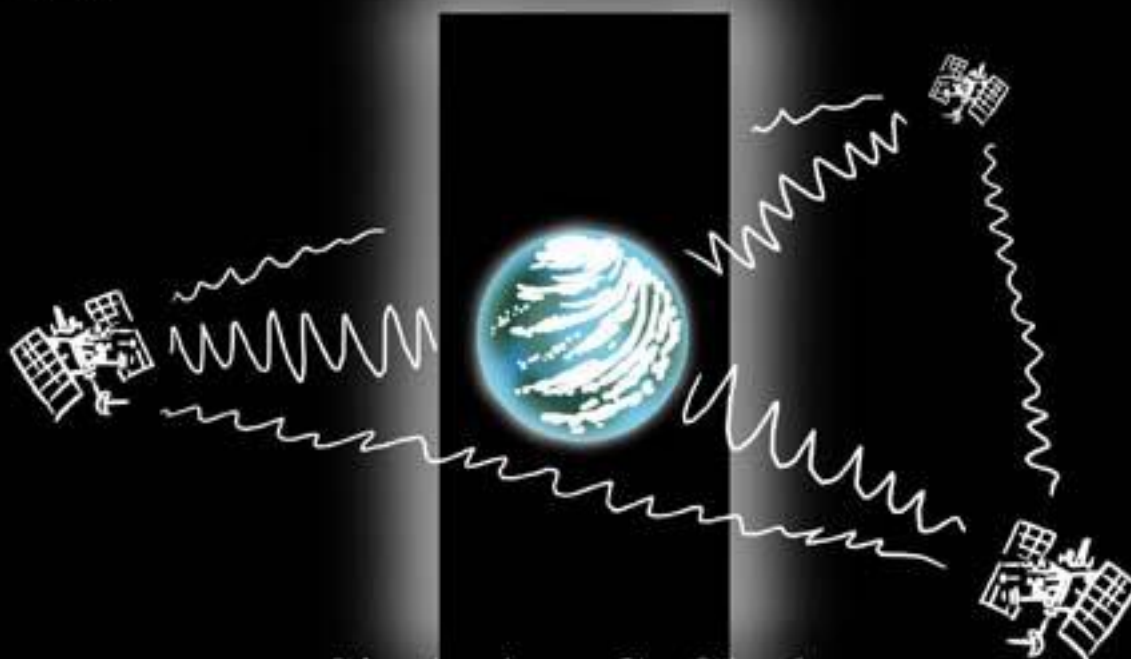




The Newsletter of the Northern Illinois Rocketry Association

Mar/April 2008

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Sir Arthur C. Clarke
1917 • A Space Odyssey • 2008



THE LEADING EDGE

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The Leading Edge is published bi-monthly for members of the Northern Illinois Rocketry Association (NIRA) NAR Section#117
Dedicated to the idea that rocketry is fun!



Contributors this issue;

Articles Bob Kaplow
Photographs Joe Charaska, Rick Gaff,
Tony Lentini, Bob Kaplow

T Minus One Launch Windows

NIRA

May 18	East Branch Forest Preserve
June 15	East Branch Forest Preserve
July 20	East Branch Forest Preserve
Aug 17	East Branch Forest Preserve
Sep 21	East Branch Forest Preserve

Meeting Calendar

NIRA

We are now back to our schedule of first Friday of the month.

May 2	Monthly meeting Helen Plum Library
June 6	Monthly meeting Helen Plum Library
July 11	Monthly meeting Helen Plum Library (Second Friday)
Aug 1	Monthly meeting Helen Plum Library



Somebody up there is a comedian. In the Unity node of the International Space Station (ISS), just above the head of ISS Flight Engineer Nikolai Budarin, hangs a sign: "Space Station Construction: Speed Limit 17,500 mph." In metric units: 28,000 km/h.

Model Of The Month



March Winners

The family theme continues. Adult was a shoe-in for **Don Kennedy** and his ultra-clean Estes **Interceptor** re-release.

Junior was taken by default when vice president **Angel Cooper** at least showed up with her unpainted rocket.

