the thought and the action. It was a fine feeling of power, but a little confusing: I would cup my hand and scoop downward, and then a split-second too late would feel the resistance of the regolith. And then casually hold in my palm several tonnes of rock and dirt. People
standing around watching; with a flick of my wrist I could have buried them. Instead I dutifully dumped it on the belt to the converter.

But the waldo that most fascinated me was the micro. It had been in use for only a few months; I had heard of it, but hadn’t had a chance to see it in action. It is a fully articulated hand barely a tenth of a millimeter long. I used it in conjunction with a low-power scanning electron microscope, moving around on the surface of a microcircuit. At that magnification it looked like a hand on a long stick wandering through the corridors of a building, whose walls varied from rough stucco to brushed metal to blistered gray paint, all laced over with thick cables of gold. When necessary, I could bring in another hand, manipulated by my right from inside a waldo sleeve, to help with simple carpenter and machinist tasks that, in the real world, translated into fundamental changes in the quantum-electrodynamic properties of the circuit.

This was the real power: not crushing metal tubes or lifting tonnes of rock, but pushing electrons around to do my bidding. My first doctorate was in electrical engineering; in a sudden epiphany I realize that I am the first actual electrical engineer in history.

After two hours they made me stop; said I was
showing signs of strain. They put me in a wheelchair, and I did fall asleep on the way back to my room. Dreaming dreams of microcosmic and infinite power.

25 September 2058

The metal arm. I expected it to feel fundamentally different from the “social” one, but of course it doesn’t, most of the time. Circuits are circuits. The difference comes under conditions of extreme exertion: the soft hand gives me signals like pain if I come close to the level of stress that would harm the fleshlike material. With the metal hand I can rip off a chunk of steel plate a centimeter thick and feel nothing beyond “muscular” strain. If I had two of them I could work marvels.

The mechanical leg is not so gifted. It has governors to restrict its strength and range of motion to that of a normal leg, which is reasonable. Even a normal person finds himself brushing the ceiling occasionally in lunar gravity. I could stand up sharply and find myself with a concussion, or worse.

I like the metal arm, though. When I’m stronger (hah!) they say they’ll let me go outside and try it with a spacesuit. Throw something over the horizon.

Starting today, I’m easing back into a semblance of
normal life. I’ll be staying at Biotech for another six or eight weeks, but I’m patched into my Skyfac office and have started clearing out the backlog of paperwork. Two hours in the morning and two in the afternoon. It’s diverting, but I have to admit my heart isn’t really in it. Rather be playing with the micro. (Have booked three hours on it tomorrow.)

26 September 2058

They threaded an optical fiber through the micro’s little finger, so I can watch its progress on a screen without being limited to the field of an electron microscope. The picture is fuzzy while the waldo is in motion, but if I hold it still for a few seconds, the computer assist builds up quite a sharp image. I used it to roam all over my right arm and hand, which was fascinating. Hairs a tangle of stiff black stalks, the pores small damp craters. And everywhere the evidence of the skin’s slow death; translucent sheafs of desquamated cells.

I’ve taken to wearing the metal arm rather than the social one. People’s stares don’t bother me. The metal one will be more useful in my actual work, and I want to get as much practice as possible. There is also an undeniable
feeling of power.

27 September 2058

Today I went outside. It was clumsy getting around at first. For the past eleven years I’ve used a suit only in zerogee, so all my reflexes are wrong. Still, not much serious can go wrong at a sixth of a gee.

It was exhilarating but at the same time frustrating, since I couldn’t reveal all my strength. I did almost overdo it once, starting to tip over a large boulder. Before it tipped, I realized that my left boot had crunched through about ten centimeters of regolith, in reaction to the amount of force I was applying. So I backed off and discreetly shuffled my foot to fill the telltale hole.

I could indeed throw a rock over the horizon. With a sling, I might be able to put a small one into orbit. Rent myself out as a lunar launching facility.

