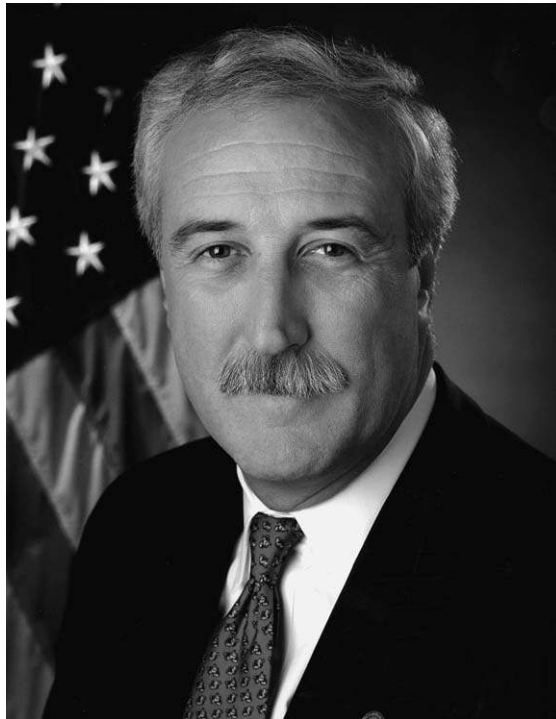


Administrative Profile

Leadership and Change at NASA: Sean O'Keefe as Administrator

W. Henry Lambright is a professor of public administration and political science in the Maxwell School at Syracuse University. He is the author or editor of seven books and more than 250 articles, papers, and reports. His books include a biography, *Powering Apollo: James E. Webb of NASA* (Johns Hopkins University Press, 1995). His current research focuses on leadership and change at NASA since the end of the Cold War.
E-mail: whlambri@maxwell.syr.edu



Sean O'Keefe was administrator of NASA a little more than three years. In that eventful and turbulent period, he dealt with numerous issues. Appointed to cope with a huge cost overrun on the International Space Station, he was soon engulfed in the Columbia shuttle accident and its investigation. Subsequently, he engineered a presidential decision that NASA return to the moon and go eventually to Mars. He also sought to terminate the immensely popular Hubble Space Telescope. The Moon-Mars decision was O'Keefe's most important achievement, as that involving Hubble was his most controversial action. This essay tracks O'Keefe's role at NASA as a case study in leadership and change.

Sean O'Keefe was administrator of the National Aeronautics and Space Administration (NASA) from December 2001 to February 2005, a little more than three years.¹ During that time, however, he achieved what Doig and Hargrove (1987) set as a key requirement for effective entrepreneurial leadership—the establishment of a new mission for his agency. His prime legacy to NASA was the presidential decision that the agency return to the moon and then eventually go to Mars. Called the Vision for Space Exploration, the decision was broader than the Moon-Mars initiative and entailed an ongoing quest to explore space through robotic and human flight. Moon-Mars was the focus, particularly the moon, but the key word in the decision was “exploration.”

Getting NASA's manned space program out of Earth's orbit and back to the moon and its original exploration mission had been a goal of space enthusiasts since the end of the Apollo era. That O'Keefe steered this ambition into decision, and did so in so brief a tenure, was not only notable but also an unexpected accomplishment.

O'Keefe did not come to NASA as a space enthusiast. He was a generalist administrator whose expertise was financial management. He was sent to NASA primarily to mitigate the International Space Station's \$4.8 billion overrun problem. He specifically rejected destination-driven goals (i.e., Moon-Mars) in favor of science-driven objectives in his first year (O'Keefe 2002).

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Yet, in late 2003 and throughout 2004, he promoted the Vision for Space Exploration and thus the Moon-Mars goal, and he reorganized and reprioritized NASA to implement the new mission. What caused this change? And why did he also, at the same time, make a decision to terminate the immensely popular Hubble Space Telescope? Wasn't Hubble NASA's

prime example of a science-driven mission? Wasn't it involved in exploration of the space frontier, albeit through non-manned means?

Behind the decisions to launch a new mission and to end an old one—two huge technological choices—was the *Columbia* space shuttle disaster of February 2003. That accident, which took seven astronauts' lives and resulted in a major investigation, seared O'Keefe to the core. Yet he dealt with the crisis and its aftermath with a rare blend of strength and compassion. *Columbia* hurt, but it also opened a window of opportunity for change. O'Keefe skillfully guided a presidential decision process to determine NASA's post-*Columbia* future. Not so skillfully, he dealt with Hubble.

In his first year, O'Keefe was widely seen as an incremental manager, competent but not a bold innovator. His critics called him a "bean counter," and he did not reject that characterization. In his third year, he led NASA in what was potentially transformative change. He was praised by space enthusiasts for the Moon-Mars decision and condemned by many of the same people for trying to kill Hubble. In between his first and third years, the *Columbia* disaster struck. That event defined O'Keefe's time at NASA and his approach to subsequent decisions.

Approach

Our focus is on the NASA administrator in relation to policy innovation. Policy innovation can be conceived as moving through six stages: (1) agenda setting, (2) adoption, (3) early implementation, (4) execution, (5) evaluation and modification, and (6) later implementation to completion. Termination of the change process can occur at any point (deLeon 1999).