Youth was a tie between siblings **Jon Mitchell's Geminee Thunder** and **Katie Mitchell's Fruit Loop**, an Estes Baby Bertha. By the way, Katie's rocket was one she had received in a **Youth Rocket Model Challenge** last year and then used in the **Baby Bertha Drag Race**, taking second overall to Bob Kaplow.



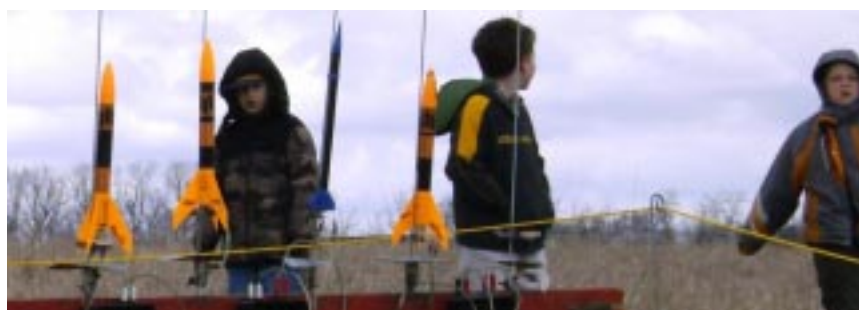
April Winners

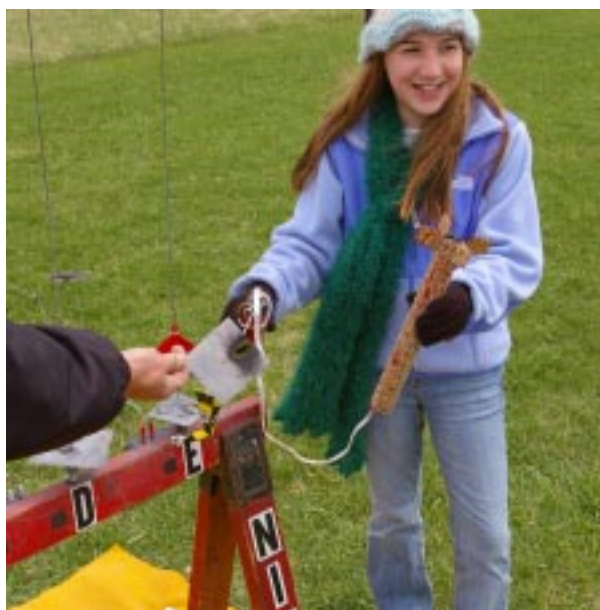
Adult honors went to **Don Kennedy** for his upscaled **Evil Knivel Sky Cycle**.

Junior was a tie between Angel Cooper and her Watermelon colored **Mean Machine**, and Joe Charaska and his **Edmonds Tinee**.

Youth went to **Jimmy Basile** for his **V-1**.

April Scout Launches





April Club Launch



St. Andrews' rocket team sets space in their long-range sights

April 14, 2008

By JENNIFER JOHNSON

The best part about high power model rocketry, say members of the Park Ridge-based St. Andrews Rocket Team, is of course finally seeing your creation successfully take to the sky.

In preparation for their second year participating in NASA's Student Launch Initiative this month, the four-member team of high school students traveled to a rural area outside Princeton, Ill., in early March to launch their 10-ft. long, 45 lb. rocket for the very first time. Set to travel to an altitude of at least one mile high, the rocket — soaring at 450 mph — missed its target by just 64 feet. Not bad for a first launch.



St. Andrews rocket team members (from left to right) Michael Cinquino, Kenneth Johnson, Michael Williamson and A.J. Witzke apply decals to their rocket.
(Jerry Daliege/for Pioneer Press)



St. Andrews Lutheran's rocket team members - Michael Cinquino, Michael Williamson, A.J. Witzke and Kenneth Johnson - apply decals to their rocket.
(Jerry Daliege/for Pioneer Press)

On April 26, the team will launch their rocket again — this time at the Marshall Space Flight Center in Huntsville, Ala., for NASA representatives to see. They, along with 16 other teams across the country, are essentially “subcontractors for NASA,” said project team leader Len Johnson.

The St. Andrews Rocket Team qualified to submit their second rocket proposal to NASA after finishing among the top teams in the country in the 2007 Team America Rocketry Challenge (TARC).

