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A Sustainable Rationale for Human Spaceflight

The August 2003 report of the Columbia Accident Investigation Board (CAIB) noted that, “all members of the Board agree that America’s future space efforts must include human presence in Earth orbit, and eventually beyond.” As justification for this point of view, the CAIB offered only President George W. Bush’s remarks on the day of the Columbia accident: “Mankind is led into the darkness beyond our world by the inspiration of discovery and the longing to understand. Our journey into space will go on.”

In parallel, the CAIB was critical of “the lack, over the past three decades, of any national mandate providing NASA (National Aeronautics and Space Administration) a compelling mission requiring human presence in space.” In the absence of such a mandate, “NASA has had to participate in the give and take of the

An appeal to national pride could provide the basis for a new program of solar system exploration.

normal political process in order to obtain the resources needed to carry out its programs.” In this give and take, “NASA has usually failed to receive budget support consistent with its ambitions. The result . . . is an organization straining to do too much with too little.”

This criticism, when combined with the CAIB’s endorsement of human spaceflight and with the soul searching that has characterized the nation’s reaction to the Columbia accident, has provided an opportunity to set the U.S. human spaceflight program on a productive long-term path. In the fall of 2003, a series of congressional hearings was held on

the future of the human spaceflight program. Most senators and representatives who spoke at those hearings appear ready to provide NASA with the additional resources needed to set things right and called on the president to put forth a new vision for the future of human spaceflight.

At the other end of Pennsylvania Avenue, the White House recognized the need for an authoritative response to the post-accident situation. Beginning in the late summer of 2003, a high-level, closely held, space policy review was initiated. Its purpose was to provide the president with recommendations for a new vision of the U.S. future in space. As that review was nearing its conclusion in late 2003, President Bush and his top advisors were trying to decide whether they indeed wanted to propose the kind of national commitment to a guiding mandate for future human spaceflight that has been lacking since President Kennedy in May 1961 asked the country to commit to landing Americans on the moon “before this decade is out.” Presuming that the president does articulate such a vision—and the expectation that

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he will has been carefully nurtured—it will then be up to the public, speaking through their elected representatives in Congress, to decide whether to accept it and to offer long-term support.

Whatever the specifics of the proposed new path in space, it will have to rest on a convincing argument of why it is in the nation's interest to make and sustain such an expensive commitment, particularly one that inevitably involves risking the lives of more astronauts. Rhetoric about “the inspiration of discovery and the longing to understand” is unlikely to be enough; those reasons have been offered publicly for years and have led to 30 years of unfocused activity. What other possible reasons are there for a commitment to human spaceflight? Can a compelling case be made?

Lessons from history

Most public justifications for accepting the costs and risks of putting humans in orbit and then sending them away from Earth have stressed motivations such as delivering scientific payoffs, generating economic benefits, developing new technology, motivating students to study science and engineering, and trumpeting the frontier character of the U.S. society. No doubt space exploration does provide these benefits, but even combined, they have added up to a less-than-decisive argument for a sustained commitment to the exploratory enterprise. The United States has committed to keeping humans in space, but since 1972 they have been circling the planet in low-Earth orbit, not exploring the solar system. The principal ra-

tionales that have supported the U.S. human spaceflight effort to date have seldom been publicly articulated. And those rationales were developed in the context of the U.S.-Soviet Cold War and may no longer be relevant.

Kennedy's proposal to send Americans to the moon was not motivated by a belief in the long-term importance of space exploration. Rather, it was a politically driven response to the situation in the first months of his presidency, as the Soviet Union gathered international acclaim by putting the first human into orbit while the new administration appeared weak as it wavered in its support of an invasion of Cuba. To counter the rapidly falling prestige of the United States and his presidency, Kennedy asked his advisors to find him a “space program which promises dramatic results in which we could win.” The response came back a few weeks later. Kennedy was told that “dramatic achievements in space . . . symbolize the technological power and organizing capacity of a nation.” For that reason, “the nation needs to make a positive decision to pursue space projects aimed at national prestige,” because such projects were “part of the battle along the fluid front of the cold war.” Putting astronauts into space was essential, it was argued, because “it is man, not merely machines, that captures the imagination of the world.”