The model suggests incremental change. However, innovation in policy can be abrupt and discontinuous rather than gradual and evolutionary. Events can disrupt or, as some scholars say, "punctuate" a particular "equilibrium" of interests that control a policy. New actors can come into the fray. An occasion for discontinuous change opens. If there is an able policy entrepreneur present to take advantage of the fluid situation, he or she can redirect and enlarge policy in a substantial way (True, Jones, and Baumgartner 1999). Transformational change becomes possible.

Many administrators seek to introduce policy change and move it forward. Whether they are effective depends on many factors, only some of which they can control. Change, especially major change, requires the use of executive power. Leaders can use power deftly or clumsily. They can avoid or invite struggle. Influencing policy change requires skill in the right context of organization and times. It necessitates having allies with political clout. It also requires an element of luck

(Doig and Hargrove 1987). Top administrators make controversial decisions and engage in contests with other political forces. As O'Keefe's experience shows, they win some and lose others.

Background and Style

O'Keefe was 45 years old at the time of his appointment to NASA. Born in Monterey, California, he was the son of a naval officer who was also a nuclear submariner under the legendary Hyman Rickover. He received his bachelor's degree from Loyola University in New Orleans and then attended the Maxwell School of Syracuse University, where he earned a master of public administration degree in 1978. Awarded a Presidential Management Internship, he began his Washington career as a budget analyst for the U.S. Department of Defense. During the 1980s, he served on the staff of the Senate Appropriations Committee. There, he got to know a number of influential lawmakers, including Dick Cheney, Republican congressman from Wyoming. When George H. W. Bush became president in 1989, he appointed Cheney his secretary of defense. Cheney selected O'Keefe to serve as comptroller and chief financial officer of the Defense Department. When the U.S. Navy suffered a sexual harassment scandal (Tailhook) in 1992, Cheney sent O'Keefe to the navy as its secretary to fix the mess (Vistica 1995).

O'Keefe left Washington when the Bill Clinton administration took office in 1993. He worked first for Pennsylvania State University and then moved to an endowed chair at the Maxwell School, running the school's National Security Program. When George W. Bush became president in 2001, with Cheney as his vice president, O'Keefe returned to Washington as deputy director of the Office of Management and Budget (OMB). There, he addressed a \$4.8 billion overrun on the International Space Station that the Bush administration had inherited from its predecessor. He negotiated a series of cuts and delays in various hardware components, along with an independent review of NASA's space station financial woes. In line with the independent panel's finding, he identified an explicit phase of construction during which NASA would restore its financial credibility (NASA 2001). This was called "U.S. Core Complete." It would be the period of approximately three years between the existing configuration (essentially a U.S.–Russian station "core") and later assembly, when other international partner modules would be linked. The United States would be launching certain components during U.S. Core Complete that would make subsequent international partner assembly possible. It was a time when NASA could get its financial house in order and get the station back on track. If NASA could not deal with its money and scheduling problems, the implicit threat was that the space station program would be halted in its smaller-scale form.

When NASA administrator Dan Goldin left the agency in November 2001, President Bush, on Cheney's recommendation, named O'Keefe to replace him. It was a surprise choice but generally well received by NASA watchers. O'Keefe had helped put NASA on "probation" to fix the station's overrun, and now he would be the "probation officer," supervising the reforms. No expert on space policy, O'Keefe was viewed askance by some scientists and engineers inside and outside the agency who wanted someone more technically astute and who visibly shared their enthusiasm for space. But all agreed that he brought something that NASA desperately needed: strong links to the Bush administration (Sietzen and Cowing 2004, 52).

What O'Keefe also provided was a well-honed management style. Intelligent, hardworking, steady, and nonideological, O'Keefe had developed experience as a generalist vis-à-vis specialists (i.e., the military) in the Defense Department. With his budgetary background, he cast a skeptical eye on technical proposals from program officials in the Department of Defense. Like the military services, NASA had historically emphasized technical excellence and subordinated cost considerations in promoting technical programs, particularly in human spaceflight. But O'Keefe believed that costs counted equally, and NASA needed to balance costs with the rewards of technology. Also, he urged NASA professionals to justify their programs in terms of broader benefits than that NASA should go into space "because it's there," or "manifest destiny," or "it's in our DNA." His predecessor, Goldin, had felt those values in his soul and expressed them, but not O'Keefe (Lambright 2007). He wanted more tangible rationales.

O'Keefe emphasized process in decision making. He especially linked policy and budget. The annual budget process created deadlines and pushed managers to consider programs, priorities, options, costs, and justifications. More than a budgeteer, O'Keefe thought beyond policy decisions to consider how to get them sold to political masters and then executed. O'Keefe believed that "management" was a legitimate field and that he could manage NASA even though he was not a longtime spaceman. A fast learner, he listened to and questioned subordinates. He brought a team-player approach to administrative leadership rather than coming across as a one-man show.

He preferred to work behind the scenes and was comfortable with politics inside the beltway. He knew Congress well and could deal one on one in private with lawmakers. He had former mentors and supporters in Congress, but there were also lawmakers (and media people) who chafed at his rhetorical style. He could speak in long, complex sentences that seemed to critics a form of "bureaucratese" intended to obscure rather than answer questions directly.

Like any leader, O'Keefe had his strengths and weaknesses, his supporters and detractors. To admirers, he was determined; to critics, he was stubborn. But few questioned his genuine devotion to public service. He took the practice (and theory) of public administration seriously. He wanted to do well at NASA. Many Washington insiders believed that if he succeeded at NASA, he might become defense secretary if President Bush won a second term and Donald Rumsfeld did not stay on at the Pentagon.