Calling their 2008 rocket launch Orion Project II, the St. Andrews team consists of Maine South High School juniors Ken Johnson and Michael Williamson; Mike Cinquino, a junior at Hoffman Estates High School in Hoffman Estates; and A.J. Witzke, a sophomore at Buffalo Grove High School in Buffalo Grove. They are assisted by their fathers Len Johnson, Jim Williamson, Nick Cinquino and Arnie Witzke.

All four teens use knowledge they have acquired in science and math classes, but for the most part, they are largely self-taught when it comes to the intricate details of launching a model rocket one mile into the sky and setting it up to record scientific data, like air speed.

“They are basically learning from past experiences with smaller rockets and are building on that,” Len Johnson added.

All the team members agreed that the first launch outside Princeton was the best part of their work so far this year.



"It was amazing," said Michael Williamson. "It made a lot of noise we didn't expect, and the video that came back for it was amazing too."

"The most fun was doing the first launch because it's the most exciting part. That's the time we finally get to see our work do it's thing," Witzke said.

This year, the team's rocket has an added feature: a parachuting robot.

The robot travels on board the rocket and is controlled by computer from the ground, explained Len Johnson. When the rocket reaches an altitude of 800 feet, a capsule containing the robot will be ejected, and it will parachute to the ground. Using a computer, a member of the rocket team will guide the robot out of the capsule and a remote control will allow it to drive around as it collects soil samples, Johnson explained.

The idea to incorporate a robot into the rocket launch began last year, immediately following the 2007 NASA Student Launch Initiative, explained Ken Johnson.

"After we were at SLI in Alabama, we stopped in a restaurant and decided to go big or go home," Ken said. "So we decided to do a robot to impress NASA."

Ken admitted the robot is a little hard to drive, but getting it to work has been easy. All the hard work, he added, has been worth it.

"We have more advanced stuff this year and our rocket is three times bigger. I think each year we get bigger and bigger, and if we get accepted [by NASA] next year, it should be a really big rocket with really cool experiments."

"I think we are doing a lot more complicated stuff, but we still know what we are doing," explained Mike Cinquino. "It's still fun."

A.J. Witzke this year's project has been difficult, but interesting.

"It's a lot harder because we had to figure out ways to incorporate different systems in our rocket," he said.

"It's insanely complicated, but I suppose a good challenge is fun to have in life," Michael Williamson said. "This has been a real fun year and I hope everything works out well in the end."

The rocket team has received recognition and letters of congratulations from U.S. Sen. Hillary Clinton, D-NY, U.S. Sen.

Barack Obama, D-IL, and New Mexico Governor Bill Richardson. The team also received the Liberty Cannon Award from Wheeling-based Numerical Precision Inc. for their rocketry work.

All four team members envision flight in their futures, whether it's becoming a NASA astronaut or piloting planes.

Len Johnson said he hopes other youth across the country will become just as involved in rocketry as the St. Andrews team members have and choose careers in scientific and engineering fields.

"Our country is in dire need of this," he said. "It's really a serious issue with engineers leaving and not getting replaced. Other countries will be passing up our technology if we don't get into this."

Thanks to Bob Kaplow for forwarding this article. Ed.

Space Filler





A few weeks ago an interesting news story made an appearance on the web. We've collected three versions of this same story, each with their different photographs and takes on this new branch of aerospace technology. Ed.

Origami in space

Japanese scientists and origami masters aim to launch a craft from space made in the tradition of Japan's ancient art of paper folding.

JAPANESE scientists and origami masters hope to launch a paper airplane from space and learn from its trip back to Earth.

It's no joke. A prototype passed a durability test in a wind tunnel in February, Japan's space agency adopted it last week for feasibility studies, and a well-known astronaut is interested in participating.

A successful flight from space by an origami plane could have far-reaching implications for the design of re-entry vehicles or space probes for upper atmospheric exploration, said project leader Shinji Suzuki,



a professor at Tokyo University's Department of Aeronautics and Astronautics.

Tokyo University assistant professor Osamu Imamura checking a paper spacecraft before a wind tunnel durability test at a laboratory in Kashiwa near Tokyo.

In a test outside Tokyo in early February, a 7cm-long and 5cm-wide prototype survived Mach 7 speeds and broiling temperatures up to 230°C in a hypersonic wind tunnel – conditions meant to approximate what the plane would face entering Earth's atmosphere.

