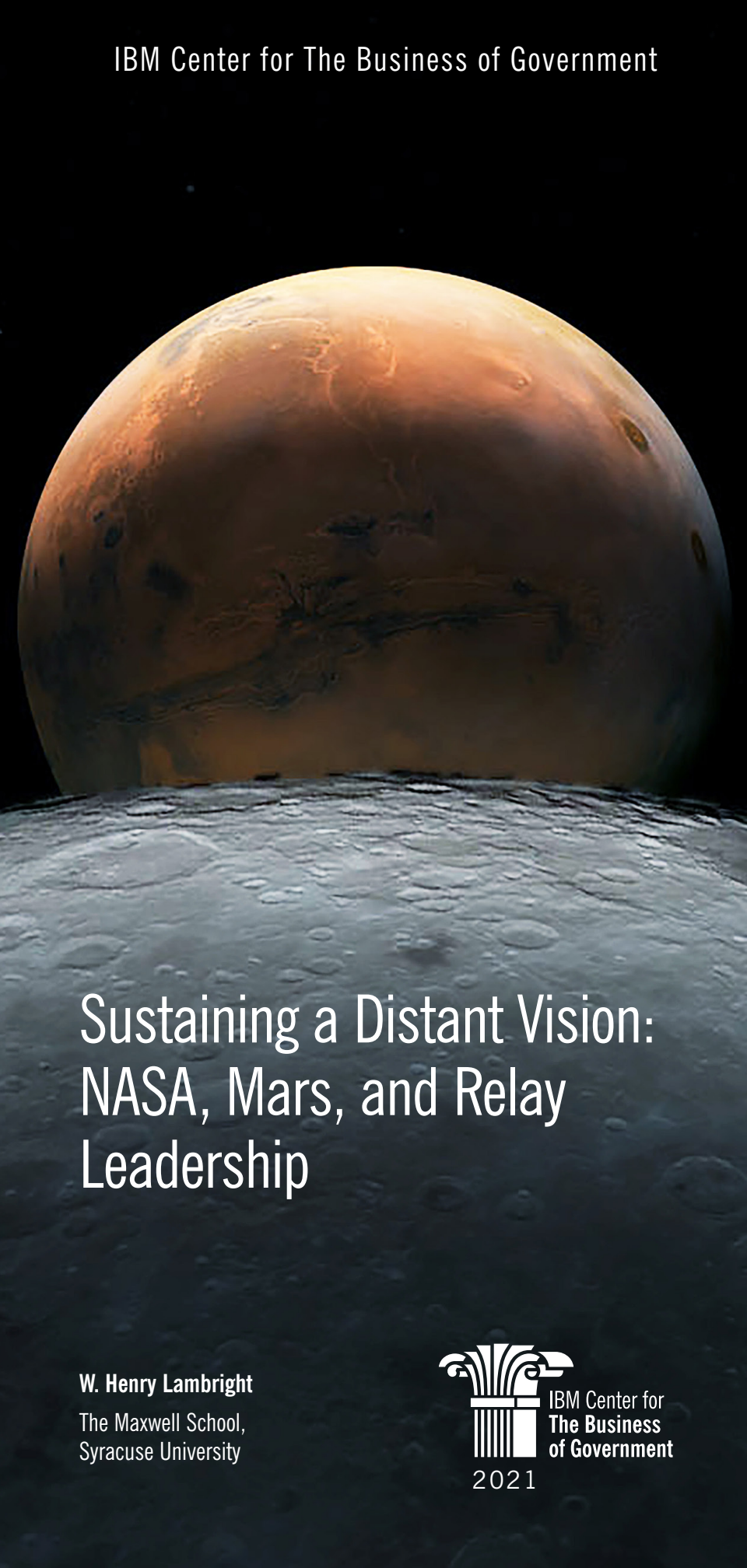


IBM Center for The Business of Government



Sustaining a Distant Vision: NASA, Mars, and Relay Leadership

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A moon landing in the late 2020s and a journey to Mars in the latter 2030s are technically possible. As a nation, will we marshal the political will and resources to make it happen?