Setting an Agenda

O'Keefe arrived at NASA at the beginning of January 2002. He encountered a myriad of briefings at NASA's headquarters and in its various field centers. He soon began to mold his executive team. He chose Fred Gregory, then NASA associate administrator for space flight, for the deputy administrator slot. Gregory was a former U.S. Air Force flier and NASA astronaut. He chose Bill Readdy, who had worked as deputy to Gregory and who at one time had been a naval aviator and NASA astronaut, to take Gregory's position. He brought over from the OMB key officials with whom he had worked, notably Steve Isakowitz, the OMB's top budget examiner for NASA. He appointed Isakowitz NASA comptroller. He also made Paul Pastorek, a lawyer and man he had known since college, NASA's general counsel. Pastorek would be his closest confidante.

Some observers worried that O'Keefe, being nontechnical, needed to have more high-powered, highly credentialed scientists and engineers in his inner circle. Others pointed out that he relied on associate administrators at the program level for technical expertise, as well as the chief scientist position. He valued loyalty along with competence, but it was more a personal than a partisan form of loyalty.

O'Keefe initially focused on change in the human space flight program. He pulled power up to headquarters from Johnson Space Center in Houston. He put his appointees in key posts at Johnson Space Center, which was most responsible for the shuttle and International Space Station. He personally negotiated with international partners (Europe, Japan, Canada, and Russia) in the space station program. He directly dealt with influential lawmakers. He sought to recast the manned space program financially while rebuilding the space station's credibility.

Consolidating his power and speaking of "one NASA" as a rhetorical strategy to overcome field center feudalism, he increasingly gave thought to communicating a broad "vision" for the agency and its many constituencies. He believed that NASA needed a common vision to help pull its disparate components closer together. The vision would be also a statement of his own agenda for NASA. After three months in office, he felt ready to

convey his philosophy. On April 12, he went to his alma mater, the Maxwell School of Syracuse University, and delivered a highly publicized and anticipated address on the direction in which he wished to take the agency (O’Keefe 2002). Saying that NASA’s role was “to improve life here, to extend life to there, and to find life beyond,” he declared that NASA “must be driven by the science, not by destination.” This was, he emphasized, “the big change” he intended to make. He rejected calls from space enthusiasts that NASA seek a bold mission back to the moon and on to Mars. “We will go,” he avowed, “where the science dictates that we go, not because it’s close or popular.”

If becoming “science driven” was the first element in his vision, then “technology as enabler” was the second. He wanted to take NASA back to its roots as a research and development agency and to develop technology that would allow NASA to advance, step by step, “to great achievements.” In a special initiative, he called for going beyond solar and chemical propulsion to a high-priority nuclear propulsion program that would enable deeper and longer robotic spaceflight missions with much greater science payoffs. Nuclear propulsion had been downplayed under O’Keefe’s predecessor. O’Keefe, familiar with nuclear propelled submarines from his navy days (and father), had no such reticence.

There was much more in his speech, including the revival of the educator in space program, his plan to launch a teacher into space, and a general emphasis on NASA’s educational and inspirational role. But the most critical policy change, as he acknowledged, was the explicit call for NASA to be science driven rather than destination driven. Space enthusiasts who heard or read the address were extremely unhappy. Tom DeLay, a Republican from Texas, the influential majority leader in the House, and a strident space advocate, sharply criticized O’Keefe’s speech and called his vision “tepid, anemic” (Weiner 2002; Morring 2002a, 24). Other legislators, aware of the budget realities in a post-9/11 world, praised O’Keefe’s cautious and, in their view, realistic approach.

Pursuing Adoption

In the months that followed, O’Keefe could see the costs of the space station becoming increasingly “manageable.” He concluded that it would be possible to go beyond U.S. Core Complete to add international partner modules for a finished space station. In line with his policy of emphasizing science requirements, he had an advisory panel of leading researchers

study station utilization issues. The panel advised him that good science required fully completing the station so that it would go from its present complement of three astronauts to at least six. With a larger and fully functional station, more astronauts could be aboard doing science rather than mere maintenance (Morring 2002b).

The big problem with finishing and using the International Space Station was the space shuttle. It was getting old and was limited in the number of flights it could provide. Under O’Keefe’s policy, technology was to enable science. Hence, in November, he revealed a new technology development program for adoption. Called the Integrated Space Transportation Plan, his program had three aspects. First, beginning in the current year, NASA would launch a major

effort to upgrade the shuttle to make it viable until 2020. Second, beginning in the next year, NASA would initiate a major development project, the Orbital Space Plane (OSP). This would be an “interim” transportation system. Its purpose was to supplement, and thus help preserve, the shuttle. It could take astronauts to and from the

International Space Station and serve as a possible rescue vehicle. It would use expendable rockets and thus not be a true shuttle replacement. That would come much later and constitute the third aspect of the Integrated Space Transportation Plan (CAIB 2003, 116).

The centerpiece for policy adoption was the OSP. O’Keefe and his associates expected to outline the OSP proposal more fully in early February 2003, as part of NASA’s presidential budget proposal for the new fiscal year. That immediate future of NASA and its international partners was linked to finishing the space station and putting it to the maximum scientific use. O’Keefe and his associates were optimistic about the era ahead (Pastorek 2003). It was not spectacular, but it was technically and financially feasible, or so it seemed to its architects.

