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One Small Step? Collection Strategies for Libraries, Archives, and Museums in the Space Age

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Abstract

This article will compare the collection of materials for the Saturn V documentation project under NAS8-21321 in 1968 to standard processes for collecting space history today. A case study of The Saturn V grant outlines the benefits of collecting research material in real time. This case study is compared to the findings compiled at the 2018 conference “To Boldly Preserve: Archiving for the Next Half-Century of Spaceflight.” The findings of this conference found that collecting space history is often fragmented by three factors: early space actors are in the twilight of their careers and loss of historical memories and materials is imminent, there is a vast expansion of the number of actors in the space industry which makes collection more difficult, and that the digital age has changed both the nature of the material and the methods by which LAMS collect them. Libraries, Archives, and Museums (LAMs) can and should develop a collaborative approach to collecting space history and ensure that acquisition and preservation of these materials goes beyond one small step and is instead one giant leap.

Keywords: Saturn V, To Boldly Preserve, archives, libraries, museums.

1. Introduction

In 1919, the Smithsonian Institution published Robert H. Goddard’s work *A Method of Reaching Extreme Altitudes*, which included a theoretical discussion of how a rocket might one day reach the lunar surface.[1] Instead of hailing this as a breakthrough in rocketry science, the press, including the *New York Times*, instead was highly critical of his theory, and publicly questioned its validity. Fifty years later, as NASA launched the Apollo 11 spacecraft toward the moon, the newspaper wrote a belated retraction, agreeing that rockets could indeed serve as a vehicle to reach lunar orbit.[2] In just fifty years, technological innovation turned Goddard’s theory into a reality, with a major news organization forced to publicly acknowledge its error. This incident proves that public perception of historical events can change quite dramatically over the longue durée.[3] Luckily, a number of libraries had the foresight to collect Goddard’s work, so the historical record is preserved. Compared to other fields of scientific endeavor, the history of modern rocketry is relatively brief and in large part a 20th and 21st century phenomenon. Libraries, archives, and museums (LAMs) therefore have the opportunity to collect these materials at a point near their creation.

In 2019 we now look back fifty years on the Apollo 11 moon landing, and can draw conclusions based on the methods used to gather archival material to document the program. The first goal of this paper will be to use the Saturn V Collection located at the University of Alabama in Huntsville as a case study of the creation and continuing evolution of a specific archival collection. Starting in 1967 the university partnered with Marshall Space Flight Center to collect a wide array of Saturn V data. Was this real-time program sufficient in scope to document the
program, or were other collection development strategies required to see the entire picture? How has preservation or access to these materials changed over the intervening fifty-plus years? A second goal will be to evaluate where LAMs stand today in regards to collection practice and how they can focus on archiving the next fifty years of space history. The findings of the 2018 conference “To Boldly Preserve: Archiving for the Next Half-Century of Space Flight” are one overview of the current state of collecting in this field and can provide guidance on where the field may go in the future[4] The question at hand is whether these efforts constitute a comprehensive collecting program that will provide sufficient documentation for subsequent study of the field. Collecting in real time has become more critical but may be much more difficult to complete. In essence, has the field made “one small step” in collecting space history, or is it poised to make “one giant leap”? [5]

