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Reimagining NASA: A Cultural and Visual Analysis of the U.S. Space Program

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Abstract

In 2010, the National Aeronautics and Space Administration (NASA) commemorated its 50th anniversary by launching an anniversary Web site, which includes links to a photographic timeline, videos, and documents that the agency views as important in telling its history. This article uses concepts from narrative theory and visual rhetoric to analyze the images used in the NASA History Timeline, paying special attention to why certain images were selected as historical markers over other photographs that are more widely published and televised. Specifically, the author uses arguments from Sontag's *On Photography* and Barbatsis's "Narrative Theory" to explain how NASA's photographic narrative provides a story with a plot that spans from triumphs and tragedies in space exploration to pioneering efforts in racial, ethnic, and gender diversity.

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Over the past 25 years, technical communication scholars have written more about the failures than the successes of the National Aeronautics and Space Administration (NASA), and they have published over a dozen journal articles on the *Challenger* disaster alone. Technical communication studies related to the agency's failures are important to our field, especially as they relate to communication and decision making within organizations (Herndl, Fennell, & Miller, 1991; Pace, 1988; Winsor, 1988, 1990) and to ethics (Dombrowski, 1991, 1992, 2006, 2007), and the results of these studies have long informed technical communication research and pedagogy.

Although I study government discourse in my research, I have been reluctant to research NASA, a quasi-governmental agency, because its tragedies have been so thoroughly investigated. Also, for personal reasons, I am still inclined to view this agency through a rose-colored lens. In 1987, during my senior year in high school, I worked for Johnson Space Center, in Houston, Texas, first as a full-time summer aide and then as a part-time clerk-typist during the school years as part of an internship program created to encourage minority students to consider government and technical careers. As I reflect on my year there, I know that the number of African-American women in positions of power at NASA influenced my decision to pursue a career in government organizations. Of course, 1987 was a difficult year for NASA; it was the year following the 1986 *Challenger* disaster. A few months ago, as I rummaged through some old keepsakes from my year there, I stumbled upon an old NASA personnel newsletter that I saved as a souvenir. In the newsletter, dated October 1987, the agency published the preliminary results of its agency-wide culture survey. Here is an excerpt from the questions posed in this survey, which was conducted in December 1986 and taken by 3,000 NASA employees and 700 Johnson Space Center employees:

- Career Development—Do NASA managers take enough time to discuss career planning with their employees?
- Power Sharing—Do we work together well as a team? Are people willing to share their power?
- Innovation—Do we welcome innovation in our administrative processes?

- Communications—Is information readily available to anyone who needs it?
- Role Clarity—Do employees have a clear concept of their roles and how they relate to others?
- Loyalty—Does NASA take care of its people?
- Trust—Can NASA senior management be trusted to do the right thing?
- Decisions—Are decisions based on open discussion and debate of the facts? (NASA, 1987)

While questions such as "Do we work together well as a team? Are people willing to share their power?" might lead those of us in technical communication to discuss the *Challenger* and *Columbia* disasters, the diverse group of employees who worked at NASA during the time of this survey might interpret this question from different perspectives. Their responses might interpret decision making and power sharing as concepts related to the agency's willingness to hire women and minorities. Mae Jemison, the first African-American woman astronaut, articulated the importance of social, cultural, and political achievements of NASA:

> It is important for scientists to be aware of what our discoveries mean, socially and politically. It's a noble goal that science should be apolitical, acultural and asocial, but it can't be, because it's done by people who are all those things. (as cited in Ryan & Cooper, 2010, p. 133)

During the 1980s, evidence of the importance of power sharing and diversity at NASA was apparent in the prominent role of a former human resources manager, an African-American woman whose image inspired many in the Houston metropolitan area when she was televised on the local news demonstrating how she was able to type on a computer even without functioning hands or arms. Another example of the importance of diversity at NASA includes additional information in the October 1987 newsletter—a pie chart explaining that 30% of NASA's workforce were women and that "JSC had the second highest percentage of women employees after the National Space Technology Laboratories in Mississippi" (NASA, 1987). These examples demonstrate that NASA decision makers were as courageous in their willingness to discuss workplace diversity, in newsletters and in the media, as they were in their efforts to walk on the moon.

