

Raymer's Rules for New Grads

...or, How to Succeed in Aerospace by Really Trying

by Dr. Daniel P. Raymer, President, Conceptual Research Corporation

AIAA Fellow, author of "Aircraft Design: A Conceptual Approach"

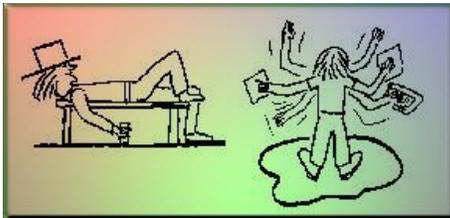
<http://www.aircraftdesign.com/ray-rule.html> (with permission)

There are many different roads through this sometimes baffling profession that we call aerospace. Some engineers, many of them very capable, just want a steady job. While they would like a big promotion to a highly responsible position, they do not "thirst" for it. Other engineers, however, really want to get ahead from the moment they start their first job out of college.

This article is written for those "driven" young engineers, who want to get responsibility (and promotion!) as fast as they are ready to assume it. An outgrowth of a talk given at a number of universities, it presents some lessons learned the hard way by a no-longer-so-young engineer who really wanted to get ahead. This [eager engineer](#) later had the opportunity to hire, nurture, and promote young engineers, and eventually gained some understanding of what is really important from the boss's perspective.

Considering the factors for getting ahead, ten rules seem most important for success. These are described below. I wish I could say that I intuitively knew and followed these from the moment I joined my first company, but my co-workers from that time would die laughing! I think I followed about six of these in my early years, and painfully learned three more, and am still working on the last. (No, I will not say which is which!)

1. Never Screw Up on the Due-Date!



We all screw up! We have too many assignments, we thought we understood it when we did not, sometimes our grandmother really is [sick](#), and sometimes we just forget. It is okay to screw up occasionally, but never, ever wait until the due-date before admitting it. When it is due, other people are depending on it. If you are not going to make the due-date, notify the boss as early as possible. Better yet, pull a couple of all-nighters to finish the job, and be more realistic in the future when you agree that you can make a due-date. You will not get the next responsible assignment if you screw up on the due-date, and after a while you will be placed in the category of "good engineer, but can't be trusted with anything important."

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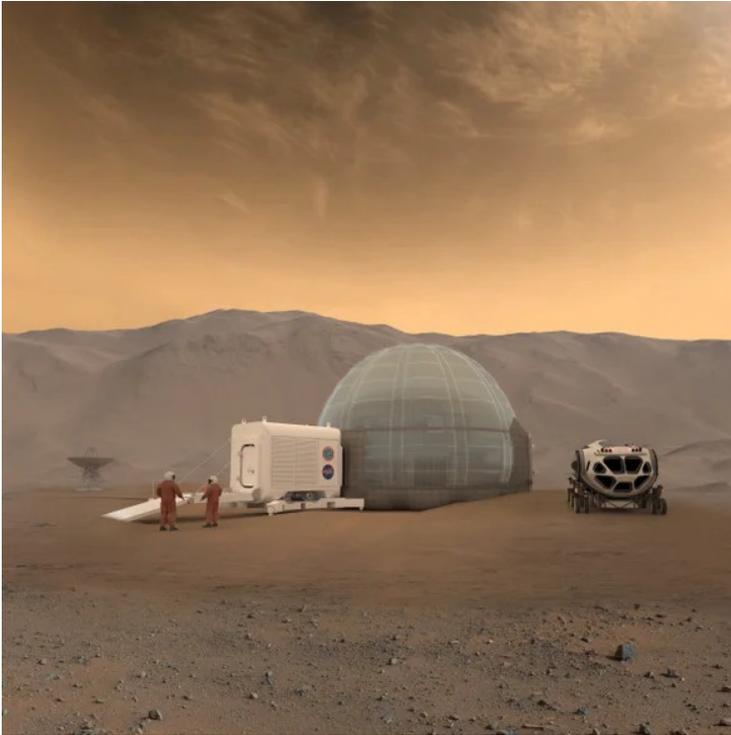
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President Biden Should Push for the Human Exploration of Mars

Robotic rovers such as Perseverance are great, but they can't answer the most fundamental questions about the Red Planet

by Dr. Robert Zubrin, Mars Society President, 25 March, 2021 (with permission) (AIAA Distinguished Lecturer)

https://www.scientificamerican.com/article/president-biden-should-push-for-the-human-exploration-of-mars/?mc_cid=8155605df3&mc_eid=462e5c5b6d



NASA concept for a Mars base that could allow astronauts to stay for several months. Credit: [NASA, Clouds AO and SEArch](#)

The triumphant landing of the Perseverance rover has inspired all Americans, and indeed much of the world. President Biden should follow it up by launching a program to send humans to Mars.

While robotic rovers are wonderful, they cannot resolve the fundamental scientific question that Mars poses to humanity, which relate to the potential prevalence and diversity of life in the universe. The early Mars was very much like the early Earth; a rocky, warm and wet planet with a carbon dioxide-dominated atmosphere. Life appeared on Earth virtually as soon as our planet was cool enough for liquid water. Did it appear on Mars too? If so, did it use the same DNA-RNA information system underlying all life on Earth, or something else? We now

know that billions of stars have planets. Is life likely to be found everywhere? Is life as we know it on Earth what life is, or is it just a particular example drawn from a vast tapestry of possibilities?

These are questions that thinking men and women have wondered about for thousands of years. They can only be resolved by sending humans.

Finding evidence of past life requires fossil hunting. Perseverance will make a stab at that, but human rock hounds, capable of traveling far over difficult terrain, climbing, digging, doing delicate work and intuitively following up clues, can do that job vastly better. Finding extant life to determine its nature will require drilling down hundreds of meters to reach underground water where life might still thrive, bringing up samples, culturing them and subjecting them to analysis. That is light-years beyond the ability of robotic rovers.

If we don't go, we won't know.

Some say that sending humans to Mars is a task for the far future, far beyond our abilities. In fact, the means to do such a mission are close at hand.

Sending humans to Mars does not require building gigantic nuclear-powered ion-drive science-fiction spaceships in a futuristic world of orbital spaceports. It requires sending a payload of 10 tons or more capable of supporting a small group of people from Earth to Mars, landing it and then sending that or a comparable payload back.

The currently operational SpaceX Falcon Heavy could throw a 10-ton class lander to Mars. The soon to be operational NASA SLS and SpaceX Starship booster will be able to send a 20-ton lander. So, we have that part covered. The next thing we need is the lander.

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The Daniel Guggenheim Medal: 2017 Medalist: Dr. Paul M. Bevilaqua (AIAA LA-LV event speaker on 3 Oct., 2020)

For the conception and demonstration of the multi-cycle propulsion system and other technologies enabling the production of the F-35 supersonic V/STOL Strike Fighters.

<https://www.aiaa.org/guggenheim/> , <https://www.aiaa.org/guggenheim/medal-recipients>

(This Award is administrated by AIAA)

Daniel Guggenheim Medal Award

www.guggenheimmedal.org

American Institute of Aeronautics and Astronautics (AIAA), American Society of Mechanical Engineers (ASME), SAE International, and the Vertical Flight Society (VFS) are proud to award *The Daniel Guggenheim Medal*.

The Daniel Guggenheim Medal was established as an international award for the purpose of honoring an individual who makes notable achievements in advancing the safety and practicality of aviation. The Medal recognizes contributions to aeronautical research and education, the development of commercial aircraft and equipment, and the application of aircraft to the economic and social activities of the nation.



Dr. Paul M. Bevilaqua
AIAA Fellow, AIAA Distinguished Lecturer

Manager, Advanced Development Programs,
Lockheed Martin Corporation (retired)

For the conception and demonstration of the multi-cycle propulsion system and other technologies enabling the production of the F-35 supersonic V/STOL Strike Fighters.

Lockheed Martin won the Joint Strike Fighter competition when the X-35 demonstrator aircraft made a short takeoff, flew supersonic, and then landed vertically, the first time any aircraft had accomplished this feat. This was made possible by its innovative multi-cycle propulsion system, invented by Paul Bevilaqua.

Bevilaqua has spent his career making key theoretical contributions as well as practical innovations in V/STOL aircraft design. He earned a B.S. in Aerospace Engineering at the University of Notre Dame and an M.S. and a Ph.D. in Aeronautics and Astronautics at Purdue University. His study of turbulent wakes identified the importance of the dominant vortices shed from the body on the development of the wake.

As a U.S. Air Force officer at Wright-Patterson Air Force Base, he worked on the turbulent jets from a V/STOL Search and Rescue aircraft. His research was actually incorporated into a VTOL interceptor aircraft being developed for the U.S. Navy's Sea Control Ship. Bevilaqua accepted an offer to become Manager of Advanced Programs at Rockwell International's Navy aircraft plant, where this aircraft was being developed.

When this ship program was cancelled, Bevilaqua was hired as Chief Aeronautical Scientist at the Skunk Works. DARPA subsequently approached him about adapting the Navy interceptor as a supersonic V/STOL strike fighter to replace both the Harrier and Hornet. He proposed the multi-cycle propulsion system, which can be switched from a turbofan cycle to a lift fan cycle for V/STOL performance. He also suggested developing a variant with a conventional engine to replace the F-16 Falcon.

Bevilaqua then led the team that demonstrated the feasibility of developing variants of this aircraft for all three military services.

New book misfires on missing Malaysian plane mystery

Author's conclusions about alleged US AWACS aircrafts' role in MH-370 disappearance shows a lack of aviation and military knowledge

by Dr. Stephen Bryen, Former Deputy Under Secretary of Defense, 1 April, 2021 (with Permission)

<https://asiatimes.com/2021/04/new-book-misfires-on-missing-malaysian-plane-mystery/>



Malaysia Airlines flight MH-370's disappearance is still a mystery despite a new book that claims to resolve the case. Image: Facebook

Florence de Changy has republished her 2016 book *of MH 370: [La disparition](#)* on the disappearance of Malaysia Airlines Flight MH370 in a new English version called *[The Disappearing Act: The Impossible Case of MH370](#)* with a new concluding chapter.

The book, originally published in French, is billed as the “definitive work” that “at last demystifies the world’s greatest aviation secrets.”

MH-370 was on a flight from Kuala Lumpur to Beijing on March 8, 2014, when en-route control lost contact with the aircraft. While some parts from the aircraft have been allegedly found, they showed up more than a year after the crash and their positive identification remains open to question. Thus the mystery that the book supposedly demystifies.

However, the book does no such thing. In fact, the author’s thesis – that there was some sort of conspiracy between the United States – namely the CIA and the White House – and Beijing, along with Malaysia, Vietnam and Australia, seems to be pure bunkum.

De Changy suggests that MH-370 was approached by two US AWACS (Airborne Warning and Control System) aircraft – one on each side – that jammed its communications and then, in a botched operation, to try and get it to divert to a US-controlled airfield.

It was destroyed when the pilot failed to comply, or perhaps even respond, since this is not clear from the

scenario proposed. How it was destroyed is not explained.

For the record, there are a few cases of aircraft being shot down when the pilot refused to respond to a demand either from ground control or intercepting aircraft. The most famous of these was a Korean Air Lines Boeing 747 airliner shot down by a Soviet Air Force Su-15 interceptor on September 1, 1983.