In a perceptive 1964 study, political scientist Vernon Van Dyke identified *Pride and Power* (the title of his book) as the primary rationales for the major commitment of national resources made in the early years of the U.S. space pro-

gram. His analysis can be applied not only to Kennedy's decision to go to the Moon, but also to the two major policy decisions that have shaped the U.S. civilian space program since. Like the Apollo initiative, the 1972 decision to develop the space shuttle and the 1984 decision to build a space station were influenced more by considerations of national power and national pride than they were by other motivations. Although they lacked the drama of sending Americans to the Moon, they were essential to keeping human spaceflight a continuing U.S. undertaking.

During the summer of 1971, the future of human spaceflight was being debated within the Nixon administration. The staff of the Office of Management and Budget (OMB) had suggested that the final two lunar landing missions, Apollo 16 and 17, be cancelled and that NASA's request to develop a reusable launch vehicle, the space shuttle, be denied. This struck one of the president's longtime associates, Caspar Weinberger (then deputy director of OMB), as shortsighted. In a memorandum to the president, Weinberger argued that ending human spaceflight would confirm a belief “that our best years are behind us, that we are turning inward . . . and voluntarily starting to give up our superpower status, and our desire to maintain world superiority.” He added, “America should be able to afford something besides increased welfare.” Nixon replied: “I agree with Cap.” This reasoning carried the day: On January 5, 1972, Nixon announced his approval of shuttle development.

The next occasion for a major

commitment to human spaceflight came after the shuttle was declared operational on July 4, 1982. NASA needed a new development program to keep its engineers fully engaged and campaigned hard in 1982 and 1983 to gain presidential endorsement of a space station as that program. In a climactic meeting on December 1, 1983, NASA presented its case for approving station development to President Reagan and other top-level officials. After listing the many functions such a facility could carry out, NASA's final argument was that it would be "a highly visible symbol of U.S. strength." This argument was persuasive; in his January 25, 1984, State of the Union address, Reagan argued that "nowhere [other than space] do we so effectively demonstrate our technological leadership . . . We can be proud to say: We are first; we are the best; and we are so because we're free." The president continued: "America has always been greatest when we dared to be great. We can reach for greatness again . . . Tonight, I am directing NASA to develop a permanently manned space station."

Using NASA's human spaceflight programs to demonstrate U.S. technological (and by implication, military) power was the underpinning motivation for the three critical decisions that have shaped those programs to date. All three decisions came in the context of the U.S.-U.S.S.R. strategic rivalry. The United States was not brandishing its power in the abstract; rather, in each case it was inviting comparison with its superpower rival.

With the end of the Cold War and the collapse of the Soviet Union, space achievement has lost

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spaceflight just as
China, its putative
21st-century
contender for
global influence,
begins its own
program.*

its potency as a symbol of U.S. power. This country no longer has to demonstrate to the world its superiority vis-à-vis a single rival for influence, and another rationale is now needed to underpin any new and major space commitment. To date, the search for a new rationale has not been successful.

Failed initiative

Between President Kennedy's 1961 call to action and today, there has been one failed attempt by a president to set a long-term direction for human spaceflight. That attempt came as the end of the Cold War was approaching. Its inability to capture political and public support provided convincing evidence that space achievement was no longer seen as an effective measure of U.S. power.

Fifteen years ago, on July 20, 1989, George H. W. Bush set out an expansive vision for the future

of humans in space. On the 20th anniversary of the Apollo 11 lunar landing, he proposed that the United States accept a "long-range, continuing commitment" to human exploration of the solar system, starting with completing the space station, then a return to the Moon, "this time to stay," and finally "a journey into tomorrow, a journey to another planet: a manned mission to Mars." That initiative died almost stillborn; neither the Democrat-controlled Congress nor NASA itself embraced it with any enthusiasm.