Suspending Policy: *Columbia*

On February 1, 2003, just a few days before O’Keefe could officially detail NASA’s proposed OSP development program and other plans, disaster struck. As it came into the atmosphere in preparation for landing, the *Columbia* space shuttle disintegrated, killing all seven astronauts aboard. Waiting at Cape Canaveral, O’Keefe was at first in a state of shock. Then, steeling himself, he ordered NASA to put its contingency plan for a shuttle disaster into effect. This was a plan he had seen his first day on the job and never expected to employ (O’Keefe 2004a).

The plan called for appointing an expert board of inquiry. This was done quickly, the first day, with retired Admiral Harold Gehman agreeing to head what became known as the Columbia Accident Investigation Board (CAIB). President Bush told O'Keefe, "You're in charge!" (Pastorek 2003). This meant that the president would not appoint an independent body similar to the Rogers Commission that investigated the *Challenger* shuttle disaster in 1986, even though many in the media and Congress called vociferously for such a body. The president's decision notwithstanding, O'Keefe realized that CAIB's credibility depended on its independence. What O'Keefe wanted was for CAIB to find out what had gone wrong so that NASA could make needed changes and return to flight as rapidly as possible. The space station was still in orbit, and with the shuttle fleet grounded, NASA was dependent on Russia for transportation services. To conserve supplies, the number of astronauts aboard the station was reduced from three to two.

On the day *Columbia* disintegrated, which he called "the worst ... of my life," O'Keefe made another important decision—that NASA be as open and transparent as possible to the media and public (Sietzen and Cowing 2004, 69; O'Keefe 2004a). This decision meant that as NASA found relevant information for CAIB, including e-mails, this information would be made widely known, even if embarrassing. After the *Challenger* accident, NASA had not appeared to be forthcoming, and its perceived bunker attitude had hurt the agency. Moreover, on the first day, O'Keefe became the human face of NASA to the country, and he would subsequently appear on television often. He came across as compassionate and with heavy heart, but also as a man in control.

As the inquiry began and information became available, debate within NASA over many safety issues prior to the accident was revealed. Many of these issues were disturbing. Along the way, O'Keefe tried to answer media questions about the decision-making process prior to launch. He was supportive of his organization, but he conveyed an overriding desire to get at the facts.

For six months, CAIB labored intensely. O'Keefe and Gehman had a mutually helpful relationship. Whatever Gehman requested in the way of resources, he usually got. Both men were conscious that in order for the agency to have credibility, it needed the appearance and reality of CAIB's autonomy. There was one serious clash along the way, over NASA personnel at Johnson Space Center. Gehman wanted to exclude certain individuals from access to CAIB's operations. O'Keefe, trying to protect his employees, disagreed, saying such explicit exclusion prejudged their complicity in the accident. Gehman held his

ground and leaked information to Congress and the media, thereby forcing O'Keefe to acquiesce. For the most part, however, there was a spirit of arm's-length cooperation. As CAIB discovered technical and organizational factors relating to the disaster's cause, it made them known to O'Keefe so that he could get an early start on corrective action (Gehman 2005; Langewiesche 2003, 73).

The CAIB report came out in August 2003. It was hard-hitting and highly critical of NASA. The technical cause was insulating foam from the shuttle's external tank. It had broken off at launch and hit the leading edge of a shuttle wing, causing a rupture. When the shuttle penetrated the atmosphere upon return from its flight, extreme heat entered the vehicle and caused its destruction. Beyond technical factors were organizational causes. NASA did not get photos of the shuttle damage that it might have obtained because of bureaucratic confusion and management errors. There was a pervasive attitude at NASA that the shuttle was "operational" rather than "experimental," and this attitude caused managers to enter into decision making with a "prove it's not safe to launch" rather than "prove it is safe to launch" mentality. O'Keefe himself came in for criticism, CAIB saying that his February 2004 deadline to end U.S. Core Complete had created "schedule pressure" (CAIB 2003, 131). But the underlying causes, CAIB emphasized, were not recent; they went back years and were systemic.

Even before the CAIB report was published, O'Keefe pledged publicly that NASA would abide by CAIB's recommendations "without further argument ... without further equivocation." He declared, "The effort we need to go through, the high bar we need to set for ourselves ought to be higher than anything anybody else would levy on us." Some of his associates felt that O'Keefe was going too far, too soon and should keep options open on implementing the CAIB report. But O'Keefe was anxious to get started on safety reforms and felt that his and NASA's credibility were at stake (Carreau 2003; O'Keefe 2005).

As the CAIB report became available, O'Keefe moved quickly to put NASA to work on mitigating the foam and other technical problems. He established an independent advisory group to oversee NASA's general compliance with the CAIB report. He hired a consulting firm to work with NASA on "cultural change." He reassigned personnel at Johnson Space Center and elsewhere. He set up an independent technical review entity to better "check and balance" shuttle program office decisions. He arranged for photos to detect damage at the time of launch and banned night launches. In these and other ways, O'Keefe acted swiftly, starting some reforms before the report was out.

