

NASA-CR-196131

NASW-4798

IN-99-TR

13686

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SPACE AND THE AMERICAN IMAGINATION

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Outline of Chapters

(NASA-CR-196131) SPACE AND THE  
AMERICAN IMAGINATION Progress  
Report, Mar. - May 1994 (American  
Univ.) 70 p

N94-35356

Unclas

G3/99 0013686

Submitted to the National Aeronautics and Space Administration

under contract NASW - 4798

May 31, 1994

## Contents

### Introduction

The introduction will set out the principal theme of the book: that the rise of the U.S. space program was due to a concerted effort by science writers, engineers, industrialists, and civic and political leaders to create a popular culture of space exploration based on important elements of American social life (such as frontier mythology, fears about the cold war, and the rise of the consumer culture). Much of the disillusionment with the NASA space program which set in during the third decade of space flight can be traced to a widening gap between popular expectations and the reality of space exploration.

1. The influence of imagination and popular culture on public policy in general: the abolitionist movement, the regulation of food and drugs, the conservation movement, the "winged gospel," cultural fashions in psychology, and administrative reform. How popular culture inspires public policy and sets limits on the ability of public officials to carry it out.
2. Public support for space exploration: the highs and lows of public support traced through opinion polls and media coverage of the NASA space program; making the case for disenchantment.
3. The overall argument: the effort to create a popular culture of space exploration and how it was organized; optimistic expectations from the "barnstorming era" of space exploration; early dissenting views; sober realities.
4. The plan of the book.

### 1. Beginnings: Making Space Travel Seem Real

Many leaders of the first spacefaring generation were influenced in their youth by science fiction. Chapter 1 will put forth the argument that the "golden age" of science fiction laid a weak foundation for the exploration of space among the public at large, and that adoption of NASA's exploration plan was the result of a deliberate effort to build political support for an ambitious space program by shaping popular culture.

1. The evidence: opinion polls from the 1940s and 1950s show a dramatic shift in public attitudes regarding the likelihood of space travel.
2. The weak foundation: science fiction and fantasy from the early 19th century through 1950, briefly summarized; how it influenced space boosters; why it did not seem real to the public at large.
3. The effort to create a popular culture of space exploration: the contributions of David Lasser, Arthur Clarke, Willy Ley, Chesley Bonestell, Wernher von Braun, the Hayden Planetarium symposia, the Collier's series, "Disneyland" theme park and television programs; realistic science fiction and cinema realism; other presentations; the order of exploration contained therein.
4. The result: the long-range plan for the exploration of space as contained in NASA's long-range plan, the Space Task Group, the National Commission on Space, and the Space Exploration Initiative; the pinnacle of space realism and public support in 1968.

## Chapter 2: The Cold War

While the spirit of adventure was sufficient to excite public interest in space exploration, it was insufficient to win political approval for the ambitious objectives contained in NASA's long-range plan. To overcome the limited program of satellite and flight research put forward by the Eisenhower administration, and win public funding for lunar and planetary exploration, space boosters tied their exploration ambitions to public hysteria over the Cold War.

1. The forgotten alternative; dissenting views at the second Hayden symposium; promoting Project Vanguard; Eisenhower's plan for the exploration of space; James Killian and the President's Science Advisory Committee; later reincarnations.
2. Public opinion polls through 1961 show that a majority of Americans opposed spending large amounts of money to explore space.
3. The popular culture of bombs from space: nuclear holocaust fears in the 1950s; space as the "high ground" of the nuclear era; "control of space means control of the world;" Hollywood weighs in; the UFO phenomenon; dissenting views; Eisenhower and Sputnik; popular reaction to Soviet space endeavors.
4. The influence of the Cold War in creating political support for NASA's long-range plan; military and industrial leaders take charge; President Kennedy and the decision to go to the Moon; Star Warriors reassert the "high ground" rationale in the 1980s; military rationales in the post-Cold War era; has prophecy failed?

## 3. Mysteries of Life

Through popular culture, scientists and other advocates of space exploration have led the public to believe that space exploration will provide answers to the great mysteries of life. Through traditions that flow back to medieval bestiaries (natural history books with moralistic or religious fables about actual or mythical animals) and journals of explorers like Charles Darwin and Lewis and Clark, the public is easily encouraged to believe that outer space teems with different forms of life and new phenomena. Public support for space exploration has declined as the images from space have failed to live up to the expectations created by earlier reports from expeditions across the earth.

