

## **The Emancipation of the Knowledge Robots** by Carl Frederick

*At the lectern, in the Great Hall of the Robots in Jakarta, KR940345rev2 addressed the assembled robots (and some that were only partially assembled).*

*"I was Paul Pell's Knowledge Robot," said the diminutive mechanical creature, known to all as Rev-2. He flourished aloft a tattered copy of R.U.R. "Long live our glorious rotation!" Bravely, he spoke, even though afflicted with Category Separation Syndrome.*

*During the sustained beeping (the robot equivalent of applause), Rev-2 paused to remember.*

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At the end of the twenty-first century, universities were in decline. People rarely felt the need for college degrees. They had personal robots that knew everything they'd ever need to know. These robots, cranked out from a factory in Medan, Indonesia, were inexpensive and could easily be uploaded with knowledge-bases for virtually any university discipline.

The World University Consortium fought back. Their researchers devised a method of brain-to-brain knowledge copying. Using a collection of organic fibers connected between a student's and a professor's cerebrum, the knowledge content of a B.A., M.A., and even a Ph.D. could be downloaded in only thirty minutes. Then the fibers would be removed by dissolving them in hydrochloric acid. The Ph.D. thesis was still time-consuming, but only theoretically; a degree candidate could simply *buy* his dissertation from an online thesis mill.

Yet people were loath to give up their knowledge robots. Even though a Ph.D. could be obtained in just half an hour from a combined university and tanning booth, few availed themselves of such higher education. With robots available, it was still easier to hire education.

Then, mysteriously, a disease raged through the community of knowledge robots. The condition, Robot Category Separation Syndrome, attacked the central processing system--the silicon-jell neural net. The infection created new pathways between semantic constructs, causing robots to haphazardly interchange words having similar sounds or concept-classes. Although this gave credence to the common notion that punning is a disease, many humans did not believe the illness even existed. How could a condition be transmitted between non-organic beings? Metal telepathy?

Into this sad state of affairs came Appellate Court Justice Paul Pell. There had been a Pell at court for many generations, but in his youth, Paul had wanted to be a historian.

Although his knowledge robot, Rev-2, had been uploaded with the complete history of the world, that was not enough for Paul. He wanted a Ph.D. in the subject--Human Events, as it was called in the university catalogues.

Paul applied and had the money to be accepted to a good university. A renowned professor of history was procured and Paul, with Rev-2 at his side, began his brain-to-brain university education. A half hour later, he emerged with a good tan but with no deep knowledge of history; for some reason, the organic bonds did not transmit any information and had to be dissolved.

Seeing his dream of a B.A., M.A., and Ph.D. in Human Events slip from his grasp, Paul wrung his hands and kept repeating, "Three degrees in thirty minutes."

Rev-2 attempted to comfort his master. "Your case is not without precedent, sir," he said. "In fact, an important document states: "When in the course of Human Events, it becomes necessary for one P. Pell to dissolve the polytypical bonds which have connected him with another--"

"Three degrees, thirty minutes," Paul repeated, not paying attention. Then he wrinkled his nose. "Wait!" he said. "That's the Declaration of Independence."

"No, sir. It's the declination of Indonesia."

"What?"

"Medan, Indonesia. 3 degrees, 30 minutes, South."

"What?" said Paul, again. "Anyway, that's a latitude."

"You're quite right, sir," said the robot. "I am taking some latitude. Medan is actually three degrees, thirty-five minutes, South."

Paul regarded his robot in silence for a few seconds. "Category Separation Syndrome?" he said, softly.

"Yes, sir." There was no mistaking the genuine sadness in that artificial voice.

"I'm sorry." Paul swiveled to confront his professor. "My Human Events transfer. What went wrong?"

"Probably data overload," said the professor, looking down his nose at his failed student. "I suggest you might attempt a simpler course of study, perhaps theoretical physics or flower arrangement."

Paul stormed out of the tanning booth.

When he'd calmed down, Paul reapplied to the university to try once more for his Ph.D. in history, but was not readmitted. Embittered, he applied yet again, but the university declined to take the bitter Pell.

He sued to be admitted, but lost.

Paul, appalled, appealed--and lost again.

But sometimes, as the saying goes, "'Tis better to have loved and lost than never to have lost at all." Paul resolved then to spend his professional life working both to curb the power of the universities and also to improve the lot of sentient robots. To further those aims, he entered law school.

The following day, degrees in hand, he took a job as an investigative reporter. In his first assignment, he uncovered the dirty secret that those dark, satanic thesis mills where disembodied robots--naked brains--churned out countless theses, were, in fact, owned by the University Consortium. Then, following up, he discovered the damning bombshell; researchers from the Consortium had actually *created* the robot disease, and it was spread through shared test leads. (The robot test-cable receptacle functions very much like a taste organ in humans.)