TABLE OF CONTENT

The Moon, Mars, and Beyond.....	4
Our Approach to Human Space Exploration	5
Putting Mars on the Agenda: Dan Goldin.....	7
Making Presidential Policy: Sean O’Keefe	8
Implementing Hardware Design: Michael Griffin	8
Maintaining Exploration: Charles Bolden.....	9
Another Reorientation: Robert Lightfoot and James Bridenstine	11
Continuity under Biden and Nelson	12
Implications for the Future.....	13
Other Nations	14
Private Companies.....	14
Disasters	15
Conclusion	16
References	17
About the Author.....	18
Contact Information	18
Reports from the IBM Center for The Business of Government.....	19





On behalf of the IBM Center for The Business of Government, we are pleased to present this special report on *Sustaining a Distant Vision: NASA, Mars, and Relay Leadership*. The report draws on insights from a group of experts in leadership roles with NASA.

The Moon, Mars, and Beyond

In October 2020, three former NASA administrators—Dan Goldin, Sean O’Keefe, and Charles Bolden—convened with the then incumbent, James Bridenstine, to ponder the state of NASA and human space exploration. Goldin (1992-2001) chafed at the slow pace of returning to the Moon and going on to Mars. He pointed out that China was “moving at the speed of light” and it was “damn time for America to get people out of Earth’s orbit.”

O’Keefe (2001-2005) was more sanguine. Referring to President George W. Bush’s 2004 decision to return to the Moon and then travel to Mars and beyond (his “Vision for Space Exploration”), O’Keefe cited progress and “what we’ve seen come to pass” since Bush was in line with the “Vision.” He saw “elements of a consistent, sustainable kind of strategy, over the course of the last couple of decades” (Foust, 2020).

Which administrator was correct? In a way, they both were. There had been positive movement but it had been slow and tortuous. There had evolved a clear consensus that the country wanted to get out of low-Earth orbit, and move beyond the International Space Station. But the nation had had problems in turning desire into policy. Still, there have been earlier calls for going back to the Moon and on to Mars and these had gone nowhere. Would the situation be

different in the 2020s? For the first time, there seemed to be policy commitment across presidents and parties to a direction if not particular deadline. Issues had to do with turning desire into supportive programs. Goldin's point about picking up the speed and China competition appeared to be shared by Presidents Donald Trump and Joe Biden as well as their respective appointees as NASA Administrator (Bridenstine and Bill Nelson).

The case of space provides an instructive opportunity to examine a common challenge in democratic government: sustaining and accelerating long-term policy in a context of frequent political change, multiple elections, presidential turnover, economic cycles, and even a pandemic. It is daunting for an agency and its leaders to persevere on a desired course that stretches over decades. "I'd rather have a root canal than ever testify again," said O'Keefe (Foust, 2020). But if one looked at where human space exploration was when Goldin ran NASA and where it stands in the first year of the Joe Biden administration, one sees significant advance.

It is possible that NASA Administrator Nelson will witness completion of the rocket/spacecraft system for the Moon. Known as Space Launch Systems (SLS)/Orion, this system is well along in development and could take astronauts on a voyage around the Moon in Nelson's current term. The Trump administration had scheduled a Moon landing for the Artemis Program, as it is known, for 2024. That date is unlikely to be met for technical and budgetary reasons. Still, there is widespread belief that a Moon landing in the late 2020s and a journey to Mars in the latter 2030s are technically possible. Holding to the long-term goal of Mars requires interim goals, and these are subject to change as the decade moves on. Bolden (2009-2017) commented at the end of the Obama presidency that NASA was "closer to Mars than we have ever been" (Lambright, 2017). The U.S. was closer still at Bridenstine's departure when the Trump years concluded in 2021. Nelson's task is to stay on course, collaborate where desirable, and make the pace such as to keep ahead of the competition.

He and his successors will have to determine NASA's role in an increasingly complex epoch of "space globalization." More nations and companies are gaining access to space. They do not necessarily share similar values. Charting a path to Mars entails leadership in a complex environment whose political and organizational challenges are as daunting as those that are technical.

Our Approach to Human Space Exploration

Human space exploration policy to Mars with the Moon as a stepping stone, constitutes a trajectory for NASA with a relative consensus of support. It has evolved over several years as the goals were distant, especially Mars. There are stages in how policy develops. What sets long-term policy apart from other policy processes is, obviously, the length of some of the stages, especially implementation. Sustainment over decades is a challenge, given short-term disruptions and political change. Periodic renewals, often requiring strategic adaptations, are a requirement.