AWACS not a radio jamming plane

Exactly why the Russians decided to shoot the plane down is far from clear and remains controversial. It is known that the Russian Air Force radioed back to base and then to Moscow asking for instructions. It is quite possible the South Korean pilots never saw the Russian fighter jet.

Ten years earlier, in 1973, a Libya airliner, Flight 114, was a regularly scheduled flight from Tripoli, Libya, via Benghazi to Cairo, but ended up over Israel. It was intercepted by two Israeli F-4 fighters. The plane refused to land and was shot down.



An AWACS plane and fighter jets. Photo: AFP/Zakaria Abdelkafi

It isn’t clear if the pilots were contacted by radio or by signaling from the fighter jets. The US AWACS, properly called the E-3A, is an airborne radar platform, not a jamming plane.

[\(Continued on Page 18\)](#)

Space Force aims for National Space Intel Center IOC in early 2022

by Courtney Albon, 5 April, 2021 (with Permission)

<https://insidedefense.com/share/210997>

(Disclaimer: The views of this article do not represent the views of the editors of InsideDefense.com, or those of AIAA, or the AIAA Los Angeles-Las Vegas Section.)

The Space Force is in the "throes" of standing up a new National Space Intelligence Center and plans to reach initial operational capability in January 2022.

Maj. Gen. Leah Lauderback, the service's director of intelligence, surveillance and reconnaissance, said during an April 2 Mitchell Institute event the Space Force recently stood up a working group to define what the NSIC will look like in the future.

The current plan is for two squadrons to shift from the National Air and Space Intelligence Center to NSIC to form the initial core of the new organization. Lauderback said the center will also need to increase its workforce in order to perform analysis of a growing number of adversary space systems.

"As those numbers of weapon systems that our adversaries have grown, we probably need to grow in number of analysts," she said. "And I also see that from an exploitation standpoint, or from an advanced threat analysis standpoint, we have room to grow too."

She noted that the NSIC working group -- which includes representatives from the Space Force, NASIC, Defense Intelligence Agency and other organizations -- are discussing what the initial workforce and mission of NSIC will be.

Lauderback also discussed the Space Force's designation [as a member of the intelligence community in January](#). Soon after the service's IC membership became official, the director of national intelligence sent Lauderback a memo listing various directives the service would need to align with.

"Over the last couple of months, we have been going through this list -- and it's extensive because there are a lot of intelligence community directives out there, things that you just need to be in compliance with," she said. "There's tradecraft that we need to be able to follow as intelligence professionals."

The Space Force has since achieved compliance with those directives, she said.

Rovers and Landers and Space Tech, oh my!

by Astrobotic, 30 March, 2021 (with Permission)



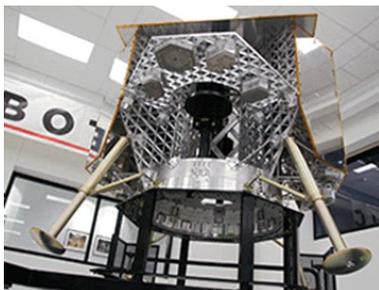
With 125 Employees and Counting, Astrobotic Unveils New Headquarters

Pittsburgh, Pennsylvania is home to our new 47,000 square foot complex — the largest private facility in the world dedicated to lunar logistics. Our Peregrine and Griffin lunar landers will be built on-site, with Peregrine set to become the first commercial mission to the Moon, and the first American lander on the Moon since the Apollo missions.

PS: we're hiring! [Apply Now](#)

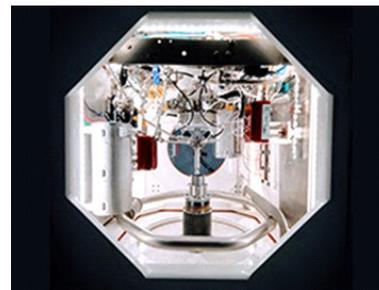
PEREGRINE MISSION ONE PATCH REVEALED

The patch will be available to the general public in the coming months through Astrobotic's new online store, anticipated to launch in April 2021.



PEREGRINE MISSION 1

Peregrine has successfully passed structural qualification testing, marking a major development milestone toward its maiden voyage and lunar landing in 2021. ([Read More](#))



GRIFFIN MISSION 1

Thrusters and engines were selected for the Griffin/VIPER Mission. Major milestones like the System Requirements Review (SRR) were also completed. ([Watch](#))



PLANETARY MOBILITY

CubeRover underwent 150 mobility tests with 11 sets of wheels in NASA Kennedy Space Center's (KSC) enclosure designed to mimic the lunar surface. Photo courtesy of NASA ([Read More](#))



FUTURE MISSIONS & TECH

UltraNav, a Phase II NASA SIBR, continues to make progress. This sensor is low size, weight, and power, using visual navigation to enable applications such as satellite rendezvous and proximity operations.

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Fujino To Receive AIAA Award for HondaJet Innovations

by Chad Trautvetter, 25 March, 2021 (with Permission)

<https://www.ainonline.com/aviation-news/business-aviation/2021-03-25/fujino-receive-aiia-award-hondajet-innovations>



Honda Aircraft president and CEO Michimasa Fujino

The American Institute of Aeronautics and Astronautics (AIAA) will present its 2021 Reed Aeronautics Award to Honda Aircraft president and CEO Michimasa Fujino. He will be presented with the award—which is given “for the invention of advanced aerodynamic and structural techniques”—during AIAA’s Aerospace Spotlight Awards Gala on August 12.

According to AIAA, the Reed award is the highest honor an individual can receive for a notable achievement in

aeronautics that represents a significant engineering advancement milestone. “Fujino's clean-sheet aircraft design [for the HondaJet] introduced innovations in aviation technology, including the over-the-wing engine mount and natural laminar flow wing and fuselage,” AIAA said.

“Dr. Fujino's dedication to using cutting-edge aeronautical technologies to create new value in business aviation with the HondaJet is an inspiration to the global aerospace industry,” said AIAA president Basil Hassan. “Dr. Fujino's passion for innovation makes him a deserving recipient of this year's Reed Aeronautics Award.”

The Reed Aeronautics Award is named after Dr. Sylvanus A. Reed, the aeronautical engineer, designer, and founding member of the Institute of Aeronautical Sciences in 1932. Past recipients of the award include Clarence Johnson for the SR-71, Ben Rich for the F-117, Preston Henne for the MD-80 and Gulfstream aircraft, and Bert Rutan for Voyager.

Honeywell Recognizes Gulfstream's APU Repair Facility

by Chad Trautvetter, 19 March, 2021 (with Permission)

<https://www.ainonline.com/aviation-news/business-aviation/2021-03-19/honeywell-recognizes-gulfstreams-apu-repair-facility>

Gulfstream Aerospace’s auxiliary power unit (APU) repair facility at the company’s Savannah, Georgia headquarters service center has been recognized as a center of excellence by Honeywell Aerospace. Established in June 2008, this facility features a maintenance shop and a 300-sq-ft test cell where technicians can repair and test APUs installed on jets made by Gulfstream and other business aircraft OEMs.

According to Honeywell Aerospace senior director for

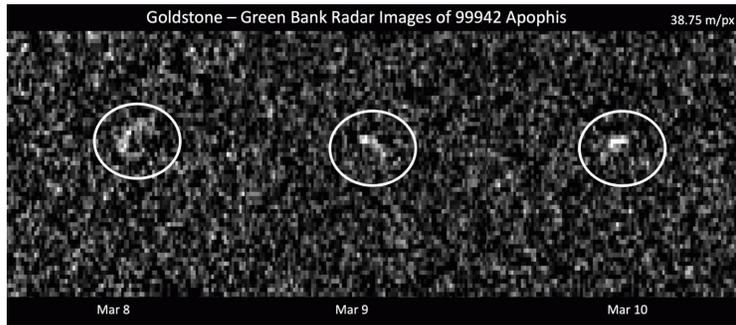
business and general aviation aftermarket business Neil Hounjet, Gulfstream’s continuous investment in APU material, tooling, and maintenance personnel allows it to “deliver a high-quality finished product and achieve turnaround times that are better than industry standard.”

Gulfstream is authorized to perform heavy repairs and overhauls, as well as warranty and manufacturer service program work, on a wide range of Honeywell APUs, including the 36-100, 36-150, RE100, RE220 series, and HGT400. The facility has also received nearly 30 foreign authority approvals.

Asteroid Apophis Won't Impact Earth For At Least A Century

by Asteroid Day, 29 March, 2021 (with Permission)

<https://asteroidday.org/news-updates/asteroid-apophis-wont-impact-earth-for-at-least-a-century/>



These radar images from NASA's Goldstone Deep Space Communications Complex in California have helped to show that asteroid Apophis poses no danger to Earth for at least the next century. Credit: NASA/JPL-Caltech and NSF/AUI/GBO

What is Asteroid Apophis?

Apophis is a near-Earth asteroid that's estimated to be about 350 metres across. That may sound small in celestial terms but to a human it's huge. Apophis is about ten percent taller than the Eiffel Tower in Paris, France. That makes it a large asteroid. It's an S-type asteroid, thought to be composed of mostly stony materials with little iron or other metals in the mix. So far, so ordinary.

When was it discovered?

Apophis was discovered on 19 June 2004 by astronomers Roy A Tucker, David J Tholen and Fabrizio Bernardi, using the Kitt peak National Observatory, Arizona. It was given the name Apophis by its discoverers on 19 July 2005. In classical mythology, Apophis was the enemy of the sun-god Ra, pursuing and trying to swallow Ra every night. So, a pretty menacing name to give an asteroid – but as astronomers quickly found out, it was maybe an appropriate one.

Yikes. Why were we worried about Apophis?

Soon after its discovery, Apophis had its orbit calculated. That's when astronomers started to keep a watchful eye on it because it was going to make a number of very close passes to Earth. A few months after discovery, on 21 December 2004, Apophis passed Earth at 14.42 million kilometres. That's not particularly close when you consider that the Moon orbits at 0.384 million km but as astronomers extrapolated the asteroid's orbit into the future, it became clear that it was going to make a number of very close passes to Earth.

When you say close, how close was Apophis going to approach Earth?

Very close! A flyby on 13 April 2029 will take place at around 31,600 km above the Earth's surface. That's more than ten

times closer than the Moon and closer even than some of the telecommunication satellites that are in orbit around the Earth. Initially, astronomers calculated that there was a slight risk of it actually hitting our planet in either 2029 or during another close pass in 2036. That was concerning since Apophis is at least one and a half times bigger than the object that devastated the Tunguska region of Siberia in 1908. Thankfully, further studies of the asteroid's orbit ruled those possibilities out, but concern still hung over yet another close pass in 2068. Now, however, everything is hunky dory again.

Phew. Why aren't we worried any more?

On 6 March, Apophis passed Earth at roughly 17 million km. Radar observations by NASA's Goldstone Deep Space Communications Complex in California, and the Green Bank Observatory, West Virginia, provided such accurate data on the asteroid's position and movement that its orbit could be calculated more precisely than ever. This shows clearly that Apophis has no chance of hitting Earth any time in the next century. As a result, the European Space Agency has taken Apophis off its '[Risk List](#)'.