Having survived the 12-second test with no major damage or burns, the tiny plane theoretically could get back to Earth because re-entry

from outer space involves passing through several layers that last only a few seconds each, said Osamu Imamura, a scientist who works with Suzuki.

The Japan Aerospace Exploration Agency, or JAXA, accepted the feasibility studies and promised up to US\$300,000 (RM960,000) in funding per year over three years.

At this point, the proposal faces just one challenge, but it's a potentially crippling one: There is no way to track the paper craft or predict when or where they may land.

Critics say that makes the test pointless. Yasuyuki Miyazaki, an aerospace engineer at Nihon University who is not involved in the project, said the paper shuttles might not come back at all, depending on the angle at which they enter the atmosphere.

Suzuki said many things about science "have to be learned simply by trying them out."

Takuo Toda, the head of the Japan Origami Airplane Association, had nursed the idea of flying a shuttle-shaped paper plane since Nasa in 1977 launched its first space shuttle Enterprise, a craft without an engine or heat shield that was used to perform test flights in the atmosphere.

He spent 18 months figuring out how to fold a perfect origami spacecraft from a plain sheet of paper – without cutting, stitching or taping it – and tested hundreds of designs in the process.

"Then I thought, perhaps I could someday have it fly back to Earth from space," Toda said. "Nobody took it seriously, saying it would burn instantly."

The project has inspired curiosity in the scientific community in Japan.

"You may think it's impossible, but we scientists are all extremely interested. I think it's a great experiment," said Miyazaki, the Nihon University engineer.

"No matter how it turns out, a paper craft flight from space would tell us many things," Miyazaki said. "The fact that a paper shuttle has endured the harsh environment in the lab tests also provides valuable data for future aerospace technology."

Suzuki and Toda use origami paper made of sugar cane fibre, and spray a special coating that gives the paper resistance to heat, wind and water onto the paper and then fold it into shuttles about 20cm long and 10cm wide that weigh about 30g. How many shuttles will be released has not been decided.



The pair theorise that with the coating, rounded edges, rounded nose cone and almost no weight, their craft will face very little of the heat-generating friction that causes most damage to vehicles re-entering Earth's atmosphere.

If the plane is found, that will support their theory that the plane's rounder shape and lightness can reduce air resistance and thus heat. The focus of the experiment would be on future space vehicle designs rather than on tracking their flight patterns.

Astronaut Koichi Wakata, who has expressed personal interest in the project, would throw several origami shuttles into the wake of the international space station, which travels at Mach 20 some 400km above Earth – if the JAXA feasibility studies pan out, Suzuki said.



Takuo Toda, head of Japan Origami Airplane Association, folding a space shuttle-shaped paper plane at the Japan Airlines' facilities in Tokyo.

Findings from the paper shuttles' flight could be used in developing new lightweight space probes that would study the upper atmosphere, Miyazaki said.

The results also could help in designing a full-scale shuttle that re-enters the atmosphere slowly to reduce friction and heat, said Suzuki. – AP

Japan plans to launch paper plane from space

TOKYO (AFP) - Japan plans to take its art of origami paper folding to outer space, launching a paper plane from the International Space Station to Earth to learn about future spacecraft design.

The Japan Aerospace Exploration Agency this week approved four space experiments, including the paper plane project, with up to 90 million yen (900,000 dollars) earmarked for studies over three years, agency official Hidehiro Akashi said Thursday.

Prototype paper planes, folded in the shape of a US space shuttle, survived a test in a hypersonic wind tunnel in late January at a University of Tokyo laboratory.

The prototypes, some seven centimetres (2.8 inches) long and five centimetres (two inches) wide, went through Mach-7 speeds and temperatures up to 200 degrees Celsius (392 degrees Fahrenheit), according to the Japan Origami Airplane Association which initiated the project.

The conditions were close to what paper planes, which will be drawn back to Earth by gravity, could confront upon re-entering the atmosphere from space, the association said on its website.

The project got a boost after the association found paper that was chemically treated to be extremely heat resistant.

"Even after the chemical treatment, paper remains paper and it can be used for origami," said Shinji Suzuki, a professor at the University of Tokyo's department of aeronautics and astronautics who cooperated in the project.