The only other souvenir that I found was an 8×10 color photograph of Ronald McNair, an African-American astronaut who was one of six astronauts who perished (along with the first civilian, Christa McAuliffe) in the

Space Shuttle *Challenger* on January 28, 1986. Although photographs of all the NASA astronauts were readily available to student employees, I remember my manager, an African-American woman, giving me the photograph of McNair, probably hoping that this image of an African-American astronaut would inspire a young African-American high school student attending a predominately black high school in the inner city of Houston, Texas. I do remember being motivated by this image of a black astronaut, especially when I discovered that as late as the 1960s, he spent summers working in the cotton and tobacco fields of South Carolina. Willis (1994) discussed the use of photography for shaping identity in the African-American community:

> The photographing of African-Americans for personal collection, scientific studies, advertising purposes, or for general public use dates back to 1839 . . . . In the last few years there has been a surge in interest in photography, specifically in the ways one looks at and interprets photographs and how identity and representation are constructed in photographs of African-Americans. (p. x)

Now, more than 20 years after putting the photograph and newsletter away for safe keeping, I realize the personal significance of the McNair photograph for me as well as the broader significance of the newsletter survey as it relates to the *Challenger* disaster and employees' reactions to this traumatic event. I also realize that scholars in technical communication have posed research studies that, in some ways, responded directly to the agency's internal survey questions (i.e., Are decisions based on open discussion and debate of the facts? and Can NASA senior management be trusted to do the right thing?). Still, with all of the questions regarding NASA's tragedies, my memory takes me to that photograph of McNair, a photograph that, for me, is symbolic of my experience with the numerous visual narratives surrounding NASA's successes and tragedies. For every NASA launch, whether successful or catastrophic, there is some accompanying visual that those of us who have followed this agency's history can recall. Personal reflections of NASA take us to auditorium-held meetings with speakers and slide shows that served to rejuvenate employees and reflect on the agency's triumphs, television coverage of NASA launches that flooded local and national media coverage and were shown in primary- and secondary-school classrooms years before the *Challenger* disaster, and the numerous photographs of NASA's triumphs published in local newspapers and national newsmagazines prior to the Internet.

In 2010, NASA commemorated its 50th anniversary by launching a Web site, the NASA History Timeline, which includes links to a photographic

timeline, videos, and documents that the agency views as important in the telling of its history (NASA, 2010e). This site also links to NASA's (2010c) Great Images in NASA (GRIN) Web site, a photographic archive that provides thousands of high-quality downloadable photographs to the public. A description of GRIN states that

> GRIN contains many, but not all of the most popular images from NASA's history. It also contains important historical images that you may not have seen before. We created GRIN because the History Office receives many requests for photos. This public database is intended to meet that need.

NASA History Timeline contains a small fraction of the images from GRIN and a few images from other government Web sites. Although the GRIN Web site contains thousands of photographs, many of which we have seen and others that are new to the public, the NASA History Timeline displays an average of 10 images per photomontage and covers six decades. This relatively small number of photos must have some historical and political significance, especially given the political environment in which the site was created. That is, this Web site was created during a period when NASA's future was uncertain, a year after the Review of U.S. Human Spaceflight Plans Committee (2009) report. The report was created 2 years before NASA's September 14, 2011, announcement of new deep-space exploration and the development of a new space launch system. The executive summary of the report begins with clear questions about the agency's future and purpose:

> The U.S. human flight program appears to be on an unsustainable trajectory. It is perpetuating the perilous practice of pursuing goals that do not match allocated resources. Space Operations are among the most demanding and unforgiving pursuits ever undertaken by human beings. It really is rocket science. Space operations become all the more difficult when means do not match aspirations. Such is the case today.
>
> The nation is facing important decisions on the future of human spaceflight. Will we leave the close proximity of low-Earth orbit, where astronauts have circled since 1972, and explore the solar system, chairing a path for eventual expansion of human civilization into space? If so, how will we ensure that our exploration delivers the greatest benefits to the nation? Can we explore with reasonable assurances of human safety? Can the nation marshal the resources to embark on the mission? (p. 9)

This report was not written by opponents of NASA or its mission but by prominent supporters, including Sally Ride, former NASA astronaut and the first woman to journey into space. Given the uncertainty of NASA's future and the fact that decision makers raised questions the year before NASA celebrated its 50th anniversary, it is important to examine NASA's history, at least in terms of how the organization attempts to reframe its own story on its anniversary Web site. In this article, I use concepts from narrative theory and visual rhetoric to analyze the images used in the NASA History Timeline, paying special attention to images that NASA viewed as culturally, socially, and politically significant.