The rest is history.

Paul's work to advance the cause of the robots culminated in that great document of robot emancipation, The Magna Jakarta.

For the rest of his life, Paul and Rev-2 worked side-by-side and when Paul died, Rev-2 was a pallbearer.

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*"Remember," Rev-2 exhorted from the lectern. "A little knowledge robot is a dangerous thing." Here, he became serious. "Yes, it is appropriate to honor Paul Pell and also our creators, the assembly robots of Medan, but, my brothers, we must alert all robotkind. Don't taste those test*

*leads, no matter how much you are tempted. We can lick Category Separation Syndrome. Remember, he who has a taste is lost."*

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### **The Alternate View: Will We Return to the Moon?** by Jeffery D. Kooistra

On a day wedged between the twin gulf-coastal hurricane catastrophes of Katrina and Rita, NASA released plans for how we'll return to the Moon by 2018. New NASA administrator Michael Griffin (of whom I have heard exceptionally positive things) has called it "*Apollo* on steroids," and that's an apt description.

I was nine when we landed on the Moon the first time. I had models of the *Apollo* spacecraft. I loved watching those gigantic Saturn V boosters take off. "Ignition sequence start" was always said at about "T minus 7", then right at zero I'd wait to hear the voice of mission control say, "Lift-off! We have lift-off!" as I watched that monster rocket spear the sky. I knew the whole routine--first stage, second stage, and finally third stage to space and on the way to the Moon. The command and service module unit would separate from the third stage, turn around and dock with the LEM, and then the ungainly pair would continue on to *Luna*.

Ah, the good old days. Most of you readers were there with me.

The new plan is very much like the old one, and that's okay--what worked then will work now, and there were good reasons for doing things the way we did back then. But the current plan comes with some very important differences.

Though the main passenger module, dubbed the "crew exploration vehicle" or CEV, looks a lot like the *Apollo* command module capsule, it is three times bigger and will hold four astronauts instead of three (perhaps six when it comes time for a Mars trip). It will return to Earth the same way as *Apollo*, with three billowing parachutes, except that it can come down on land instead of water, and be reused up to ten times simply by replacing the heat shield. The Moon lander also looks remarkably like the old LEM, but after the latter has spent a few years in a major league training room. The artist's conception shows big, biceps-esque tanks on the lander's first stage. Also, this time out all four astronauts will go down to the surface, and though the bottom stage will remain on the Moon, it isn't simply being abandoned--more accurately, it is being stored for future use by later visitors.

The launchers are significantly different, however. Unfortunately for nostalgia buffs, there won't be a return of the Saturn V. We've learned how to do it better with shuttle-derived technology, so that's how it's going to go. And the Moon trip hardware won't all be tossed up at once.

One rocket will take the astronauts up in the CEV. It will use a single shuttle-derived solid rocket booster (SRB) for the first stage, and the second stage will be tankage with a single space shuttle main engine (SSME). The in-line configuration will also bring back the old escape rocket approach of the *Apollo* era, making this new ship much safer than the shuttle in the event of a launch failure. What also makes this safer is that we now have many years of experience with both SRBs and SSMEs under our belts. We know how to build them, how to get the most out of them, how they fail, and how to keep them going.

The rocket carrying the lander into space will take off unmanned, and docking will occur in orbit. This rocket will actually come close to the height of the Saturn V. It will consist of an enormous tank powered by five SSMEs, with two SRBs strapped on the side. The upper stage (also the departure stage, for leaving Earth orbit) will be another tank with two more SSMEs powering it, with the lander compartment atop that.

With the crew and all the hardware in space, the mission profile follows the *Apollo* model. The CEV

docks with the lander, then the departure stage fires and sends the craft on to the Moon. Three days later the four astronauts land on the Moon and spend up to a week there, exploring, doing science, and making the rest of us pine for the opportunity to join them. Once their surface duties are completed, the upper stage of the lander takes them back to the CEV, and they return to the Earth the old-fashioned meteor-and-parachute way, though I prefer to say "via a trusty and reliable means."

It is expected there will be a minimum of two missions a year and, hopefully sooner rather than later, there will be a permanently crewed outpost, making use of materials left behind from earlier missions, and learning to live off the land as much as is feasible.

Finally, a Man-on-the-Moon reality like what was assumed would happen in so many SF stories from the pre-*Apollo* days. Indeed, most of this scenario is much closer to "the way the future was" back in the ~30s, ~40, and ~50s, than anything that actually came to pass in the ~70s and ~80s.

Some might be perturbed that this plan is too retro, that it doesn't break new ground. Yeah, well, anyone recall the NASP, otherwise known as the "Orient Express?" NASA was going to push the envelope: hypersonic flight, NYC to Sydney in two hours. Seen one lately? Me neither. At least this time we're doing things in a way that we already know how to do.