So, can we just forget about Apophis now?

No! Its orbit will continue to evolve because of gravitational interactions during its close passes of the Earth, and because of the way the asteroid responds to the Sun's heat but at least we can be confident of its orbit for the next century or so. And there is plenty of opportunity to use Apophis for science. Because it comes so close to Earth, it will provide astronomers with great chances to study it in comparative close-up and learn more about it: the details of its composition and internal structure for example. Anything we learn from one asteroid can help us understand the others. Now that we no longer need to fear Apophis, it can become our friend – and that means if you live in Europe, Africa or western Asia, you need to get your friends together for an Apophis party on 13 April 2029.

Always up for a party, tell me more!

From those locations Apophis will be visible to the naked eye in the night sky as it passes by Earth. It will appear as a moving point of light, about as bright as a moderate star. It's a great opportunity – and an extremely rare one – to see the celestial dance of an asteroid's orbit with your own eyes. Mark it on your calendar now!

Wow, now I think about it, this is all pretty neat isn't it?

Yes. Asteroids rock. So do the people that study them. Asteroid Day congratulates all who took part in this work: great job!

NASA Invites Public to Share Excitement of Agency's SpaceX Crew-2 Mission

by Emily McLeod Sulkes, NASA's Kennedy Space Center, 30 March, 2021

<https://www.nasa.gov/feature/nasa-invites-public-to-share-excitement-of-agency-s-spacex-crew-2-mission>



A SpaceX Falcon 9 rocket carrying the company's Crew Dragon spacecraft is launched on NASA's SpaceX Crew-1 mission to the International Space Station on Nov. 15, 2020, from NASA's Kennedy Space Center in Florida. NASA's SpaceX Crew-2 mission is targeted for no earlier than Thursday, April 22, at 6:11 a.m. EDT.

Credits: NASA/Joel Kowsky

NASA invites the public to take part in virtual activities and events ahead of the agency's SpaceX [Crew-2](#) mission. Liftoff of the Crew Dragon spacecraft and Falcon 9 rocket with astronauts is targeted for no earlier than 6:11 a.m. EDT Thursday, April 22, from Launch Complex 39A at NASA's Kennedy Space Center in Florida.

NASA's SpaceX Crew-2 mission will carry NASA astronauts Shane Kimbrough and Megan McArthur – who will serve as the mission's spacecraft commander and pilot, respectively – along with Japan Aerospace Exploration Agency (JAXA) astronaut Akihiko Hoshide and ESA (European Space Agency) astronaut Thomas Pesquet, who will serve as mission specialists.

The crew is scheduled to work aboard the International Space Station through the fall of 2021, conducting science research in areas such as medical technology, human health, and materials to benefit life on Earth.

Live coverage and countdown commentary will begin at 2 a.m. EDT on NASA Television and the agency's

[website](#), as well as [YouTube](#), [Twitter](#), [Facebook](#), [LinkedIn](#), [Twitch](#), [Daily Motion](#), and [Theta.TV](#).

Members of the public can [attend the launch virtually](#), receiving mission updates and opportunities normally reserved for on-site guests. NASA's virtual guest experience for Crew-2 includes curated launch resources, a behind-the-scenes look at the mission, notifications about NASA social interactions, and the opportunity for a virtual launch passport stamp following a successful launch.

Organizations hosting launch-focused events are also encouraged to [register](#) and let NASA know that you're doing so. This would include school groups, museums, or even colleagues watching together! *If you plan to gather in person with others to watch the launch, NASA recommends following all Centers for Disease Control and Prevention guidelines and local rules regarding COVID-19.*

Members of the public and organizations can share in the journey through a variety of activities, including:

Virtual Launch Passport

Print, fold, and get ready to fill your [virtual passport](#). Stamps will be emailed following launches to those who [register](#) via email through Eventbrite.

Watch and Engage on Social Media

Stay connected with the mission on social media, and let people know you're following Crew-2 on Twitter, Facebook, and Instagram using the hashtag **#LaunchAmerica**. Follow and tag these accounts:

- Twitter: [@NASA](#), [@Commercial_Crew](#), [@Space_Station](#), [@NASAKennedy](#)
- Facebook: [NASA](#), [NASACommercialCrew](#), [ISS Facebook](#), [Kennedy Space Center](#)
- Instagram: [NASA](#), [ISS Instagram](#), [NASAKennedy](#)

Click [here](#) to find out more about the Crew-2 mission.

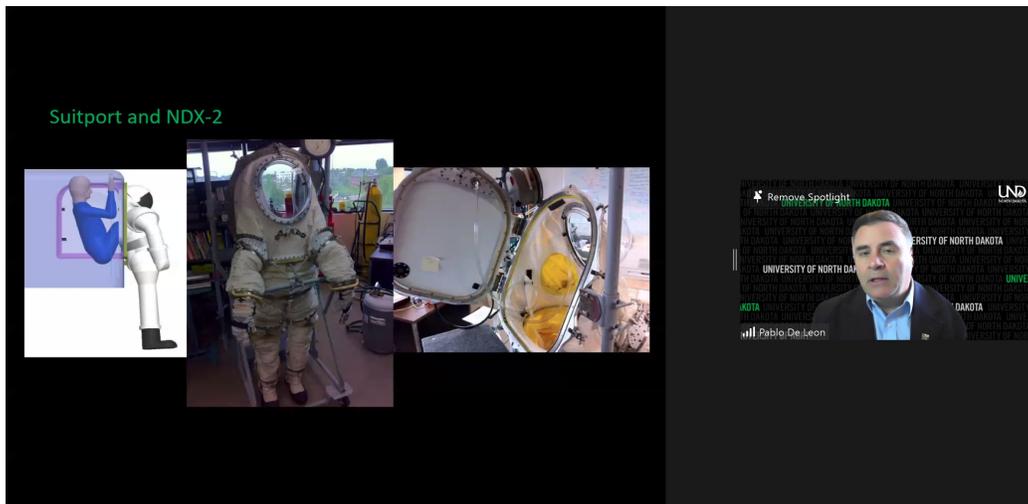
The 3rd AIAA LA-LV Space Architecture Gathering (27 March, 2021)

(Screenshots only)

<https://www.aiaa-lalv.org/march-27-2021-the-3rd-international-aiaa-la-lv-space-architecture-gathering/>



Some speakers joining the concluding panel discussion (moderated by Prof. Madhu Thangavelu (upper left)) for an inspiring session of interactive discussions.



Prof. Pablo de León talking about the new spacesuit he designed for better protection and maneuverability.

(Continued on Page 21)

LGBTQ / GSM in Aerospace by Mr. Sean Mobley (3 April, 2021)

(Screenshots only)

<https://www.aiaa-lalv.org/april-3-2021-lgbtq-gsm-in-aerospace-by-mr-sean-mobley/>



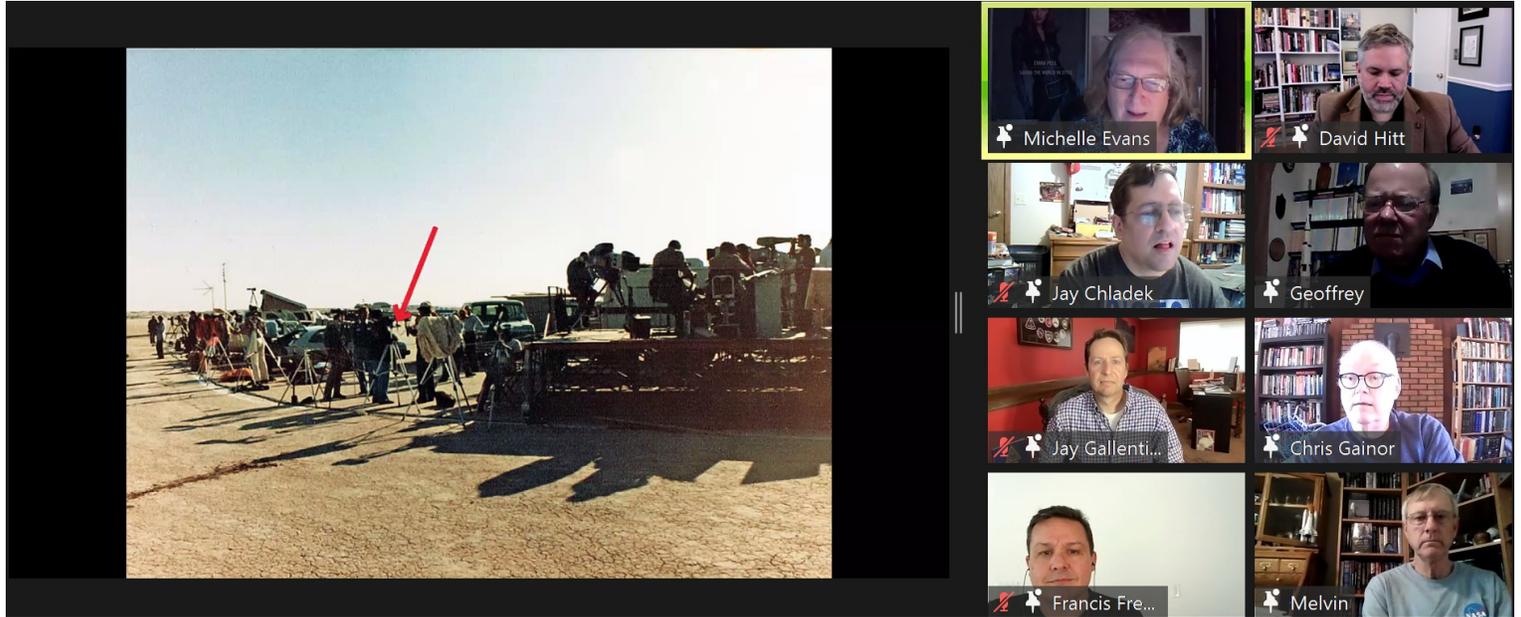
Mr. Sean Mobley talking about the Museum of Flight and the stories of LGBTQ / GSM.



Ms. Michelle Evens (AIAA Distinguished Lecture) (lower right) joining the Q&A after the presentation, sharing some thoughts in an engaging interaction with the attendees.

(STS-1 40th Anniversary Celebration) Outward Odyssey Authors Present: "Columbia and the Legacy of the Space Shuttle Program." (10 April, 2021) *(Screenshots only)*

<https://www.aiaa-lalv.org/april-10-2021-sts-1-40th-anniversary-celebration-outward-odyssey-authors-present-columbia-and-the-legacy-of-the-space-shuttle-program/>



Ms. Michelle Evans showing the photos she collected for the STS-1 launch (and other related photos), in the opening speech.



The panelists taking turns sharing thoughts and excitement about STS-1 and the Space Shuttle Program, also pointing out some of the related details in the Outward Odyssey series Human Spaceflight books.

Can a US war with China be limited?

Any US-China conflict including over Taiwan would quickly put the nuclear option on the table

(This article was on the top page of [AsiaTimes.com](https://asiatimes.com) on 13 April, 2021)

by Dr. Stephen Bryen, Former Deputy Under Secretary of Defense, 13 April, 2021 (with Permission)

<https://asiatimes.com/2021/04/can-a-us-war-with-china-be-limited/>



Speculation is rising about a possible US-China war. Image: Facebook

There is growing global speculation that the possibility is rising for a US war with China [with the focus on Taiwan](#).