Using Narrative Theory to Understand NASA's History Timeline

In his *Poetics*, Aristotle (1963) defined a tragedy as a narrative with language "adorned with different kinds of ornament, separately in its various parts," which include rhythm, melody, and song (p. 471). In my own recollection of successful, televised rocket launches, I recall the image of the rocket on the launchpad in all of its technological grandeur followed by three anticipated phases, which, for the sake of a textual description, I categorize using Aristotle's parts of adorned language. In the narrative of a rocket launch, then, rhythm is the movement of the rocket with its accompanying firing of flames, the melody is the roar of the engine often muffled by the announcer's voice, and the song is the audience's cheers or, in a few tragic cases, gasps. To tell NASA's story from a lay audience's perspective, we can trace the successive plots embedded in our collective consciousness through this adorned language that is almost always read via images. The stories' plots are narrated through pictures both tragic and triumphant. These plots, though, are also about possibilities because NASA, regardless of its tragedies, has always been about possibilities. From John F. Kennedy's speech declaring the possibility of a moon landing to the agency's effort to rebuild their spaceflight program after the *Challenger* disaster of 1987, NASA has always been an experiment in possibilities. My rationale for framing this study around storytelling and images is rooted in part by Aristotle's model of narratives, not just because Aristotle was a rhetorician whom those of us in scientific and technical communication studies depend on for much of our rhetorical analysis but because his model of narratives requires that storytellers adopt the persona of a historian. As Aristotle theorized, "the historian and the poet do not differ by virtue of one's using prose and the other verse.... The difference is that one

describes what happened, the other describes what can happen'' (p. 475). So how do images fit into this discussion of what happened and what can happen?

Before Aristotle (1963) described adorned language, he stated, ''not only do philosophers get great pleasure from learning, but other people do so too, even though they do not have an interest in it to the same extent. This is why people enjoy looking at pictures: one consequence of their looking is that they learn and realize what each thing is'' (p. 468). Few of us are rocket scientists, but over the past few decades we have learned quite a bit about NASA and gleaned most of what we know from images. We have viewed video footage of rocket launches, photographs of men on the moon, and videos of men and women, of various ethnicities, yielding to gravity aboard spaceflights. And although there are as many documents on NASA's history as there are photographs or video footage, for most of us, the visuals have had a greater impact in telling this agency's story.

Over the past 50 years, NASA and the media have served as coauthors of NASA's legacy. While NASA photographers archived thousands of images that they now display on GRIN and a NASA cable channel, traditional media outlets have done the same with images in print and hundreds of hours of video footage. But Barbatsis (2005) argued that photographers are collaborators with their audiences, who are ''their counterparts in the visual storytelling'' (p. 341), her term for the process of telling stories through visuals. She described the method of analyzing visual stories as ''narrative analysis,'' an interdisciplinary methodology used ''to interpret the ways in which visual materials use a narrative way of 'structuring thought' to make sense of the world'' (pp. 344-345). Acknowledging that her study in narratives and visuals is not new, Barbatsis claimed that ''scholars since the time of Aristotle have asked: What is a pictorial story? Why do we need pictorial stories? Why do we need the 'same' pictorial stories over and over? And, finally, why is our need for more pictorial stories never satisfied'' (p. 346). In the case of NASA, its photographic archive, often comprising pictures of the same or similar activities ''over and over,'' has both rhetorical and historical purposes. Visuals and videos of successful rocket launches are more than the obvious, collective interpretations of hard work and excellence; they make arguments for the continuation of the space program and federal funding. Barbatsis described a story as having more than a number of events that shape the plot, reminding us that the events that shape a story are informed by ''some agents as well as some sort of pattern or native rhythm'' (p. 335). In NASA's visual timeline, these agents or characters are as often presidents as they are astronauts, and recurring events or patterns

include images that symbolize not only technological and scientific innovations but political and social change and progress.

In Barbatsis's (2005) study on visual narratives, she used a graphic to describe Seymour Chatman and Northup Frye's explanation of narrative theory, in which these narrative theorists make a clear distinction between the two major parts or branches of a narrative, its story and its discourse. The story branch has two subbranches: (a) events, which are the "actions" or, "happenings" and (b)"existents," which are the "characters" and "settings." The other major branch, discourse, also includes two subbranches: (a) "structure of narrative transmission" and (b) "manifestation" (p. 336). Within the manifestation subbranch, Barbatsis argued, we can make claims about the various outlets for storytelling, including verbal, pictorial, gestural, and musical (p. 336). Within this view of a narrative structure, the graphic denotes that the major difference between narratives is not the various parts of their story, but the form (verbal, pictorial, gestural, or musical) in which these stories are articulated. Working within this theoretical perspective, I explain why photography, the pictorial form, was and is the most appropriate means of communicating NASA's story to the public. Specifically, I use arguments from Sontag's (1977) *On Photography* to explain how NASA's photographic narrative provides us with a plot that spans from triumphs to tragedies in space to pioneering efforts in workplace diversity. NASA's timeline tells its story through photographs that celebrate and mourn while praising those government officials who have helped the agency survive.

Triumphs

More than 40 years after its launch, the *Apollo 11* spaceflight is still viewed by many as NASA's most significant exploration and achievement. It was a scientific and political triumph. Clearly, the scientific success is that on July 21, 1969, humans walked on the moon. The political triumph, for NASA, was that these humans were U.S. citizens who, in accomplishing this feat, had helped the United States to beat the Soviet Union in the space race of the Cold War era.