1. The intellectual tradition: bestiaries and other reports of exotic lands and animals; images from the "golden age of exploration" across the earth.
2. Early expectations: visions of the Moon and planets; 19th century debates over extraterrestrial life; Mars and its canals; the evolution of Venus and Mars; envisioning extraterrestrial life from H.G. Wells to E.T.; life on the planets; alien visits, fairy tales, and devil visits; scientific support for life in the galaxy; wormholes and hyperspace.
3. The mysteries: where did we come from? Are we alone? Where will the universe end? Space science answers myth and religion. The promise made.
4. Tales from the void: the disappointing Mariner flights to Mars; actual results from Viking, Voyager, COBE, the Hubble Space Telescope, and other NASA projects; the debate over SETI; is the universe inhospitable to life?; the gap between expectations and reality.

#### 4. The Extraterrestrial Frontier

Expectations about space exploration in America draw much of their force from the myth of the frontier. Chapter 4 examines the way in which space boosters have relied upon the popular appeal of frontier mythology to inspire support for the American space program.

1. Space as the final frontier: how space boosters have employed historical analogies to justify space exploration; appeals to the voyages of Christopher Columbus and European mariners, to the settlement of America and Australia, to the American West, and to the exploration of Antarctica.
2. The frontier as a spiritual imperative: the basis for the popularity of the frontier myth in American popular culture; the influence of Frederick Turner; science fiction as the western in space; space boosters talk about the pioneering spirit and its significance in maintaining the American way of life.
3. New worlds in space: plans for settling new lands and conquering new worlds; lunar bases; colonizing the solar system; terraforming Mars.
4. Sour views: attacks on the frontier analogy; Eisenhower and the utilitarian space program; academic efforts to demythologize the frontier; the continuing appeal of frontier mythology.

#### 5. Settlement of Space

Space stations are the first step in the pioneering of space. The settlement of the Moon and Mars depends upon the development of space station technology. This chapter compares the promise of space stations in American popular culture to NASA's actual experience in trying to build them. The resulting gap between public expectations and reality contributed significantly to public disillusionment with the space program in the 1980s.

1. Conceptual history and intellectual foundations: migration and the human spirit; the doctrine of Manifest Destiny in space; space stations as frontier forts, base camps, and first colonies where people learn to live and work in new surroundings.
2. Space stations in fiction and fantasy: the Brick Moon, von Braun's wheel, "2001: A Space Odyssey," the space colonization movement, and other examples of ambitious outposts in space.
3. NASA perpetuates the image of really big space stations through its advance planning: large space stations, outposts, and extraterrestrial bases; the Space Task Group and the large space base; the space operations center; the National Commission on Space; the promise of NASA's Space Station Task Force; the dual keel space station.
4. From vision to reality: the technical and political difficulties of building a permanently occupied space station from 1984 to 1994.

#### 6. Spacecraft

In order to promote the vision of space as an accessible frontier, space boosters sought to convince the public that space flight would be cheap, easy, and reliable. They likened space travel to the popular conception of other twentieth century transportation technologies, most particularly the airplane. The shape of space craft did not matter as much as the necessity that they prove accessible and easy to fly. Chapter 6 traces the popular culture of space transportation and shows how the inability of the space shuttle to fulfill public expectations dampened enthusiasm for human space flight.

1. The intellectual foundations of space flight: space travel and the popular culture of twentieth century transportation; the airplane as an extension of the automobile, the spaceship as an extension of the airplane; the "winged gospel."
2. Spacecraft in fiction and fancy: public expectations expressed in books, magazines, and the movies; the influence of Star Trek and other visions of space travel; space propulsion in popular imagination.
2. Presenting the case for the space shuttle: the "cannonball" approach to space transportation; space boosters promise cheap, reusable transportation; "everyman" can fly; why the shuttle has wings; dissenting views and warnings; the Challenger accident and its aftermath.
3. The continuing search for new transportation technologies to lift humans from the earth and speed them through space; to Mars and beyond; space wars between the White House and NASA over transportation technologies for the Space Exploration Initiative.

## 7. People

Chapter 7 will place the question of "who flies in space" within the cultural movement toward social equality in the United States. It argues that NASA missed an opportunity to build popular support for space exploration by ignoring the social consequences of this movement in its early flight programs, especially through its exclusion of women.