(Later) Most interesting. A pretty nurse who has been on this project since the beginning came into my room after dinner and proposed the obvious experiment. It was wildly successful.

Although my new body starts out with the normal pattern of excitation-plateau-orgasm, the resemblance stops there. I have no refractory period; the process of
erection is completely under conscious control. This could make me the most popular man on the Moon.

The artificial skin of the penis is as sensitive to tactile differentiation as that of the cyborg fingers: suddenly I know more about a woman’s internal topography than any man who ever lived—more than any woman!

I think tomorrow I’ll take a trip to Farside.

28 September 2058

Farside has nine sex bars. I read the guidebook descriptions, and then asked a few locals for their recommendations, and wound up going to a place cleverly called the Juice Bar.

In fact, the name was not just an expression of coy eroticism. They served nothing but fruit and juices there, most of them fantastically expensive Earth imports. I spent a day’s pay on a glass of pear nectar and sought out the most attractive woman in the room.

That in itself was a mistake. I was not physically attractive even before the accident, and the mechanics have faithfully restored my coarse features and slight paunch. I was rebuffed.

So I went to the opposite extreme and looked for the
plainest woman. That would be a better test, anyway: before the accident I always demanded, and paid for, physical perfection. If I could duplicate the performance of last night with a woman to whom I was not sexually attracted—and do it in public, with no pressure from having gone without—then my independence from the autonomic nervous system would be proven beyond doubt.

Second mistake. I was never good at small talk, and when I located my paragon of plainness I began talking about the accident and the singular talent that had resulted from it. She suddenly remembered an appointment elsewhere.

I was not so open with the next woman, also plain. She asked whether there was something wrong with my face, and I told her half of the truth. She was sweetly sympathetic, motherly, which did not endear her to me. It did make her a good subject for the experiment. We left the socializing section of the bar and went back to the so-called “love room.”

There was an acrid quality to the air that I suppose was compounded of incense and sweat, but of course my dry nose was not capable of identifying actual smells. For the first time, I was grateful for that disability; the place probably had the aroma of a well-used locker room. Plus
pheromones.

Under the muted lights, red and blue as well as white, more than a dozen couples were engaged more or less actively in various aspects of amorous behavior. A few were frankly staring at others, but most were either absorbed with their own affairs or furtive in their voyeurism. Most of them were on the floor, which was a warm soft mat, but some were using tables and chairs in fairly ingenious ways. Several of the permutations would no doubt have been impossible or dangerous in Earth’s gravity.

We undressed and she complimented me on my evident spryness. A nearby spectator made a jealous observation. Her own body was rather flaccid, doughy, and under previous circumstances I doubt that I would have been able to maintain enthusiasm. There was no problem, however; in fact, I rather enjoyed it. She required very little foreplay, and I was soon repeating the odd sensation of hypersensitized explorations. Gynecological spelunking.

She was quite voluble in her pleasure, and although she lasted less than an hour, we did attract a certain amount of attention. When she, panting, regretfully declined further exercise, a woman who had been watching, a rather attractive young blonde, offered to
share her various openings. I obliged her for a while; although the well was dry, the pump handle was unaffected.

During that performance I became aware that the pleasure involved was not a sexual one in any normal sense. Sensual, yes, in the way that a fine meal is a sensual experience, but with a remote subtlety that I find difficult to describe. Perhaps there is a relation to epicurism that is more than metaphorical. Since I can no longer taste food, a large area of my brain is available for the valuation of other experience. It may be that the brain is reorganizing itself in order to take fullest advantage of my new abilities.

By the time the blonde’s energy began to flag, several other women had taken an interest in my satyriasis. I resisted the temptation to find what this organ’s limit was, if indeed a limit exists. My back ached and the right knee was protesting. So I threw the mental switch and deflated. I left with a minimum of socializing. (The first woman insisted on buying me something at the bar. I opted for a banana.)

