CRITICAL ISSUES IN THE HISTORY OF SPACEFLIGHT

Critical Issues Conference Speakers

Left to right: James Hansen, John Krige, Asif Siddiqi, David DeVorkin, Howard McCurdy, Woody Kay, Andrew Butrica, Margaret Weitekamp, Phil Scranton, Steven Dick, Stephen Pyne, Alexander Brown, Slava Gerovitch, Stephen Johnson, and David Mindell. Not shown: Roger Launius, Peter Hays, John Logsdon, Todd La Porte, and Diane Vaughan. The image was taken in front of the Space Shuttle *Enterprise* at the Steven F. Udvar-Hazy Center of the National Air and Space Museum.

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Introduction

At a May 1981 "Proseminar in Space History" held at the Smithsonian Institution's National Air and Space Museum (NASM) in Washington, DC, historians came together to consider the state of the discipline of space history. It was an historic occasion.[1] The community of scholars interested in the history of spaceflight was not large; previously, well-meaning but untrained aficionados consumed with artifacts had dominated the field, to the exclusion of the larger context.[2] At a fundamental level, this proseminar represented a "declaration of independence" for what might be called the "new aerospace history." In retrospect, it may be interpreted as marking the rise of space history as a recognizable subdiscipline within the field of U.S. history. Bringing together a diverse collection of scholars to review the state of the art in space history, this proseminar helped in a fundamental manner to define the field and to chart a course for future research. Its participants set about the task of charting a course for collecting, preserving, and disseminating the history of space exploration within a larger context of space policy and technology.

In large measure, the course charted by the participants in this 1981 proseminar aided in advancing a very successful agenda of historical research, writing, and understanding of space history. Not every research project has yielded acceptable results, nor can it be expected to do so, but the sum of the effort since 1981 has been impressive. The opportunities for both the exploration of space and for recording its history have been significant. Both endeavors are noble and aimed at the enhancement of humanity. Whither the history of spaceflight? Only time will tell. But there has been an emergent "new aerospace history" of which space history is a central part that moves beyond an overriding concern for the details of the artifact to emphasize the broader role of the spacecraft. More importantly, it emphasizes the whole technological system, including not just the vehicle but also the other components that make up the aerospace climate, as an integral part of the human experience. It suggests that many unanswered questions spur the development of flight and that inquisitive individuals seek to know that which they do not understand.

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1. Richard F. Hirsh, "Proseminar on Space History, 22 May 1981," *Isis* 73, no. 266 (1982): 96–97. There had been previous gatherings of historians interested in the subject, but these had mostly been oriented toward specific subdisciplines such as space science. See Paul A. Hanle and Del Chamberlain, eds., *Space Science Comes of Age: Perspectives in the History of Space Sciences* (Washington, DC: Smithsonian Institution Press, 1981).

2. At that time, only the several volumes published as part of the NASA History Series, all written by credible scholars, and John M. Logsdon's *The Decision to Go to the Moon: Project Apollo and the National Interest* (Cambridge, MA: MIT Press, 1970) were accepted as works of serious scholarship by the larger historian community.

This assumption arises within historians and is based on their understanding of humans, for technological systems are constructions of the human mind.[3]

This "new aerospace history," therefore, emphasizes research in aerospace topics that are no longer limited to the vehicle-centered, project-focused, scientific internalist style of space history. Many of the recommendations that historian James R. Hansen suggested in an important historiographical article in *Technology and Culture* are beginning to come to fruition.[4] Taken altogether, these tentative explorations of themes build on what has gone before. At the same time, they represent a departure from the simplistic works that preceded them, notably the argumentative volumes and essays that either espouse or ridicule space exploration.

