Written by **James Heiser** on July 8, 2011

Keeping the Final Space Shuttle Mission in Perspective

As the last flight of NASA's space shuttle began with a photogenic launch this morning, the future of manned space flight is far from certain. From the first shuttle mission — designated STS-1 — in April 1981, when astronauts John Young and Robert Crippen flew the Columbia, through today's launch of Atlantis for STS-135, the shuttle program has been the focus of much of the praise and criticism in public analysis of America's space program. Now, as Atlantis begins its twelve-day mission, the debate about the future of human space flight centers on the role of public and private involvement in such endeavors.

Since the beginning of "space race" between the Soviet Union and the United States, outer space has primarily been the domain of governmental space programs. National security concerns led to the development of spy and weather satellites, global satellite communications, and the global positioning satellite (GPS) system. Other programs — such as the Apollo — mixed science and "national prestige" interests.

Over the years, some constitutionalists and libertarians have challenged government's role in space exploration and development. However, private space initiatives have often been, or have been perceived to be, quixotic, often proposing new technologies, but lacking the resources needed to move the proposals from vague concepts to "nuts and bolts" systems. In recent years, however, such private initiatives have begun to be seen in a new light, as companies such as SpaceX have emerged as serious competitors to aerospace "giants" such as Lockheed Martin.

NASA's shuttle program is, in a sense, emblematic of the difficulties experienced by the space agency in the decades since the conclusion of the Apollo program in 1975. With the Apollo-Soyuz Test Project in June of 1975, NASA's manned space program ended with an essentially symbolic note, until the launch of *Columbia* six years later. The scientific successes of the shuttle program (most notably the Hubble Space Telescope, which was deployed from the shuttle *Discovery* in 1990) have earned a certain respect for the program. At the same time, however, the tragedies surrounding the destruction of the *Challenger* (1986) and *Columbia* (2003) brought lengthy investigations, and fundamental questions regarding the risks which the public would be willing to accept in pursuit of a space program conducted by a governmental agency. Although the number of deaths associated with the entire U.S. space program has been far lower than many would have anticipated at the birth of NASA, a society that has become increasingly risk-adverse often seems bent on the unattainable goal of accomplishing astounding missions in outer space without risk or loss of life.

On the eve of the last flight of *Atlantis*, private companies and space advocacy organizations have continued to press for alternatives to the exclusively governmental approach to human exploration of space. An article ("SpaceX tries to offer an answer for the future") for the *Houston Chronicle* sent forth

the argument of what is arguably the most viable alternative to what has been, to date, an exclusively governmental program:

> SpaceX's goal is having its rockets (there are two possible configurations, including one called the Falcon heavy, to be used for long-distance flights) loaded in an integration facility, then roll it out and raise it into position for launch in as little as one hour. That pales in comparison to the approximately nine hours that NASA takes to roll its shuttles to its launch pads. (Both spacecrafts take time to be readied, which is done for the shuttle for about a month at the launch pad and done for the Falcon 9 in its hangar.) SpaceX hasn't accomplished that loading time yet, getting the transition down to six hours so far. …
> As for the questions about reliability, safety, feasibility, and efficiency? Will this really be the future of human space flight to the International Space Station? SpaceX says yes to all of those. And it'll be cheap, too, the representatives said, taking every opportunity to highlight the company's cost-efficiency.
> A launch pad acoustics buffer could have cost millions, by the Air Force's estimates, instead cost SpaceX $60,000, Henderson said. A spherical tank for storing liquid oxygen fuel was purchased for $1 above scrap value, he said. "It's all about thinking differently," Henderson said.

SpaceX is one alternative, and more alternatives will rise to prominence with the passage of time. For advocates of manned space flight, the end of the shuttle era is more of a time of transition than anything else, as the role of government may continue to decline, and private efforts may rise in prominence. Governmental space programs will not come to an end; whatever libertarian or budgetary arguments may be raised against it, NASA's $18 billion budget is little more that one half of one percent of the federal budget and enjoys a little of congressional and popular support that make it unlikely that NASA (or any other federal agency) would actually be eliminated.

Since the end of the Apollo program, NASA has lacked a destination; like any federal bureaucracy, many within it appear to be content for literally "going around in circles." The response of many advocates of human space flight has been to favor giving NASA a goal. As Mars Society President Robert Zubrin recently wrote for CNN:

> Instead, as matters stand, the United States will waste the next decade spending $100 billion to support an aimless constituency-driven human spaceflight effort that goes nowhere and accomplishes nothing.
> For NASA's human exploration effort to make any progress, it needs a concrete goal, and one that's really worth pursuing. That goal should be sending humans to Mars. …
> There is nothing required by such a plan that is beyond our technology.
> The issue is not money. The issue is leadership. NASA's average Apollo-era (1961-73) budget, adjusted for inflation, was about $19 billion a year in today's dollars, only 5% more than the agency's current budget.

The twisting political currents in Washington, D.C., have demonstrated that the space program is at least as open to the vagaries of various administrations as any other program of the federal government. The one surety seems to be that more and more money will be spent, regardless of the outcome. The future of manned space flight is too important to be left solely in the hands of government, and thus it is likely to see an increasingly significant role for private efforts using technology developed by private corporations. President Jefferson sent Meriwether Lewis and William Clark out on their famous expedition two centuries ago (and, it might be added, with a final mission cost

which was roughly fifteen times the original amount budgeted by Congress), but it was, in the end, millions of Americans pursuing their own dreams who opened the West and caused this nation to thrive.