29 September 2058
Now that I have eyes and both hands, there’s no
reason to scratch this diary out with a pen. So I’m entering it into the computer. But I’m keeping two versions.

I recopied everything up to this point and then went back and edited the version that I will show to Biotech. It’s very polite, and will remain so. For instance, it does not contain the following:

After writing last night’s entry, I found myself still full of energy, and so I decided to put into action a plan that has been forming in my mind.

About two in the morning I went downstairs and broke into the waldo lab. The entrance is protected by a five-digit combination lock, but of course that was no obstacle. My hypersensitive fingers could feel the tumblers rattling into place.

I got the micro-waldo set up and then detached my leg. I guided the waldo through the leg’s circuitry and easily disabled the governors. The whole operation took less than twenty minutes.

I did have to use a certain amount of care walking, at first. There was a tendency to rise into the air or to limpingly overcompensate. It was under control by the time I got back to my room. So once more they proved to have been mistaken as to the limits of my abilities. Testing the strength of the leg, with a halfhearted kick I
put a deep dent in the metal wall at the rear of my closet. I’ll have to wait until I can be outside, alone, to see what full force can do.

A comparison kick with my flesh leg left no dent, but did hurt my great toe.

30 September 2058

It occurs to me that I feel better about my body than I have in the past twenty years. Who wouldn’t? Literally eternal youth in these new limbs and organs; if a part shows signs of wear, it can simply be replaced.

I was angry at the Biotech evaluation board this morning. When I simply inquired as to the practicality of replacing the right arm and leg as well, all but one were horrified. One was amused. I will remember him.

I think the fools are going to order me to leave Nearside in a day or two and go back to Mercy for psychiatric “help.” I will leave when I want to, on my own terms.

1 October 2058

This is being voice-recorded in the Environmental Control Center at Nearside. It is 10:32; they have less
than ninety minutes to accede to my demands. Let me backtrack.

After writing last night’s entry I felt a sudden excess of sexual desire. I took the shuttle to Farside and went back to the Juice Bar.

The plain woman from the previous night was waiting, hoping that I would show up. She was delighted when I suggested that we save money (and whatever residue of modesty we had left) by keeping ourselves to one another, back at my room.

I didn’t mean to murder her. That was not in my mind at all. But I suppose in my passion, or abandon, I carelessly propped my strong leg against the wall and then thrust with too much strength. At any rate there was a snap and a tearing sound. She gave a small cry and the lower half of my body was suddenly awash in blood. I had snapped her spine and evidently at the same time caused considerable internal damage. She must have lost consciousness very quickly, though her heart did not stop beating for nearly a minute.

Disposing of the body was no great problem, conceptually. In the laundry room I found a bag large enough to hold her comfortably. Then I went back to the room and put her and the sheet she had besmirched into the bag.
Getting her to the recycler would have been a problem if it had been a normal hour. She looked like nothing so much as a body in a laundry bag. Fortunately, the corridor was deserted.

The lock on the recycler room was child’s play. The furnace door was a problem, though; it was easy to unlock but its effective diameter was only 25 centimeters.

So I had to disassemble her. To save cleaning up, I did the job inside the laundry bag, which was clumsy, and made it difficult to see the fascinating process.

I was so absorbed in watching that I didn’t hear the door slide open. But the man who walked in made a slight gurgling sound, which somehow I did hear over the cracking of bones. I stepped over to him and killed him with one kick.

At this point I have to admit to a lapse in judgment. I relocked the door and went back to the chore at hand. After the woman was completely recycled, I repeated the process with the man—which was, incidentally, much easier. The female’s layer of subcutaneous fat made disassembly of the torso a more slippery business.

It really was wasted time (though I did spend part of the time thinking out the final touches of the plan I am now engaged upon). I might as well have left both bodies there on the floor. I had kicked the man with great force—
enough to throw me to the ground in reaction and badly bruise my right hip—and had split him open from crotch to heart. This made a bad enough mess, even if he hadn’t compounded the problem by striking the ceiling. I would never be able to clean that up, and it’s not the sort of thing that would escape notice for long.