Twenty-four years after the 1981 proseminar, the National Aeronautics and Space Administration (NASA) Headquarters History Division and NASM's Division of Space History brought together another group of scholars—including historians, political scientists, sociologists, public administration scholars, and engineers—to reconsider the state of the discipline. This volume is a collection of essays based on this workshop on "Critical Issues in the History of Spaceflight," held at the Steven F. Udvar-Hazy Center of the National Air and Space Museum on 15–16 March 2005. The meeting was especially timely because it took place at a time of extraordinary transformation for NASA, stemming from the new Space Exploration Vision, announced by President George W. Bush in January 2004, to go to the Moon, Mars, and beyond. This Vision in turn stemmed from a deep reevaluation of NASA's goals in the wake of the Space Shuttle *Columbia* accident and the recommendations of the Columbia Accident Investigation Board. By June 2004, a nine-member Presidential Commission on Implementation of United States Space Exploration Policy, led by former Secretary of the Air Force Edward "Pete" Aldridge, had produced a report on "A Journey to Inspire, Innovate, and Discover." In February 2005, NASA's strategic objectives were released in a report called "The New Age of Exploration." All these documents placed the new vision in the context of the importance of exploration and discovery to the American experience.[5]

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3. Roger D. Launius discusses the richness of what has been accomplished thus far in "The Historical Dimension of Space Exploration: Reflections and Possibilities," *Space Policy* 16 (2000): 23–38.

4. James R. Hansen, "Aviation History in the Wider Context," *Technology and Culture* 30 (fall 1989): 643–649.

5. Columbia Accident Investigation Board, *Report*, (Washington, DC, 2003), 6 volumes. The President's program for NASA as announced on 14 January 2004 was entitled "A Renewed Spirit of Discovery." It was followed in February by a more detailed "Vision for Space Exploration." The Aldridge Commission report was *A Journey to Inspire, Innovate and Discover.* Events leading up to the Vision are detailed in Frank Sietzen, Jr., and Keith L. Cowing, *New Moon Rising: The Making of America's New Space Vision and the Remaking of NASA* (Burlington, Ontario: Apogee Books, 2004), as well as in the Aldridge report.

As the meeting took place, NASA had not flown a Space Shuttle since the *Columbia* accident on 1 February 2003 and was looking forward to returning to flight in mid-2005. At the same time, the space agency was in the midst of a reorganization and a change in programs of truly historic proportions. The transformation potentially heralded the beginning of a new era, as the Agency's human spaceflight program sought to leave the Space Shuttle behind and depart Earth orbit for the Moon and Mars—something that humans had not done since the end of the Apollo era more than three decades earlier. Because the new Vision was to be achieved with little or no addition to NASA's $16-billion annual budget, attempts to develop an implementation plan set off a debate on the relative merits of other areas of NASA's portfolio. Funding for aeronautics was under severe pressure, with serious implications for NASA's aeronautics research centers at Glenn, Langley, and Ames. In the wake of renewed emphasis on human spaceflight, the space science community was quick to argue that its activities were also exploration, an integral part of the "Moon, Mars, and beyond" vision, and therefore should not be subject to cuts. Earth science—which had been administratively combined with space science as part of the recent transformation—could not so easily make that argument, but it had Congress largely on its side because of the practical implications of the Earth Observing System. Also in the mix was the extraordinary and sustained controversy over a servicing mission for the Hubble Space Telescope, in which the public, Congress, and the science community had strong opinions, mostly favoring a servicing mission. Finally, it was also a time of transition between Administrators: after three years of heading the Agency, Sean O'Keefe departed in February, and on 11 March, the President nominated a new Administrator, Michael Griffin, who was confirmed by the Senate and became the 11th NASA Administrator on 14 April.

As these issues swirled, March 2005 thus proved a particularly appropriate time to assess some of the perennial challenges and concerns of spaceflight, with the primary goal of providing perspective on current issues. Six critical issues were chosen for analysis. The first session examined motivations—the persistent question of why we should go into space at a time when there are so many problems on Earth. The second session provided background on another often-asked question, why should so much be spent on human spaceflight if robotic spacecraft were cheaper and more efficient? The controversy then raging over servicing the Hubble Space Telescope with the Space Shuttle demonstrated that this dichotomy was not quite so simple; without human spaceflight and four servicing missions, the myopic Hubble would never have functioned properly and certainly would not have reached its 15th anniversary on 25 April 2005. The third session could provide only a sampling of case studies of NASA's relations with external groups, in this case with the Department of Defense (DOD), international relations, and a portion

of the aerospace industry. The fourth session shed light on another persistent issue: why there has been no replacement for the aging Space Shuttle. The fifth session, on NASA cultures, reflected the preoccupation with safety and risk in the wake of the *Columbia* accident. A concluding session addressed specific questions relating to the historiography of spaceflight and suggested possibilities for future research. After the assessment of distinct issues, it particularly considered the second goal of the meeting: to assess the state of the field of space history.

