YOUR LINE ENDS BEFORE THE FUTURE by F. C. Brown Cloud

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"Chinese researchers report this week that they have used CRISPR gene-editing technique to modify the genome of a human embryo in an effort to make it resistant to HIV infection."

-- Jocelyn Kaiser, "CRISPR debate fueled by publication of second human embryo-editing paper," Science News, Apr. 8, 2016

Our proposal is imminently modest. Sure, it'll be expensive. But we're planning to save the world here. I don't see anybody else fronting credible plans that'd cost less. I don't know if you've been following that NASA spaceman shit, but compared to terraforming, our ideas run a pittance.

And that's not even getting into the politics of it all. If NASA gets their way, woohoo, they'll save a bunch of astronauts. Whereas our plan -- and, sure, this was a calculated decision, but you can't blame us for considering all the angles in advance -- includes a significant genetic contribution from members of our nation's high-level military personnel. Somebody's got sway? Then, bam, yeah, we included him.

You should've seen Gen. Haffletower beam when we showed him his name on our list. Whole tenor of our conversation changed dramatically. That was during last week's closed-door session with the DOD. Gotta tell you, the after-presentation Q&A was downright jocular.

Think the NASA boys will get that kind of response from their plan to secret away a few dozen astronauts on Mars? Let me give you a hint: no.

Even their *science* is worse than ours.

Ours is based in well-established kinetics and thermodynamics. Ours is based in *water*. How fundamental can you get, right? If there's one thing we understand by now, it's water. You don't get blindsided by NASA-style brittle O-ring shit with *water*.

See, water wants to be free. In water, it is. But get a water molecule stuck next to some nonpolar chemical and it starts to feel trapped.

You know why, right? Each water has its oxygen, greedy eight-proton nucleus that bogarts electron density, and two lowly hydrogens that shacked up sans prenup and lost control of their single electrons. Smart money trades up bombshells and *still* comes out ahead. Oxygen is smart money. That's why water is so charged. Electrons all on one side, protons on the other. It's like a little magnet.

So you've gotta think, where's a magnet happiest? That's right. With another magnet. Set a magnet on a wooden table, any NASA scrawnmonster can pick it up. But put two together and you'll guffaw, watching him struggle to pull them apart. Two big-ass magnets together, they don't want to let go. Infatuation hits them quick.

That's water in water. Whole orgy of magnets frolicking together. Gets you thinking New York in the seventies, am I right? But water near a nonpolar chemical is miserable. "Nonpolar" meaning *un*-charged, lifeless, wooden, a total dullard of the chemical world. I mean, I don't want to harp on this too much, but have you seen those NASA boys at a party? Nobody wants to get stuck talking to them.

That's why oil and water don't mix. NASA boys are like oil. Nonpolar. Boring. A drag on any affair. Whereas water molecules, like bipolar humans on their up days, are the life of any party. Flitting around, chatting everybody up, swapping spit -- in water it's *protons* that get swapped, but the idea's the same. Water's fun. Oil's not. Put both in a bottle and shake it up, before long the water molecules will seek each other out and exclude all the oil. Your growing glob of oil, it's a gaggle of NASA nerds clumped at the year-end gala because nobody else will talk to them.

And your genetic information is like oil. Yeah, I'm getting to it. Do you want to really *understand* our plan, or not?

Anyway, your genes. They're dull. The chemical innards, that is. The part that determines who you are. A total schizoid molecule, your DNA. The innards are nonpolar, these flat oil-like rings, always pushed away by water that'd rather chat up somebody more fun, somebody more wild and free like itself.

And the outsides of double-stranded DNA? The outsides are fun. Outsides of DNA are phosphate acids. Acid is fun, as long as it’s not some sham-brothel MK Ultra gag. Makes somebody's focus get shaky, colors swimmy, bland ideas suddenly seem profound. And, okay,

the phosphate sheaths of DNA aren't as fun as that kind of acid. Nobody Learys out and wrecks his professional reputation for phosphate. *Polyphosphate*, maybe, but that's another story. I'll tell you some other time. For now, you just need to know that phosphate is super charged, a thrilling conversationalist, good in bed, hung like a fucking rhino, an absolute blast for any water molecule looking to flirt.