Whether it is Taiwan or a clash elsewhere, for example in the [Miyako Strait](#) or the [South China Sea](#), the question arises whether such a kinetic conflict would be limited, or would end up in a general war.

The Great Powers — namely the US, Russia (before USSR) and China — have generally tried to avoid direct conflict with each other.

In the Korean War, for example, the Yalu River was the US no-go line to avoid a head-on fight with China.

Even after [China sent “volunteers” into Korea](#), the US held back on any direct battle in China’s territory, although some military leaders, [General Douglas MacArthur](#) among them, wanted to use atomic weapons on China — 34 of them to be exact.

In the Vietnam war, the US directly avoided provoking China. In the 1973 Arab-Israel (Yom Kippur) war, the US supported Israel but stayed away from direct armed involvement so as not to get into a hot war with the Soviet Union.

In October 1973, during the Yom Kippur War, I was in the Soviet Union. Then, the possibility of a US-Soviet war was looming.

Washington had declared [DEFCON 3](#) in response to what the CIA believed was a Soviet decision to move nuclear weapons to Egypt. Whether that was true or not

remains unknown, but what was known was the tension between the Soviets and the US was escalating.

Soviet troops were massing in the south of Russia and Washington believed they might be sent to Egypt. In Kiev, when our plane landed there, we were hustled onto the tarmac to watch a military demonstration. The situation could have gone out of control.

On October 24, 1962, in response to [nuclear intermediate range ballistic missiles sent to Cuba by the USSR](#), which had become operational, the US declared DEFCON 2 for the Strategic Air Command and DEFCON 3 for US armed forces.



A B-52 Stratofortress arrives at Andersen Air Force Base, Guam, in support of a Bomber Task Force deployment on January. 26, 2020. Photo: US Air Force/1st Lt. Denise C. Guiao-Corpuz

Negotiations between then-president John Kennedy and Soviet chairman Nikita Khrushchev were able to defuse the crisis, and the missiles were dismantled and removed.

The US had quarantined Cuba, searched ships carrying missile parts and equipment, and mobilized its strategic forces.

DEFCON means Defense Readiness Condition. DEFCON has 5 levels of readiness, with DEFCON 1 the highest. DEFCON 1 means that nuclear war is imminent or has already started.

DEFCON 2 indicates that US armed forces are ready to deploy and engage in less than six hours. DEFCON 3 means the US Air Force is ready to deploy within 15 minutes. [\(Continued on Page 24\)](#)

Raymer's Rules for New Grads

(Continued from Page 1) Copyright © 2021 by Daniel P. Raymer. All Rights Reserved. Used by Permission of Author.

2. Be Technically Excellent!

Yes, some people get ahead armed only with a nice suit, a good briefing style, and a lot of politics. Luckily, they are few in number and their careers are (usually) limited. To break out of the pack in a technical organization, it is critical that you be known as one of the best engineers. Always do superior work. Get that graduate degree soon. Sign up for short courses in your technical area and in other areas for broadening. Respectfully pick the brains of the experienced engineers. Not only will you learn, but they will think that you are a sharp young engineer for recognizing their expertise.

As you start to become really good technically, you should let others know. Write technical papers and submit them for presentation at meetings. It is amazing how many times a technical session at an AIAA meeting gets just one or two abstracts in response to the announcement in the Aerospace America bulletin. While in school, present a paper at an AIAA Regional Student Conference. Try to write something for the company paper. Give talks to the local or company AIAA branch and to local schools.

Also, do not be afraid to express a technical opinion in conversations and meetings at work when you are certain that you know what you are talking about. Do not always try to dominate every meeting, but do not be a wallflower either.

3. Excel During Proposals!



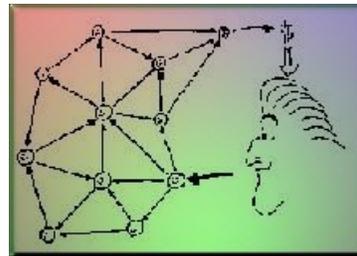
Willy Sutton was once asked, "Why do you rob banks?" He replied, "Because that's where the money is!" Proposals are "where the money is" for any technical company, and you should become known as a young engineer who can help to win the proposal and get that money! Proposal time is the very best time to impress the bosses, and you should plan to work your hardest and longest when you are permitted to join a proposal team.

The ability to write clear and concise text on a technical subject is probably the single most valuable and rare commodity in aerospace. Take writing classes. Write as

often as possible, and seek critical review from someone who writes well. I personally never submit anything, including this article, without finding someone who will constructively hack it apart for me.

When a proposal is approaching the due-date, and it is three o'clock in the morning, I frequently notice something strange. The "oldtimers" (over thirty, like me) are all there, and the young engineers have left. Their usual excuse is that "nobody told me what to do next" so they went home. If you want to impress the bosses, be the last person to leave while a proposal is under way and always ask for more work and responsibility. "I'm done, what can I do next?" is wonderful music to an overworked proposal manager, and a great addition to your growing reputation.

4. Network!



The Yuppies are right. You will get ahead faster if important people outside the company know who you are. Sad to say, but it is very common for a good engineer to languish in a job until an outside

company offers a much higher position, at which point the current company suddenly offers the same promotion. It happened to me (I left anyway!). These outside offers come only if important people know you.

The American Institute of Aeronautics and Astronautics (AIAA) is probably the best networking avenue for aerospace engineers (SAE is good too, but AIAA is fully-focused on aerospace). Attend conferences. Better yet, volunteer to help organize the conference. Work with your local AIAA section, and volunteer to work on one of their standing committees. Once you have proven yourself, run for a local section office.

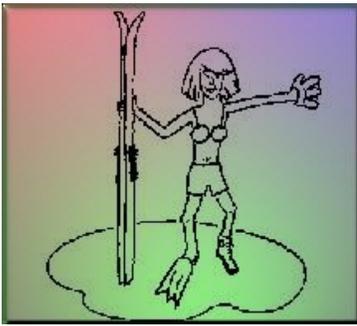
Another networking avenue offered by AIAA is membership on a National Technical Committee. While it is difficult for a young engineer to be invited to join one of these committees, it is not impossible! You will meet and work with the key people in your technical area, and have many opportunities to prove your talents.

(Continued on the Next Page)

Raymer's Rules for New Grads

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5. Socialize with Your Peers!



Some young engineers seem to have the idea that, to be truly professional, one should always remain businesslike with co-workers. Others have a full social circle outside of work, or some other personal situation which prevents socialization with

people from the office.

However, an engineering organization is a social grouping as well as a structure for accomplishing technical tasks. Engineers are people, and will be far happier working with people they feel they know than with some unsmiling automaton whom they only see at work (and therefore in stressful situations!). Also, as you get ahead you will encounter much less resentment if people know you from the softball team, or the ski club, or some other outside socializing.

Along the same lines, try to be nice! I know this sounds silly, but your career is over if you are labeled as a "great engineer, but one nobody wants to work with". Smile, say hello, and take a few seconds for social pleasantries before leaping into a discussion of the current panic!

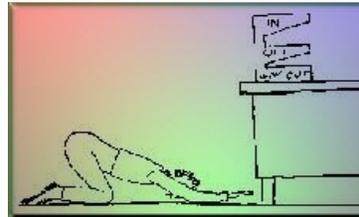
6. Temper Your Ambition!

You are the hottest graduate from the hottest school, and you are ready to take over something really important, right now! Kelly Johnson did it, why not you?

Because things have changed a bit since the 1930s. Aerospace is a mature business, and aerospace organizations are bureaucracies. The bosses' careers depend almost as much on not doing anything wrong as they do on doing things right. If they trust you with something really big, and you screw up, they will look worse than if they had appointed a seasoned veteran who had made the same screw up!

Also, your effectiveness as a rising aerospace leader depends as much on your ability to get quality work out of other people as it does on your own output. If you are perceived as a person who only cares about the immediate promotion and who wants to be the boss all the time, others will resent you and will work poorly for you. So be aggressive, but not excessively or overtly (easy to say, but for many of us, hard to do!).

7. Cultivate the Secretaries!



Some young engineers develop an unfortunate and even dangerous attitude about secretaries, treating them as typing/copying servants. After all, engineers have one or

more college degrees and are the lifeblood of the company, whereas a secretary....

A secretary is the boss's closest co-worker, and is usually a personal friend. A good secretary adds about 20 to 50 percent to the boss' productivity (or more!), and is far more important to the boss than any new-hire engineer. A really good secretary would have no trouble destroying a new engineer's career! Even a "department" secretary (i.e., one who does not work directly for the boss) is used as a source of information about which of the new engineers have the most promise.

Furthermore, a secretary can make you look good by improving your writing, by offering hints as to what the boss really wants, and by moving your typing or other jobs up on the priority list. Treat the secretaries as equals who perform a job different from yours, but important just the same. Be friendly (but not too friendly, if you want to stay out of really big trouble!).

(2007 update: Times change. Secretaries no longer do the typing for engineers - now we have to do it ourselves. Everything else still applies, so I still sayCultivate the Secretaries!)

(Continued on the Next Page)

Raymer's Rules for New Grads

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8. Become a Great Briefer!



If proposals are "where the money is", then briefings are "where the reputation is". Skill at giving a clear and enjoyable briefing is an absolute requirement for advancement in a technical organization. The only way to get this skill is practice. Give talks at every opportunity. Perhaps take a class in speaking or acting. **Toastmasters** is a fine organization for perfecting speaking skills.

Also, ask the good briefers in the company for help when you have a briefing to give. You will learn that a great briefing results from great preparation and organization as much as it does from the "gift of gab".

<---- Raymer's first AIAA presentation - love the Sonny Bono hair and John Travolta white suit!

9. Look the Part!



Again, the Yuppies are right. You will be entrusted with more responsibility, and given promotions sooner, if you look like a trustworthy, competent person in the eyes of your company's customers. In our culture that usually means a suit and a "normal" haircut/style. The "correct" **dress** varies from company to company, and even from department to department (people in the computer department can wear anything!). Don't "put on airs", obviously overdressing to curry favor, but look like you would fit in just fine at the next level up. A good rule of thumb is to dress approximately half-way between what your boss wears and what your average co-worker wears.

10. Always Be Totally Professional!

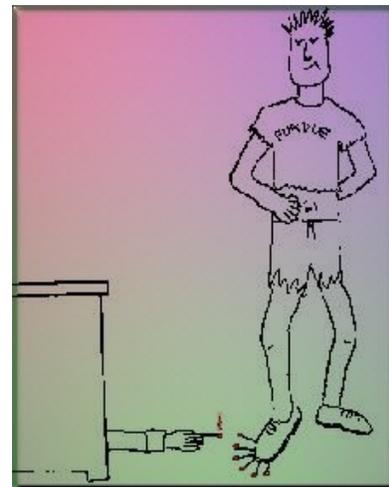
You are being paid to work. Period. Always look like you are working, even if there is really nothing to do. Do not read Spiderman while waiting for the computer to respond. Also, no horse-play, foul language, practical

jokes, or other foolishness on company time. If you are not sure what is acceptable, imagine that your boss and your company's most important customer are watching.

