

Testimony before the Senate Committee on Commerce, Science, and
Transportation, Space, Aeronautics, and Related Sciences Subcommittee. Hearing on,
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Thank you for the opportunity to present my views on Reauthorizing the Vision for Space Exploration. This is a topic which I consider important beyond the realm of exploration. The path America follows in human space exploration will, I believe, be read by much of the world as indicative of America’s strategic future. Therefore, I would like to address what I consider the value and importance of U.S. human spaceflight capabilities, the implications and consequences of any gaps in such a capability, and an assessment of NASA’s needs in order to accomplish its given mission as outlined in the Vision for Space Exploration.

As a matter of full disclosure, in my 2007 book *Space As A Strategic Asset* I wrote about the Vision in less than positive terms.

Politically, the 2004 Bush space vision was always a vision bordering on fantasy. Though perhaps well intended, it was effectively doomed from the start. The vision as announced was a very broad-brush outline of intent, describing a return manned mission to the moon, as well as manned missions to Mars and beyond. But the devil is in the details, and those details must be in some way attached to reality. Three major circumstantial realities predetermined the outcome of that new vision. First were the budget issues. The domestic budget has been, and will likely remain, an effective hostage to the war in Iraq, homeland security concerns, and clean-up for Hurricane Katrina – and like events in the future...Second and equally critical, the NASA budget was already consumed by commitments to support existing programs...Third, the public view of the NASA program has consistently been that it is desirable, but expendable. The public supports human exploration, and even recognizes that benefits accrue on Earth, but it prioritizes funding for roads, schools, health care, and near-term

¹ The views expressed are the author’s alone and do not represent the official position of the Department of the Navy, the Department of Defense, or the U.S. government.

benefits over space programs, particularly space exploration.²

Then, and now, I believe the vision did not consider even the basic tenants of successful strategy execution; matching goals, strategy to achieve the goals, and the resources required to carry out the strategy.

Some individuals involved in the development of the Bush space vision have suggested to me the intent was to give NASA a goal and allow them, the experts, to figure out how best to get there. That would be reasonable except that a multitude of dates were included in the speech unveiling the Vision which inherently negated certain incremental, paced, and subsequently less resource intensive strategies and required instead accelerated strategies which leave little room for error and are more resource intensive.

- Our first goal is to complete the International Space Station by 2010
- In 2010, the Space Shuttle...will be retired from service
- Our second goal is to develop and test a new spacecraft, the Crew Exploration Vehicle, by 2008, and to conduct the first manned mission no later than 2014
- Our third goal is to return to the moon by 2020

The shortsighted and unrealistic timetables included in the Vision, including acceptance of a gap in U.S. spaceflight capabilities between the retirement of the Shuttle and the new vehicle becoming operational, created the Rubic's Cube that we are dealing with today.

Announcement of those dates immediately and inherently created a number of dilemmas for NASA, first and foremost, how to keep Shuttle flying to complete the ISS while simultaneously investing every dollar possible in the development of the new vehicle. The gap between Shuttle retirement and the new vehicle becoming operational also raised the question of how to send cargo and crews to the ISS after the Shuttle was retired. There are few options to answer that question. Clearly the U.S. (NASA) will have to pay others to transport goods and people, which then creates a follow-on dilemma of having to pay others for transportation while trying to maximize funds that can be used to develop Ares and Orion as new means of transportation, and as quickly as possible.

Despite the significant execution issues related to the Vision as announced in 2004, in my 2007 book I also wrote:

In the 1960's, leadership was the motivation that took the United States to the moon, as the country wanted to show itself as the winner in a technology-based competition against the Soviet Union. It was a techno-nationalist show of prowess. Today, post-September 11 and, equally or more important, with the ongoing war in Iraq, the United States needs to

² Joan Johnson-Freese, *Space as a Strategic Asset* (New York, New York: Columbia University Press, 2007) 16-17.

again recognize and embrace the leadership opportunity offered by manned space exploration.³

The advocacy of human spaceflight as a key expression of U.S. leadership that I expressed in 2007 is even stronger today. Leadership should not be underrated; it is a commodity as important to security as any tank or gun. It is generated as much through soft power as through military might, and human spaceflight, especially cooperative ventures, is a potent soft power tool. In my new book, I cite a quote from Retired Air Force General Pete Worden, now Director of NASA's Ames' Spaceflight Center. Worden believes that "space cooperation is already serving as 'glue' to forge coalitions and keep people working together. As one of the few truly global media, space capabilities should realize their full potential as the basis for 'soft power' influence. This does not exclude economic competition among cooperating players - indeed shared interests in allowing commercial developments are a foundational element of space soft power."⁴

The United States has, unfortunately, lost its edge on engaging the world. A 2007 public opinion poll conducted as part of the Pew Global Attitudes Project indicated that: "Anti-Americanism is extensive, as it has been for the past five years."⁵ The timing of that tumble from grace could not be worse. As the lone remaining superpower it is critical that if the United States must be seen as a hegemon, it be seen as a benevolent hegemon rather than a rogue hegemon. Unfortunately, the latter image, particularly as evoked by the war in Iraq, has proved hard to shake. Manned spaceflight, especially cooperative programs, has consistently been an effective area for the United States to generate feelings of optimism for the future, goodwill and leadership.

