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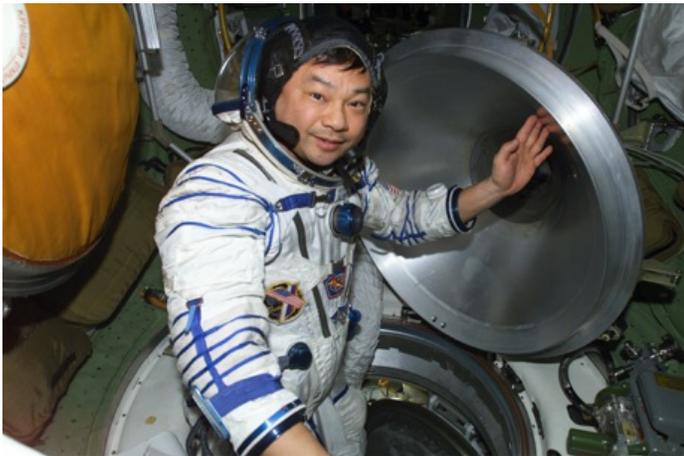
Q&A QUESTION TIME

Astronaut Leroy Chiao on the End of the Space Shuttle Program and the Future of Space Pleasure Cruises

by *Eric Spitznagel*

June 30, 2011, 10:00 AM

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Leroy Chiao in space. Courtesy of NASA.

On July 8, NASA will launch the Space Shuttle Atlantis into orbit for the final time, effectively ending the 30-year-old space shuttle program with a big, eardrum-shattering boom. Though there'll be plenty of cheering (and drunk) fans in Florida for the lift-off—a good number of them likely blaring Europe's "The Final Countdown" from their pickup trucks—it'll be a sad and anticlimactic moment. After NASA enjoys a summer of astronaut nostalgia and commemorative T-shirts . . . what then? Maybe the Kennedy Space Center becomes another Florida tourism destination, with thrill rides and overpriced corn dogs and a chance to yell at the moon with Buzz Aldrin for premier club members. Or maybe all of those rumblings about space tourism will actually come to pass, and NASA will get a second lease on life. Even if space travel becomes as widely accessible as Caribbean cruises, there's a good chance it'll be just as disappointing as Caribbean cruises. Once you get past the awesomeness of being in deep space, a space cruise will probably cost too much, the meals will be tasteless and the drinks overpriced, most of the other passengers will be cranky retirees, and your cramped cabin won't even have a good view of Earth. To get the skinny on the future of terrible vacations in space, I called retired NASA astronaut Leroy Chiao, former commander of the Expedition 10 and tenant of the International Space Station, who has logged a total of 229 days, seven hours, 38 minutes and five seconds outside the Earth's atmosphere. He was kind of a bad-ass, because there's no such thing as an astronaut who's not a bad-ass.

***Eric Spitznagel:* I assume that watching the final shuttle launch is going to be an emotional moment for you.**

Leroy Chiao: Oh yes, very much so.

Will you get a little drunk for it? Maybe sing that Aerosmith song "I Don't Want

To Miss a Thing” as the Atlantis lifts off?

[Laughs.] Well, I don't know about that. I'm just sad to see the shuttle program coming to an end. The space shuttle is the most amazing flying machine that's ever been conceived and designed. My fear is we're going to lose that corporate knowledge of how to build a space plane.

Is it true that the shuttle's basic design was created in the 1970s?

That's correct. It was designed during the mid-70s as a follow-on program for Apollo.

Isn't that like if the auto industry said, "The Chevy Chevelle is as good as it gets. Let's keep making cars that look exactly like that."

I guess so, but there have been progressive upgrades and modifications over the years. The systems have been modified. When I came to NASA, the computer memory was still iron core. We were just starting the transition to solid-state memories. Up until fairly recently, the shuttle had a tape drive.

You could only play cassettes in space?

No, no, that's not . . . That's funny.

I guess it depends on the tape. If it's just the same battered Rush cassette, or a "Space Oddity" cassingle . . .

I mean a tape drive that would load the entry software up into the upper memory of the computers. In the late 90s, the program underwent an avionics upgrade, a big step forward from where it was when I started in 1990.