Two decades had passed since serious attempts had been made to assess the state of the field. In addition to the 1981 proseminar, NASA and NASM joined forces once again to hold a broader meeting in the spring of 1987, published as *A Spacefaring Nation: Perspectives on American Space History and Policy*.[6] In its treatment of issues, *Critical Issues in the History of Spaceflight* is broader in some respects but narrower in others. The title and spirit of the current volume hearkens back to Marshall Clagett's book *Critical Problems in the History of Science*, a collection of essays from a meeting at the beginning of the Space Age that had a considerable influence on the evolution of the history of science.[7] Space history was no part of that volume, but the 50 intervening years have given rise to a new kind of history with links to scientific, technological, political, cultural, and social history.

Although the subject of the meeting was "Critical Issues in the History of Spaceflight," this did not imply that history was the only mode of analysis that could be applied. Experts with a variety of backgrounds brought a variety of approaches to the chosen critical issues, including history, cultural studies, political science, and sociology. The reader will therefore find a range of approaches reflecting these backgrounds.

Certainly not all subjects could be covered at this meeting. NASA's first *A*, aeronautics, was not represented at all—not for a lack of issues, but precisely because an entire conference could be devoted to the subject. In addition, the focus was naturally on NASA and American space history, despite papers on international relations, and comparisons of the U.S. and Soviet space programs. The space sciences also received short shrift in this workshop and in this resulting volume. Again, there is more than enough in this arena to fill an entire volume. The issues encompassed by space history, along with its interconnections with the broader world and with other forms of analysis in

6. Martin J. Collins and Sylvia D. Fries, eds., *A Spacefaring Nation: Perspectives on American Space History and Policy* (Washington, DC: Smithsonian Institution Press, 1991). A similar conference hosted by Yale University in 1981 was published as Alex Roland, ed., *A Spacefaring People: Perspectives on Early Space Flight* (Washington, DC: NASA, 1985).

7. Marshall Clagett, *Critical Problems in the History of Science* (Madison: University of Wisconsin Press, 1959).

history and the social sciences, compose a field now grown so large—in scope if not in practitioners—that only a fair sampling can be given here. If this volume serves to stimulate more research in these areas, which we believe are of vital importance to the nation and the world, it will have served its purpose.

The meeting was a small workshop with 18 presentations and several dozen audience members who contributed substantially to the discussions. Even a small workshop, however, engendered numerous logistics. We would like to thank General John R. Dailey, Director of the National Air and Space Museum, for allowing us to use the beautiful Udvar-Hazy Center, just opened in December 2003 and adjacent to Dulles International Airport. It was a pleasure to contemplate space history in the midst of the Concorde, the SR-71 Blackbird, and the Space Shuttle *Enterprise*, among other aviation and space icons, all part of "the cathedral of the artifact," as it was termed during the meeting. For essential logistical help, we thank Nadine Andreassen, Giny Cheong, and Annette Lin, all of the NASA History Division. We are grateful to Chris Brunner and Tim Smith of SAIC for recording the proceedings on videotape. A copy of the video, along with transcripts of the discussions, may be accessed in the NASA Historical Reference Collection at NASA Headquarters.

At the NASA Headquarters Printing and Design Office, our thanks to Lisa Jirousek for copyediting and Shelley Kilmer-Gaul for design and layout. Finally, we wish to acknowledge the many contributions of those who participated in the workshop, both as presenters and from the audience. This book represents a final report on the activities of the workshop, and we hope that it will stimulate additional contemplation, research, and presentation of the history of spaceflight.

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