Additionally, when NASA was created in 1958, part of the motivation was to present a peaceful, civilian face for the U.S. space program, juxtaposed to the militaristic face of the Soviet space program. In contrast, in 2008 much of the world considers military space efforts as the focus on U.S. space activities, efforts potentially threatening to them, coupled with a perception that the American manned space effort is being bested by the Chinese. Therefore, we are currently at a critical junction in deciding whether the United States will continue to be considered as the leader in human spaceflight or whether we will deliberately and knowingly abrogate that role to others.

A September 2004 report of a task force of the Defense Science Board, a prestigious board of high-level advisors to the Pentagon, focuses on Strategic Communication.⁶ Strategic communication is a critical part of soft power as it conveys messages of U.S. intent to the world. Let's be clear: if the United States chooses to abrogate its leadership role in human spaceflight, a message will be sent and received that will have strategic consequences for the United States beyond the space realm. It will be viewed as an indicator of an overall U.S. decline in its ability to lead.

³ Johnson-Freese, *Space As A Strategic Asset*, 248.

⁴ Dr. S. Pete Worden, private interview, 30 March 2008. Cited in: Joan Johnson-Freese, *Heavenly Ambitions: Will America Dominate Space?* (Philadelphia, PA: University of Pennsylvania Press) forthcoming 2009.

⁵ Global Unease with Major World Powers, 27 June 2007, www.pewglobal.org

⁶ Report of the Defense Science Board Task Force on Strategic Communications, September 2004, 56. www.acq.osd.mil/dsb/reports/2004-09-Strategic_Communication.pdf

NASA has been caught between a rock and a hard place since 2004. Required to meet unrealistic deadlines with insufficient budgets, it reconceptualized the 2004 Vision in ways unsatisfying to some, but still stretching the bounds of technology development and its own organizational capabilities to the limit. The Constellation Program, using the Ares rocket and carrying the manned Orion spacecraft, still seeks to return a crew to the moon by 2020, or earlier, though even 2020 seems like a long-shot. Orion won't be ready until 2016 if everything goes perfectly in development, which rarely happens. That leaves a minimum 5-6 year gap in U.S. human spaceflight capabilities, during which time the United States will be reliant on other countries, particularly Russia, to reach the ISS. Recent problems with the Russian Soyuz capsule used to transport people back-and-forth to ISS raises concerns about that option as well. Alternatively, there has been discussion about development of a private commercial spacecraft that could taxi cargo and crew to the International Space Station, with the NASA Commercial Orbital Transportation Service (COTS) program seeking to encourage investment in that alternative. That program, however, has not been without difficulties and even a successful venture would likely not be ready to carry cargo for at least two years and crew for at least four.

During this gap period other space faring nations will not sit ideally, waiting for the United States to get its human spaceflight program back on track. A recent meeting of the Russian Security Council focused on the future of Russian space exploration, as part of efforts to reinvigorate the country's technological programs, outlining the developmental possibilities of the national space program until 2020. According to Sergei Ivanov, First Deputy Prime Minister and head of Russia's military-industrial development, all aspects of space activities were considered separately, including "manned space flights, defense security, socio-economic aspects of space activities, scientific and all ground-based related infrastructure, including the forthcoming Vostochny (Eastern) spaceport."⁷

Chinese human spaceflight activities have taken a slow, incremental approach and still managed to create the perception that China is "beating" the U.S. in a new space race. While far from true, what China has that the U.S. does not is top-down political will. It is likely that China will launch more taikonauts into orbit next Fall, toward fulfillment of their official three-part program: launching taikonauts into space, which was accomplished with Shenzhou V and VI; a space laboratory; and eventually a space station. While there are also reports of Chinese intentions to land a man on the moon, there have been no official announced plans in that regard. Essential to Beijing's more ambitious plans is the development of a new heavy-lift launch vehicle, the Launch March 5.

As recently as March 2007, Huang Chunping, chief vehicle designer for Project 921, predicted that China would be able to send taikonauts to the moon within 15 years. Key, however, was that he said success would depend on Beijing providing adequate funding and successful key precursor missions.⁸ There have been other reports as well, including one that garnered considerable publicity. Shortly after NASA announced in 2005 that it would put a man on the moon by 2018,⁹ Chinese space official Ouyang

⁷ The ISCIAP Analyst, Volume XIV, No 12, 24 April 2008.

⁸ Reuters, "Moonshot possible in 15 years," 6 March 2007.

⁹ Guy Gugliotta, "NASA Unveils \$104 Billion Plan To Return to the Moon by 2018 Spacecraft Draws on Apollo, Avoids Shuttle Foam Problem," *Washington Post*, 20 September 2005, A03.