So what happened to the space shuttle program? How did NASA, for lack of a better way to say it, screw the pooch?

There are a couple of different reasons . . . [It] totally failed to live up to its promise of efficient, inexpensive operations. In fact, the shuttle operations ended up being quite expensive. But that's understandable because this was a completely new vehicle and a completely new way to operate. You have this winged vehicle and it's supposed to be reusable. As we got deeper into the program, we learned more and more, and the list of things that needed to be refurbished got longer and longer. And we certainly learned a lot from the two accidents, first the Challenger accident in '86 and then the Columbia accident in '03.

I can't get on a plane without thinking about every commercial airline that's crashed in my lifetime. When you were on the shuttle, did you ever have a minor panic attack thinking about Christa McAuliffe?

Not really. Obviously there is risk involved in flying into space. The space shuttle, if you look at it on a per-astronaut basis, is the safest vehicle ever built. If you count how many astronauts have launched versus how many astronauts have been lost on this vehicle, over its lifetime of 30 years, it's pretty safe. But I don't think the crashes are what killed the program, ultimately.

It's because we won the Cold War, isn't it?

That's a large part of it. Politics is the driving force for pretty much everything. The whole reason nations get into human space flight is for national prestige. That's why the United States got into it, to beat the Soviets to the moon.

And we did it! Suck on that, Brezhnev!

I don't think any of us, including myself, thought we wouldn't be going back to the moon on a regular basis. But it became a matter of national priority and expense. President Nixon basically shut down the program because he had the Vietnam War and runaway inflation to deal with. When Bush announced the end of the shuttle program in early 2004, that was also

about national priority. We just had bigger and more pressing issues as a nation.

Is there a way of getting al-Qaeda interested in space exploration?

I don't think so. When China launched their first astronaut in '03, there were some people who said, "Great, we're going to have another space race!" And of course that wasn't true. We're a lot farther ahead of the Chinese, not so much in technology but in experience. They've only flown three missions in eight years. Their longest mission was five days.

I read that there'll be an iPhone on the last Atlantic mission. How much do you think Steve Jobs paid for that endorsement?

I seriously doubt that the government is getting any money for sending the iPhone into space. I haven't kept up with why they're doing it. Obviously the phone wouldn't work because you're pretty far away from cell towers. A satellite phone might work, because the satellites are up there with you.

Could this be a missed opportunity for NASA? They might've been able to save the shuttle program if they sold ad space like the Super Bowl does.

That's an interesting idea.

The first Lady Gaga song played in space. The first Coke Zero consumed in space. "McDonald's, I'm loving it . . . in space!"

Well, the Russians have done some of that. Back in the late 90s, there was a Pepsi commercial shot in space, where two Russian guys went out on a space walk and brought a Pepsi can. But the quality of the video wasn't high enough, so it wasn't really usable. And I remember they sold ad space on some of their rockets, I think to Pizza Hut and maybe Radio Shack.

So the Russians couldn't beat us to the moon, but they beat us to space product placement?

Probably a lot of people don't know this, but the Russian cosmonauts sign a contract before they fly, guaranteeing them certain bonuses for successfully completing different projects during their mission. They make somewhere between 75 to 200 thousand dollars per mission. A Russian secretary asked me once, "What kind of bonus do the Americans get?" I said, "We don't get a bonus." And she was stunned. She said, "Why do you fly?"

There's been talk about space tourism being the next frontier. Is that actually going to happen?

There are a number of companies trying to do exactly that. Two years ago, I was a member of a White House appointed committee called the Review of United States Human Space Flight Plans Committee. We were charged to examine the NASA space flight program and formulate several option paths for the new administration to use as a basis for a new space policy. One of our sub-options was stimulating commercial companies to take over the task of ferrying civilian astronauts to and from lower-Earth orbit.

And the White House took you seriously?

They did. The thinking was, we've been sending astronauts to space for 50 years, so the technology is mature. The commercial companies deserve a chance to succeed. If they can pick it up and do it, then NASA can contract out their technology to those commercial providers and use our resources to push farther out, beyond lower-Earth orbit. NASA has been hosting a competition to pick companies deserving of grant money, and they're starting the next round in September.