Do not ever, ever do anything that could be construed as sexual harassment. No off-color jokes, come-ons, or even excessive compliments concerning looks or dress.

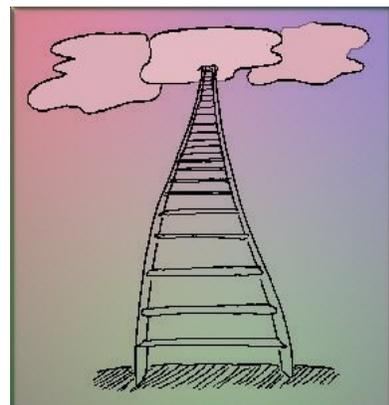
Also, avoid office romances. The concern by management is that productivity will suffer, especially when office romances end. Most importantly, avoid office romances with the boss or the boss's secretary!

(What about cultural differences? [Click here.](#))



Well, those are "Raymer's Rules." Hopefully they will help you get ahead. If they help so much that I wind up working for you someday, I want a raise. A big one!

(If you are not yet a graduate but are aiming for a career in aircraft design, read Raymer's Rules for Would-Be Aircraft Designers.)



President Biden Should Push for the Human Exploration of Mars

(Continued from Page 2)

The Perseverance landing system can deliver one ton to the surface of Mars. To get started with human exploration, we need a 10-ton class lander. There are a number of ways to create such a system. For example, we could use aeroshells, parachutes and landing jets, or perhaps a miniature version of Starship. I won't go into the details. But the bottom line is if we can land one ton on Mars, we can land 10. It requires no scientific breakthroughs, just engineering.

Once we have a 10-ton lander, we can use it send large robotic expeditions to Mars. Instead of landing one rover, we land a platoon of robots. These could include science explorers like Perseverance, and much bigger versions of the Ingenuity helicopter capable of broad-ranging reconnaissance. A team of smaller rovers armed with high resolution cameras could create a high-definition map of the area and transmit it to Earth, allowing millions of people here to walk the landscape with virtual-reality gear, directly assisting the robots in exploration by calling their attention to features of interest.

But the expedition would also include construction robots, possibly humanoid in form with arms and legs, capable of building a Mars base. These would set up a power system and put in operation units for converting Martian carbon dioxide and water ice into methane and oxygen rocket propellant, which would be stored in tanks. With such a base set up and fully equipped with housing, power, a lab, a workshop and supplies in

advance, all astronauts will need to do is show up with a credit card, and check in. Everything they need to live and work on Mars, and return from Mars, will be there waiting for them.

There is nothing in this plan that is beyond our capability, either technically or financially. Joe Biden could take the key step that would allow America to once again to astonish the world with what free people can do. The COVID-19 pandemic has shown the importance of science to our lives. Science comes from scientists, who come from children who want to become scientists. Youth loves adventure. As during the Apollo days, a bold space program would make science the great adventure, inspiring millions of young people to want to become scientists, engineers, inventors, medical researchers and technological entrepreneurs—the ultimate resource we will need to meet whatever challenges the future may bring.

Seize the moment, Joe.

ABOUT THE AUTHOR

Robert Zubrin

Robert Zubrin, an aerospace engineer, is the founder of the Mars Society and the president of Pioneer Astronautics. He is the author of *The Case for Mars: The Plan to Settle the Red Planet and Why We Must*, published by Simon and Schuster. Twitter: @robert_zubrin.

New book misfires on missing Malaysian plane mystery

(Continued from Page 4)

The E-3s were built to provide long-range radar surveillance and identification of threats and to direct friendly fighter aircraft to go after the threats in a war scenario. Typically, the E-3's orbit outside of missile range and enemy aircraft, often hundreds of miles away from the targeted area.

Built on a modified Boeing 707 platform, the last E-3 was manufactured in 1992. However, since then the radars and computers of the E-3 have been improved, GPS has been added, and a number of additions such as Link 16 have also been integrated into the aircraft. The E-3A does not carry any armament.

If a Malaysian airliner was approached by a US fighter jet and told to follow and land at a different location, it is unlikely the pilot would resist such an order. While US-Malaysian relations were none too good in 2014 (since improved), a US fighter jet is a formidable machine.

A hoax or a decoy

The airline pilot would have to respect any order coming from a lethal fighter jet. The notion promoted by de Changy that the airliner pilot bravely flew on and resisted US fighter planes – if that is what she thinks was there – does not make sense. Nor does her argument that it was the AWACs planes that jammed MH-370's radios.

De Changy wants us to believe that the search for MH-370 was a sort of hoax or decoy to cover up the real crash of the MH-370 in the Gulf of Thailand or thereabouts. The alleged reason for the cover-up was that MH-370 was carrying cargo (Motorola electronics) to Beijing that was very sensitive and may have been stolen.

The US wanted to stop the aircraft from getting to its destination and tried to get the pilot to divert. When he refused, the plane was allegedly shot down (somehow). In short, the operation was allegedly bungled, but for various reasons, a number of countries, including China, were willing to conspire with the US to cover up the incident.



Men watch Malaysia Airlines aircraft at Kuala Lumpur International Airport, March 2, 2016. Photo: Agencies

That does not mean that everything in the book is wrong. But the author became so convinced she was being given the runaround and that witnesses were being intimidated, that she seems to have concluded that something else was behind the loss of MH-370. Yet for all the immense detailed research that went into de Changy's research effort, there were some glaring oversights.

For example, despite the numerous references to Motorola electronics in the cargo, the author did not ask Motorola for a detailed accounting of what was shipped by them. Instead, the author complains that Malaysian Airlines was not forthcoming about anything and was deliberately misleading the press and the families of the missing passengers.

The author rightly points out there was other cargo put on board MH-370 that surely was not what the paperwork said it was, namely mangosteens. But as de Changy also noted, smuggling stuff to China was a big business and dodgy paperwork was part of the system.

Iranians and Uighurs

Similarly, the two most important clues – two Iranians flying under false passports, and at least one alleged Uighur, did not get any attention in her narrative.

(Continued on the Next Page)

New book misfires on missing Malaysian plane mystery

(Continued from the Previous Page)

A Uighur group called the East Turkestan Independence Movement actually did take responsibility for what happened to MH-370, and claimed it was carried out by a 35-year-old Uighur man. Malaysia's Harian Metro paper claimed the man had taken flight-simulator training in Sweden in 2005.

One would think this is a powerful claim that should have been pursued. The second clue involves the Iranians.

It is well known there were ISIS and al-Qaeda terrorist cells operating in Malaysia. There also were Shia terrorists operating in Malaysia, which may explain why Massoud Sedaghtzadeh had fled Thailand and arrived in Kuala Lumpur on February 15, 2011, where he was arrested. There were also a number of other radical Islamist terrorists under arrest there.



ISIS has spread its wings far and wide. Photo: AFP/Mohamad Maruf/Sputnik

For the record, ISIS and al-Qaeda are Sunni Muslim radical organizations, but today we have evidence that Iran was working with these groups in order to cause trouble for "the Great Satan," namely the United States. Their cooperation and overlap in operations in Malaysia or Thailand or elsewhere is, therefore, quite possible, especially if backed by the Iranian regime.

As I wrote at the time, "Massoud was part of an Iranian team who tried to kill Israeli diplomats in Bangkok." Two of the team, one whose legs were blown off in a related "work accident," were arrested. Two others, one man and one woman, escaped, as did Massoud.

Terrorist scenario

At the time of the disappearance of MH-370 in 2014, Massoud was under arrest in Malaysia and was appealing his extradition to Thailand.

One possible theory is that the "capture" of MH-370 by a colleague of Massoud would have created a potential for a trade whereby the passengers on the plane would be released in exchange for Massoud and perhaps the two others under arrest in Bangkok. (Two additional terrorists, one the alleged

bomb-maker, Norouzi Shayan Ali Akbar, and the other, a woman named Leila Rohani, are believed to have escaped and returned to Tehran.)

One of the possible reasons why Ms de Changy found the Malaysian government not forthcoming and, perhaps deceptive, could be related to a terrorist scenario. If the Malaysian government was contacted and urged to make a deal to get their passengers back, they may have tried to do so, only to find out later that the terrorists did not have the passengers in their control and that the plane was lost.

As I wrote at the time: "No government ever wants to admit it was duped, especially a government that was already in a lot of political trouble at home."



Then Australian Prime Minister Tony Abbott (6/R) with leaders of international military operations based in Australia searching for missing Malaysia Airlines flight MH370, in front of a Royal Australian Air Force P-3C Orion search aircraft. Photo: AFP/Jason Ree

Where the plane actually ended up remains unknown and its flight path as understood by some Inmarsat calculations could be way off the mark. The report that MH-370 was seen on fire and another that the pilot may have reported that the plane was about to break up, should not be dismissed and represents useful research by de Changy.

The author does a good job in clearing the pilot of the plane, who some suspected may have been either intending to divert the plane to some unknown final destination or who was on some kind of suicide mission. There isn't a shred of evidence these allegations were ever true and de Changy proves that with her interviews with the pilot's family, colleagues and friends.

It is popular these days to accuse the US government of being a sinister puppet master, even getting top Chinese leaders to go along with a cover-up that killed many of their citizens. This is a case where there is no evidence to support such a thesis.

MH-370 remains lost and The Disappearing Act does not solve the mystery.

Rovers and Landers and Space Tech, oh my!

(Continued from Page 6)