At any rate, it was only twenty minutes wasted, and I gained more time than that by disabling the recycler room lock. I cleaned up, changed clothes, stopped by the waldo lab for a few minutes, and then took the slidewalk to the Environmental Control Center.

There was only one young man on duty at the ECC at that hour. I exchanged a few pleasantries with him and then punched him in the heart, softly enough not to make a mess. I put his body where it wouldn’t distract me and then attended to the problem of the “door.”

There’s no actual door on the ECC, but there is an emergency wall that slides into place if there’s a drop in pressure. I typed up a test program simulating an emergency, and the wall obeyed. Then I walked over and twisted a few flanges around. Nobody would be able to get into the Center with anything short of a cutting torch.

Sitting was uncomfortable with the bruised hip, but I managed to ease into the console and spend an hour or so studying logic and wiring diagrams. Then I popped off an
access plate and moved the micro-waldo down the corridors of electronic thought. The intercom began buzzing incessantly, but I didn’t let it interfere with my concentration.

Nearside is protected from meteorite strike or (far more likely) structural failure by a series of 128 bulkheads that, like the emergency wall here, can slide into place and isolate any area where there’s a pressure drop. It’s done automatically, of course, but can also be controlled from here.

What I did, in essence, was to tell each bulkhead that it was under repair, and should not close under any circumstance. Then I moved the waldo over to the circuits that controlled the city’s eight airlocks. With some rather elegant microsurgery, I transferred control of all eight solely to the pressure switch I now hold in my left hand.

It is a negative-pressure button, a dead-man switch taken from a power saw. So long as I hold it down, the inner doors of the airlock will remain locked. If I let go, they will all iris open. The outer doors are already open, as are the ones that connect the airlock chambers to the suiting-up rooms. No one will be able to make it to a spacesuit in time. Within thirty seconds, every corridor will be full of vacuum. People behind airtight doors may choose between slow asphyxiation and explosive
decompression.

My initial plan had been to wire the dead-man switch to my pulse, which would free my good hand and allow me to sleep. That will have to wait. The wiring completed, I turned on the intercom and announced that I would speak to the Coordinator, and no one else.

When I finally got to talk to him, I told him what I had done and invited him to verify it. That didn’t take long. Then I presented my demands:

Surgery to replace the rest of my limbs, of course. The surgery would have to be done while I was conscious (a heartbeat dead-man switch could be subverted by a heart machine) and it would have to be done here, so that I could be assured that nobody fooled with my circuit changes.

The doctors were called in, and they objected that such profound surgery couldn’t be done under local anesthetic. I knew they were lying, of course; amputation was a fairly routine procedure even before anesthetics were invented. Yes, but I would faint, they said. I told them that I would not, and at any rate I was willing to take the chance, and no one else had any choice in the matter.

(I have not yet mentioned that the ultimate totality of my plan involves replacing all my internal organs as well
as all of the limbs—or at least those organs whose failure could cause untimely death. I will be a true cyborg then, a human brain in an “artificial” body, with the prospect of thousands of years of life. With a few decades—or centuries!—of research, I could even do something about the brain’s shortcomings. I would wind up interfaced to EarthNet, with all of human knowledge at my disposal, and with my faculties for logic and memory no longer fettered by the slow pace of electrochemical synapse.

A psychiatrist, talking from Earth, tried to convince me of the error of my ways. He said that the dreadful trauma had “obviously” unhinged me, and the cyborg augmentation, far from affecting a cure, had made my mental derangement worse. He demonstrated, at least to his own satisfaction, that my behavior followed some classical pattern of madness. All this had been taken into consideration, he said, and if I were to give myself up, I would be forgiven my crimes and manumitted into the loving arms of the psychiatric establishment.