"The paper plane's return from space will give us tips about designing new spacecrafts," he said.

Japan has an increasingly ambitious space programme. The US space shuttle Endeavour returned Thursday Tokyo time after beginning to set up Japan's first space laboratory.

"The biggest problem is that we cannot predict where the plane will touch down if it manages to return. That's because the plane will be blown away by wind after entering the troposphere," Suzuki said.

"We are considering attaching a tiny transmitter. But if the paper plane gets heavier, it can't escape heating up due to air resistance," he said.

"In its initial flight, we may write on the paper of the plane in different languages, 'please let us know when you find this.'"



Scientists, origami masters float paper plane re-entry

By MARI YAMAGUCHI

KASHIWA, Chiba Pref. (AP) Japanese scientists and origami masters hope to launch a paper airplane from space and learn from its trip back to Earth.



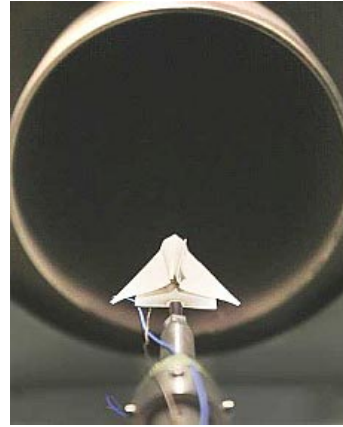
Shinji Suzuki of University of Tokyo's Department of Aeronautics and Astronautics shows a paper spacecraft at his laboratory in Kashiwa, Chiba Prefecture, on Feb. 6. AP PHOTOS

It's no joke. A prototype passed a durability test in a wind tunnel in February, the Japan Aerospace Exploration Agency, or JAXA, adopted it last week for feasibility studies and a well-known astronaut is interested in participating.

A successful flight from space by an origami plane could have far-reaching implications for the design of re-entry vehicles or space probes for upper atmospheric exploration, said project leader Shinji Suzuki, a professor at the University of Tokyo's Department of Aeronautics and Astronautics.

Suzuki said he was skeptical a decade ago when he first discussed the idea with experts.

"It sounded like a simply impossible, crazy idea," Suzuki said. "I gave it some more thought, and came to think it may not be ridiculous after all, and could very well survive if it comes down extremely slowly."



A 7-cm-long, 5-cm-wide space shuttle-shaped paper plane is seen in a wind tunnel before a flight test.

In a test outside Tokyo in early February, a prototype about 7 cm long and 5 cm wide survived Mach 7 speeds and broiling temperatures up to 230 degrees in a hypersonic wind tunnel — conditions meant to approximate what the plane would face entering Earth's atmosphere.

Having survived the 12-second test with no major damage or burns, the tiny plane theoretically could get back to Earth because re-entry from outer space involves passing through several layers that last only a few seconds each, said Osamu Imamura, a scientist who works with Suzuki.

JAXA accepted it last Wednesday for three years of feasibility studies and promised up to about ¥30 million in funding per year.

At this point, the proposal faces just one challenge, but it's a potentially crippling one: There is no way to track the paper craft or predict when or where they may land.

Critics say that makes the test pointless. Yasuyuki Miyazaki, an aerospace engineer at Nihon University who is not involved in the project, said the paper shuttles might not come back at all, depending on the angle at which they attempt to enter the atmosphere.

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He spent 18 months figuring out how to fold a perfect origami spacecraft from a plain sheet of paper — without cutting, stitching or taping it — and tested hundreds of designs in the process.

"Then I thought, perhaps I could someday have it fly back to Earth from space," Toda said. "Nobody took it seriously, saying it would burn instantly."

Toda and Suzuki first met about 10 years ago, when Suzuki and other scientists attended Toda's launching of a 2-meter-long paper craft from the top of a mountain. The successful flight impressed Suzuki, and



Toda revealed his long-cherished dream.

The effort has been a labor of love. It's had no outside funding so far, relying on paper donated by the origami association and Suzuki's access to University of Tokyo equipment.

The project has inspired curiosity in the scientific community in Japan.

"You may think it's impossible, but we scientists are all extremely interested. I think it's a great experiment," said Miyazaki, the Nihon University engineer.