To prepare for this study, I thought I should speak with a former NASA employee with some connection to NASA's glory days. So in the summer of 2009, I interviewed Charles Criner, one of at least three African-American artists hired by NASA in the late 1960s to help draw the flight plan for *Apollo 11*, the flight plan that landed men on the moon. Criner was quick to point out that his NASA supervisor was also African-American and that

both he and his supervisor had studied art at Texas Southern University, a historically black university in Houston, Texas. The interview was brief because it was conducted via telephone during a break from Criner's current work as a master lithographer for the Houston Print Museum. Ironically, Criner began the conversation with an apology, explaining that he was not a technical communicator, so he might not be as helpful as I wished. Here is an excerpt from our interview:

Williams: As an artist, what type of work did you do at NASA?

Criner: Well, that was before computers, so we did the flight plan. We also did graphics for engineers. The flight plan was like a great big dictionary and at the end, it had sequences like every tenth second. We had to draw the lunar landing and its position from one tenth second to the next. It was just a long line of drawings. And when something happened or the engineers changed something, . . . everything from that point down had to be changed. Believe me, they didn't care about how much work we did. We had about 25 or 30 artists. We also had technical writers, but we had a lot more of them.

Williams: Did you work with the technical writers?

Criner: We worked with the engineers . . . . They would come in with a sketch—a pencil sketch with all of the readings on it. This was apart from what we did with the flight plan . . . . Are you familiar with Leroy lettering? Leroy lettering is what we used before computers came along.

After Criner described Leroy lettering, he moved on to discuss in great detail his first job interview after he graduated from Texas Southern University. Specifically, he highlighted an experience that demonstrated the overt racism that was commonplace during the 1960s:

Criner: I graduated in 1968 and I went to work for [a billboard company], but [before that] I worked with Dr. John Biggers [at Texas Southern University].[1] I told him [Biggers] that I wanted to go into commercial arts, (although I liked fine arts you know we worked together, but he said, "What you need to do is go down to one of the [job] agencies and see if you can get a job," and so I did, and they sent me to [Company x], and I was sitting there—this is a true story—I was sitting out there in the hallway waiting for my time to go in to see the two interviewers. Then, a white fellow came in . . . . He came and sat down, and they came and asked him to come in first. You know, I was sitting out there and I could hear them. And they said, "Well your work looks really good, and we have already looked at the other fellow's work. (They hadn't looked at my work.) And they

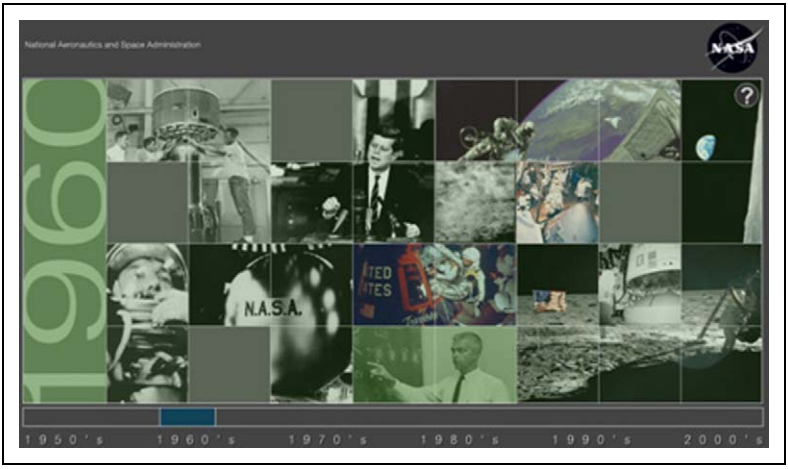

Figure 1. NASA's 1960s photomontage.

> said, "You have the job." And I just packed up my stuff and was getting ready to leave and the fellow said, "No, I can't work for this salary." And that's how I got my first job. (C. Criner, personal communication, September 16, 2009)

While Criner's discussion of his experience at the billboard company was about racial discrimination, his discussion of his experience at NASA was about the work. Although I was fascinated with the detail he provided regarding his work, which I will save for a future study, I was even more fascinated by the fact that African-American artists played such a prominent role in drawing the flight plan for Apollo 11. Besides telling me about his experience as an African-American artist during the 1960s, Criner provided me with a rudimentary understanding of the level of detail and precision needed to make a successful launch and to engage in space exploration. Although most of us have a basic understanding of what these artists, through photographs or drawings, are attempting to communicate, the lay audience's understanding of space exploration is what Sontag (1977) would describe as a "semblance of knowledge." As she put it, "photography makes us feel that the world is more available than it really is" (p. 24).