Consider the following stages as an abstract but helpful roadmap. First is agenda-setting. For some years after the Apollo Moon landings ended in 1972, going back to the Moon and on to Mars has been on NASA's agenda. There have been false starts including one in 1989 under President George H.W. Bush. Most of the time such a journey has been low on NASA's agenda. What moves a particular aspiration higher on the agenda are triggers. Policy analysts call these disruptive events "punctuation" points that disrupt the status quo. A second stage of policy formulation unfolds. Efforts are made to find a response to the disruption (Sabatier, 1999).

When authoritative officials in national government legitimate a particular policy option, that process of adoption constitutes a third stage. Fourth comes early implementation. The agency organizes, staffs, budgets, and begins execution. In due time, a fifth stage of evaluation/possible reorientation takes place. Sixth, there is later implementation to closure, or what many call institutionalization. The new mission reaches its goal. What was new becomes routine.

With long-term policy, the evaluation/reorientation stage comes typically with a change in presidents and Congress, especially in party control of national government. That can mean drastic reorientation, even termination. Indeed, termination can come at any point in a process. For long-term programs, sustainment without significant modification is extremely rare. But adaptation is the price of renewal.

To the extent there has been sustainment of the 2004 Vision, what has made it possible? There are three factors that stand out. First, continued administrative leadership. Long-term programs require "relay leadership." An implementing agency has the greatest stake in a mission, and as its leaders change, long-term programs require successors to take up the cause, possibly altering its rationale as times change. One administrator can take a hands-off approach to a program, while another moves it forward towards its goal. Leaders vary in experience, contacts, and political skill in dealing with shifting environments.

Second is an essential strategy of coalition building. The agency requires administrative partners and political supporters. Third is the ability of leaders and allies to neutralize threats to the program. They have to meet technical, financial, and political risks. These three factors—leadership, coalition-building, and neutralization of threats—interact and determine the successful sustainment of the program. They adapt to new pressures, while holding to a goal.

Mars is, as Bolden said, closer than it was before 2004, but it is still far away in space and time. The Moon is closer, with relative consensus for it as an interim goal. NASA is in an early implementation stage, at least where the Moon is concerned. It has gotten through two presidential changes since 2004, and is adjusting to the latest transition now.

How has the agency gotten to the present point? What have administrative leaders done? What are the likely possibilities and requirements for sustaining and even speeding this long-term policy process and reaching Mars in the future?



Putting Mars on the Agenda: Dan Goldin

Dan Goldin put Mars as a goal on NASA's agenda in the 1990s. In addition, he adopted an improved organizational approach that appears critical to get there. A human mission to Mars, or the Moon, was not involved. But what he did with the unmanned program was extremely relevant to the long-term task.

Mars was Goldin's top personal priority. In 1989, George H.W. Bush had proclaimed his intent to have NASA send astronauts to the Moon, then on to Mars. That decision died almost immediately. Goldin knew a manned Mars mission was not an option under President Clinton, but he put Mars visibly on the national agenda through the robotic science program.

There had not been a successful unmanned probe to Mars since 1976 when Goldin arrived in 1992. He made Mars the centerpiece of his "faster, better, cheaper" approach to space policy. He sent probes to Mars frequently—observing, landing, roving. Although this program had failures, it had more successes and created a Mars consciousness that was novel and looked ahead.

He also built on an organizational model he inherited with Space Station Freedom. This was a collaboration with Europe, Canada, and Japan. Allies were building modules for the station when Goldin brought Russia, the former rival, into the partnership. Freedom became the International Space Station (ISS). By broadening the Space Station partnership, Goldin greatly enlarged the constituency of the station. ISS became a foreign policy symbol for President Bill Clinton. Clinton helped get Congress' support and averted the real threat of cancellation that existed prior to the Russian merger.

The transformation of the Space Station partnership was the kind of adaptation that changed thinking and renewed political commitment to human space flight. It was a model for a potential cooperative Moon/Mars program. The Reagan/Bush station program was transformed into a Clinton program (Lambright, 2001). Human space exploration continued but with a Mars consciousness thanks to the robotic program.



Making Presidential Policy: Sean O’Keefe

The punctuation point for a huge shift in policy toward Moon/Mars came in 2003 when the Columbia Shuttle disintegrated as it entered Earth’s atmosphere to land, killing all aboard and scattering debris across a number of states. One outcome of the investigation and Congressional hearings that followed was a sense widely shared that human lives should not be put at risk simply to go up and down and around in low-Earth orbit. There was also a realization that the shuttle was old, flawed, and its days numbered.