The CAIB investigation gave way to a congressional inquiry in September. The major question that Congress asked O’Keefe was “who was to blame.” O’Keefe would not name names, saying he would not be party to a “public execution.” He had specifically refused an early offer of Readdy, associate administrator of space flight, to resign. He did make several personnel changes, mostly at Johnson Space Center. No one seriously blamed O’Keefe, who was seen as unlucky to have had the event occur on his watch. Gehman backed up O’Keefe, saying the NASA administrator was dealing with the problems CAIB had found, and he reinforced the finding that systemic causes were at fault that went back years, in some cases to the very beginning of the shuttle program (Cabbage and Harwood 2004, 168; Berger 2003; O’Keefe 2004a).

Congress and the media gradually shifted from the debate over the accident to looking ahead. Both wanted to know what NASA would do about another conclusion of CAIB—namely, that NASA was lacking a “compelling mission requiring human presence in space” (CAIB 2003, 209). Without such a mission, it said, NASA would not get the public support and resources it needed to manage its program effectively.

Evaluating Options

Soon after the *Columbia* disaster, various staff in the Executive Office of the President, including individuals connected with the White House Office of Science and Technology Policy, met on an ad hoc basis to discuss the implications of the accident for space policy (Sietzen and Cowing 2004, 115). At the same time, space enthusiasts inside and outside NASA sought to turn the national attention that space was suddenly receiving to positive advantage. A general mood in the country emerged that it did not make sense to risk astronauts’ lives simply to go to near-Earth orbit again and again. The International Space Station, whatever its merit, did not seem a goal worthy of sacrificing human lives. Also, the shuttle had now experienced two traumatic accidents. It had to be replaced—sooner, not later. The space enthusiasts wanted what O’Keefe had refused to give them in his 2002 vision speech—they wanted a bold destination, back to the moon and on to Mars!

O’Keefe was hesitant to go along with the enthusiasts. He sensed there was a window of opportunity for large-scale policy change. But he was not at all certain what that policy change should be, especially while CAIB was still meeting and determining causation. His initial stance in the early months after the *Columbia* disaster was to adhere to his pre-*Columbia* policy. This meant an emphasis on the OSP, needed even more now that the shuttle was questionable. Space enthusiasts pointed out that the OSP simply got astronauts up to the space station,

and that was an inadequate mission, at least for them.

In the spring, O’Keefe conferred with Cheney, Josh Bolton (White House deputy chief of staff), John Marburger (President Bush’s science advisor and director of the Office of Science and Technology Policy), and others about the post-*Columbia* planning process. O’Keefe’s strategy was to create a process for national policy decision. The ad hoc group of staff-level people meeting would, in his view, not lead to such a decision, which had to culminate with the president. There were two top-level interagency policy mechanisms available, the National Security Council (NSC) and the Domestic Council. The NSC was far more established and influential. In the summer, he persuaded Stephen Hadley, NSC deputy director, to lead an interagency activity. He also enlisted Margaret Spellings, who led the Domestic Council. He thus designed a hybrid NSC–Domestic Council process. It became known as the Hadley Committee. It was also called the Deputies Committee, in view of the involvement of deputy secretaries of a number of cabinet departments, including the U.S. State Department, as well as senior NASA and White House officials (Sietzen and Cowing 2004; O’Keefe 2004b, 2005). O’Keefe’s support from the influential Vice President Cheney helped ensure the attention of the various high-level agency officials.

Throughout the summer and into the fall, as CAIB ended its work and Congress conducted its hearings, the Hadley Committee met periodically behind closed doors and considered virtually every option possible—from shutting down the shuttle program to making a manned voyage to Mars. In August, once CAIB had called for a “compelling vision,” expansive options became more legitimate. O’Keefe did not play the “space enthusiast” role. If anything, others urged him to move beyond Earth orbit and his OSP–space station orientation. As discussions continued, the issue came down to finding a goal that was bolder than the space station but also feasible financially and politically. Eventually, the group leaned toward a return to the moon as a new mission. It was a goal that Marburger said had scientific value. Given O’Keefe’s desire for a “science-driven” NASA, Marburger’s view was important.

Meanwhile, President Bush was briefed on the Hadley Committee process, the options vented, and the direction in which the process seemed headed. Bush made it clear that he wanted something bolder to back. Bush’s father had unsuccessfully called for a Moon-Mars goal in 1989, and the son wanted to make a similarly big decision, but one that had a chance to succeed. The key word that Bush liked was not “science” but “exploration” (Sietzen and Cowing 2004, 118).

Whatever reservations O’Keefe might have had about advocating a large new mission, by late October they had given way to his need for the Hadley Committee to produce a consensus decision the president would back. Bush was engaged and awaiting the outcome from the planning process. O’Keefe increasingly exerted leadership in the interagency effort as he strove to link it with the budget process and its timetable. In doing so, he collided with the OMB. Bush might have indicated informally he wanted to make a big space decision, but he was also simultaneously telling the OMB to hold the line on spending that was not related to the Iraq war or security generally.

O’Keefe, therefore, had to do battle with the OMB to get resources for an expanded NASA mission. Moreover, there had to be closure by Thanksgiving or early December to get the results of the planning process incorporated into the upcoming presidential budget. O’Keefe lobbied aggressively for a substantial raise with Mitch Daniels, the director of the OMB, his former boss. He pointed out that bold decisions without resources to back them “will make us [NASA] look ridiculous” (Sietzen and Cowing 2004, 119).