Within the 1960s photomontage in NASA's timeline (see Figure 1) is a photograph of Neil Armstrong walking on the moon (see Figure 2) after he and Buzz Aldrin raised the U.S. flag and after he famously declared, "That's one small step for man, one giant leap for mankind." This often

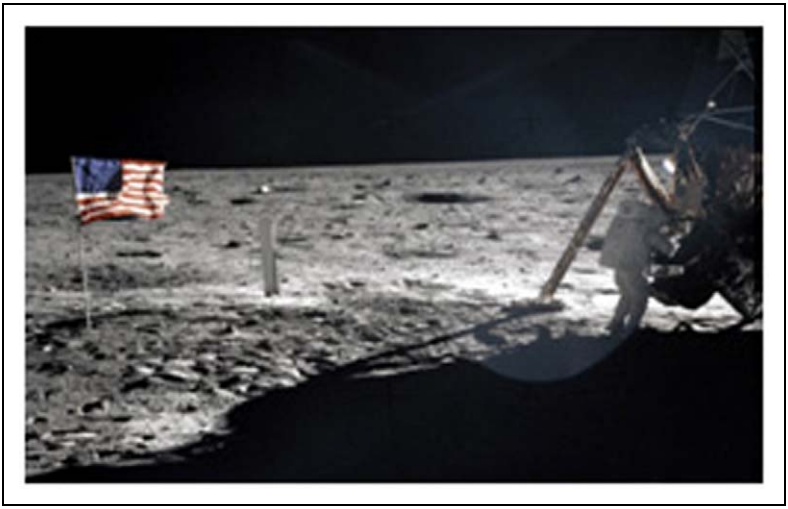

Figure 2. "Neil Armstrong on the Moon" (NASA, 2010f).

viewed image of astronauts walking on the moon made it seem more accessible to humans than ever before. Within this same montage is a large photograph of President John F. Kennedy as he made his May 25, 1961, speech declaring his intentions for NASA to land on the moon (see Figure 3). While he is prominently displayed in the 1960s photomontage, other evidence of NASA's successful explorations in space includes a photograph of "the first man to fly in space," Alan Shepard; "the first man to orbit the earth," John Glenn; and the first walk in space by an astronaut (NASA, 2010e). While the 2009 Review of U.S. Human Spaceflight Plans Committee questions the sustainability of NASA's current goals and mission, it does acknowledge that "many of the benefits of human spaceflight are intangible (e.g., the positive impact the *Apollo* 11 landing had during a time of great tribulation for America)." The committee argued, "But this makes such intangible benefits and activities no less significant—witness the importance assigned to great literature, music, and art in our nation's history" (p. 111). While NASA's contributions in the 1960s are still used in arguments for the sustainability of the organization, the 1970s photomontage signaled a period with less dramatic feats. Although the 1970s photomontage includes photographic references to the two Viking shuttles' trips to Mars, it lacks the number of firsts that are in the 1960s photomontage. This decrease in the number of NASA's novel space explorations is likely

Figure 3. "Kennedy Giving Historic Speech to Congress" (NASA, 2010g).

related to the differences in presidential support for the agency during these two decades, which I discuss later.

Starting with the 1980s, photographs of women and ethnic minorities are prominently displayed in the photomontage (see Figure 4). The montage is clearly not presenting these photographs of women, people of color, and foreign-born astronauts as everyday occurrences; when viewers click on these photographs, they find captions that celebrate the social and political firsts in NASA's history. Captions in the 1980s photomontage indicate that Guion S. Bluford was the first African-American astronaut, that Sally K. Ride was the first American woman to fly in space, and that Ulf Merbold was the first non-U.S. astronaut to fly aboard a NASA space shuttle (NASA, 2010e). But even without the captions and the recurring use of the word *first,* viewers can clearly see that the photographs of ethnic minorities and women in the photomontages from the 1980s to the 2000s are included to demonstrate the agency's success in creating a diverse workplace and employing crew members from all walks of life. As important, NASA's acknowledgment of these firsts on their anniversary timeline communicates that this agency viewed its past efforts toward diversity