NASA was lucky in that its administrator, O’Keefe, was formerly deputy director of OMB and close to White House power brokers, especially Vice President Dick Cheney. He had direct access also to President Bush. Experienced in Washington maneuvers, O’Keefe used a top-level interagency committee to steer the formulation of new policy for human space flight. In January, 2004, Bush came to NASA’s auditorium to announce the “Vision for Space Exploration.”

The president called for going back to the Moon by 2020 as prelude for Mars and beyond. The shuttle would be retired when it finished constructing ISS and NASA would develop a new spacecraft capable of taking astronauts into deep space. ISS’s role would be narrowed to enabling exploration. NASA would get an additional \$1 billion to jump-start the human exploration mission, with additional funds to come from reprogramming.

O’Keefe initiated implementation, but left in early 2005. Congress, controlled by Republicans, provided the extra \$1 billion before he departed (Lambright, 2005).

Implementing Hardware Design: Michael Griffin

Michael Griffin (2005-2009) took O’Keefe’s place and the baton of leadership. He made it his task to design the hardware and let contracts for implementation. He proposed developing a new rocket (Ares 1) along with a spacecraft (Orion) to carry astronauts. This system would come first. Then, NASA would build a “heavy-lift” rocket (Ares 5) that could take astronauts and cargo to the Moon and possibly Mars. In addition, he called for landers to ferry astronauts to the Moon’s surface. This total creation was called Constellation.

Griffin was a true rocket scientist. A well-connected bureaucratic politician he was not. The momentum of Columbia waned, and Bush did not provide rhetorical advocacy or the ample funding Constellation

required. Nor did Congress. Griffin was able to get Congress to twice back the new mission in statements, once under Republicans and once under Democrats. But he could not build a coalition big enough to get the resources to make Bush's 2020 Moon goal viable. Congress also broadened rather than narrowed ISS's role, making the U.S. portion a national laboratory, a decision thus requiring its continued maintenance expense, for years to come. The deadline pressure of the Vision weakened as the trigger for action—Columbia—lost momentum.

To his credit, Griffin initiated a public-private program that would enable commercial firms to take cargo, and eventually astronauts, to and from ISS. He saw that a commercial crew role could be back-up to the Ares 1/Orion governmental system he prioritized. This institutional model was important in its promise to allow government to cede low-Earth orbit eventually to the private sector so NASA could concentrate resources on the exploration mission. One of the firms Griffin brought into his program was a new one, SpaceX, headed by Elon Musk, a man who had his own dreams about Mars and was vocal and visible in his advocacy (Lambright, 2009).



Maintaining Exploration: Charles Bolden

The greatest threat to any high-profile presidential initiative is the transition of that initiative to the successor of a different party. Would there be enough of a constituency for the new program to avert a threat of cancellation?

Barack Obama, who became president in 2009, inherited a program, Constellation, suffering major overruns and delays. Ares 1/Orion, the lead elements, did not reach the bar he set to continue. Evaluations by Obama and his chief advisors called for cancellation. Those advisors did not include Charles Bolden, his NASA administrator. Bolden, a retired Marine general and former astronaut, initially eschewed his political advocacy role and was slow to play it as Obama formed his NASA budget.

The consequence was that in February 2010, Obama, in his budget message, cancelled Constellation entirely. Obama gave no destination to replace the Moon and Mars goal. He shifted expenditures to accelerate and enlarge Griffin's public/private commercial rocket program as a shuttle replacement. What had been a back-up to Ares 1/Orion became

the priority for Obama. Obama also called for a major increase in research and development for new “breakthrough” technologies relevant to exploration. Obama argued he was for Mars, but not Constellation as the means. However, termination rhetoric accompanying his budget did not make that distinction clear.

The termination decision came as a surprise and shock to NASA and Congress. The White House defense of the decision was clumsy. Bolden found out about the decision the last minute, and he realized he had failed to avert the threat to Constellation from its opponents.

The pushback from Congress, prime contractors, and retired astronauts was intense and united. Pilloried as killing human space exploration, Obama backed off. In April, he gave a major space-policy speech. He called for a Mars visit in the 2030s, with an interim goal being an asteroid in the 2020s. He dismissed the Moon with a “been there, done that” attitude. He doubled down on the emphasis on public/private innovation and commercial crew launches. He restored Orion, not Ares 1, and sought to hold off on a decision about Ares 5 or its equivalent. The fact that he specifically mentioned Mars reflected a push not only from elements of Congress, but also Bolden. The NASA administrator realized his mistake as NASA’s leader. Like it or not, he was a “political” executive, and had to learn to play that role. He had Mars as his own priority and helped lobby successfully to get that destination in the president’s speech.