2. Preserving Apollo Era Documentation in Real Time: The Saturn V Collection at UAH

On June 20, 1961, Marshall Space Flight Center Director Wernher von Braun traveled to the Alabama State Capitol in Montgomery to speak in favor of legislative action to support a fledgling research center at the University of Alabama Center in Huntsville. Von Braun pled his case, stating: “To make Huntsville more attractive to technical and scientific people across the country -- and to further develop the people we have now -- the academic and research environment of Huntsville and Alabama must be improved and improved immediately.” [6] The bond issue passed in December 5, 1961, and the university quickly established The University of Alabama in Huntsville Research Institute. The Board of Trustees hired Dr. Rudolf Hermann to administer this new center. A former German wind tunnel expert brought to the United States as part of Operation Paperclip, Hermann was at the time a faculty member at the University of Minnesota. He describes the process as follows: “The plebiscite passed… On December 11, I was at the University of Minnesota in my office working, when I got a call from Tuscaloosa, Alabama, Dr. Alex Pow, he was Executive Vice President. He called me telling me the story -- legislature, plebiscite, Research Institute, and he asked me if I wanted to come there as its director.”[7] One of the main early objectives of the Research Institute was to develop grant programs to support space research. In December 1967, Hermann submitted a grant proposal which, in conjunction with Marshall Space Flight Center, aimed to gather research materials about the Saturn V Program in and produce a book length written history.[8] Awarded contract NAS8-21321 in 1968, the grant team began work collecting archival material. Project members for the Research Institute included Hermann, Frederick I. Ordway III, and David L. Christensen. Christensen’s prior experience with missile and rocketry programs at White Sands and Redstone Arsenal and his familiarity with program personnel proved to be a great asset when acquiring documents. Also helpful was an October 4, 1968 memorandum from von Braun, which requested NASA employees to cooperate with UAH Research Institute personnel as they worked to obtain copies of pertinent information. His hope was that the resulting written history “may serve as the standard reference work on the subject.”[9] David Aikens, Chief of the Marshall Space Center Historical Office, and L.L. Jones, Marshall Space Flight Center Historian provided technical guidance from NASA as the project moved forward.
Over the next three years, Christensen and his colleagues made site visits to gather documents, conduct interviews, and began to store and index the materials relating to Saturn V. Over 1600 documents became part of the final collection. These include materials from NASA, various contractors, and oral history interviews with key members of the rocket team. The primary organization of the collection was chronological order, so that materials could be located and consulted by identification of the date of the item. An early index divided the materials into fourteen major categories with 200-plus additional identifiers.

Collection of documents was merely the first stage of the project. The ultimate goal was a written technical history of the Saturn V Program. Early on, John S. Beltz and Barton C. Hacker both worked on the historical project at the UAH Research Institute. The Research Institute was not able to retain funding, however, and the entire project moved to NASA Johnson Space Center in 1974. This relocation included the Saturn V documents, which migrated to the University of Houston at Clear Lake. Roger E. Bilstein authored the final 511-page monograph, *Stages to Saturn: A Technological History of the Apollo/Saturn Launch Vehicles*, in 1980. Von Braun died in 1977, three years before the history appeared, but the product certainly fulfilled his 1968 prediction and became a standard reference work on the Saturn V.

The Saturn V Collection of documents remained at the University of Houston Clear Lake for several years before being returned to the UAH Special Collections and Archives. A 2004 IAC paper by Coleman, Lundquist, and Christensen identified this collection is one of the core collections of the UAH Special Collections and Archives Space Collections. With the digital revolution, it became important to enhance access to the collection so that not only in person but also remote users could have access via digital mediums. The first improvement was a searchable digital spreadsheet based on the original indexing which created a means for enhanced searching of item descriptions in the collection. This version provided enhanced search capabilities over the prior print versions but provided no access to content collection. In 2006, a digitization project led by UAH Librarian Charlotte Olson in conjunction with Archivist Anne Coleman created digital scans of roughly 45% of the documents and a handful of the project’s oral histories. This new version of the Saturn V digital database utilized the database AgentDC by Autographics to provide access through a search function to display items from the collection on the world wide web. These images were migrated to a new database framework, ContentDM, in 2018, to ensure continued viability of the digital search function.

In anticipation of increased use during the Apollo fiftieth year, in early 2019 the archives staff began a major reassessment of the collection. At this time staff did base level preservation work, including reboxing and refoldering the documents in acid free materials. At this time UAH archives staff, led by Archivist Drew Adan, entered the box and folder data into the content management program ArchivesSpace. This product allows for keyword searching, which provides patrons with increased search capability. At the current time (October 2019) the roughly 700 images previously scanned images are being prepared for migration. This process includes reviewing and enhancing the existing Dublin Core metadata and preparing the files for upload into the UAH Digital Collections portal by Digital Projects Specialist Caroline Gibbons. This migration from ContentDM will allow the items to become part of a one-stop digital search.
portal for all UAH digital materials in the content management system Omeka. The last stage of this project is to scan all of the items not protected by copyright and make them available to the public through the digital portal with accurate, usable descriptions to enhance patrons’ ability to find the material they need from the collection. Items will be linked between ArchivesSpace and Omeka so that researchers will have quick access to not only search the collection for keywords, but also to digital images of the files.

Based on the grant guidelines, the original contract NAS8-21321 met the majority of its contract goals. While not every technical document of the program became part of the archive, document collection was clearly a success. One unique aspect of the grant is that it occurred in tandem with one of man’s greatest technological achievements, the Apollo 11 mission that placed man on the moon in July 1969. The documents were collected at a point near creation. The project also gathered documents which allowed for the successful scholarly monograph on the Saturn/Apollo launch vehicles. After its return to UAH, the collection inspired others to either donate or collect space materials related to the Saturn/Apollo program.