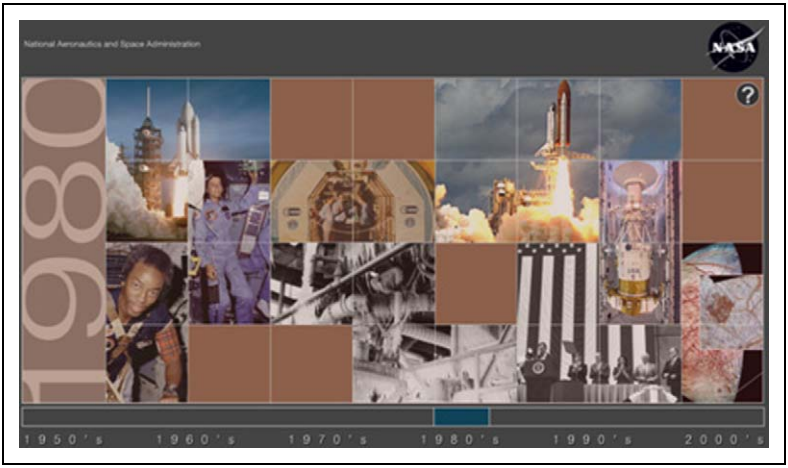

Figure 4. NASA's 1980s photomontage.

as triumphs warranting space on the Web site that is almost equal to that of the shuttle launches. While NASA's current administrator, Charles F. Bolden, is an African-American and former astronaut, his photograph is not included on the timeline. Bolden, the highest ranking NASA official at the time of this study and the highest ranking African-American in NASA's history, was appointed by President Barack Obama in 2009. While including a photograph of President Obama with Bolden would seem to be an obvious means of communicating its triumphs in achieving cultural diversity, NASA was likely influenced by politics and sustainability, which I discuss later, in its decision to exclude such a photograph on its anniversary Web site.

Tragedies

Sontag (1977) argued that the most popular uses of photography are to record achievements (like those in the 1960s and 1980s photomontages) and to document tourism with photographs serving as souvenirs: "As photographs give people an imaginary possession of a past that is unreal, they also help people to take possession of a space in which they are insecure" (pp. 8-9). There is no greater evidence of a space in which NASA is insecure than in its projects that were disasters. Beyond these depictions of firsts in the 1980s photographs, there is, in the center of the montage, a black and white photograph of ice covering the launchpad at Kennedy Space Center (see Figure 5). When viewers click on this photograph, they discover that

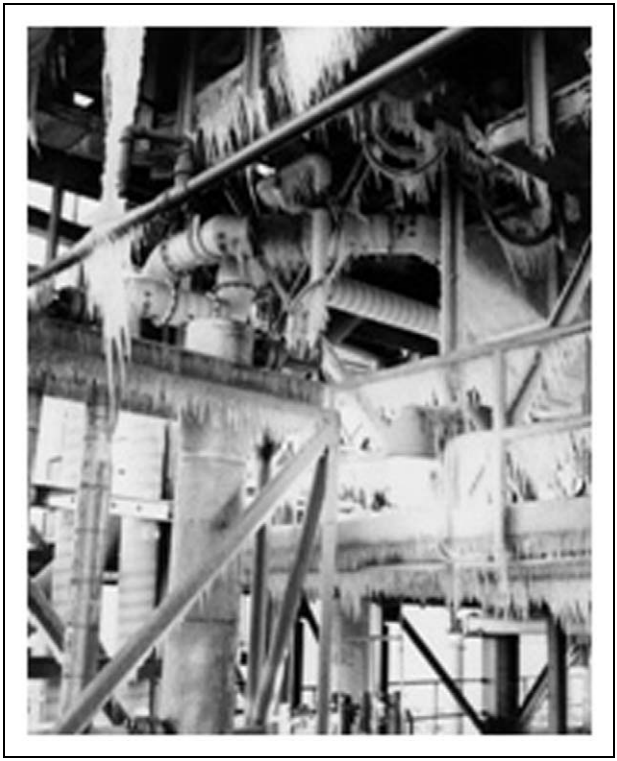

Figure 5. "Ice on the Pad on the Day of STS-51-L's Launch" (NASA, 2010d).

this is the only photographic reference in the montage of Space Shuttle *Challenger*, which exploded on January 28, 1986. The accompanying caption explains that seven crew members lost their lives as a result of an explosion (NASA, 2010e). Although it is understandable that those selecting the photographs for the montage celebrating NASA's 50th year would not want to include a photograph of the *Challenger* in some stage of its exploding, the inclusion of the photograph of the iced-over launchpad seems to present nature, specifically ice, as the cause of the explosion in lieu of poor decisions made by NASA officials and their contractors. While the icy scene is not placed in the optical center of the montage, the scene is located in the geometric center, which most viewers would consider a prominent place, making it difficult to argue that this disaster was not given appropriate space within this narrative.