In October 2010, Congress and Obama reached a compromise that saved part of Constellation. Ares 1 went, Ares 5, now called Space Launch System (SLS), remained. It would carry Orion to an interim goal (asteroid, Moon, something else) with Mars the ultimate destination. Commercial crew and new technology research would be pushed. ISS would be extended in duration. Compromise embodied in legislation revealed the strength of exploration’s bipartisan support in Congress, especially the Senate. Bolden’s connections were more with Congress than the president, although he was a loyal appointee. He was especially close to Senator Bill Nelson (D., FL), the leader in the fight to avert cancellation and emphasize Mars.

For the remainder of Obama’s eight-year term—and Bolden’s as well—the October compromise held. The debate, year after year, was about how much money should go to SLS/Orion and how much to commercial crew. Congress focused on the former and Obama the latter. Bolden’s apolitical reputation worked to NASA’s advantage. He was able to mediate between the White House and Congress and both programs moved ahead at a time of worsening relations between president and Congress.

What he did not do well was build support for Obama’s asteroid interim goal. It gained little to no traction politically. Republicans in Congress insisted on the Moon. So did potential international partners. NASA as an organization gave the asteroid tepid support. The same was true for Democrats in Congress. Bolden focused on Mars and spoke of using the orbit around the Moon—cislunar space—as a proving ground. There was thus considerable adaptation of the original Bush decision, but there was also a sense of renewed commitment, at least to Mars (Lambright, 2017).



Another Reorientation: Robert Lightfoot and James Bridenstine

Supporters of Mars exploration felt that the struggle of 2010 had cost the program a year of progress. Anticipating a threat to program survival, as Obama gave way in January 2017 to Donald Trump, congressional advocates passed legislation during the presidential transition emphasizing the need for “constancy of purpose,” a theme Bolden sought as a legacy as he left office.

It turned out the new administration was quite space-oriented. It created a National Space Council for space policy headed by Vice President Mike Pence. Trump talked about “making America great again.” And space was a dramatic way to demonstrate national achievement.

Trump made big changes in what he inherited. He terminated the asteroid mission and reinstated the Moon as the prime interim goal on the way to Mars. The Moon became the focus of Trump/Pence space policy.

Because Trump had difficulty getting his appointee for NASA administrator through the Senate, Robert Lightfoot, NASA associate administrator and top civil servant in the agency, served as acting administrator for a record-setting 15 months. Determined and proactive, Lightfoot took the concept of a space station in lunar orbit barely in the formulation stage at the end of the Obama term and sold it to Pence and Trump. It became known as the Gateway Project. The original notion NASA had in mind was a gateway to Mars. Now it was redirected as a gateway to the Moon (Lambright, 2019).

The most significant policy question about the Moon was whether to land there and when. This decision awaited the permanent NASA administrator, James Bridenstine, a former Republican Oklahoma congressman. Taking office in April 2018, Bridenstine was very much an exploration advocate and brought a political sensitivity to the position that was needed in the Trump years. He was absolutely clear that he regarded NASA as a bipartisan/nonpolitical agency, and pushed to keep it that way. He nurtured relations with legislators on both sides of the aisle. Noticing the power of certain women in Congress (e.g., Nancy Pelosi, the Speaker of the House) he made landing “the first woman and next man” on the Moon his rhetorical mantra. The issue of “when” was settled by Pence, who directed NASA to land in 2024, the last year of a possible Trump/Pence second term, rather than in 2028, the year NASA regarded as feasible.

Bridenstine took the 2024 date seriously and worked for the large increase in budget that could enable that deadline. In particular, there would have to be new money for landers. Landers were in Griffin's Constellation, but went away under the 2010 Obama/Congress compromise. The White House and Congress did grant NASA increases for the Artemis Moon program including landers. But the funds were nowhere near the level required for a 2024 mission. What was clear by the end of the Trump/Bridenstine term was the strong support in Congress for exploration continuity. Moreover, that support was bipartisan at a time when little else was bipartisan in Washington (Klotz, 2020).