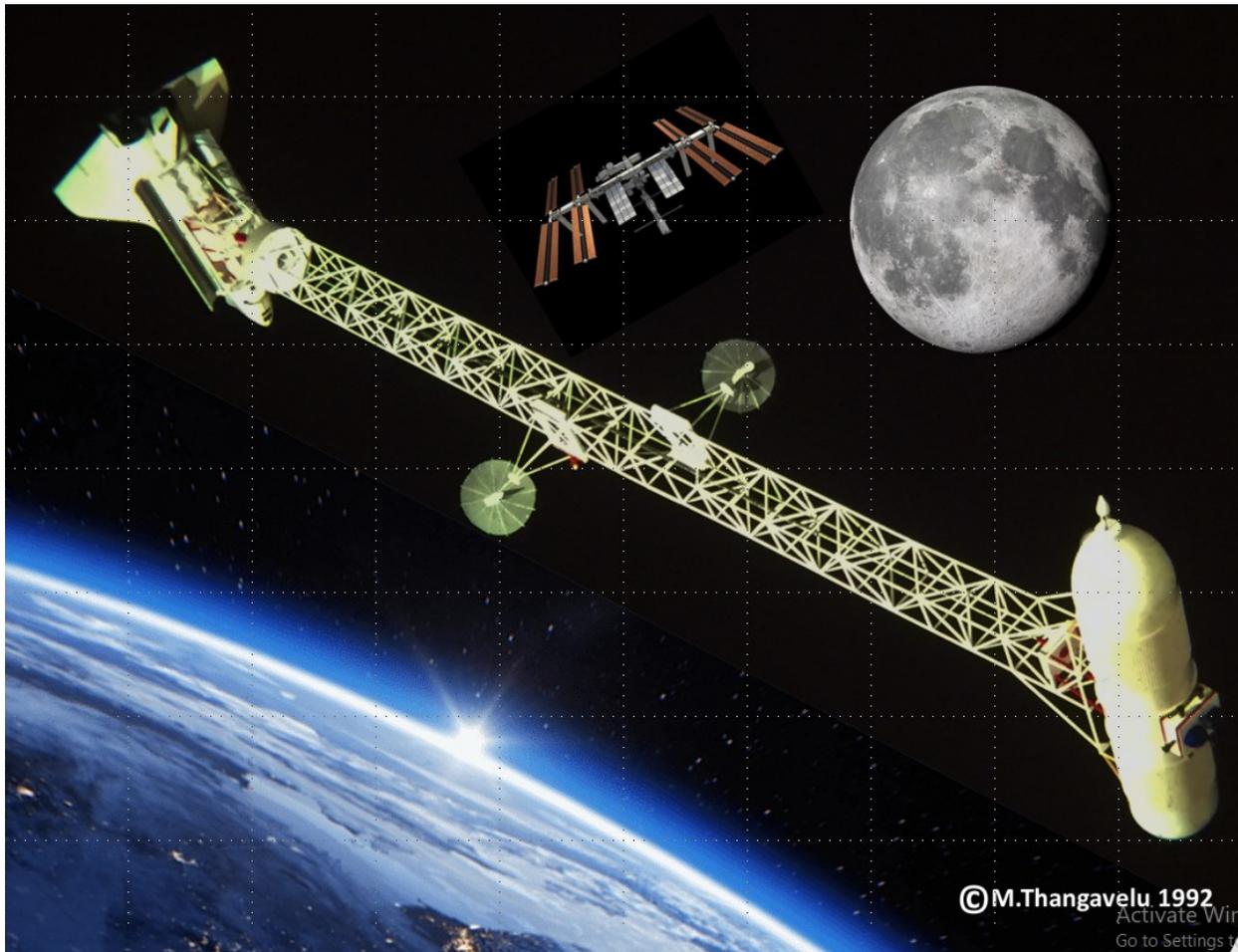
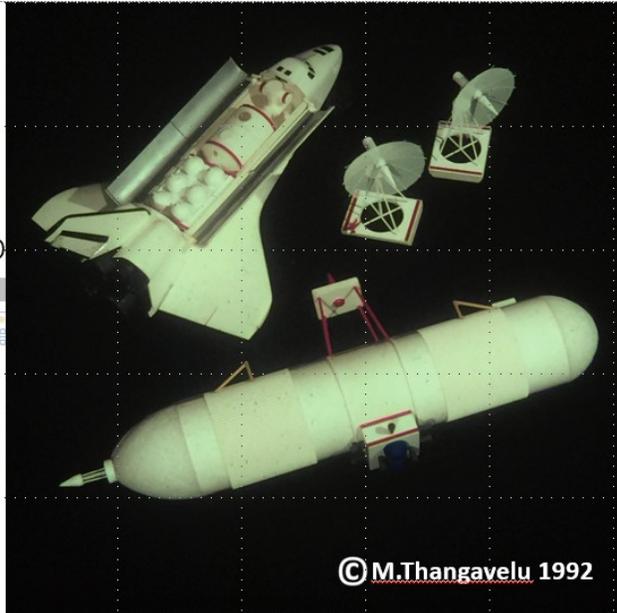
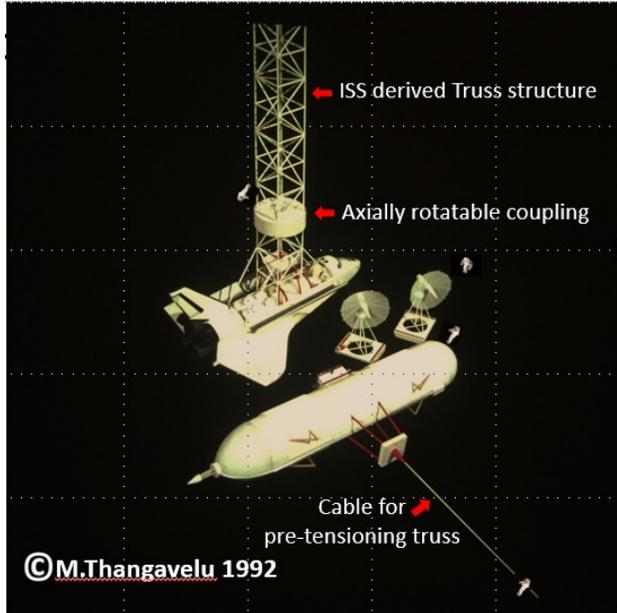


WHO DO YOU LOVE TO THE MOON AND BACK?

DHL asked the world to take selfies with their loved ones and are sending them on a moon capsule to the Moon!
Payloads and precious memories are going to outer space aboard Astrobotic's Peregrine Mission One.

The 3rd AIAA LA-LV Space Architecture Gathering (27 March, 2021)

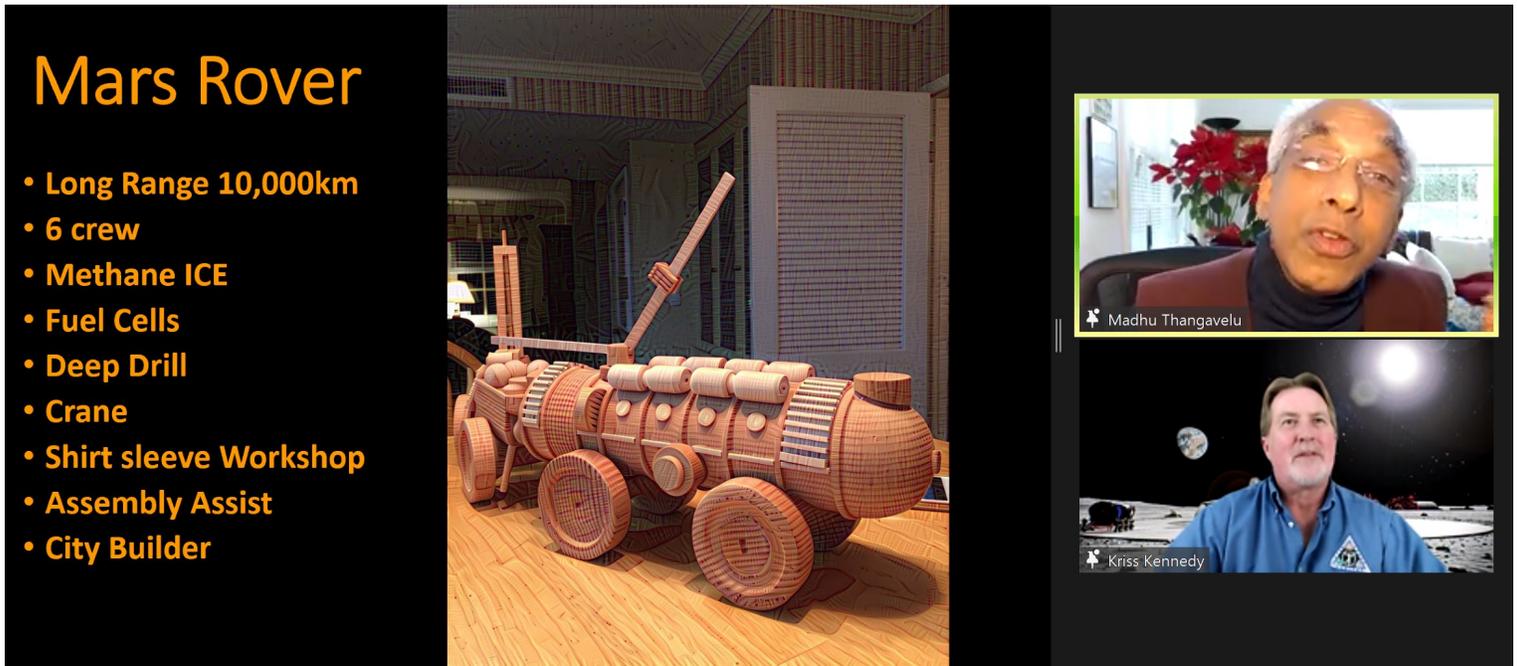
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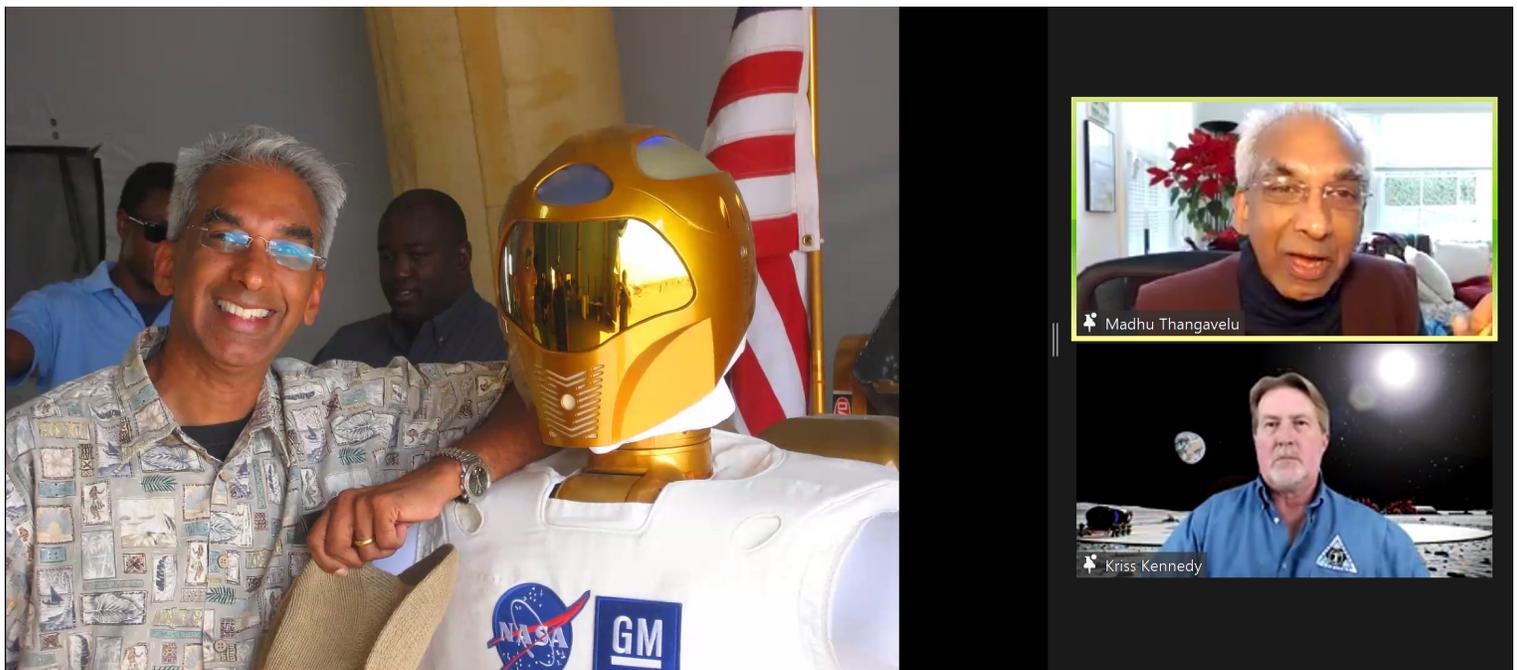
The STS Extended Duration Orbiter with ESA Spacelab and the External Tank are integrated close to the International Space Station. A pre-tensioned truss structure with an axially rotatable coupling and communications platform were proposed as part of this Variable Gravity Simulation Mission (STS-VGSIM) before the STS retirement. (M. Thangavelu) (Continued on the Next Page)

The 3rd AIAA LA-LV Space Architecture Gathering (27 March, 2021)

(Screenshots only) (Continued from the Previous Page)



Prof. Madhu Thangavelu with the rough study model of his Mars Long Range Rover, which has been following him at various events, such as the AIAA LA-LV's events on Space Tourism, and the 2018 Sci-Tech vs Sci-Fi. He presented his idea for a one-week trip to Mars and back using hybrid Nuclear Propulsion at the AAMars2021 Symposium hosted by the Architecture Association School of Architecture.