The budget deadline and universal realization that the window for policy innovation was closing forced decisions to come to a head. O’Keefe, the OMB, and others connected with the interagency process concluded that a new “exploration initiative” would be approved and jump-started with additional money the first fiscal year, with more coming for the initiative over the next four years and after. As funds for exploration ramped up, expenditures for the shuttle and space station would go down to make room for the exploration initiative. The new would gradually replace the old.

On December 19, O’Keefe, Cheney, Hadley, Marburger, and others met at the White House with President Bush. “This is more than just the moon, isn’t it?” Bush asked. Assured that it was, Bush declared, “Let’s do it!” He then told Hadley to schedule a date when he would announce the decision for maximum visibility (Sietzen and Cowing 2004, 152).

Adopting Moon-Mars

On January 14, 2004, President Bush came to NASA’s auditorium and announced the agency’s new mission: back to the moon, on to Mars, and beyond. His decision was entitled a “Vision for Space Exploration.” It was vastly different from the vision proclaimed in early 2002 by O’Keefe. In all, \$11 billion would go to the new program in its first five years, starting with an add-on to NASA’s budget of \$1

billion the first year. Most of the \$11 billion would come by reprioritizing within NASA’s overall budget (Sietzen and Cowing 2004, 162; Lawler 2004a, 293; Allen and Pianin 2004).

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The key financial strategy, as negotiated between O’Keefe and the OMB, was for money for exploration to go up as funding for the shuttle program and the International Space Station went down. The president’s decision called for retiring the space shuttle by 2010, with a new space-

craft, called the Crew Exploration Vehicle, taking its place by 2014. This rocket-powered vehicle would not only be able to go to the space station but, more importantly, also to the moon, with the moon voyage set for 2020.

The Moon-Mars program of Bush was a giant leap from the Integrated Space Transportation Plan of O’Keefe. The prime technology development program set in motion—the Crew Exploration Vehicle and associated rocket system—was much more ambitious than the shuttle upgrade—Orbital Space Plane concept of the Integrated Space Transportation Plan. The destination of the moon was similarly a prodigious leap from the OSP’s aim, the low-Earth orbit space station. In a multitude of ways, the decision represented not a reorientation of an existing program but the adoption of a new one. O’Keefe could take a large measure of the credit for steering the Moon-Mars decision into being. He had used a coalitional strategy to put NASA’s mission into a national policy context. The coalition included the president. Now he needed congressional endorsement.

Terminating Hubble

O’Keefe wanted to get off to a fast start in promoting and implementing the new policy. On the day after President Bush spoke, January 15, O’Keefe announced the first steps in implementation. He created a new NASA division, which he called Exploration Systems. O’Keefe selected retired Admiral Craig Steidle, who had guided the Defense Department’s huge Joint Strike Fighter program, as the division’s chief. O’Keefe said that NASA was pursuing “exploration informed by science” in an address to NASA officials and employees, the words marking his shift from earlier rhetoric, “driven by science.” The president was surely in the manifest destiny tradition of exploration, and now he seemed interested in the space program—although the depth of that interest was ambiguous. When president Bush gave his State of the Union address, shortly after his space exploration speech, he failed to mention his Vision for Space Exploration. Cheney, however, was actively aiding O’Keefe with senior lawmakers, lobbying behind the scenes (O’Keefe 2004c).

As O’Keefe began his own process of extending his coalition of support to Congress, the media, scientific community, and general public, he suffered a serious blow. It arose from his decision to terminate the immensely popular Hubble Space Telescope by not sending a future shuttle-based servicing mission to make needed repairs. The same day, January 15, that he announced his reorganization to carry out the Moon-Mars mission, the *Washington Post* published a front-page article on the president’s decision. It concluded by noting one of the impacts of the decision, namely, that there would be “no further servicing missions to the Hubble Space Telescope” (Sawyer 2004). The direct linkage of Hubble’s termination to Moon-Mars was incorrect as far as O’Keefe was concerned. But that was the “truth” that was conveyed, through an inadvertent leak from a White House staffer, and publication in the *Post*. It was the perception that Hubble would be sacrificed to get money for Moon-Mars (Sietzen and Cowing 2004, 172).

The reality for O’Keefe was that the link was to *Columbia*, not a budget trade-off for the new mission. O’Keefe had promised publicly and clearly that NASA would adhere to the CAIB report. He had pledged to abide by CAIB “without ... equivocation.” Moreover, he wanted desperately to change NASA’s safety culture, from one of “prove to me it’s unsafe to launch” to “prove to me it is safe to launch.” CAIB had recommended that NASA develop a way to repair shuttle damage in space. While the space station offered a safe haven for astronauts to make repairs, there would be no such haven for Hubble repair, which was in a different orbit from the International Space Station. O’Keefe made a judgment call based on technical information he had gleaned over time about NASA’s ability to make repairs in space to the shuttle. It was that the extra servicing of Hubble repair, in the wake of *Columbia*, in the face of the CAIB recommendation, was unacceptable risk. Moreover, how could he talk about changing NASA’s safety culture if he appeared to be making a huge exception on Hubble?²

He knew the decision would be controversial. He reached it personally and gradually, in conversations with NASA officials, often indirectly, without much open discussion and debate. It came across as a one-man decision—the converse of O’Keefe’s more customary management style, which favored processes in which competing views could be aired. Moreover, it reached apparent finality around Thanksgiving, when he sat down with Steve Isakowitz, his comptroller, to make final decisions on NASA’s budget for the following year. For Hubble termination, this meant deleting funds for a potential repair mission, the precise timing of which was dependent on the shuttle’s return to flight. Because of the uncertainty of the shuttle’s return, the decision could have been delayed, more persuasive evidence gathered about risk, and more technical and

political people involved in the decision. But O’Keefe’s style was to connect policy and budget, and thus he decided sooner rather than later. Why spend money preparing for a flight that would not take place?