Bridenstine also strengthened the public/private connection to exploration. Musk's SpaceX succeeded in carrying not only cargo, but crew to ISS. Jeff Bezos, the Amazon billionaire, also entered space in a very serious and well-financed manner. What was once a largely governmental enterprise for space exploration now included significant private sector partners.

Continuity under Biden and Nelson

At the time of writing, August 2021, President Joe Biden has indicated a space policy favoring continuity. Former Senator Bill Nelson is now NASA Administrator Nelson. Biden has endorsed the Moon/Mars sequence. SLS/Orion is well along in development. A mission to orbit the Moon during the Biden years might be possible and would be a highly visible undertaking. The issue would be timing, and that would depend on money. A landing would be a much higher risk, and much higher cost, unlikely in a first term. However, Biden has sought a substantial raise for NASA, so a landing later in the 2020s could happen.

There is a worry among many space policy observers that landing on the Moon would lead to some sort of Moon-base and building such a base would delay going for Mars. Meanwhile, the Gateway is well along in planning, with hardware contracts, and collaborative agreements with all ISS partners save Russia, and Russia may yet come aboard.

What is most critical about the Gateway is that it provides a near-term destination—a place to go—as ISS ages and faces an inevitable “retirement,” perhaps as early as 2030. What NASA does about low-Earth orbit is a decision that the Biden administration cannot postpone too long. Trump/Pence wanted to “commercialize” ISS. That ambition remains unfulfilled. NASA truly wishes to move out—to explore. Its Perseverance rover continues the robotic Mars program that Goldin initiated, shows national leadership, and a show of leadership has always been the most salient driver in space policy.

But America has today what it did not have for decades—a viable rival. China is capable, and willing to spend on space. That competition will be a major factor in space policy, especially the issue of pace. This is because space is not just about science and technology,

but about geopolitics. China has landed a rover on Mars and is building a space station. It is possible that ISS will go down as China's space station goes up. China understands the symbolic value of space and wants primacy.

The legacies of previous administrations include means as well as ends. Means embrace partnership. Commercial crew reached fruition with SpaceX during the Trump/Bridenstine years, and Boeing is expected to join in transporting astronauts (as well as cargo) under Biden. NASA has awarded a contract to SpaceX to build a Moon lander. That award is being contested by other companies, including one headed by Jeff Bezos. There is a burgeoning commercial sector emerging in space, along with many new spacefaring countries. Building an expanded and compatible international and public/private coalition for space exploration is going to be a significant part of space policy going forward. Nothing is certain, but the prospects for sustaining the momentum toward Mars look favorable in the Biden/Nelson years.



Implications for the Future

What implications do the past and present hold for the future in regard to Mars? One of the most difficult tasks for administrative leaders is to anticipate issues so as to prepare for them. Most challenges, however, are extensions of present trends. Perhaps the single most important matter with which Biden and future NASA administrators will have to deal is the globalization of space access. That issue will affect policies for the Moon as well as Mars. By globalization is meant the proliferation of actors in space policy. There are simply more nations and businesses going into space. This fact presents opportunities but also challenges, including the potential for disasters in space, an issue which NASA leaders would probably not want to think about, but should, as it could be a setback for space exploration.

Other Nations

There was a time, not that long ago, when NASA had a virtual monopoly on Mars policy. Only NASA had successfully landed and roved on Mars. The Soviet Union had landed a spacecraft, but it had failed to communicate as planned, and the Soviets have never landed a rover.

Today, many new nations have shown the capacity to orbit Mars, including India, the U.K., United Arab Republic, and others. China has recently joined the U.S. in being able to land and rove. Now behind the U.S., which has flown a device on Mars, China is nevertheless making progress. Moreover, China is determined to launch manned spacecraft to the Red Planet.

It is motivated to explore Mars, robotically and with humans, to show its technological progress. It has an authoritarian government that can maintain a course for the long period it will take to get humans to Mars. At present, NASA is restricted by national policy from collaborating with China in human space flight. Bolden and Obama had hoped to do that, starting with ISS, but Congress had other ideas. China remains a rival. Competition with China is a rationale NASA administrators can use to acquire resources for Mars.

But the sheer difficulty and expense of sending humans to Mars could eventually force NASA and its political masters to compartmentalize space cooperation with China from other more contentious issues. The aim is to find common interest in space in spite of divisions on Earth. That change might seem unlikely today but the situation in the 2030s could be different. Partnership with Russia on ISS would have seemed impossible from a Cold War vantage point.