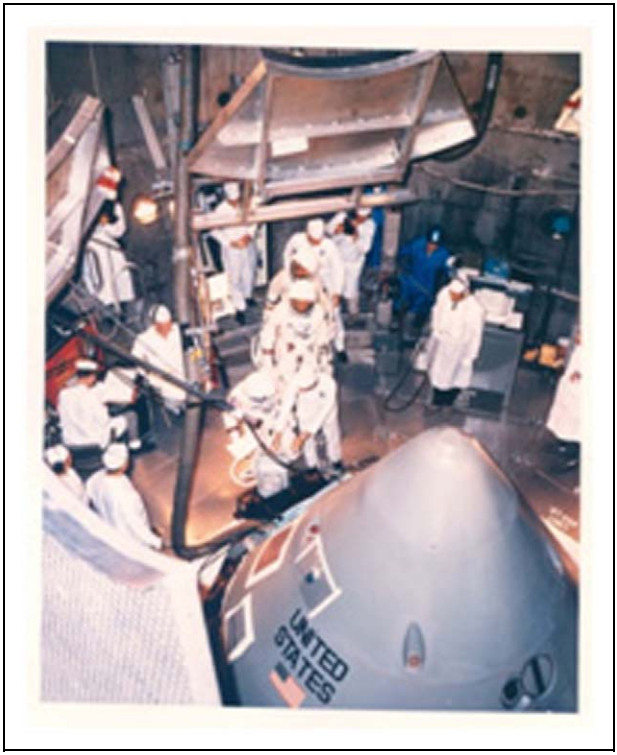

Figure 6. "Apollo 204 Astronauts Training" (NASA, 2010a).

Within the 1960s photomontage, directly below a photograph of the first American spacewalk and above an *Apollo 11* lunar-landing photograph, there is a photograph of the *Apollo 1* crew, which was also known as Apollo–Saturn 204 (see Figure 6). All three crew members lost their lives in a fire on January 27, 1967, while engaging in a training session for the flight. Although there is no evidence that the photograph was taken the same day as the tragedy, the caption notes that the photograph is indeed of the three crew members as they engaged in a simulation or training event.

Sontag (1977) considered viewing images of tragedies:

> To suffer is one thing; another thing is living with the photographed images of suffering, which does not necessarily strengthen conscience and the ability to be compassionate. It can also corrupt them. Once one has seen such images,

Figure 7. "STS-107 Makeshift Memorial" (NASA, 2010i)

> one has started down the road of seeing more—and more. Images transfix. Images anesthetize. (p. 20)

She went on to argue that some images, specifically photographs depicting tragedies, can facilitate apathy, making the event "less real," but she acknowledged that there are certainly exceptions, including photographs of Nazi concentration camps, which "gained the status of ethical reference points" (pp. 20-21). While the inclusion of a photograph of the actual explosion of the *Challenger* within the realm of an anniversary site would be viewed by some as inappropriate, inclusion of a photograph of the crew members, like the one included in the 1960s photomontage, would seem to be a good compromise between including a photo of ice on the launchpad, which NASA seems to present in this narrative as the antagonist, and including a photo of the actual explosion, the tragedy. Likewise, the Space Shuttle *Columbia* disaster, in which all crew members died upon reentry into the atmosphere on February 1, 2003, is included in the 2000s photomontage with a picture of a memorial event held at Johnson Space Center (see Figure 7). Although viewers can find photographs of the seven crew members who lost their lives in the *Challenger* disaster by browsing the GRIN images (see Figure 8), there is no photograph of these crew members

Figure 8. "*Challenger* Crew in White Room" (NASA, 2010b)

in the 1980s photomontage. But a page is dedicated to the Space Shuttle *Challenger* and its crew on the NASA history Web site (NASA, 2010b), which links to photographs of and biographical information about the crew, to reports from investigations of the disaster, and even to external sites with information about the *Challenger* disaster.

Politics and Sustainability

While the NASA timeline uses photographs to acknowledge the agency's most memorable triumphs and tragedies, the depictions of government officials, particularly United States presidents, are much more selective. This agency's sustainability, as indicated by having two centers named after U.S. presidents, the Kennedy Center in Florida and the Johnson Space Center in Texas, is often closely linked to presidential proposals regarding NASA's future. Historically, presidents have expressed their support for NASA through speeches and executive orders that are eventually manifested through funding to support NASA's short-term and long-term missions. In a February 1, 2010, article in the *New York Times*, Chang explained that President Obama's proposal would "officially end aspirations to return astronauts to the

Moon by 2020— President George W. Bush's 'vision for space exploration' developed in the aftermath of the loss of the space shuttle Columbia in 2003" (para. 8). It is no wonder, then, that the NASA photomontage for the 2000s includes a picture of George W. Bush with an outstretched hand as he gives a speech regarding his "vision for space exploration" (NASA, 2010e), which was for U.S. astronauts to again walk on the moon by 2020.When clicking on the photo of Bush, the audience finds that this photo is not on GRIN, where the other high-quality anniversary photos are found, but leads to the George Bush's White House Web page with a home page linking to the current White House home page. There is no photograph of the current president, Barack Obama, on the NASA timeline.