When he subsequently made the decision known to his top science officials, it did not come across to them as subject to change but as a decision made, with the administrator concerned mainly about how to present the bad news to those affected. Hubble proponents within NASA were surprised when they heard about the decision. NASA’s chief scientist, an avowed “Hubble Hugger,” who was also an astronaut and had himself made a servicing mission to the telescope, felt that he had been deliberately excluded from decision making and almost resigned (*Science* 2006, 903).

After the *Washington Post* announced the termination to the world, a cacophony of protest sounded. Critics asked, how could O’Keefe talk about Moon-Mars while being so risk averse when it came to Hubble? The former seemed far more hazardous than the latter. The fact that the decision became known the day after Bush’s Moon-Mars announcement connected it irrevocably with the president’s Vision for Space Exploration. Those who opposed Hubble termination were convinced it was a budget trade-off decision despite O’Keefe’s fervent denials. The nucleus of the Hubble proponents consisted of astronomers and institutions whose fates were linked to Hubble’s survival. However, support for Hubble extended well beyond them. It was a public icon.

The die was cast. Because of the leak, there had been no time for steps to be taken to prepare the Hubble science community, and its supporters in Congress, the media, or general public, for the stark decision. O’Keefe’s intent had been to talk with those scientists inside and outside NASA who were most affected, along with their allies in Congress, before making an official announcement some time hence. Absent such activity, the decision came across as arbitrary and capricious. The political backlash was immediate, loud, and harshly personal. O’Keefe was put on the defensive, and Hubble became a severe distraction from his main priority, which was to build support for Moon-Mars, including support from the scientific community.

As soon as he saw the story in the *Post*, O’Keefe called and sought to placate Senator Barbara Mikulski (D-MD), the ranking Democrat on the Senate appropriations subcommittee controlling NASA’s budget, in whose constituency were the principal scientific institutions working on Hubble (NASA’s Goddard Space Flight Center and the Johns Hopkins University-based Hubble Space Telescope Science Institute). She demanded that O’Keefe get a “second opinion.” O’Keefe agreed and asked Gehman to provide his perspective. Because O’Keefe was basing his decision

largely on CAIB's recommendations, he had reason to believe that Gehman would side with him in shifting the balance in shuttle decision making from "prove to me it's not safe" to "prove to me it is safe" (O'Keefe 2004d; Sietzen and Cowing 2004, 172–75).

But Gehman did not support O'Keefe. Instead he undercut him, writing on March 10 that "only a deep and rich study of the entire gain/risk equation can answer the question of whether the extension of the life of the wonderful Hubble Telescope is worth the risks involved, and that is beyond the scope of this letter." Senator Mikulski pounced on Gehman's suggestion, calling on O'Keefe to ask the National Academy of Sciences (NAS) to conduct an in-depth study. O'Keefe felt that he faced a Hobson's choice on Hubble. He had to decide, and he saw no good options (O'Keefe 2004d; Sietzen and Cowing 2004, 175).

Then, a group of NASA officials came to O'Keefe to tell him it might be possible to service Hubble robotically. This possibility appealed to O'Keefe. It avoided putting shuttle-based astronauts at risk, and it aided Moon-Mars, as it would advance robotic technologies. It would also get O'Keefe off the hook from the barrage of criticism he was receiving. If there was one space technology with a large, supportive constituency, it was Hubble. Advocates called it "the people's telescope," to project its broad public appeal. O'Keefe found himself having to defend his decision on the *60 Minutes* television program. He had virtually no vocal allies outside NASA.

O'Keefe told Mikulski that he would ask NAS to do the study she wanted, but also to weigh the robotic option he hoped to use. On June 1, he went to a meeting of the American Astronomical Society in Denver to offer an olive branch of peace. He reiterated his position as opposing a shuttle mission to Hubble because of safety. Then, he announced he would let a contract to industry to explore the option of a robotic rescue effort. This gesture won him strong applause from his audience and lowered the scientific, congressional, and media heat on O'Keefe. It also allowed him to devote his attention more fully to selling Moon-Mars and to regaining the momentum he had lost as a result of the Hubble controversy (O'Keefe 2004d, 2004e; Sietzen and Cowing 2004, 256–57).

Getting Congress Aboard Moon-Mars

On November 2, the American people reelected George W. Bush to the White House and enlarged the Republican majority in Congress. These and other political developments helped ensure the near-term continuity of the Moon-Mars exploration mission. Moreover, redistricting in Texas put the Johnson Space Center directly under the jurisdiction of Tom DeLay.

The powerful majority leader personally held up a vote in the House on an omnibus budget bill to make sure NASA got virtually all the \$16.2 billion appropriation it had requested. Senator Ted Stevens (R-AK), a onetime O'Keefe mentor and current backer and chair of the Senate Appropriations Committee, worked in tandem with DeLay not only to get a substantial "start-up" raise for NASA but also authority for O'Keefe to reprogram funds within NASA's budget as necessary to launch the Moon-Mars program.