I did take time to explain the fundamental errors in his way of thinking. He felt that I had quite literally lost my identity by losing my face and genitalia, and that I was at bottom a “good” person whose essential humanity had been perverted by physical and existential estrangement. Totally wrong. By his terms, what I
actually *am* is an “evil” person whose true nature was revealed to himself by the lucky accident that released him from existential propinquity with the common herd.

And “evil” is the accurate word, not maladjusted or amoral or even criminal. I am as evil by human standards as a human is evil by the standards of an animal raised for food, and the analogy is accurate. I will sacrifice humans not only for any survival but for comfort, curiosity, or entertainment. I will allow to live anyone who doesn’t bother me, and reward generously those who help.

Now they have only forty minutes. They know I am—end of recording—

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25 September 2058

Excerpt from Summary Report

I am Dr. Henry Janovski, head of the surgical team that worked on the ill-fated cyborg augmentation of Dr. Wilson Cheetham.

We were fortunate that Dr. Cheetham’s insanity did interfere with his normally painstaking, precise nature. If he had spent more time in preparation, I have no doubt
that he would have put us in a very difficult fix.

He should have realized that the protecting wall that shut him off from the rest of Nearside was made of steel, an excellent conductor of electricity. If he had insulated himself behind a good dielectric, he could have escaped his fate.

Cheetham’s waldo was a marvelous instrument, but basically it was only a pseudo-intelligent servomechanism that obeyed well-defined radio-frequency commands. All we had to do was override the signals that were coming from his own nervous system.

We hooked a powerful amplifier up to the steel wall, making it in effect a huge radio transmitter. To generate the signal we wanted amplified, I had a technician put on a waldo sleeve that was holding a box similar to Cheetham’s dead-man switch. We wired the hand closed, turned up the power, and had the technician strike himself on the chin as hard as he could.

The technician struck himself so hard he blacked out for a few seconds. Cheetham’s resonant action, perhaps a hundred times more powerful, drove the bones of his chin up through the top of his skull.

Fortunately, the expensive arm itself was not damaged. It is not evil or insane by itself, of course. Which I shall prove.
The experiments will continue, though of course we will be more selective as to subjects. It seems obvious in retrospect that we should not use as subjects people who have gone through the kind of trauma that Cheetham suffered. We must use willing volunteers. Such as myself.

I am not young, and weakness and an occasional tremor in my hands limit the amount of surgery I can do—much less than my knowledge would allow, or my nature desire. My failing left arm I shall have replaced with Cheetham’s mechanical marvel, and I will go through training similar to his—but for the good of humanity, not for ill.

What miracles I will perform with a knife!

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Joe Haldeman writes for a living and teaches as an absorbing hobby. He has been a full-time writer since 1969, except for the occasional teaching and a short tenure as senior editor of Astronomy magazine. He has taught writing at MIT every fall semester since 1983. Main hobbies are astronomy, bicycling, watercolor, and guitar. His latest books are Marsbound and Starbound. He’s hard at work on the final book of the trilogy, Earthbound.
If you type the name “Joe Haldeman” in any search engine, you’ll find multiple entries that go into great detail about the man with degrees in physics, astronomy and writing. Not only has he won eighteen major writing awards, including the Damon Knight Memorial Grand Master Award for lifetime achievement, but this science fiction giant holds a Purple Heart after being drafted into Vietnam in the ‘60s. One of his most famous novels, *The Forever War* (1975), is based on his experiences as a combat engineer in Vietnam, and the novel went on to win the Hugo, Nebula, and Locus awards that year. The book is currently being taught in college classrooms throughout the U.S. Haldeman is currently working on the novel *Earthbound*, which completes the trilogy containing *Marsbound* and *Starbound*.