Prof. Madhu Thangavelu and Robonaut at NASA's Desert Research and Technology Studies (D-RATS) Deep Space Habitat (DSH) Working Group event a few years ago. Several speakers in the AIAA LA/LV Space Architecture gatherings were on site. Dr. Scott Howe of JPL, winner of the AIAA SATC Gordon Woodcock Memorial Space Architecture award, and Prof. Kriss Kennedy (JSC & SICA) were the DSH architects and among the D-RATS hosts at the Black Lava Flow in N. Arizona.

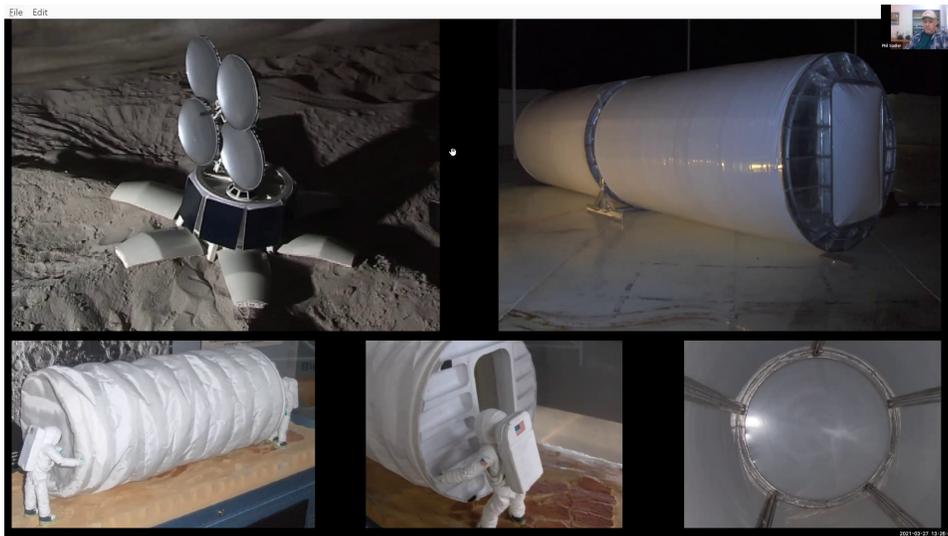
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The 3rd AIAA LA-LV Space Architecture Gathering (27 March, 2021)

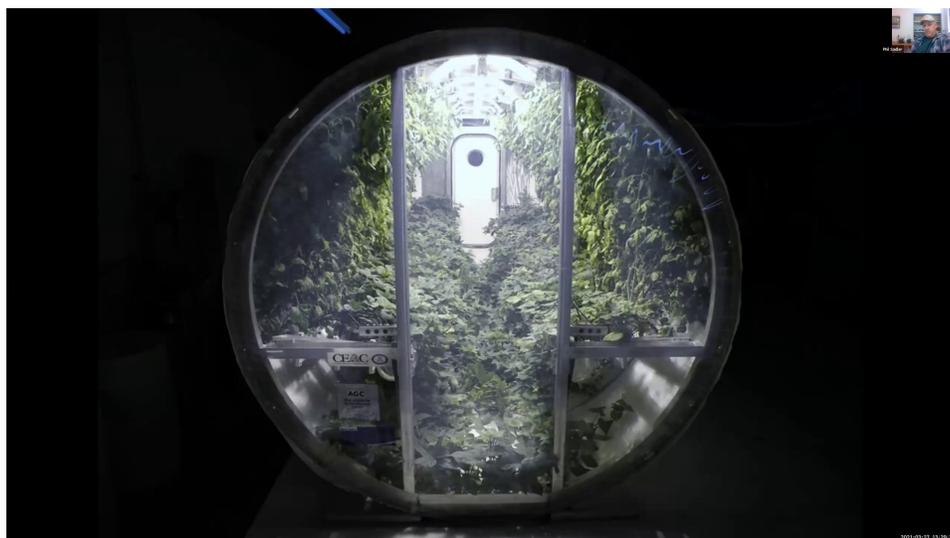
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Mr. Philip Sadler ([CEO of Sadler Machine Co](http://www.sadlermachine.com)) talking about the food support / agriculture greenhouse project he designed and made for the US NSF's Amundsen-Scott South Pole Station, as an example for sustaining life in space / on planetary bodies.



Based on JSC's HDU (Habitat Demonstration Unit), Mr. Sadler designed greenhouses based on inflatable structures.



The LMGHs (Lunar/Mars GreenHouses) Mr. Sadler designed / demonstrated: functional and stylish!

Can a US war with China be limited?

(Continued from Page 13)

A DEFCON alert anticipates some kind of nuclear threat. While a fight over Taiwan, for example, might not involve an immediate nuclear threat, the US would have to watch China and Russia's behavior very intently because China has built up a huge nuclear missile force focused on Taiwan and Japan.

If China threatened to use nuclear weapons, for example against US bases in Japan's Okinawa or Guam, the US would almost certainly declare a DEFCON alert.

If China could not achieve an immediate victory, for example in a direct invasion of Taiwan, or found itself challenged not only by Taiwan's military forces but also by US intervention in support of Taiwan, would China start to think about using nuclear weapons?

Even more to the point, how could anyone tell if China was readying nuclear forces for attack?



Military vehicles carrying YJ-18 anti-ship and land-attack cruise missiles drive past Tiananmen Square during the military parade to celebrate the 70th anniversary of the founding of the People's Republic of China, in Beijing, China. Photo: Anna Ratkoglo / Sputnik via AFP

China's intermediate-range ballistic missiles can be equipped with conventional warheads or with nuclear ones. Of course, China might choose to make it clear it was readying nuclear weapons as a means of deterring US intervention. Any such declaration would trigger a DEFCON alert.

Worse still, China [has not entered into any arms control agreements](#) with the US. There are no understandings of how to control any escalation, meaning there are no hotlines and no other agreed means to avoid any armed conflict, including nuclear.

Under current circumstances, China is a wild card player that could do almost anything. Its growing power and

apparent confidence in its military presage a period of growing regional instability and threat.

The US also would have to worry about Russia, especially with eastern [Ukraine reaching a boiling point](#). As such, President [Biden's assurances to Ukraine](#) could not have come at a worse time.

The US has approached the China puzzle by acting as if it wants to contain China's rising power. [Containment is always tricky](#).

In the European theater, NATO is part of the Western approach to [containing the Soviet Union](#), now Russia, but the real stick in the closet is the nuclear capability of the US, [UK](#) and [France](#).

In East Asia, there is no NATO and there are no nuclear weapons other than America's and China's. [Japan is a nuclear capable nation](#), but if it has nuclear weapons it hasn't told anyone.

Japan has a vast supply of plutonium and has developed a ballistic missile capability, [but is far from actually deploying nuclear weapons](#) on its few space launch platforms.



Image from a flight test conducted by the US and Japan which resulted in the first intercept of a ballistic missile target using the Standard Missile-3 (SM-3) Block IIA. Photo: US Navy via AFP / Leah Garton

China cannot be assured that it can attack Taiwan at will without US intervention. Any American administration that declared, openly or secretly, it would stay out of any Chinese attack on Taiwan, would face a huge public outcry, bipartisan Congressional anger and perhaps even an attempt to impeach the president.

(Continued on the Next Page)

Can a US war with China be limited?

(Continued from the Previous Page)

As the Biden administration has openly declared it will oppose China (although vague on details), the more likely steps will be the movement of US forces and some support for Taiwan initially, perhaps delivering military and humanitarian supplies similar to what the US did in the October 1973 Yom Kippur war.

How willing the US would be to do more militarily cannot be determined. What it is certain is that any unfolding conflict over Taiwan will require the US to activate all its forces in the region. All US bases would go on alert.

The US would have to move nuclear aircraft carriers and [AEGIS missile defense](#) Arleigh Burke-class destroyers and Ticonderoga class cruisers into battle positions, as would Japan and Korea.

US nuclear submarines, both attack and ballistic missile types, would need to go on urgent alert. Pilots and ground crews for US Jets such as the F-35, F-15, F-16 and specialized aircraft including AWACS would need to be called to base. Aircraft would need to be in the air constantly to respond to any attack on any US airbase.

The US almost certainly would move B-52s and B-1 strategic bombers to Guam and keep them in the air during any crisis. US Marines might start to prepare operations to go to Taiwan's aid.

Even if ultimately the US decides not to commit US forces, these and many similar steps would need to be taken almost immediately if there is an attack on Taiwan or US intelligence detects an imminent strike by China.



Taiwanese sailors salute the island's flag on the deck of the Panshih supply ship after taking part in annual drills at the Tsoying naval base in Kaohsiung, Taiwan, 2018. Photo: AFP / Mandy Cheng

It is easy to see that limiting a war started by China will be very difficult. Despite what many analysts think, the US has formidable firepower available and the skill to use it.

China has to plan on a general war with the US. The fact that a war could lead to a nuclear conflict cannot be dismissed. China's leaders thus need to consider how far they want to go down a road that could lead to a great war and a massive tragedy for China and the world.

Photo Gallery: Ms. Michelle Evans (AIAA Distinguished Lecturer)

<https://www.aiaa-lalv.org/september-28-2020-aiaa-member-spotlight-on-michelle-evan/>



A hummingbird egg in a new nest in the author's backyard.



A hummingbird spotted near the nest.

(Continued on the Next Page)

Photo Gallery: Ms. Michelle Evans (AIAA Distinguished Lecturer)

(Continued from the Previous Page)



A nice photo on a mother hummingbird showing off the iridescence under her chin. (11 April, 2021)

(Continued on the Next Page)

Photo Gallery: Ms. Michelle Evans (AIAA Distinguished Lecturer)

(Continued from the Previous Page)

The mother hummingbird laid the second egg a few days late on 12 April, 2021. The photographer was very patient.

The mother hummingbird hatching the eggs in her nest on 12 April, 2021.

The photographer's cat also wanted to see what's in the trees.