This collection is unique in that UAH holds the materials; many other Apollo era collections are held either by NASA, the National Archives and Records Administration, or National Air and Space Museum (NASM). Jennifer Levasseur, in her presentation “Learning from the Past to Inform the Future” at the 2019 International Astronautical Congress, explained the 1967 agreement which provides a contract between NASM and NASA to acquire collections, which granted NASM a right of first refusal. [13] The federal agencies have a mandate to collect a much wider swath of material to document their operations, as they are the official recordkeeping entities of the federal government. The NASA History Office not only collects historical material, but also interprets this material and makes it available to the public through conferences, presentations, monographs, and various other means. UAH Archives and Special Collections, in contrast, collects history materials as a part of its mission but without a federal mandate. The Saturn V Collection represented one very specific collecting topic rooted in one grant project, making the project an outlier to the collecting patterns of federal agencies in many respects.

Another topic which was largely ignored and outside the original auspices of this particular collection is the social and societal impact of the program, and for the last two decades UAH faculty and staff have worked hard to attract donations of other space-related materials to complete the story of Apollo. The Saturn V Collection gained further notice with the celebration of the fiftieth anniversary of the Apollo moon landing in the summer of 2019. In part because of the recognition of the importance of the documents, in 2019 the Council of Library Resources (CLIR) awarded the UAH Archives and Special Collections a $18,755 Recordings at Risk grant for the project “Shooting for the Moon: Digitizing Audiovisual Materials Related to the Apollo Program” with the funds designated to preserve space-related audio-visual materials. Included in this grant are funds to digitize some of the aging media from the Saturn V Collection.[13]

Migration to new formats is a challenge now and in the future. Continued preservation of the original documents, creating better access to digital surrogates, and migration to new formats or
content management systems will be the primary challenge which the UAH Archives must face if the documents will still be available to the public in 2069.

3. Planning for the Future of Space Archives Through To Boldly Preserve

A group of 96 archivists, librarians, museum curators, collectors, and space historians gathered at the American Institute of Physics on March 1-2, 2018 for a conference to discuss issues related to the future of collecting space materials. Sponsored by a grant from the National Science Foundation, the conference “To Boldly Preserve: Archiving for the Next Half-Century of Spaceflight” offered participants an opportunity to learn more about the current state of collecting from peers and served as a platform for discussion about directions for the future of the field. Organized by Jonathan Coopersmith, Angelina Callahan, and Greg Good, the two-day conference contained forty presentations with diverse topics in the field. The conference addressed three main issues:

“First, as early generations of researchers, engineers, technicians, administrators, and users retire, they form a disappearing treasure of untapped personal histories about the first decades of spaceflight... Second, the number of countries, organizations, and companies involved in space is sharply expanding... Finally, new forms of electronic communication and data including oral histories and social media are changing the nature of historical records.”[14]

These three questions hit very close to the mark for this case study. While the pre-1975 era of space may be better documented, the individuals who participated in that era are dwindling as time takes its inevitable toll. Many collections come to the UAH as children or grandchildren of rocket pioneers are faced with the task of putting their relatives’ affairs in order. UAH holds a robust collection of oral histories related to space history, but time is of the essence to procure new interviews as the number of individuals from the pioneer era is dwindling.[15] For example, two proponents of space history, David Christensen and Charles A. Lundquist passed away in a three month period in 2017. Both of these individuals played important roles in aerospace and space history and worked tirelessly to encourage others to preserve historical materials by donating them to an appropriate LAM. The loss of these individuals mutes their voices both as veterans of the space program and as advocates for the contemporary collection of space materials. As time passes, collecting items outside of the technical realm becomes more urgent as the field looks toward the future, so that we can examine the cultural and societal impact of the space program on the local, national, and international level. A good example of this type of project is the documentary project When We Were Apollo (2019), in which producer Zachary Weil utilized a variety of resources to tell the story of Apollo through the eyes of its participants. Conducting over a dozen interviews, Weil was able to collect new material and share it with UAH Special Collections and Archives so that it will not be lost to posterity.[16] Since the resources of LAMs are limited, It is crucial that they work with public partners to document the technological and human stories which are yet to be uncovered and shared.