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Navajo Wisdom

About 1966 or so, a NASA team doing work for the Apollo moon mission took the astronauts near Tuba City where the terrain of the Navajo Reservation looks very much like the Lunar surface. Along with all the trucks and large vehicles, there were two large figures dressed in full Lunar spacesuits.

Nearby a Navajo sheep herder and his son were watching the strange creatures walk about, occasionally being tended by personnel. The two Navajo people were noticed and approached by the NASA personnel. Since the man did not know English, his son asked for him what the strange creatures were and the NASA people told them that they are just men that are getting ready to go to the moon.

The man became very excited and asked if he could send a message to the moon with the astronauts. The NASA personnel thought this was a great idea so they rustled up a tape recorder. After the man gave them his message, they asked his son to translate. His son would not.

Later, they tried a few more people on the reservation to translate and every person they asked would chuckle and then refuse to translate.

Finally, with cash in hand, someone translated the message, "Watch out for these guys, they come to take your land."



All The News That Fits To Print

Bush Cites *The Last Starfighter* As Inspiration For Entering Politics



Bush at work in the Oval Office, with a poster of his favorite movie nearby.

WASHINGTON, DC—During a speech Monday, President Bush disclosed for the first time the pivotal role the 1984 science-fiction adventure film *The Last Starfighter* played in his decision to enter politics.

“My whole life, I’d grown up around politics, but it wasn’t until that fateful day in 1984, at a matinee screening of *The Last Starfighter* at the old Orpheum Theater in Midland, TX, that I finally realized that my destiny lay in public service,” said Bush, speaking at a Republican National Committee fundraiser at the Washington Hilton. “The movie showed me that no matter who you are and where you come from, you can make a big difference.”

The comments surprised the estimated 600 RNC members in attendance, as well as Bush’s aides, who expected the president to discuss his proposed tax cut and plan for governing post-war Iraq. Not even his closest advisors knew of Bush’s passion for the Reagan-era space epic.

Straying from his scripted remarks, Bush described at length his “lost” years of the early 1980s in Midland.

“I was holding down two jobs, one at an oil well, the other for a third-rate professional baseball team,” Bush said. “I had gotten a local girl pregnant, and I spent my weekends watching golf on TV and drinking with my buddies. My dad was vice-president then, and occasionally he’d offer me some vice-presidential stuff to do, you know, just to get a taste for politics. But I was too distracted by other things. Basically, I was your typical unfocused kid.”

One idle Saturday, Bush said he purchased a ticket to a matinee showing of *The Last Starfighter*. The seemingly inconsequential act would have profound repercussions on the young man—and, ultimately, on the entire nation.

“Just minutes into the film, I found myself relating deeply to Alex, the lead character played by Lance Guest,” Bush said. “He lived in a trailer park and had little opportunity to advance himself. His only escape was playing video games.”

After achieving a record score on a video game called “Starfighter,” Alex is contacted by a mysterious man who invented the game. The man, named Centauri, proves to be a space alien whose home planet, Rylos, is under impending attack by a sinister invasion force known as the Ko-Dan Armada. Centauri had invented the game as a means to recruit standout video gamers who could pilot the real-life versions of the Gunstar spaceships featured in the game.

Bush was enthralled.

“Here’s this kid, with nothing going on in his life, and it turns out that his only talent, one that seemed so trivial and ridiculous, could alter the fate of the galaxy forever,” Bush said. “That really inspired me.”

Bush said he could also identify with Alex’s initial reluctance to becoming a Starfighter.

“At first, Alex didn’t want to do it,” Bush said. “He figured, why should he fight for the Star League and risk his life battling an enemy he knew nothing about? But then, when the other Starfighters were killed in an attack on their base and [evil emperor] Zur sent his vicious Zan-Do-Zan assassins to Earth to kill him, Alex began to realize that the only thing standing between the Ko-Dan and universal conquest was himself.”

Continued Bush: “I realized that if Alex turned down the chance to be a Starfighter, he would have been assassinated, and Earth would have been destroyed. It made me think long and hard about my own place in the world: Was I making the right decisions? Was I helping people as much as I could? Was I missing out on a chance to save mankind?”