Newly added online Gallery: James Vaughan

<https://www.aiaa-lalv.org/gallery/gallery-aerospace-art/gallery-mr-james-vaughan/>

<https://www.aiaa-lalv.org/gallery> ; <https://www.aiaa-lalv.org/gallery/gallery-aerospace-art>



Asgardia – little girl at window – paint – alt-scaled



Oppourtunity – last day on Mars



Mars – Einstein and Clarke A-scaled



Shuttle – Sled Launch – Northrop Grumman



SOFIA – paint-scaled



SST – landing approach- below

RSVP and Information: <https://conta.cc/3flPYrx>

Thursday, April 15, 2021, 9 AM PDT (GMT-0700) ([Add to Calendar](#))

AIAA LA-LV Special: Practical Quantum Computing with D-Wave

Dr. Victoria Horan Goliber

Senior Technical Analyst
D-Wave Systems



Dr. Victoria Horan Goliber, Senior Technical Analyst, joined the sales team at D-Wave Systems in 2018. In her current role, Dr. Goliber works with teams around the world to bring quantum annealing to a variety of groups through seminars, workshops, and conferences. She received her Ph.D. in discrete mathematics from Arizona State University in 2012 through the U.S. Department of Defense Science, Mathematics, and Research for Transformation (SMART) Scholarship Program, and more recently completed a MS degree in computer science with a specialization in machine learning through Georgia Tech University. Her doctoral research bridged both mathematics and computer science with a focus on de Bruijn sequences and Gray codes for combinatorial objects. After graduating, Dr. Goliber worked as a Senior Mathematician with the U.S. Air Force Research Laboratory's Information Directorate, along with a special assignment as the Executive Officer to the Director. In early 2018, she joined D-Wave Systems as a Research Scientist and continues to support the sales team through customer interaction and training.

Quantum computing has moved from the research lab to the enterprise. Hear from our expert speaker to learn about quantum computers, the kinds of applications that are best suited to today's technology, and an overview of the programming model and tools available for D-Wave's quantum computer.

About D-Wave Systems Inc.: D-Wave is the leader in the development and delivery of quantum computing systems, software and services and is the world's first commercial supplier of quantum computers. Our mission is to unlock the power of quantum computing for the world. We do this by delivering customer value with practical quantum applications for problems as diverse as logistics, artificial intelligence, materials sciences, drug discovery, cybersecurity, fault detection, and financial modeling. D-Wave's systems are being used by some of the world's most advanced organizations, including NEC, Volkswagen, DENSO, Lockheed Martin, USC, and Los Alamos National Laboratory. With headquarters near Vancouver, Canada, D-Wave's US operations are based in Palo Alto, CA and Bellevue, WA. D-Wave has a blue-chip investor base including PSP Investments, Goldman Sachs, BDC Capital, NEC Corp., and In-Q-Tel. For more information, visit: www.dwavesys.com.

Questions about Events/Program: events.aiaalalv@gmail.com

Disclaimer: The views of the speakers do not represent the view of AIAA or the AIAA Los Angeles-Las Vegas Section.

RSVP and Information: <https://conta.cc/31DadbN>

Saturday, April 17, 2021, 10 AM PDT (GMT-0700) ([Add to Calendar](#))

AIAA LA-LV New Space mini-Conference 2021

Online on Zoom

Technologies to live on other planets, remote sensing, food, air, water, energy, transportation and communication for NewSpace

Event Speakers & Presentations:

(not in the presentation sequences or in alphabetical order)

**"The Raymer Manned Mars Airplane:
Overview & Design Integration"**

**Daniel P. Raymer, PhD, AIAA Fellow
(Keynote Speaker)**

President, Conceptual Research Corp
with

Mr. Jaspreet Singh
Lead Designer, Tata Motors Ltd (India)

Mr. Aviv Levy
President, Aviv Innovations (Israel)

Mr. Joabe Marcos de Souza
Graduate Student, University of São Paulo (Brazil)
Department of Aeronautical Engineering

"Virgin Orbit and New Space !"

**Mr. Stephen Eisele
(Keynote Speaker, Afternoon Session)
Vice President at Virgin Orbit**

**"Exploring the Jupiter system with Juno and Europa
Clipper"**

Ms. Tracy Drain
Systems Engineer, NASA's Jet Propulsion Laboratory

"EnCorps and STEM Teachers Program"

Ms. Tanja Schroeder
Southern California Recruitment Coordinator for EnCorps STEM Teachers
Program

**"Young professionals are a vital part of the space
industry"**

Ms. Nicole Chase
Anatomic Pathology Data Analyst for The Mayo Clinic,
Director of Projects of SEDS-USA,
an Emergency Room medical scribe

**"Rovers and Landers and Space Tech, oh my!"
with a possible virtual site tour**

Mr. Daniel Gillies
Mission Director, Astrobotic

"Moon 2030: Unlocking the lunar ecosystem"

Ms. Eva Pettinato
Guidance, Navigation, and Control Lead for Masten's XL-1 Lunar Lander
Masten Space Systems

**"The History of Space Nuclear Power with an Eye to the
Future"**

Mr. Steven P. Curtis, MHP
Former President, Health Physics Society & American Nuclear Society
Nuclear technical team leader for Nuclear Emergency Support Team
(NEST) and Radiological Consequence Management Teams associated with
the Federal Radiological Management and Assessment (FRMAC)

**"Artificial Intelligence in Space Systems and Systems of
Systems"**

Mr. Brendan L. Rosseau and Mr. Parker Saussy
Booz Allen Hamilton

**"Mars Flight VR, a virtual reality simulation of the
Ingenuity helicopter on Mars"**

**"How can VR & gaming technology help in Aeronautics and
Astronautics?"**

Mr. Conor O'Kane
Director, Io Normal
Games | Simulation | VR

**"Green Propellants for future space exploration"
(Student Presentation)**

Mr. Bhushan Thombare
BTech Student in Aerospace Engineering
SRM Institute of Science and Technology
Chennai, India

Questions about Events/Program: events.aiaalav@gmail.com

Disclaimer: The views of the speakers do not represent the views of AIAA or the AIAA Los Angeles-Las Vegas Section.

RSVP and Information: <https://conta.cc/3uGIYuR>

Saturday, April 24, 2021, 10 AM PDT (GMT-0700) (Add to Calendar)

AIAA LA-LV Earth Day Celebration 2021

Online on Zoom

Celebrate Earth Day. Discover the beauty we share.



Event Speakers & Presentations:

(not in the presentation sequences or in alphabetical order)

"The Climate of the 21st Century from Space"

Dr. João Teixeira

Co-Director, Center for Climate Sciences, NASA JPL

"Taking off from your garden: It's possible!"

Mr. Jean-Philippe Régnault

Managing Director at Accenture

"Be Green, Keep flying"

Ms. Christine LIN

Student, Mechanical Engineering Program
University of Technology of Compiègne (UTC)
&

Mr. Chiu-Yüeh BLAISE

Aeronautical Engineer with a double degree from
the University of Compiègne and Cranfield University

(More To Be Announced)

(Speakers' bio : Please see below and the RSVP & Information Page)

Questions about Events/Program: events.aiaalav@gmail.com

Disclaimer: The views of the speakers do not represent the views of AIAA or the AIAA Los Angeles-Las Vegas Section.

RSVP and Information: <https://conta.cc/3fYmMXP>

Saturday, May 1, 2021, 10 AM PDT (GMT-0700) ([Add to Calendar](#))

AIAA LA-LV e-Town Hall Meeting

Ingenuity Mars Helicopter: A New Era of Planetary Robotic Exploration?

(Online on Zoom)



Speaker:

Dr. Jeff H. Delaune

Robotics Technologist
Aerial Mobility
Jet Propulsion Laboratory

Dr. Jeff Delaune is a robotics technologist at the Jet Propulsion Laboratory. He researches and develops autonomous navigation and robotic systems for planetary exploration, with a focus on flying vehicles. Jeff was part of the navigation team for NASA's Ingenuity Mars Helicopter flight project. His interests include state estimation, sensor fusion, perception, computer vision and mission design. Jeff received his Ph.D. in Robotics from Institut Supérieur de l'Aéronautique et de l'Espace (ISAE, France) in 2013, after a M.S. in Astronautics and Space Engineering from Cranfield University (United Kingdom), and a B.S./M.S. in Engineering from Ecole Centrale de Nantes (France).

Questions about Events/Program: events.aiaalalv@gmail.com

Disclaimer: The views of the speakers do not represent the views of AIAA or the AIAA Los Angeles-Las Vegas Section.

RSVP and Information: <https://conta.cc/3a3sUKn>

Thursday, May 6, 2021, 7 PM PDT (GMT-0700) ([Add to Calendar](#))

AIAA Los Angeles-Las Vegas Section

2021 Annual Awards Ceremony

Online on Zoom



Please join us for our annual Awards Ceremony

Thursday, May 6, 2021

Recognizing Excellence in our Chapter

To be presented:

2021 Excellence Award (TBA)

(recognizing recent accomplishments)

The James Wertz Scholarship

STEM Student Awards & Recognition

Recognition of 2021 Chapter Honorees

Questions about Events/Program: events.aiaalalv@gmail.com

Disclaimer: The views of the speakers do not represent the views of AIAA or the AIAA Los Angeles-Las Vegas Section.

RSVP and Information: <https://conta.cc/3g13ZuN>

Saturday, June 12, 2021, 10 AM PDT (GMT-0700) (Add to Calendar)

Aerospace Projects in India: **Recent Developments and Future Plans**

An AIAA LA-LV Zoom webinar



(Left) Light Combat Aircraft (LCA) Tejas developed in India (Tejas-N is the aircraft carrier-based version) (image: Rushabh P Bafna); (Middle) A Polar Satellite Launch Vehicle lifts off from the Satish Dhawan Space Center with the Amazonia 1 satellite and 18 secondary payloads. Credit: ISRO; (Right) Dr. Kailasavadivoo Sivan, Chairman, ISRO (Indian Space Research Organisation)



Speaker:

Prof. Rajkumar S. Pant

Aerospace Engineering Department

Indian Institute of Technology Bombay

Powai, Mumbai, India

Prof. Rajkumar S. Pant has been a member of faculty of Aerospace Engineering Department at the Indian Institute of Technology Bombay since December 1989. He has also worked for five years in Hindustan Aeronautics Limited in the Design & Engineering Department. Prof. Pant is an alumnus of College of Aeronautics, Cranfield University, UK, where he earned his Ph.D. under Commonwealth Scholarship Scheme, and Indian Institute of Technology Madras, where he obtained his Masters in Aeronautical Engineering.

He has published and presented > 245 scientific papers, of which > 180 are in international journals and conferences. He was a visiting faculty for a year each at Nanyang Technological University in 2016, and Virginia Tech in 2010-11. He has also carried out several short-term assignments at several top-ranking institutes and universities all over the world such as Instituto Tecnológico de Aeronáutica, Brazil in 2012, Texas A&M University in 2011, Cambridge University in 2008, and Imperial College London in 2006. In 2102, he was appointed as a Special Visiting Researcher under the Science Without Borders program of the Brazilian Government for a three-year project.

Prof. Pant was honored with the D P Joshi Excellent Teacher Award in 2014, in recognition of his merit, achievements and enthusiasm for teaching and making a lasting impression on students. In 2019, he was felicitated by Institution of Engineers (India) as an Eminent Engineering personality in Aerospace Engineering. Recently, he has received Special Recognition in Academic Excellence (Faculty-National category) award by Institution of Engineers (India).

Questions about Events/Program: events.aiaalav@gmail.com

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