Private Companies

Republican and Democratic administrators have sought partnerships with private companies, as will future NASA administrators. Space is rapidly commercializing and Mars exploration will require partnering between NASA and the private sector. Private companies are building, owning, and using their own rockets and spacecraft. SpaceX is taking cargo and astronauts to and from ISS and Boeing will eventually follow suit.

Billionaires (e.g., Richard Branson, Jeff Bezos, and Elon Musk) are spawning a space tourism industry. Bezos and Musk have the ambition once reserved for governments. Bezos wants to move heavy, polluting industry off Earth to preserve it as a habitat. Musk desires to establish a human colony on Mars, thereby making humanity a multi-planet species. Whatever else may be said of them, they are adding excitement, especially for younger people, to the space endeavor. They are visionary heirs of the role played by Wernher Von Braun in the 1950s when he wrote about the trips to Mars. Von Braun then saw Sputnik accelerate the potential of the Moon as a stepping stone. But as noted earlier, the exploration dream generally faded after Apollo. Some new event or breakthrough could speed up a realization of the Bezos or Musk visions. Even without a breakthrough, we can expect steady, incremental progress toward the Red Planet.

Business is moving with its own momentum into space. Goals may be compatible with those of NASA or may not be. There will be more pressures for partnerships with businesses as well as other countries. Who will dominate the partnerships? Unless NASA maintains and enhances its internal competence, businesses can dominate partnerships, and public interests suffer. The future for Mars demands “Mars together” approaches, but who goes together—and how—will be questions for NASA administrators (and their political masters) to answer.

Disasters

It was Columbia in 2003 that triggered Bush’s decision to set NASA on a course to the Moon and Mars. A space disaster could just as easily set back Mars ambitions. With the globalization of space, there will be plenty of opportunity for disasters. China and India have deliberately attacked their satellites to develop technologies for military purposes. Fragments from satellites purposely or accidentally destroyed will add more to the debris threat facing civilian satellites and human exploration. The commercialization and militarization of space adds potential threats to civilian space exploration. Before Mars will come the Moon, and possibly a Moon-base. This may well be needed in preparation for Mars, but NASA leaders had best anticipate the risks to human beings as they break the umbilical cord with Earth and spend time on the Moon. No one wants to think about the downside of exploration. But NASA leaders need to weigh the risks of space exploration to avert them.

In closing, one can note that it has taken a long time to get to the present point, where returning to the Moon and going eventually to Mars have become space priorities. It will take strategic leadership, broad partnerships, and uncommon persistence to realize these destinations, especially Mars. But exploration is in humanity’s blood and the quest for the Red Planet will continue. A relay of NASA administrators will need to show “constancy of purpose” for years to come to achieve a Mars landing. Otherwise, a rival could get there first.

Conclusion

Is it difficult for American democracy, with its deep political divisions, to launch and continue a large, long-term, multi-decadal program? Goldin in the 1990's highlighted Mars robotically. In 2004 President Bush set the Moon and Mars on a human space flight course, and the nation has adhered to it, with considerable twists. The journey has been slow and contentious, but it has survived. The risks to sustenance are more political than technological. When one presidential administration goes and another takes its place, there is always an evaluation stage. That evaluation is inherently political. Survival of a program with a high political profile is uncertain. When that new administration reflects party change, evaluation can turn into significant reorientation—even termination of a new mission or major components thereof.

What keeps such a program going? Relay leadership is critical. The leaders of NASA have to share the same long-term goal and work toward its end. They have to advance it individually and collectively. They do so by building a constituency of administrative partners and political supporters. The partners are international and increasingly private sector as well. The political supporters have to be bipartisan. Keeping NASA above the political fray is essential to continuity and mission accomplishment in these toxic times.

Finally, supporters of the long-term mission must anticipate threats and move sooner than later to avert them. The biggest threats are political successions. But the longer advocates keep a program going, the longer those threats can be averted, simply because more and more constituents acquire stakes in the program. Advocates need flexibility in the short-run to maintain a multi-decadal program for the long run. They have to keep the distant goal a constant reminder of where they are headed so the interim objectives help and do not hinder progress. Mars may be closer in time than it ever has been (Lambright, 2017), but there is still a long way to go. Like Bolden, Nelson uses the term “constancy of purpose” as his byword (Nelson Sails Through NASA Administrator Confirmation Hearings, 2021).

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