The absence of a photograph of the current president, Barack Obama, during the 50th anniversary year says as much about his perceived role in NASA's narrative as does the inclusion of photographs of presidents George H. Bush, George W. Bush, and Richard Nixon, who was in office during *Apollo 11*. Although President Obama is the first African-American president, his level of support for the agency, after less than 2 years in office and while balancing two wars and economic turmoil, was clearly not enough to warrant space within NASA's timeline. According to the Nixon photo caption in the 1970s photomontage, Nixon was also an advocate for space shuttle development in 1972 (NASA, 2010e, 2010h), whereas George H. W. Bush and George W. Bush made speeches about returning to the moon and exploring Mars.

On September 14, 2011, a year after the NASA anniversary Web site was created and photographs of President Obama were excluded from it, NASA administrator Charles Bolden credited Obama as a supporter of NASA and its development of a space launch system by stating that "President Obama challenged us to be bold and to dream big, and that's exactly what we are doing at NASA. While I was proud to fly on the space shuttle, tomorrow's explorers will now dream of one day walking on Mars" (NASA, 2011). But President Obama is not the only recent U.S. president to be left off the history timeline. Presidents Gerald Ford, Jimmy Carter, and Bill Clinton are also absent. On another page of NASA's 50th anniversary Web site, not directly linked to the 50th anniversary timeline, there is a text-filled page, titled "Ten Presidents and NASA," that describes the relationship between U.S. presidents and NASA from Dwight Eisenhower to George W. Bush. Here, the authors explained that "Gerald Ford gave limited attention to space issues"; "Jimmy Carter was perhaps the least supportive of U.S. human space efforts of any president in the last half-century, but as a trained engineer, he took a strong interest in the developments in planetary

exploration that occurred on his watch;'' and ''space was not a high priority during the eight years of the Clinton administration'' (NASA, 2010j). This text provides some rationale for the absence of photographs of these three presidents from the NASA anniversary timeline and the notable decrease in the number of significant events cited in the photomontage for the 1970s, a period marked by Nixon's impeachment and resignation and in which two presidents, Ford and Carter, did not make space exploration a priority.

Future Implications

Over the past 25 years, we have learned important lessons from technical communication research on NASA and its tragedies. Still, with the important lessons we have learned from such research, we can learn even more from NASA's extensive archives of photographs, videos, reports, and willing human subjects who might further inform our understanding of this unique organization.

As I interviewed Criner, the African-American artist who helped draw the flight plan for *Apollo 11*, I leafed through the July 1, 1969 final version of the *Apollo 11* flight plan that he helped create and realized that his explanation of this ''big dictionary'' would also require a more in-depth, face-to-face conversation. I needed Criner to explain to me how the artists' drawings related to the words that preceded them. I wanted to know more about how technical writers and artists worked ''before computers came along.'' I wanted to better understand the collaborative process between artist and engineer and that would require more than a telephone interview. After talking a bit about Criner's experience with the *Apollo 11* flight plan, we veered toward Criner's current work as a lithographer at the Houston Print Museum. Criner described the ancient process and history of stone lithography in such detail and precision that I knew, again, that a telephone interview would not do justice to this description either. I needed to be there, to see it, to understand the complexity of this practice and witness the art that has yet to be replaced by new technologies. As we neared the end of our conversation, I did have a better understanding of how NASA's *Apollo 11* landing had been facilitated by an art department and of the importance that visuals have played, not only in NASA's communication with the public through photography but also in the communication between engineers and artists. From Criner's description of his work with NASA in the late 1960s, the relationships between the engineer and the artist and the engineer and the technical writer seemed similar. While it was the technical writer's responsibility to translate the engineer's flight plan into text that would end

up in a document of more than 350 pages, it was the artist's responsibility to translate the engineer's description of the same information into a visual that was as meaningful to both engineers and astronauts.

Now I am curious about contemporary flight plans and whether technical communicators have taken over the roles of both technical writer and artist at NASA. I wonder if it is still necessary to have these two groups of professionals, artists and technical writers, who work separately on the same project with engineers or if all these responsibilities have shifted into the hands of technical communicators. I wonder how NASA was able to form an ethnically diverse group of artists, engineers, and technical writers in 1969 whereas some organizations continue to struggle with workplace diversity in 2012.When I began my conversation with Criner, he apologized for not being a technical writer and not being able to give me information directly related to my work in this field. And although Criner claimed that "a lot of it wasn't all that important," those of us who study communication would disagree. As scholars of technical communication, we know that visual rhetoric is important, and we can learn more about this agency's story by analyzing its visual artifacts and interacting with the diverse group of people who helped create them.

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Note

1. Biggers was an internationally acclaimed African-American muralist who founded Texas Southern University's art department.

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Bio

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