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Stuck with the Old, In with the New

NASA's Budgetary Balancing Act

During its storied history, the human spaceflight program at the National Aeronautics and Space Administration has been transformed from a vigorous can-do team hell-bent on reaching the Moon "before this decade is out"; to a middle-aged agency with a space shuttle but no clear mission; to a senescent bureaucracy nursing a dud shuttle, an unfinished space station, and a tarnished reputation. Today, NASA is two years into its most important transition yet—a return to its original focus on manned space exploration. The agency is moving ahead by looking behind, working to regain capacities and competencies that it lost decades ago, and planning to send human explorers back to the Moon and eventually on to Mars.

The heart of NASA's present makeover is the Vision for Space Exploration outlined by President Bush two years ago in the wake of the 2003 demise of the shuttle *Columbia*. The Vision calls for the completion of the International Space Station and retirement of the space shuttle by 2010, and the replacement of the shuttle by a new Crew Exploration Vehicle (CEV) no later than 2014.

The great challenge facing NASA's leadership is how to move the agency from where it is now (weighed down with an outrageously expensive infrastructure for supporting the shuttle) to where it wants to be a decade hence (flying the new CEV and training crews for the first lunar missions since 1972). The agency must negotiate this tricky transition in the face of tremendous interlocking political, budgetary, and engineering constraints.

Politically, the Bush administration has supported NASA quietly, preferring to give new NASA Administrator Michael Griffin significant independence in directing the agency. But Congress is another matter. NASA's biggest congressional supporters have long been those Senators and Representatives with constituents working for NASA. These members of Congress—from such politically important states as Florida, Texas, Maryland, California, and Ohio—do not want the NASA employees and contractors in their home districts to lose their jobs as the space agency remakes itself. And so NASA is in the position of needing the support of legislators whose institutional and electoral predilection is to oppose any changes that might cost jobs. This situation is made only more complex by the pending resignation of Representative Tom DeLay, the embattled Texas Republican whose clout was indispensable to the passage of NASA's last two budgets.

NASA's budget problem might not be apparent at first glance—after all, the agency's annual budget is now about $17 billion, an increase of about $2 billion over 2003, and all dur-

ing a time of war and deficits. But a closer look at where within NASA that money is going shows that the agency's budgeteers are in a bind like that of a bigamist, with funds being squeezed and stretched between two major commitments. On one hand, the agency is devoted to supporting the waning shuttle program, which costs about $4 billion per year even if the shuttle never flies. On the other hand, the agency is ardently ramping up work on the new CEV, its new launch vehicle, and the other components of the new Vision, with related annual costs scheduled to reach $4 billion in about three years. As a result, the agency needs to cope with a multi-billion-dollar shortfall through the end of the decade.

One way that NASA is dealing with the shortfall is by holding down spending on basic scientific research. While NASA's science budget hasn't actually been cut, it won't be growing significantly in the next few years, which means that a number of unmanned scientific missions are now to be canceled or indefinitely postponed—including a number of satellites that would study the Earth and its environs. News of these planned and potential cancellations drove critics in the popular press into a tizzy. "Scientists, Researchers Feel Pain of NASA Budget Cuts," read a headline in *USA Today*. "NASA's Budget Blunder," said a *Time* magazine headline. "NASA holds the taxpayers in contempt," screeched an intemperate article in *Slate*. The prize for hysteria surely goes to the Associated Press, which predicted that next time there's a big volcanic eruption or tornado or hurricane, "the people in harm's way—and those responsible for their safety—will have a lot less information than they'd like about the impending threat."

The truth is, as ever, much more complex. Yes, it's true that the government's spending on satellites to study the Earth and the Sun is inadequate. (A major report to that effect is expected from the National Academies later this year.) And yes, it's true that canceling or postponing certain projects will inconvenience those researchers expecting continued grants from NASA. It's even true that canceling some of these scientific programs could "cause problems in international cooperation on Earth and space science, an area in which NASA has had a good record," as a sensible white paper from the Center for Strategic and International Studies recently warned. But NASA will continue to fund an enormous amount of scientific research, including more than fifty continuing robotic missions—like the Cassini probe that has been sending back stunning pictures from Saturn and Titan, the Messenger probe en route to Mercury, the New Horizons probe launched in January for Pluto, and many more. And the very success of some of these existing missions makes it harder to afford new ones: The Spirit and Opportunity rovers, for example, were originally intended for ninety-day stints on Mars, but both are still operating two years later

and making valuable discoveries about the Red Planet's past. The continuing funding of those successful rovers reduces the money available for other projects.

One potential solution for NASA's budget woes would be to retire the space shuttle fleet early. As things stand now, the expensive space shuttle program is being kept alive until 2010 for two reasons. The first is to meet the goal of completing the International Space Station. No less than sixteen shuttle missions will be required to complete the station. But last summer's *Discovery* shuttle mission showed that the debris that doomed *Columbia* remains a problem, and no shuttle has taken off since then. Every delay in returning the shuttles to action reduces NASA's margin for error, and there is plenty of reason to be skeptical that NASA will be able to launch sixteen successful shuttle missions before the decade is out.

The second reason the agency doesn't want to retire the shuttle before 2010 is out of fear of "a repeat of the 1970s," as the *Orlando Sentinel* recently put it, "when NASA lost thousands of skilled workers between the final Apollo flight in 1972 and the first shuttle launch more than eight years later." As Senator Bill Nelson—the Florida Democrat who actually flew in space on a shuttle mission when he was a Representative in the 1980s—describes it, "We have to keep the space shuttle going until 2010" in part because of the importance "of keeping all of the educated and experienced workforce."

On the surface, that might seem to be a good point: The imprudent decisions at the end of the Apollo program squandered much NASA talent and hardware. But it isn't clear how much of the expensive "educated and experienced workforce" employed by the shuttle bureaucracy will be worth retaining in the post-shuttle era and how much of it consists of unnecessary layers of management. Besides, whether the shuttle program is ended as scheduled (in 2010) or early (by, say, the end of 2007), there will be a gap between the last shuttle flight and the first flight of the new CEV—a gap of two to four years. Surely Senator Nelson doesn't think American taxpayers should continue to pay billions of dollars for purposeless personnel during that period.

The most sensible course of action, one which we have called for before in these pages, would be to use the shuttle for a handful of critical missions—like saving the Hubble Space Telescope—before retiring the fleet for good. Retiring the shuttle early would certainly upset the Japanese, the Russians, and our other international partners in the space station. But it doesn't mean the space station would remain forever unfinished, nor even that it would have to be much delayed. The money saved by retiring the shuttle early, more than $20 billion through the end of the decade, would free NASA to speed the development of the powerful new heavy-lift launch vehicle it is planning, which could in

turn be used to complete the station. Finishing the station with the shuttle is like hiring a workman to move ten tons of bricks across town in a small wagon even though you know you're going to buy a pick-up truck in a few months anyway; it makes much more sense just to get the pick-up truck early and move the bricks more quickly once you have it.

At present, alas, there is no real support for this approach within NASA's leadership or in Congress, and only a few signs of support for it within the Bush administration. But we hope it will be seriously considered if the shuttle's continued problems make the 2010 deadline untenable.