O'Keefe took the congressional appropriations action as an endorsement of Bush's decision. Others noted that although Congress had funded one year of Moon-Mars, it had yet to fully debate, consider, and legislatively authorize the new mission. O'Keefe had a different view. He had a go-ahead from the president and Congress. He declared to his agency, "We have a mandate, we have the president's direction. We have the resources." It was now up to NASA, he said, to deliver (Berger 2004, 10).

Leaving NASA

O'Keefe seemed visibly tired. He had never really overcome the sense of loss he had suffered with *Columbia*. He had gone to funeral after funeral, and even kept up contact with the families of the deceased astronauts. He had soldiered on to sell Moon-Mars, but he had not gotten much public support from the president subsequent to the January 2004 speech. The Hubble decision had brought him under "withering" attack. He had a family to support and children to educate. If he had harbored ambitions of becoming secretary of defense, those ambitions were suspended when Donald Rumsfeld decided to remain at the Pentagon.

On December 13, O'Keefe wrote to President Bush that he was resigning, effective in February 2005. He was leaving to become chancellor of Louisiana State University. He could exit knowing that NASA was going to get another Moon-Mars raise in the president's upcoming budget, to \$16.45 billion. It was \$500 million short of what Bush had promised earlier, but it was a raise greater than most other nonsecurity agencies got (Berger 2005, 4).

However, the shuttle was months away from a return to flight, the International Space Station assembly remained on hold, and many of O'Keefe's financial reforms had a long way to go. Shortly after announcing his impending departure, he heard the National Academy of Sciences report that the robotic mission to service Hubble could not be ready technically in time to save the telescope. Instead, it urged him to reinstate the shuttle mission (Lawler 2004b, 2018). O'Keefe left NASA adamantly refusing to do that. If Hubble were to be saved by a shuttle mission, the decision to send a shuttle would have to come from his successor.

Conclusion

Sean O’Keefe put his stamp significantly on NASA, even though his tenure was only a little over three years. He came in primarily to fix the cost overrun afflicting the International Space Station. He left having steered into being the Moon-Mars program, thereby changing NASA’s course. The incremental, linear model of policy innovation noted earlier did not hold. That for transformative change applied to this process. The “punctuation point” in O’Keefe’s tenure was the *Columbia* disaster. It defined his three years in the starkest way possible, changing discontinuously not only O’Keefe’s space policy agenda but also that of NASA and the United States. As O’Keefe put it as he left, “I had to play a different hand than I thought I would be playing. What I was dealt was not what I had expected” (O’Keefe 2005).

The brevity of O’Keefe’s tour had its costs. He probably left too soon, before he could consolidate many of his initiatives from space nuclear propulsion to financial reform. He did not get the resources for the Vision for Space Exploration he would have liked. The budget projections for subsequent years that he left for his successor proved inadequate, especially for the space shuttle. He made progress on space station financial management, only to have *Columbia* set that project back. He obviously stumbled on the Hubble termination decision.

The Hubble case shows that top administrators engage in many battles over change-oriented policies. Some they win, some they lose. It may be easier to start major programs than to end them. O’Keefe lost the Hubble encounter, and his successor reversed his decision. But on the most significant challenges on his watch—*Columbia* crisis management and Moon-Mars—he did well. He got NASA through the *Columbia* disaster and its investigatory aftermath relatively intact. He made organizational changes to enhance shuttle safety. He used *Columbia* to get a presidential decision to return to the moon and eventually go on to Mars.

It is doubtful that a NASA administrator lacking O’Keefe’s skills and contacts with the Bush White House could have gotten this presidential decision. The Moon-Mars mission was not the policy O’Keefe had originally intended when he came to the agency, or even later, but it was the policy he left as his prime imprint. *Columbia* made it possible, and others were significantly involved, but he deserves credit for converting *Columbia* into a change in course for his agency that has potential historic significance.

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The Moon-Mars decision, like Hubble, has broad lessons for administrative leadership that go beyond O’Keefe’s experience. Among these is the criticality of powerful political allies for transformative and controversial decisions. O’Keefe did not have the allies he needed for Hubble, but he did in the case of the Moon-Mars program. Adopting Moon-Mars required Cheney and Bush in the White House and DeLay and Stevens in Congress.

Another lesson is that windows of opportunity for major policy change open rarely and briefly. *Columbia* came in 2003. President Bush announced his Moon-Mars decision and Congress appropriated start-up funds for the decision in 2004. The nation turned its attention to the Iraq war and Katrina’s devastation of New Orleans in 2005. Big decisions and new missions need coalitions, catalysts, and *timely* advocacy by an advocate with influence. O’Keefe, as NASA administrator, was an effective policy entrepreneur behind the Moon-Mars mission when NASA needed him to lead, and that milestone decision marks his most important legacy. If the decision is sustained in the years to come, O’Keefe will be viewed as the administrator who initiated the epic transition of NASA’s human space flight program from low-Earth orbit back to the space frontier.

Notes

1. The author thanks the IBM Center for the Business of Government for providing research support in preparing an earlier study of O’Keefe’s NASA experience, *Executive Response to Changing Fortune* (2005). This article builds on the IBM study and subsequent research.
2. The section on Hubble draws on research that the author and Steve Dick, NASA historian, have under way on the Hubble Space Telescope.

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