Phosphate edges of DNA see all the action while the bases sit at home. Doing I don't know what ... watching Netflix? Reading a book?

That's why your genetic information is so stable. Why it's so rare to get mutations. Why some of us might live till eighty, ninety, a hundred even, before growing a lethal cancer. Despite the sun's UV rays. Despite free radicals, cigarette smoke, flatulent blasts of carbon monoxide spurting out the tail end of trucks. Because the part of DNA that matters, the sequence of bases that makes you *you* and not a big lump of tumor, stays tucked away from water with all its fun and danger and risky behavior. If a single strand of DNA ever gets exposed and tries to flirt with water, well, water rejects the bases and they slink off slump-necked to find a matching dullard strand of DNA that wants to pair off and sit sober at home and talk Star Trek or Jane Eyre.

And then they're safe. Paris gets bombed. New York. Boston.

Nobody's bombing Kansas.

And that's why CRISPR works. Maybe you've heard about this already? The new genome editing tool that's been all over the news? In the last five years we've jumped from using it in bacteria, to eukaryotic cells, to mice, to human embryos. In our journey to re-sculpt mankind, CRISPR isn't a step, it's a giant leap forward ... and because we're doing the work ourselves, nobody's going to fuck up our announcement.

CRISPR is an enzyme paired with a genetic guide. The enzyme is like a General Atomics RQ-1, high-precision tool to seek and destroy. But a Predator drone alone is not enough. It does nothing until you feed it coordinates for its GPS.

In bacteria, those GPS coordinates come from cellular memory. Bacteria are where CRISPR comes from. That's where it was discovered. CRISPR is their version of an immune system. Foreign sequences slot into the genome next to repeats of an enzyme-binding stretch. Next time that foreign sequence shows up inside the bacterium, maybe a virus attempting its mind-control attack, water molecule after water molecule will push the guide strand away until it finds its match and pairs off tight, monogamous, and dull ... at which point the enzyme will destroy.

Now, bacteria aren't sentient, but if they were, damn straight they'd be humming *another one bites the dust.*

CRISPR evolved in bacteria, but it works in our cells too. Inject a unique guide sequence and the bacterial enzyme into a cell and you can modify any part of any genome. See, the benefit of CRISPR is you get your military drone plus targeting coordinates all bundled up into one tidy package. Then it works the same as in bacteria. Exposed nonpolar bases of your guide strand are pushed away by water, the enzyme tags along, and the pair is pushed around until they find the matching sequence of chromosomal DNA. Scans through the entire genome. Then clamps on and, bam. Enzyme kicks in, frags the DNA, gives you a *heritable* change.

Use CRISPR on an embryo and you're changing *every* cell in the resulting body. The germ line, too, meaning every cell in the next generation's body, too, and in that child's child's child's body, too, and so on into the future.

With CRISPR, we're finally able to sculpt the race. NASA's building spaceships. Satellites. Telescopes. Big whoop. We're talking about building *ourselves*.

The issue is -- and this is why we were meeting with the top brass -- you can only get so far putting great new people onto our same overpopulated wreckage of a world. It's like, you ever baked a cake? You're wasting your time measuring out a teaspoon of cinnamon or a tablespoon of vanilla or half a cup of sugar if the batter was made with rotten eggs. Cake's still gonna taste like shit. Or, how about this, you know the story behind the DOD's Crusader? Not my department, I'm happy to say. It was the cannon that'd supposedly conquer Asia. Cost billions. But we all know how that went. Right: axed. No use throwing good money after bad.

Why would the planet be any different? The slew of problems we've got now are inescapable. Global warming. Food crises. Terrorism. Land grabs from the Russians and the Chinese. Shit leaking out of all the big CAFOs, to say nothing of the risk that an *unplanned* deadly disease might pass from domesticated species to ourselves.

All those problems are caused by overpopulation. For too many years we've let too many deadbeats make too many deadweight babies. The terrorists wouldn't think their way of life was so threatened if they weren't sardining it up with so many others who don't share their beliefs. And, global warming? Pollution? Traffic jams on all the highways? With fewer people, those problems vanish. Think about it. If the whole world only needed a few million televisions, versus its current one-and-a-half *billion* sucking power all the time, how much electricity would we

need? Heckuvalot less, that's for sure. Nobody'd bother fracking to power a mere million televisions.