Ziyuan was quoted as saying “China will make a manned moon landing at the proper time, around 2017.”¹⁰ Ouyang Ziyuan is a key figure in the Chinese robotic lunar mission, Chang’e (which has no connection to the manned program). He was either misquoted – a problem prevalent in sorting through Chinese space intentions - simply speaking in terms of desire rather than official intent, or perhaps just goading the United States. Nevertheless, his statement was widely reported in the United States, bolstering the perception of a space race between the United States and China, with China winning. While U.S. technology and capabilities are significantly ahead of China’s in all areas, lack of political will in the United States to support human spaceflight efforts to the level they need to be for milestones to be successfully reached allows for the misperception to be perpetuated.

European space plans are always constrained by resources and ability to find consensus among all its key players. New and worrisome from Europe, however, is their increasingly prevalent concerns, and often suspicions, about U.S. intentions in space. An editorial run in *The Times* (London) after the release of new U.S. National Space Policy (NSP) is illustrative. Entitled “America Wants it All – Life, the Universe, and Everything,”¹¹ it stated that apparently space was no longer the final frontier, but the 51st state of the United States. The editorial went on to say that, “The new National Space Policy that President Bush has signed is comically proprietary in tone about the U.S.’s right to control access to the rest of the solar system.” That same newspaper ran an article entitled “Son of Star Wars takes out toxic satellite with \$30m space attack” after the destruction of US-193 in February 2008. While not challenging U.S. motives explicitly, the article cynically stated the satellite’s destruction had been “broadcast” by President Bush “as a safety measure” and “the Pentagon celebrated its \$30million Star Wars-style interception in space.”¹²

The situation currently being faced is far from ideal. Quite the contrary it is a mess. The United States has spent billions on a space station only to find itself unable to get there after 2010 without paying someone else for a ride, and having a questionable future altogether after 2016. Untenable dates have been set for sometimes competing achievements, without sufficient budgets to accomplish one let alone more. While some might think it is time to pull the plug on the Vision, I would suggest the price of doing so in terms of international prestige, with prestige defined as including leadership implications, is too high. America needs to be seen as a leader into the future, and no venture, no journey, no undertaking represents the future more than human spaceflight.

I believe the Vision for Space Exploration should be reauthorized, to assure the continuation of the U.S. human spaceflight program. That said, budgets are clearly insufficient to allow programs be completed within the current timelines. However, it is not as clear that more money would assure that those timelines could be met. People, institutions and technology are already being pushed to levels that could soon result in a rush to failure. Further, setting deadlines and then missing deadlines does not generate

¹⁰ Reuters, “China Eyes 2017 Moon Landing,” 4 November 2005.

¹¹ Bronwen Maddox, “America Wants it All – Life, the Universe, and Everything,” <http://www.timesonline.co.uk/article/0,,30809-2410592,00.html>

¹² Michael Evans and Jane McCartney, “Son of Star Wars takes out toxic satellite with \$30m space attack,” *The Times* (London) 22 February 2008, 39.

confidence – especially for the country that said it was going to land a man on the moon and then return him safely to Earth within the decade in the 1960's, and did it. The difference, however, was that until 1967 the Apollo budget was sufficient to achieve the goals that had been set. With Constellation that is not and never has been the case. Therefore, consideration should be given to restructuring the entire program, with realistic timelines developed toward achieving multiple, prioritized goals within anticipated budgets. NASA is in the best position to determine that prioritization, but it seems that narrowing the gap between Shuttle decommissioning and a follow-on system becoming operational ought to be a key consideration.

As part of a restructuring, I encourage the consideration of opening the program to more international cooperation. The more countries that are involved, the less the perception of a space race can be propagated. While there are significant political and technical issues potentially involved with international cooperation, there are several models of cooperation that could be employed, and the lessons learned from ISS can be invaluable.

Finally, I return to the importance of soft power and having countries desire to work with the United States by choice, rather than because of its military might or coercion, and the proven ability of human spaceflight to both generate soft power and bolster its image as a global leader. In May 1961, after the Soviet Union had beat the United States into space and established leadership in space exploration, President John F. Kennedy put together a message to Congress on "Urgent National Needs." While the speech covered many issues, its major focus was on the space program. In it Kennedy expressed his belief that a manned lunar landing before the end of the decade should be the principal goal of the American space effort. He stressed this meant a long and costly development program to reestablish the nation's world leadership in technology, and cautioned that "if we are to go only halfway, or reduce our sights in the face of difficulty . . . it would be better not to go at all."¹³ It was a call for the United States to wholeheartedly commit itself to a long-term objective requiring sustained effort, substantial cost, and determination to see it through to a successful conclusion.¹⁴ That, in my opinion, is where we are again, and again we must wholeheartedly but realistically commit to achieving our goals.

¹³ John M. Logsdon, *The Decision to Go to the Moon: Project Apollo and the National Interest* (Cambridge Mass.: MIT Press, 1970), 127-128.

¹⁴ history.nasa.gov/SP-4214/ch1-3.html