As Geoff Nunn has pointed out, the NewSpace economy means that there are many more private companies are now involved in space travel, and this changes the collecting landscape.[17] Often they are less likely or even unable by privacy agreements to document their technology in a way
that can be accessed by the general public. Some may be unaware of the historical value of their programs. The sheer expansion in space actors likely means all will not be adequately documented, just as information on 1960’s era Apollo contractors is sometimes scant. The federal government has more limited oversight for documenting NewSpace actors, and this could result in gaps in the historical narrative. Ensuring preservation of company histories and technical achievements will be key to understanding and being able to interpret the current and future history of space travel. LAMs must act now to build the relationships needed to save this material, which is often digital in nature.

Likewise, the new digital milieu requires a different approach to traditional recordkeeping. In the past paper records often survived for fifty or more years, making them retrievable far into the future. Today the majority of records are born digital and never become true physical copies. For example, the National Archives and Records Administration will stop accepting paper records on December 31, 2022.[18] While this shift will impact government based space materials, many private firms already house material in a digital only format. This necessitates a new collection development strategy where curators, archivists, and records managers must plan ahead or be directly involved in the preservation process to ensure they can save the pertinent data.[19] Brian Keough and Mark Wolfe use the term “moving the archivist closer to the curator” and make a strong argument for an active role for the archivist early in the life cycle of digital materials.[20] In their example, print campus photographs often made their way to the archives, but with the advent of digital photographs this format became much harder to collect as they easily disappear from digital devices for a variety of reasons and therefore never reach the archive. Digital materials from space actors may suffer a similar fate if there is no intervention by LAMs.

Newly created material is not the only issue however. LAMs also must be able to continue to migrate this digital data, as it will surely erode over time. Much like the Saturn V case study, material will continue to need adequate housing, and to be useful must have accessible digital structures. These platforms will change over time, requiring reappraisal of how to properly present the stored data. As per the day to day accumulation of digital materials, the sheer mass of this data means only a small sample will likely be retained. For example, in December of 2017, the Library of Congress abandoned its plans to archive all of Twitter after twelve years, choosing to focus on fewer tweets which document important historic events.[21] As the author noted on a Science Friday program in July 2019, digital mediums such as the cell phone may offer us the best true snapshot of human action as we look back on the current from fifty years in the future. Are we prepared to archive it?[22]

4. Conclusions

Based on the evidence, it is clear that the collecting in real time approach of the Saturn V grant the late 1960’s was certainly a giant leap and not merely a small step. The team gathered numerous reports, speeches, diagrams, technical leaflets, correspondence, and oral histories at or near the time of creation, instead of waiting years later when documents were scattered and memories faded. The grant also stayed true to its original mission, collecting technical documents for the completion of a history of the Saturn V program. While compilation the monograph Stages to Saturn took much longer than expected, the resulting history and its
longevity as a highly utilized reference work is qualitative proof of the success of the collecting program.

Whether today we are taking a small step or giant leap into new LAM collecting paradigm is unclear. While nearly one hundred professionals were concerned about the future of archives, more problems than solutions were evident at the To Boldly Preserve conference and are complicated now by the current Covid 19 crisis which is highlighting the need for digital remote access to documents. LAMS can help to resolve these issues in three ways: First, contacting early space actors from the pre shuttle era and seeking to preserve their papers and conduct oral history interviews with them to broaden our documentation of the “golden age” of space travel. Despite best efforts, many stories still have no documentation to reveal their depth or contours. For example, a new wave of space related civil rights scholarship is emerging which are based in part on oral history interviews.[25] Second, as Geoff Nunn suggested, LAM’s can focus on the many NewSpace actors and find ways to collaborate and preserve their data, as the nature of our information storage systems are now increasingly digital. Third, LAM’s should be making plans to archive digital only materials and create a digital preservation plan to do so. A good example to follow are the “Strategy for Preserving Digital Archival Materials” issued by the National Archives in 2017. [26] While the National Archives plan focuses on federal government records, a LAM which is not part of the federal system can use the 2017 document as a starting point to develop a preservation plan which should include ways to capture the everyday datastreams of individuals, corporations, and other organizations in the space industry. This study proves that we as LAM professionals need to continue to adapt by recognizing the 21st century challenges of collecting space materials and think creatively about solutions which will ensure pertinent records are secured which will allow future generations to say our collecting strategies were one giant leap instead of one small step.

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• Examines the importance of collecting archival material at the time of the event
• A case study of the Saturn V Collection at the University of Alabama in Huntsville
• Discusses the findings of the To Boldly Preserve Conference
• Analysis of how LAMs may reduce barriers to the collection of space history material
Declaration of interests

☐ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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