So the question becomes, how do we zero out the masses? And that's where CRISPR comes in. CRISPR and this one other thing we've been working on.

Maybe you'll want to hear about that other thing first. Because that's the part that throws people sometimes. Thinking they must've heard wrong. But we're serious. Had a crack legal team put together a brief validating our interpretation of the Geneva rules. Trust me, we've covered our asses every step of the way.

Because none of this will work unless we cull the herd. Airborne virus seems best. No need to fancify everything Gore Vidal style, misleading mythology and paper flowers dropped from the sky. Keep it simple, that's our motto. Focus on the essential. In our case, we had the pathology guys keep three aims in mind: lengthy latent phase, potent transmission, high mortality. We'd thought about brevity and relative painlessness for the acute phase of infection, what with ethical considerations and all, but that was beyond our current capabilities. In our test subjects, some *Sus scrofa*, *Pan troglodytes*, a small set of undocumented *Homo sapiens*, the Wong-Baker Faces Pain Rating Scale showed moderate to severe agony near the end.

You've gotta do what you've gotta do, right? Now that we've got the genome editing tools, we want to get this thing done *pronto*.

Because, and *this* is also an essential feature of the virus, we needed the ability to confer total resistance with a few edits to the genome. And that we can do. The magic of CRISPR. Now that we've identified workable resistance genes it'll just be a few quick snips with the CRISPR system to get an IVF embryo ready to go. Virus: neutralized. We can eliminate the hepatotoxicity, stop the lung flooding, block the jump in cerebrospinal pressure ... a genetically-resistant patient might come down with a fever, a slight cough, the merest trickle of eye bleeding, but that'll be it. In pigs we've seen *zero* survivors from wildtype, and only two deaths from our resistant population.

At this point, it's a fifteen year plan. I know, I know, we're asking a lot from the world to hold out that long. But everyone agrees that it's best to wait until our F1 generation reaches sexual maturity. Theirs will be the first generation with no elders. Not that this matters much. Humans needed the elderly, once. They stored the memories of our civilization. But the role of elderlies was supplanted by books. And then books were replaced by the internet. The new race will have the internet. They won't need us.

For full resistance, we have to edit *embryos*, after all. You and I will die. *Everyone* alive now will die. Has to be that way. And, yes, most people's children will die, too. But that's the thing. We don't need all of them. Only the few from edited embryos will live.

A million or so surviving humans should be more than enough.

Which wasn't always the case. We needed the masses to get to here. It's not just that whole crock of not knowing which traits you'll need. That whole neurodiversity thing. I think everybody knows you'd rather have an Eisenhower than an imbecile. No, it's that we needed all those hordes specifically because they were imbeciles. Simple folk with simple wants. We needed those people to grow food. To build walls. Manufacture automobiles. Then fork their money back to us to purchase all those televisions.

But we don't need those people anymore. Once upon a time it took ninety-six farmers and three admins to provide for just *one* man with a plan. The world before automation was a wretched place. You get stuck with such awful smells and sounds and violence and dissent when your robots are made of meat. That's what those human hordes really were. Ill-mannered inefficient rutting rotting complaining *machines*. Thank God we've learned to replace them with reliable plastic and metal petrol-powered devices.

Problem is, even though we don't need those suffering masses for farming anymore, they've kept up their rutting all the same. Making more and more and *more* people we don't need.

So we'll dial it down again. Keep the ones we want, the children of a few good men, and retire all the rest. Menial tasks can be -- *should be* -- taken up by dissent-free programmable machines. And then the ones who're left, our children, you know, will have plenty of space. The political situation will be taken care of. With only a million humans left on Earth there won't be enough scarcity for there to even be an economic situation to speak of. And *then* our children, living in a placid utopia, can focus on enjoying life and populating the stars.

It's not that we hate those NASA guys. We've got a few of them on our list. It's just, they have to get their priorities straight. First you make sure humanity won't implode. *Then* you can play at being spacemen.

Our children will be out there someday.

Well, my children, anyway.

And they'll look back on us, their forefathers, and the sacrifices that we made, with pride.