Are you O.K. watching all of this happen as an impartial observer, or do you want a piece of the action?

There's a company called Excalibur Almaz that I've been a part of.

Ka-ching!

Unfortunately we didn't make the final cut during the last round, when NASA cut the numbers down to four, so we won't be getting any funding. But we're still trying to move ahead with the program. They're using Russian hardware from an old Soviet military space program, and integrating it with modern avionics. So instead of reinventing the wheel, they'll be using stuff that has flown before and putting it together in an efficient way.

What's the timeline? How long before space tourism is competing with Sandals?

Seven people have already flown as what we call "space flight participants," which in the media have been reported as tourists. It's not quite the same thing as tourism, because those people had to take six months off and go through intensive training with the Russians. But there have been seven people who paid to spend about a week on the International Space Station. So technically it's already started. But we're talking about price tags that started out around \$20 million and are currently somewhere north of \$35 million.

Holy Christ. No chance of getting a better deal on Expedia?

Not yet, no. In my opinion, it's going to take a pretty significant breakthrough in propulsion technology before we can get the price down. Because the main cost of sending somebody into space is the cost of the rocket. If you're a satellite provider, it's going to cost you around \$100 million to launch your satellite. That's just how much rockets cost. And then there's the precision milling and the quality control checks. These shuttles have to perform flawlessly. Until there's a radical new technology that revolutionizes how we impart that energy into a payload to get a ship up into orbit, I don't see how it can get much cheaper.

They could do what the airlines have done and fuck their customers with luggage surcharges.

Well, they'd have to charge quite a bit.

There are all kinds of extra charges they can tack on. "Oh, you wanted oxygen? That'll be \$45."

That's funny. And actually, not a bad idea.

You spent more than 200 days in space. What's the most irritating thing about living in zero gravity?

There are good things, too.

O.K., let's start with that.

First of all, it's amazing to float. You very quickly get used to the idea of using your fingertips just to move around. The view of the earth is unbelievable, especially the very first time you see it from orbit. It's just stunning. The colors are much brighter than I imagined it would be. The atmosphere is several different shades of blue as the sunlight passes through it. But the irritating parts? Let's see . . .

Is it like living in the smallest and most overpriced studio apartment in Manhattan?

Surprisingly, no. It's not so much that I felt cooped up in there. The station is plenty big, especially back when we had only a crew of two. Now it's up to a crew of six. To me, subjectively, it felt like the equivalent of a large three-bedroom apartment. Although it's really just a series of tin cans, so it's not really laid out like an apartment. But it was fine. The other irritating thing about being in zero gravity, it's really easy to lose things. You've got to be very good about velcro-ing something down or putting it behind a rubber bungee. And even then,

if somebody walks by and bumps into it, it gets knocked loose and it's gone.

Where does it go?

Things usually turn up in the filters of the ventilation system. But sometimes you never find them. Things just get lost. I heard a story about a guy who lost his watch on one of the early missions. Two missions later, with an entirely different crew, his watch just came floating out from somewhere.

That could be a big problem for space tourism. You'll have guests constantly losing their passports.

That seriously does happen. For my final flight, I flew with the Russians, and the last thing I did before boarding the shuttle at the Baikonur Cosmodrome in Kazakhstan was hand over my passport to my NASA flight surgeon. Because they were going to need it after I landed to get me out of the country. You don't want to lose that somewhere on the shuttle.

All speculation aside, is this something we can be realistically hopeful about? Is space tourism the "I'm taking a Carnival cruise to Saint Maarten with my grandparents" of the not-so-distant future?

I honestly think it is, because major breakthroughs will happen. They have in every other form of technology we've had. Look at the airplane. It's not a perfect analogy, but in the beginning the airplane was relatively dangerous, and it was just for a few wealthy or specialized people. And look at the system we have today. We couldn't live without air travel.

Before I let you go, I have a weird request.

How can I help you?

I've always wanted to ask this of a real astronaut. Would you do that famous Charlton Heston line from *Planet of the Apes*? "You blew it up!"

"Damn you!" That one?

Yeah, baby!

"Damn you all to hell!" Gosh, I haven't seen that movie in a long time. That felt pretty good.



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