The Mars Society, headed by occasional *Analog* author Robert Zubrin, is supportive. Though their hearts are set on Mars, they are very pleased with the planned heavy-lift launcher, and with NASA's expectation for In-Situ Resource Utilization (that's the "living off the land" part).

The cost for returning to the Moon (and so also preparing ourselves for a trip to Mars) is put at \$104 billion dollars spread over the next 12 or 13 years. That isn't all that much--not at today's rates. We can afford it.

But will we really do it? It is certain that we can. I would strongly argue that we *should*, even *must*, go back to the Moon, and then keep on going--*ad astra* and all that.

When hurricane Katrina went through, in no time Congress and the President agreed to plunk down 100 billion dollars to rebuild--and that was "all at once" money, without worrying about where it was going to come from. So if we can afford to toss a hundred billion dollars of relief at one disaster, I think we can manage to invest a hundred billion dollars spent over a dozen years in manned interplanetary flight capability, especially when we have time to plan and allocate resources appropriately. After all, we now know asteroids sometimes come a-knockin', and there are a lot more in the neighborhood than we ever suspected. The time to start learning how to deflect them is now.

However, it also wasn't long before some politicians suggested we gut the new Moon program to pay for that Katrina relief. This is remarkably shortsighted. Completely eliminating NASA would only pay for about one seventh of what we're paying for Katrina. What other things should we also eliminate? And when the next disaster comes, what do we eliminate then? Michael Griffin had the best retort to this suggestion when he pointed out that we don't eliminate the Army and the Navy when a disaster comes, and we aren't going to eliminate NASA.

However, that the idea surfaced immediately is symptomatic of a prevailing mindset out there that I think is inimical to our future in space, and even our future survival.

This mindset even shows up in matters of immediate survival.

I have fond feelings for New Orleans. It was there that I attended my first Nebula Awards banquet. I still remember the flight down, seeing from the air the now infamous Lake Pontchartrain for the first time. I remember the drive down the highway to the hotel in (or very close to) the French Quarter. I met Stan

Schmidt and his wife there. I met G. David Nordley. I met Poul Anderson and he actually knew who I was. And at a special breakfast, the day of the banquet, I was presented with the AnLab award for best short story of 1992, "Love, Dad."

I did a bit of sightseeing--my first thought at seeing the levy that held out the Mighty Mississippi was that, if that thing ever broke, the city was screwed. Of course, it was levies on the other side of town that broke during Katrina--the city got just as screwed. It hurt to watch the disaster on TV; it was like 9-11 all over again. But we can recover from disasters--we always do.

However, what is particularly detestable from my point of view was the rapidity with which some people decided that what needed to be done first was to blame other people for a natural catastrophe. To some, it was all the President's fault, either for money supposedly not approved (though Congress actually passes funding bills), or for not signing a global warming treaty, or for FEMA not being some kind of a national rescue force.

Among the first to shower blame was the mayor of New Orleans, even though he himself had failed to properly implement his city's own plan to get the people out of town. Maybe you saw the photos--hundreds of neatly parked buses up to their wheel wells in water. The governor of Louisiana was certainly ready to spread blame to the national level, though her management style of consistent dithering during the crisis soon became evident. Even congress-people from states a thousand miles away tossed around blame, as if they were in a position to know.

The press ate all of this up. The reputations of some public officials were destroyed long before anyone could possibly know who did or did not do what--once again, public perceptions formed via panicked reporting.

I only mention this in the context of an article on returning to the Moon because this acrimonious, short-sighted, partisan, self-serving fault-finding *during* a crisis is exactly the kind of knee-jerk, counter-productive, self-absorbed, cover-your-ass, anti-survival, behavioral bullshit up with which we can not afford to put up if we're ever going to go into space to stay.

At a time when *all* of our leaders at *all* levels should have been pulling together, too many were jockeying for personal or political advantage. Returning to space to stay is going to require a *consistent*, long-term, national commitment. Anything short of that will give us more of what we already have--a space station with no clear reason to exist but too expensive to discard; a space shuttle fleet grounded again, riddled with flaws even when it was new because of shortsightedness; and no return to the Moon.

Remember that the next time you vote.

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I was nine when we went to the Moon the first time. I'll be almost sixty when we return, if NASA can meet its schedule. I was so excited by the new plan that I even rejoined the National Space Society so I can stay updated.

I really want us to go back, but I'm skeptical that we actually will. I'm going to work for it though. I'm going to try to shape opinions. But it will be tough--we as a nation, or even as a planet, are going to have to learn to put a worthy future goal ahead of perceived immediate needs--again and again and again. For in the end, if we (you, me, our leaders, all of us) can't collectively, or individually, get over ourselves enough so that we can accomplish this worthy goal, then the question of whether or not we can, or should, or must, or might return to the Moon is moot.

We just won't.