

October 2005

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(This essay was originally published in the journal Space Policy in 1997)

Frontier Days in Space: Are They Over?

For more than 150 years, the metaphor of the frontier and the idea of manifest destiny have held prominent places in American consciousness. These concepts were important elements of the rationale for American westward expansion in the nineteenth century. And they have played a significant part in the history of the U.S. civil space program as well, providing a goal somewhat loftier than simply winning the Cold War space race .

The frontier spirit is still alive and well in the American space community. Aerospace leaders in government and industry continue to use the metaphor of the frontier in speaking of the future of space exploration. The National Aeronautics and Space Administration's official "vision" statement revalidates the concept, for example, stating that "as explorers, pioneers, and innovators, we boldly expand frontiers in air and space...."

But at the end of the 20th century it may be time to abandon, or at least rethink, the frontier metaphor. The social, political, economic and cultural context of the U.S. civil space program has changed radically since the 1960s. NASA's Mercury, Gemini, and Apollo programs were products of a geopolitical competition that is now, with the end of the Cold War, history.

In the post-Cold War world, geoeconomic competition is a prevailing force. Thus, the rationale of national security no longer masks the aerospace industry's relentless drive for profit. This profit motive threatens to undermine future space exploration efforts, by absorbing most of NASA's budget into infrastructure projects. With profiteers landing contracts for multi-billion-dollar launch systems and orbital facilities and talking of mining the asteroids and building on the moon, space advocates need to reexamine what the frontier metaphor means today.

Dictionaries describe a frontier as a shifting or advancing zone that marks the limits of settlement and civilization. As historian Frederick Jackson Turner explained in his famous essay, "The Significance of the Frontier in American History," a frontier is a physical and a psychological place, a sort of organizing principle. Patricia Nelson Limerick, a leading contemporary historian of the American West, has said that members of the space community should think more deeply about what they are saying as they exercise the frontier metaphor. "To many advocates of space development, American history is a straight line, a vector of inevitability and manifest destiny linking the westward expansion of Anglo-Americans directly to the exploration and colonization of space." By this model, space exploration is promoted as an escape from Earthly problems, colonization as a safety valve for social stresses.

"Space boosters promise a wide and open distribution of benefits," says Limerick. But "in situations of colonization and settlements, occasions in which everyone gains and no one loses have been extremely rare.... Whether it occurs in terrestrial space or celestial space, expansion has been tough on the ideals and practices of democracy. Principle takes a beating and expediency triumphs...." (Proceedings, "What is the Value of Space Exploration?", July 18-19, 1994, Washington, D.C.)

As Limerick explains and as Turner's critics have argued, materialistic interests played a major role in driving U.S. westward expansion. And just as profit was a primary motive for conquering America's Western frontier, profit is a primary motive for space exploration. Thus it is infrastructure development that consumes most of NASA's budget; NASA's most expensive endeavors are the international space station, the space shuttle, and the development of new launch vehicles are all multi-billion-dollar endeavors which fill up corporate coffers whether or not they ever fly. The U.S. aerospace industry lobbies hard to ensure that such programs survive and thrive. And, not coincidentally, salaries for chief executive officers and other top officials of U.S. Aerospace companies are obscenely large, and growing.

Though perhaps not so clearly articulated as the frontier metaphor, the idea of a manifest destiny in space is still alive. Manifest destiny in nineteenth-century American thought "expressed a spirit of confidence and a sense of power," writes historian Norman Graebner (Manifest Destiny, Bobbs-Merrill, Indianapolis and New York, 1968). This idea "implied that the United States was destined by the will of Heaven to become a country of political and territorial eminence. It attributed the probability and even the necessity of this growth to a homogeneous process created by certain unique qualities in American civilization -- the energy and vigor of its people, their idealism and faith in their democratic institutions, and their sense of mission...."

Advocates actually declared that expansion was a natural process. John O'Sullivan, a journalist credited with coining the term "manifest destiny," wrote in 1839 that the United States was "destined to be *the great nation* of futurity.... We are the nation of human progress, and who will, what can, set limits to our onward march?" ("The Great Nation of Futurity," Democratic Review)

This rhetoric is old and tired, even threatening today, and certainly not suited to the current global political environment. Yet it persists among space advocates, supported by a prevailing belief among Americans that the United States remains "Number One" among all the nations of the world. Even President Bill Clinton has described his country as "the world's only superpower."

The rhetoric of the U.S. space program, a rhetoric conceived by America's military industrial complex, persistently retains the idea of manifest destiny as a mobilizing concept. As the theory of historical materialism explains, history is not a matter of "destiny" but human-made. Nonetheless, the rhetoric of manifest destiny still permeates public discourses on national identity and national security. And space exploration is still described as pioneering the frontier, conquering the unknown, exploiting space resources.