In addition to his novels, much of Haldeman’s short fiction has gone on to win more Hugos and Nebulas, as well as other distinguished industry awards. He’s been an adjunct professor at the Massachusetts Institute of Technology, the president of Science Fiction and Fantasy Writers of America, and he’s savvy at poker and more
than decent at guitar playing. Chances are good you might see him at the next big science fiction convention or catch his lectures at a prestigious writing workshop, like Clarion.

Published in 1985, “More Than the Sum of His Parts” was set in the then-distant future of 2058. “It seemed a reasonable time frame, when we were somewhat more optimistic about space industrialization,” Haldeman says, “although the waldo technology is wishful thinking, or arm-waving—I didn’t have any actual technological rationale for it happening that soon, or ever. Thewaldos themselves were inspired by the story ‘Waldo,’ by Robert Heinlein. The idea of smaller and smallerwaldos building their miniaturized successors came from the notions about self-replicating ‘von Neumann’ machines that were cutting-edge technodreaming at the time.”

In the story, Haldeman’s protagonist Cheetham makes a fascinating progression from calm apathy to curious experimentation to detached coldness. There is plenty of foreshadowing of the darkness emerging inside him, including Cheetham’s own early observation that he felt too calm, as well as after he receives new genitals and what that was like, psychologically. We asked Haldeman if he thought the replacement of Cheetham’s body turned
him into a different man.

"I suspect that the kernel of Cheetham’s insanity may have been there all along," Haldeman says, and you know that only a great writer like Haldeman could get away with using the word “kernel” in any way other than its technological definition. “But of course the insanity was actualized when he acquiesced in merging his ‘animal’ nature with machines. That’s the story’s main metaphor."

The story ends on a chilling note, as Janovski follows up the details of Cheetham’s fate with the use of the word “experiment,” and clearly taking over the metal arm for his own. Yet based on what we know as readers, and our experience in watching Cheetham fall apart, we’re left with thinking that Janovski may get more than he bargained for. When I tried to get Haldeman to come clean with us about what he thinks happens next, he only offered this: “What’s clear in the story is that Cheetham is sure he has Janovski outwitted, but actually Janovski has him ‘contained’ in some cybernetic sense. As far as what happens next, if Janovski is going to take the high road or if he’s going to end up just the way Cheetham did...the story may be ambiguous in that regard—you’ll have to decide for yourself.”
Erin Stocks is a writer and musician newly transplanted from Chicago to Oklahoma City. Her fiction can be found in Flash Fiction Online (upcoming), the Hadley Rille anthology Destination: Future, and The Absent Willow Review. When she’s not writing, she’s reading slush for Lightspeed Magazine, Fantasy Magazine, critting works for her SFF writing group, the Self-Forging Fragments, and rambling about baking bread on erinstocks.blogspot.com.
Cyborg-netics
Matt London

“We can rebuild him. We have the technology....We can make him better than he was before. Better, stronger, faster.”

—Oscar Goldman, *The Six Million Dollar Man*

Long before the premiere of *The Six Million Dollar Man* in 1974, the idea of a bionic human has fascinated the scientific and science fiction communities. Just turn on the television or take a trip to the local movie theater to find some examples. But there’s a lot more to this burgeoning science than Darth Vader and the Borg. It’s not just science fiction; it’s not even science future. What most people might be surprised to discover is that the kinds of mechanized prosthetics writers used to dream about actually exist right now.

But first let’s clear up something about the term “cybernetics” itself. Though popularized in the age of Cyberpunk to refer to bionic augmentation, to the scientific community, the word cybernetics defines the shared control between humans and machines (so more like power steering in your Honda than, say, Robocop). A
more appropriate term may be cyborg-netics, but no one name has been universally adopted yet.

One of the foremost scientists working tirelessly to produce the prosthetics and augmentations of science fiction is Doctor Hugh Herr of the MIT Media Lab. After losing his legs in a climbing accident at age eighteen, Herr was scaling mountains again only months later, using new artificial legs of his own design. These new legs could adjust his height from five feet to eight feet, and were outfitted with titanium spikes that allowed him to dig into rock walls. Thereafter, Herr dedicated his life to developing smart prosthetics.