A major problem in 1989 was the lack of an alternative to demonstrating national power as a rationale for making the requested long-term commitment to exploration of space by humans. With the Cold War reaching its end, the president asked: "Why the Moon? Why Mars? Because it is humanity's destiny to strive, to seek, to find. And because it is America's destiny to lead."

The lack of political support for what came to be known as the Space Exploration Initiative suggests that arguments for supporting space exploration as some sort of U.S. manifest destiny do not have the kind of appeal that would lead politicians to commit billions of dollars. The notion that it is important for the United States to be recognized as the leader in major cooperative space undertakings such as the International Space Station has had some degree of political resonance. However, U.S. space leadership, although often proclaimed, has yet to be earned. Even setting aside the significant effects of the Columbia accident on U.S. partners in the International Space Station, this country has a very

mixed record of stability and sensitivity to others in that and other space undertakings. Space-faring countries around the world are now looking to other partners as they plan their future endeavors.

The lure of national pride

In his 1964 book, Van Dyke suggested that national pride was as much a motivator of the U.S. commitment to space as was the quest for national power. It may well be that space achievements, particularly those involving direct human presence, remain a potent source of national pride and that such pride is the underpinning reason why the U.S. public continues to support human spaceflight and would find a decision to end the U.S. human spaceflight program unacceptable. Certainly, space images—an astronaut on the Moon, a space shuttle launch—rank only below the American flag and the bald eagle as patriotic symbols. The self-image of the United States as a successful nation is threatened when we fail in our space efforts, as we have seen from the embarrassment of a misshaped mirror on the Hubble Space Telescope to the sense of collective loss when some of our best citizens die before our eyes in space shuttle accidents. Americans expect a successful program of human spaceflight as part of what the United States does as a nation. They are not overly concerned with the content or objectives of specific programs. But they are concerned that what is done seems worth doing and is done well. It is that sense of pride in space accomplishment that has been missing in recent years.

The CAIB report laid bare for

the country to see both that there had been no overarching meaning to the U.S. human spaceflight space program in recent years and that the program that did exist was not being well executed. The most damning sentences in the report are those that suggest that neither NASA nor the nation's leadership lived up to the bargain they had made with those who took the risk of flying on the shuttle "to operate and maintain the vehicle in the safest possible way."

NASA is now working hard to ensure that never again will it be the subject of such a painful indictment. It cannot do this alone. The nation's leaders must propose a set of activities for the future that have positive meaning and set worthy goals for humans in space as well as provide the resources needed to carry out those activities successfully and as safely as humanly possible.

If national pride is to be a fundamental rationale for putting people into space, what is obviously needed first is for spaceflight to continue. In 1971, as the debate over whether to approve the space shuttle reached its climax, NASA Administrator James Fletcher argued to the White House that "for the U.S. not to be in space, while others do have men in space, is unthinkable, and is a position which America cannot accept." That admonition still seems valid. It is indeed unthinkable that the United States would abandon human spaceflight just as China, its putative 21st-century contender for global influence, begins its own program.

Beyond just being in space, what seems important to a continu-

ing feeling of national pride is a sense that people are doing valuable things there. For government-sponsored activity, that is likely to require that people leave Earth orbit to explore and eventually utilize for research purposes other destinations in the solar system. Building a new and improved space station is unlikely to be a well-received next step after completing the International Space Station; other possible Earth-orbit goals, such as capturing solar energy as a source of electrical power on Earth, are too far in the future. Between 1988 and 1996, one goal of U.S. national space policy listed was "to extend human activity and presence beyond Earth orbit into the solar system." No specific destinations were listed, nor were schedules set. If the president proposes and Congress approves the initial steps toward achieving this goal, an important step toward restoring a longer-term purpose for human spaceflight would be achieved.

A space exploration program that provides the promise of continued scientific payoffs, that serves as a vehicle for U.S. leadership in carrying out missions that have sparked the human imagination for millennia, that excites young people and attracts them toward technical education and careers, and that would serve as a source of renewed national pride in its accomplishment is something that American citizens appear willing to support. The challenge for the country's leaders is to not only propose such a program as a legacy of the Columbia accident but also to demonstrate the political will to sustain it over coming decades.