Bush added that he loved the film’s breakthrough computer-generated special effects, as well as the fact that Alex had a robot double—something he had dreamed of having in his youth.

Transfixed by the film, Bush would go on to see it seven times that summer, memorizing its dialogue and buying a VHS copy on the day of its release. But *The Last Starfighter*’s most profound impact on Bush was the way it motivated him to leave the private sector and enter politics.



"It made me realize that politics truly was in my blood," Bush said. "Who cares if I wasn't a good businessman or a sharp scholar? Alex was even worse off than me, and look what he achieved."

Bush admitted that, while running for Texas governor in 1994, he kept his *Last Starfighter* videocassette cued up in his campaign bus' VCR, ready for rewinding or fast-forwarding to his favorite scenes on a moment's notice.

"When my spirits were sagging, I'd watch the scene where Alex tells Centauri that he's just 'a kid from a trailer park,'" Bush said. "Centauri replies, 'If that's what you think, then that's all you'll ever be.' It helped me remember that the only boundaries that exist are those you create in your mind."

Continued Bush: "Or, as Alex says to [his girlfriend] Maggie, 'Don't you see this is it? This is our big chance. It's like, whatever this is, when it comes, you've got to grab on with both hands and hold tight.'"

The fundraiser audience reacted to the Bush speech with near-silence.

"I sort of remember the movie when it first came out, but I never saw it," RNC chairman Marc Racicot said. "As a Bush supporter and GOP policymaker, maybe I should rent it sometime."

Former White House communications director Karen Hughes, a close advisor to Bush in the early days of his presidency, said she had failed to realize the full significance of *The Last Starfighter* during her time in the administration.

"When I first started working for the president, he would sometimes mention the movie. Once or twice, he even tried to get me to read his *Last Starfighter* fan fiction," Hughes said. "But I always assumed that his decision to enter politics was shaped by his desire to continue his family's long history of public service. *The Last Starfighter*. Wow."

Added Hughes: "That probably explains why [*Last Starfighter* co-star] Catherine Mary Stewart is our ambassador to Zambia."

Reprinted from 'The Onion'

PEOPLE LIVING ON THE MOON

NASA recently announced plans to construct a base on the moon's south pole that will be completed by 2024. Here are some of the features its inhabitants will enjoy:

Golden throne so tourists can have their pictures taken as the Moon King

Neil Armstrong statue in front of Neil Armstrong wing of Neil Armstrong Recreation Center

One toilet

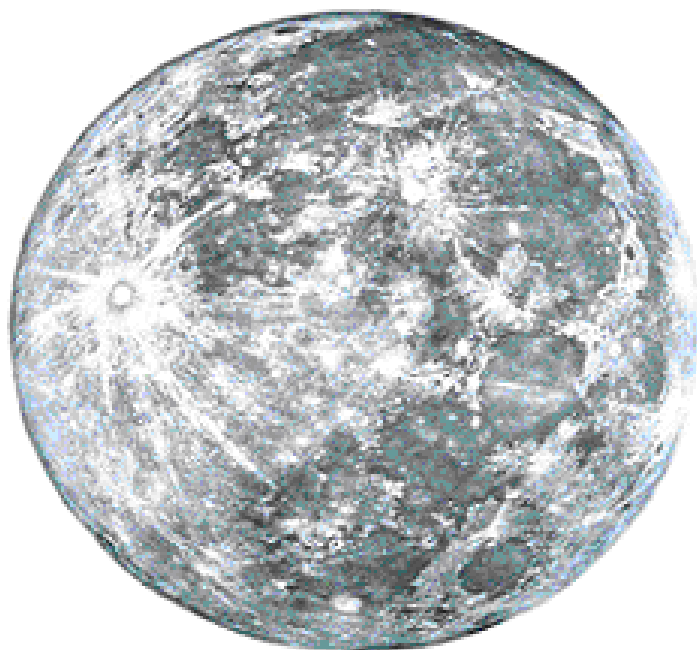
Alice Kramden Memorial Domestic Violence Shelter

Precautionary maximum-security prison

One of those slow-opening airlocks where you can initially panic, then tearfully say goodbye to your family right before getting sucked into space

Immigration border fence to keep out Venusians

Hopefully, water



Reprinted from 'The Onion'