Today, as the head of the Biomechatronics research group at MIT, Herr develops powered prosthetics. He’s the inventor of a computer-controlled knee, which can sense the joint’s position and how much weight is being put on the leg and adjust the load accordingly. He’s also created a powered ankle-foot prosthesis which provides proper support and seamlessly imitates the natural gait of an organic leg. So seamlessly, in fact, that if you passed a person in the street who was wearing one, you’d be hard pressed to notice anything out of the ordinary.

In addition to cool prostheses, Dr. Herr has further delved into the realm of science fiction by developing mechanisms that amplify the endurance of able-bodied
people, things like elastic shoes that reduce running energy expenditure and improve jumping ability. He’s also built leg exoskeletons for load-carrying augmentation. Ripley, anyone?

But there is one critical problem that none of these incredible breakthroughs solve, and that’s the issue of control. What separates a prosthetic from a true cybernetic limb is the ability to actually exert command over the limb, even though the nerves connecting it to the brain are gone. Todd Kuiken, an M.D. and biomedical engineer at the Rehabilitation Institute of Chicago, who fondly recalls watching The Six Million Dollar Man as a teenager, has found one way around this problem. By rerouting the nerves of amputees into residual muscles, Kuiken gives patients the ability to control their prostheses organically. In other words, a patient who’s lost her arm in an accident can opt to have the nerves once connected to the arm rerouted to the pectoral muscles. The patient then retrains her body to move the prosthetic arm by flexing her pecs.

Now, while this method has proven to be very effective for amputees, for spinal cord patients, it’s of no use. Fortunately, Lee Miller of Northwestern is working to solve this problem. Miller is focusing his research on developing technology that would allow communication
between the brain and the body without any physical connection. A current term being batted around for this technology is neuromechatronics and it can be considered the software answer to Hugh Herr’s and Todd Kuiken’s hardware solutions.

What is most surprising about this research, however, is just how far along it is. Test subjects, their brains wired to computers, simply think and a cursor moves across their screens. Quadriplegic patients adjust the volume on their TVs with just their minds. They check their email. And the ability to type just by thinking about the needed key is really not that far away. This, truly, is cyborg-netics.

Of course, some day all this science will go the way of the compact disc and the fax machine, to be replaced by tissue engineering. (Because really, what’s the point of having a bionic arm when you can just grow a new biological one?) But the bio-science revolution is at least thirty years away. In the here and now, cyborg-netic innovations are already allowing previously impaired people to walk freely again, to use computers, and even perform complex motor functions.

In fact, the only severely limiting factor facing cyborg-tech these days is the bottom line. Research and development at this level costs money. How much
money? The Defense Advanced Research Projects Agency (DARPA) has developed the prototype of a fully articulated bionic hand. This one hand, however, costs a whopping fifty million dollars. Fifty million! And you probably thought Steve Austin was expensive.

However, with America engaged in two wars overseas, and thousands of amputee veterans returning home, the US Department of Veterans Affairs and the Department of Defense have stepped up to the plate to fund research to improve prosthetics. So labs will continue to make progress and we hope that ten years from now, a brain-controlled prosthetic will be possible. Sure, it won’t be a Luke Skywalker-style, thirty-six-degrees-of-freedom hand with a range of motion like yours or mine. No, this one will have only a modest eight degrees, but eight will be enough to allow us to do most of what we do every day. And that’s a pretty great start.

Cyborgs are not the future; these discoveries and innovations are happening right now. And just like science fiction, in cyborg-netics, the possibilities are endless.

Matt London is an author and filmmaker who lives in New York City. He is a graduate of the Clarion Writers Workshop, and a columnist for Tor.com and Realms of Fantasy magazine. His story “Mouja” appears in John Joseph
Adams’s anthology *The Living Dead 2*. He has no less than three escape plans should the zombies take Manhattan.