

3 Questions: David Mindell on Obama's NASA proposal

February 5 2010, by Morgan Bettex



NASA's Constellation program — including the Orion spacecraft and Ares rockets (shown here in a concept image) — would be scrapped under President Obama's new budget proposal. Image: NASA

In 2008, David Mindell, the Frances and David Dibner Professor of the History of Engineering and Manufacturing; professor of aeronautics and astronautics; and director of MIT's Program in Science, Technology, and Society, was the lead author of an independent review of the future of the U.S. human spaceflight program. Among the report's many recommendations were that the nation set loftier goals for humans in space, focus research more clearly toward those goals and increase cooperation with other nations and private industry.

In an interview with MIT News, Mindell responds to the Obama administration's recent budget proposal for NASA. The proposal would increase the agency's budget but would cancel the Constellation program, which was intended to send humans to the moon by 2020, and would also rely on the commercial sector to ferry [astronauts](#) to the [International Space Station](#).

Q. Some observers have said President Obama's 2010 budget proposal marks the demise of U.S. human space exploration. Do you agree?

A. I don't agree. First of all, we have to remember that humans have not been exploring space beyond low-Earth orbit for nearly 40 years already, so the so-called demise actually began in the 1970s. Moreover, the program that was canceled, Constellation, was simply not viable, financially and possibly otherwise. The Augustine commission reported last fall that NASA needed at least \$3 billion more per year to achieve even modest goals in the next 20 years, and in this political environment there is no stomach for that. So the best it would have done would be muddle along, cost a great deal, and likely get people hurt along the way. The Augustine commission also laid out a "flexible option," which the Obama budget is seeking to follow, which makes for a more sensible, forward-looking policy, thinking in new ways about what constitutes exploration. Space exploration will certainly be different if this policy (i.e., budget) goes through. There will be more focus on new technologies within NASA, and the private sector is being ramped up in a big way to contribute.

In the history of American technology, it's often been the case that the federal government tends to support radical new technologies (e.g. interchangeable parts in the 19th century, computers in the 20th century) for about 40 years to help them get off the ground before turning them over to the private sector to take hold. There's a good case to be made that government-funded human spaceflight has grown conservative and

bureaucratic; it's time to see how private industry will do and what other models might work. We don't know how well they'll do, but we can only know by trying.

Q. Under the proposal, NASA's budget would receive an additional \$6 billion over the next five years. Is this enough funding for NASA to meet Obama's stated goal for it to focus on developing radically new space technologies?

A. It's hard to tell in terms of absolute numbers; spaceflight is expensive, but \$6 billion is a lot of money, especially when combined with whatever's freed up from Constellation and from retiring the shuttle. There are a lot of exciting, practical ideas out there about operating in space, like learning to refuel on orbit and to fly autonomously, that are waiting to be tried. Constellation had short-circuited many such ideas in a rush to get something built. NASA had canceled essentially all of its advanced technology development work (both in-house and supporting places like MIT), eating its seed corn for Constellation.

Q. If Obama's proposal is implemented, how different would NASA look five years from now?

A. The Obama proposal is a very clear statement that NASA should be an advanced technology development agency for spaceflight, not just a government-run airline for space or a manager of rocket-building projects. Moreover, NASA has been too hesitant to investigate radical combinations of human and robotic in its explorations, and this budget also will push the agency in those directions, which should prove very valuable. For example, a recent [NASA](#) press release mentioned the possibility of telerobotic rovers on the moon. In my opinion, it was simply ridiculous to talk about sending people back to the moon without first doing the best exploration possible with telerobotics. Look at what's been done on Mars, where the time delays, available power, bandwidths

and everything else are so much more difficult than on the moon. Yet I still can't walk into my local science museum, or a lunar geology lab at MIT, and drive around a remote rover on the moon. In five years, we should be able to do that, and we should be able to send our students and our faculty on short, sub-orbital privately run flights for their research.

Provided by Massachusetts Institute of Technology

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