The Cold War rhetoric and today's rhetoric are virtually the same. This sort of thinking reinforces the idea that conquest and exploitation are reasonable ends for space exploration. American space exploration initiatives today are ostensibly intended to promote global leadership, economic competitiveness, scientific excellence, and technological progress. But the idea of conquest and exploitation for the sake of profit is an insidious threat to achieving any of these ends.

With the Cold War over and the entire world accessible, the military industrial complex is extending the doctrine of manifest destiny into outer space. In the late 20th century, the

common wisdom is that humankind has conquered nature here on earth. Now the conquerors who run the military industrial complex are looking toward the chaos and emptiness of space as new territory to claim and tame. As the doctrine of manifest destiny was used to justify purging U.S. territory of indigenous residents, it is being used to justify clearing the way into space.

Hence, space enthusiasts continue to speculate about mining the asteroids and staking claims on the moon. (See Lawrence D. Roberts, "Foundations for Castles in the Air," *Space News*, January 20-26, 1997) When the Department of Defense recently announced that one of its space probes had found evidence of water on the moon, proposals immediately started surfacing for developing the moon and the asteroids. (See John S. Lewis, "Water on the Moon, Pie in the Sky." *The New York Times*, December 7, 1996)

And aerospace industries continue to air plans for expanding their businesses into outer space. Lockheed Martin executive James Blackwell has expressed the corporate viewpoint very well: "In the 20th century we have called space 'The Final Frontier.' In the 21st we will call it something new. We will call it 'Open for Business.'" ("Space Shots," *Space News*, February 3-9, 1997) (It is worth noting that the United States refuses to ratify the 1979 United Nations Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, because it prohibits sovereign claims on extraterrestrial property.)

It is undoubtedly possible that space exploration could degenerate into the kind of conquest and exploitation that characterized the West's domination over what is now called the developing world. Thus, NASA and its partners in space should be vigilant in their efforts to avoid repeating past mistakes. Exploration for the purpose of aiding and abetting conquest and exploitation will not build a sound foundation for humankind's future in space. Initiatives intended to conquer and exploit, to fence off bits and pieces of the solar system and extend private property rights into space, are not worthy of public funding.

Instead of profit, what the space community should be attending to in developing long-term exploration plans are the social, political, ethical, and even spiritual ramifications of extending human presence into space. NASA needs a few good social theorists and moral philosophers to guide the design of a meaningful 21st century space exploration program.

Fundamentally, what space exploration is all about is not profit but evolution, revelation, and inspiration. "Explorers...are driven by a desire to discover which transcends the urge to conquer, the pursuit of trade," writes Robin Hansbury-Tenison. (*The Oxford Book of Exploration*, Oxford University Press, Oxford and New York, 1993) Apollo 11 astronaut Michael Collins has observed that "exploration produces a mood in people, a widening of interest, a stimulation of the thought process...." (*Carrying the Fire: An Astronaut's Journey*, Farrar Straus Giroux, New York, 1974) Such efforts as NASA's Discovery program -- a series of low-cost missions to study planets, moons, asteroids, and comets -- embody the true spirit of exploration. The search for extraterrestrial intelligence (abandoned by NASA in 1993) and the search for extrasolar planets epitomize the spirit of exploration as well.

Patricia Nelson Limerick has recommended that the space community abandon the frontier metaphor. But at the same time she acknowledges that it is "an enormously persistent and determining pattern of thought...." Ultimately, it may not be feasible to expunge the frontier metaphor from the public discourse about space exploration. But it certainly is possible, and

practical, to reexamine it as a motivating force for space exploration. What *is* this space frontier?

It might be useful to think of the space frontier as a vast and distant sort of Brazilian rainforest, Atacama desert, Antarctic continent -- a great unknown that challenges humans to think creatively and expansively, to push their capabilities to the limits, a wild and beautiful place to be studied and enjoyed but left unsullied. Curiosity is what brought humans out of caves, took them across oceans and continents, compelled them to invent airplanes, and now draws them toward the stars. The broad, deep public value of exploring the universe is the value of discovery, learning, and understanding; thus, the space frontier could be a school for social research, a place where new societies could grow and thrive. This is the space frontier: the vast, perhaps endless, frontier of intellectual and spiritual potential.

Consider the popularity of director Ron Howard's film "Apollo 13." What appealed to audiences about this story was that it was about danger, risk, challenges, hard work, human ingenuity, turning failure to success, life triumphing over death. In his turn of the century essay, "The Moral Equivalent of War," American philosopher William James wrote that "without risks or prizes for the darer, history would be insipid indeed...." Space exploration offers tremendous opportunities to take extraordinary risks, and thus it promises great challenges to the human mind and spirit. Intellectual and spiritual growth are more than worthy goals of future space exploration efforts.

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