1. The cultural tradition: de Toqueville's observations on the influence of the American frontier in reducing social differences and promoting cooperation; the yeoman farmer in America; social utopias in science and other fiction.
2. Women in aviation: the role of women in the development of American aviation; the role of American aviation in promoting the equality of women.
3. The astronaut corps: the decision to employ male test pilots as astronauts; astronauts as American heroes; women lobby for inclusion in the astronaut corps; the Jerrie Cobb story; NASA's efforts to demythologize the astronaut corps.
4. The "gender gap" in space: the space shuttle promises flight for everyone; NASA struggles with EEO; the decision to recruit women and minority astronauts; reaction to the flight of Sally Ride; NASA's teacher in space program; the Challenger accident; public opinion polls on the lack of support among women and minorities for space exploration.

## 8. Life on Earth

Chapter eight argues that support for the U.S. space program was part of a larger movement undertaken by industrial and civil leaders to create a popular culture that would lead the United States away from the Great Depression. Beginning in the late 1930s, industrial and civil leaders worked to create popular support for a "consumer society" as the principal alternative to socialism and New Deal liberalism. The space program was presented as part of a future in which technology and free enterprise would provide a cornucopia of consumer goods for the average American. Human flight was required in order to reaffirm the vision of technological progress, namely a higher standard of living for people on (and off) the earth. In turn, the actual space program undermined this rationale by returning images of the whole earth, helping to awaken the environmental movement. Chapter eight recasts the classic debate between proponents of "manned" and

"unmanned" space flight, seeing it not as a contest between humans and machines but as a controversy pitting the economic and scientific purposes of exploration.

1. The Great Depression, the search for alternatives to socialism to revive the economy; the effort to promote the desire for consumer goods through visions of a better tomorrow; the 1939-40 New York World's Fair; the use of airline and space flight images on product design and marketing; planned obsolescence.
2. Human space flight and the consumer society; the first generation of space flight engineers and the legacy of the Great Depression; space flight and economic progress; gadgets and spin-offs from space; the importance of humans in space exploration.
3. The view from space: how the picture of the whole earth from space transformed human understanding of the planet; communication satellites and information technology; the earth as one world; humankind as one family; the environmental movement; Malthus and the "limits to growth;" environmental protests against the space program; the frontier notion of unlimited natural resources; space technology as the solution to overpopulation and starvation; the view from space as a Rorschach test: the earth as a fragile globe with limited resources versus the cornucopia of technology.
4. The seeds of its own destruction; forces undermining the space program and the consumer society; the "man-machine" debate; the purpose of human space flight; economic progress versus the spirit of discovery; the future of the U.S. space program.

### Conclusion

The final chapter will summarize the principle thesis of the book and examine what sort of space program is likely to emerge in the future give the need to reconcile expectations and reality.

1. Imagination and the U.S. space program: a summary of findings.
2. Reconciling expectations and reality: the loss of public interest; space realism gives way to space fantasy; Disney replaces "Mission to Mars" with "Alien Encounter;" the sour view (in which space expectations are viewed as a cult-like religion that can never come true); the sober view (the abandonment of barnstorming for a more utilitarian space program); the "swashbuckling" view (some technological breakthrough will make original expectations possible).
3. Space exploration compared to other endeavors where initial expectations gave way to reality: exploration and the search for wealth in America; the development of aviation.
4. How popular culture affects public policy: creating expectations and setting limits to governmental activity; comments on the relationship between culture and technology; where will the space program go from here?

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## Introduction

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## 1. Beginnings: Making Space Travel Seem Real

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## 2. The Cold War

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## 5. Settlement of Space

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## 7. People in Space

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## 8. Life on Earth

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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503			
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 5/31/94	3. REPORT TYPE AND DATES COVERED Progress Report 3-5/94	
4. TITLE AND SUBTITLE History of Space and the American Imagination		5. FUNDING NUMBERS NASW-4798	
6. AUTHOR(S) Howard E. McCurdy			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Office of Research Services The American University Washington, D.C. 20016		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Dr. Roger Launius, Director History Division NASA Headquarters Washington, D.C. 20546		10. SPONSORING/MONITORING AGENCY REPORT NUMBER NASW-4798	
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT <i>Unclassified Unlimited Distribution Publicly Available</i>		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This report summarizes progress during the first full year of work on the project to prepare a history of Space and the American Imagination for the NASA History Division. The first year was devoted to the collection of materials necessary to begin writing the book. A complete bibliography containing 700 entries, with annotations, and a revised outline of chapters are submitted with this report. Additionally, the author during the past year has prepared two academic papers and three publications as part of the effort to clarify the themes that will guide the book. Writing of the book has commenced, and the first chapters will be submitted with the next quarterly report.			
14. SUBJECT TERMS		15. NUMBER OF PAGES 2	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT