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Jerald L. Perlman

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A Tale of Two Rockets: Public History Silence in Alabama¹

By: Jerald L. Perlman

Joseph Kanon's 2001 novel, *The Good German*,² gives readers the word Dora in the context of something far more sinister than a pleasant female name. That novel tells the story of an American war correspondent who travels to Berlin in 1945 to cover the Potsdam Conference. The correspondent comes across a file belonging to a Nazi mathematician who the American Army wants to bring to the United States as part of Operation Paperclip, the effort the Army mounted to get German scientists, including Wernher von Braun and his rocket team, out of Germany to prevent them from falling into the hands of the Russians. The mathematician's file, labeled "Dora," contains a computation of calories. The correspondent learns the computation is for the minimum number of calories needed to keep enslaved workers alive at a concentration camp called Dora, built by the Nazis in central Germany in conjunction with the production of V-2 rockets.

In her doctoral thesis-based monograph, *German Rocketeers in the Heart of Dixie*,³ Monique Laney links Dora the slave labor camp to the German rocket scientists that the Army re-located to Huntsville, and who formed the basis of Huntsville's becoming Rocket City. Visitors to Huntsville's premier tourist attraction, the U.S. Space and Rocket Center Museum (SRCM), can gaze upon an actual V-2 rocket, painted in the innocuous black-and-white colors

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²Joseph Kanon, *The Good German* (New York: Henry Holt and Co., 2001).

³ Monique Laney, *German Rocketeers in the Heart of Dixie: Making Sense of the Nazi Past During the Civil Rights Era* (New Haven: Yale University Press, 2015).

of the early test models rather than its sinister camouflage weapon colors.⁴ There is an identifying placard alongside the rocket.⁵ The placard lists such mundane things as the rocket's weight, length, diameter, range, and top speed.⁶ There is no mention of the destructive power of its warhead. More significantly, there is no mention of Dora. How could that be? How does the SRCM justify the silence?

This paper will explore those questions. It will address why the SRCM is comfortable displaying an actual V-2 rocket, but at the same time silences information about slave laborers who died while working and living under deplorable conditions building and maintaining the facility in central Germany, near the town of Nordhausen, where the Nazis produced the V-2. The thesis of this paper is that this silence is the result of many factors. These include 1) how the SRCM originated, 2) how the City of Huntsville and the State of Alabama wish to present the SRCM, 3) internal pressures within the SRCM community itself and 4) the complexities of the issue.

This paper argues that, over seventy years after the end of World War II, if the SRCM continues to display a V-2 rocket, it has an obligation to end the silence and educate visitors about the dark side of that rocket's origins.⁷ The primary sources available for thesis and

⁴"V-2 Rocket.COM-Markings, Colors and Camouflage." [https:// www.v2rocket.com/start/makeup/markings.html](https://www.v2rocket.com/start/makeup/markings.html).

⁵"Exhibit," *V-2 rocket with explanatory placard*, U.S. Space and Rocket Museum, Huntsville, AL.

⁶ *Ibid.*

⁷ This is not to say that the SRCM is the only prominent American museum that has experienced a silencing regarding the presentation of World War II information. In 1995, Martin Harwit, the director of the Smithsonian Institute's National Air and Space Museum, resigned under the pressure of termination for putting together an exhibit centered around the B-29 bomber Enola Gay that was to commemorate that airplane's dropping of the atomic bomb on Hiroshima. Harwit had prepared the exhibit to include a display of relics of the bombing such as ruined timepieces and lunch boxes, as well as disturbing photographs. When a draft of his 50,000-page exhibit script became public, he received criticism from members of Congress, veterans' groups and the press. Eighty-one members of the U.S. House of Representatives wrote a letter to the Smithsonian demanding that he resign or that the museum dismiss him. When the exhibit finally opened in May of 1995 to commemorate the fiftieth anniversary of the Enola Gay's Hiroshima mission, it was a completely sanitized exhibit that only gave the technical specifications for the aircraft and the fact that it had dropped the atomic bomb. There was no mention of the horrific effects of the Hiroshima and Nagasaki bombs or any inclusion of Harwit's lower estimate of American casualties from an invasion of Japan, which the United States had given a justification for engaging in atomic warfare. See "Official Resigns Over Exhibit of Enola Gay," *New York Times*, May 3, 1995, A.19; R. Emmett Tyrell Jr., "Hiroshima and the Hectoring Herd," *Washington Times*, September 24, 1994; Marianne Means, "Smithsonian Deserved the Flak It

argument development of this topic are numerous and varied. These include the SRCM exhibits themselves, the enabling state legislation and public relations campaign associated with its construction, and numerous newspaper articles. They also include a PBS documentary; memoirs, drawings and recollections of Dora concentration camp survivors; photographs; U.S. government documents detailing the conditions found at Dora when American troops liberated it; and the ensuing war crimes investigation and trial of German war criminals for Dora atrocities. They additionally include a video made by an American soldier and Huntsville native who was part of the unit that liberated Dora. Finally, they include in person and YouTube interviews of an SRCM official that touch upon the silence.

Through these sources, this paper will foreground why the Nazis built Dora, the atrocities the Nazis committed to put the V-2 into production there, the retributions for these atrocities, and the forces behind the SRCM silence associated with the V-2 rocket on display. The paper will then look at a second and even more prominent SRCM exhibit, the actual Saturn V rocket on display there. The Saturn V's principal production engineer, Arthur Rudolph, relinquished his American citizenship and returned to Germany to avoid prosecution as a Dora war criminal. The paper will consider whether the SRCM should address him in its presentation of the Saturn V.

This paper will look at the V-2 and Saturn V displayed at the SRCM in the historiographical context of the interplay between museums and memory. As Roger Lanius writes, museums are a representation of cultural or group memories.⁸ These are memories,

Caught Over Tilting History,” *St. Paul Pioneer Press*, March 1, 1995; Lewis A. Neil, “Smithsonian Alters Enola Gay Exhibit After Criticism,” *New York Times*,” Oct. 1, 1994, 1.10. *see also* Roger D. Lanius, “American Memory, Culture Wars and the Challenge of Presenting Technology in a National Museum,” *The Public Historian* 29, no 1 (Winter 2007) 12-30; Michael J. Neufeld, “The Smithsonian’s National Air and Space Museum and ‘The Romance of Technological Progress,’” *Journal of Educational Media, Memory, and Society* 14, no.1 (Spring 2022) 76-97; Edward T. Linenthal, Struggling with History and Memory,” *The Journal of American History* 82, no.3 (Dec. 1995),1094-01; Robert C. Post, “A Relic for Our Time: The Enola Gay ‘and After That, Period,’” *Technology and Culture* 45, no. 2 (April 2004), 373-96.

⁸ Roger D. Lanius, “American Memory, Culture Wars,” 22.

Lanius says, by which people identify and define themselves.⁹ Americans, he notes, are particularly active pursuers of the past,¹⁰ and people who visit museums tend to come to connect with historic artifacts.¹¹ At the SRCM, these artifacts, with the exception of the V-2, explain a history which begins only after World War II ends.

In a paper dealing with the origins of the Huntsville Space and Rocket Center and its museum, Patrice Green discusses in detail the beginnings and development of the SRCM.¹² Green does not, however, discuss silences regarding individual exhibits. This paper takes a step beyond what Green writes about by discussing SRCM silences. In so doing, this paper acknowledges Michel-Rolph Trouillot's proposition that there is a decision-making point where presenters decide what events to include and what ones to exclude in presenting an historical narrative.¹³ These narratives, Trouillot notes, are, almost by definition, made of silences.¹⁴

Equally significant as the above is Trouillot's acknowledgment of the power struggle that the production of history involves. As Trouillot indicates, debates over the presentation of historic events involve not only professional historians but also political appointees, journalists and various civic associations.¹⁵ Michael Kammen writes that powerful groups can promote versions of events that reflect well on them and meet their needs, and that politicians and others in authority can manipulate memories to tell a certain story or to encourage people to think a certain way.¹⁶ This echoes what Daniel Walkowitz and Lisa Knauer are saying when writing of

⁹ *Ibid.*

¹⁰ *Ibid.*, 23.

¹¹ *Ibid.*, 22.

¹² Patrice R. Green, "For the Common Man: An Analysis of the United States Space and Rocket Center," (master's thesis, University of South Carolina, 2019).

¹³ Michel-Rolph Trouillot, *Silencing the Past: Power and the Production of History* (Boston: Beacon Press, 1995), 16.

¹⁴ *Ibid.*, 152.

¹⁵ *Ibid.*, 19.

¹⁶ Michael Kammen, *Mystic Chords of Memory: The Transformation of Tradition in American Culture* (New York: Alfred A. Knopf, 1991), 5.

the fact that public historians can face contradictions and tensions from public audiences and financial supporters when telling upsetting, uncomfortable stories these people may not want to hear.¹⁷ This paper will contextualize these historians' words and show that the SRCM has faced in the past and will continue to face these same tensions both from outside sources and from within the museum itself.

Rockets and Memories

The presentation of the V-2 and Saturn V rockets at the SRCM stand, historiographically, at the intersection of silencing and memory theory. Memory theory explores how objects can become part of our inner life.¹⁸ It foregrounds memory as a powerful force in human experience that plays an important role in creating both social and personal contexts.¹⁹ Its most influential theorist was French sociologist Maurice Halbwachs.²⁰ Susan Crane writes that Halbwachs built upon Freudian and Jungian psychology to conclude that individual memories rely upon a framework of collective memories.²¹ Visitors to the SRCM do not go there thinking of Freud and Jung. They do, however, often go there collectively. Groups of students accompany their teachers; children and grandchildren accompany their parents and grandparents. These intergenerational groups generate collective memories of the wonders of American technology and the historical context of the race into space and to the moon that the SRCM reinforces. When they gaze upward and see an actual Saturn V rocket suspended from the ceiling, that sight most likely evokes memories of Apollo 11's fiery liftoff from Cape Canaveral and Neil Armstrong's

¹⁷ Daniel J. Walkowitz and Lisa Knauer, eds., *Contested Histories in Public Space: Memory, Race and Nation* (Durham: Duke University Press, 2009), 5.

¹⁸ Sherry Turkle, "Evocative Objects: The Things that Matter," in *The Public History Reader*, eds. Hilda Kean and Paul Martin (London: Routledge, 2013), 159.

¹⁹ Barbara Franco, "Doing History in Public: Balancing Historical Fact with Public Meaning." *Perspectives on History*. May 1995, <https://www.historians.org/publications-doing-history-in-public>.

²⁰ Susan Crane ed., *Museums and Memory* (Stanford: Stanford University Press, 2000) 6.

²¹ *Ibid.*

setting foot on the moon, and at the same time reinforces their belief in the triumph of American technology. When they see the museum's V-2 rocket, they see it presented solely as a technological achievement. While visitors familiar with World War II history may also see it as a terror weapon that brought destruction to London and Antwerp in the latter stages of the war, nothing presented about the weapon hints at the destruction of human life associated with its production.

Turning to the museum component of the equation, museums are a representation of cultural group memory through which people identify themselves collectively.²² They represent a crossroads of the past that help create an historically literate, thoughtfully reflective populace.²³ According to Susan Crane, the memory function of museums literalizes the Lockean idea of a storehouse of memories,²⁴ drawing upon images of medieval and early modern treasure troves and curiosity cabinets,²⁵ freezing time through the permanent display of objects,²⁶ and serving as memory triggers for both individuals and entire cultures.²⁷ Any visitor to the SRCM can see that the museum is in fact a treasure trove of rockets, satellites, spacesuits and space capsules. Among older visitors, these exhibits can also evoke memories of the U.S.-Soviet race to space, John F. Kennedy, and the nuclear threat associated with the Cold War. The SRCM intensifies those memories by presenting actual video footage both of Soviet Cold War leader Nikita Khrushchev and Kennedy's promise that Americans will go to the moon.²⁸

Moving towards the silence that is the subject of this paper also requires considering the practicalities associated with museums in general and historical museums particularly. Museums

²² Lanius, "American Memory," 22.

²³ *Ibid*, 18-19.

²⁴ Crane, *Museums and Memory*, 3.

²⁵ *Ibid*, 5.

²⁶ *Ibid*, 3.

²⁷ *Ibid*, 5.

²⁸ "Exhibit," *John F. Kennedy and Nikita Khrushchev video footage*, U.S. Space and Rocket Center Museum.

tend to be highly trusted institutions.²⁹ However, they operate in a public environment and not an academic one. They often struggle with having to balance scholarly values with a public value system.³⁰ Put another way, Sheldon Hackney asks: What standards should the public presentation of history require; do museums have an obligation to make audiences aware that there are competing interpretations of history?³¹

This struggle becomes particularly apparent when one considers what museums choose and not choose for the public to see, *i.e.*, what museums silence. Obviously, museums cannot present everything about a subject. If they tried, they would become like overcrowded closets, with visitors tripping over objects rather than viewing them in a rational manner. Some silences are therefore inevitable, particularly regarding modern history, with its plethora of potential objects. Moreover, the story of the past is not a fixed reality.³² This moving line of reality inevitably results in changes in what museums present. A prime example of this is how many museums in the American South have moved from presenting the Civil War in terms of the “lost cause of the Confederacy” to presentations that focus on the conflict being rooted in African slavery.

It is within this theoretical framework that this paper turns to the SRCM itself. The museum opened in March of 1970³³ on land that the State of Alabama, in conjunction with the Army and NASA, had donated.³⁴ Monique Laney writes that Wernher von Braun was the

²⁹ Maria Vlachou, “Museums making sense: dealing with discomfort in a multicultural world.” <https://www.linkedin.com/pulse/museums-making-sense>.

³⁰ Franco, “Doing History.”

³¹ Sheldon Hackney “Who owns history?” *Humanities* 16, no. 1 (January-February 1995): 8, 10.

³² Trouillot, *Silencing the Past*, 147.

³³ Green, *For the Common Man*, 14.

³⁴ Susan Lloyd McClamroch, “Memory of Wernher von Braun in Rocket City: The Historians’ *Vergangenheitsbewältigung* Challenge in Huntsville, Alabama, 1998-2010,” *PhD diss., University of New Orleans, 2021), 20.

driving force behind the museum's creation.³⁵ Von Braun, she says, lobbied NASA, the Army, local booster clubs and Huntsville and Alabama officials, including the Alabama legislature, for its creation.³⁶ The legislature passed, according to Patrice Green, what was known as Amendment 3, that proposed a \$2,000,000 bond issue to fund the SRCM at no cost to taxpayers.³⁷ Von Braun, to ensure voter passage, picked Alabama football coach Bear Bryant and Auburn football coach Shug Jordan to be the honorary chairpersons of the committee tasked with promoting passage of the Amendment.³⁸

The von Braun-sponsored committee, Patrice Green also notes, published and distributed a "Vote Yes" brochure as part of its campaign, exhorting Alabamians' support of the SRCM because its creators were primarily designing the museum for them to make them proud of Alabama's space and defense achievements.³⁹ The advertising campaign for the SRCM clearly echoed what Daniel Walkowitz and Lisa Knauer wrote about politicians and grass roots organizers stressing history as an element of revitalizing local economies.⁴⁰ It also made Alabamians potential agents in deciding what the museum would and would not display. Alabama voters approved the Amendment by a sixty-seven percent margin.⁴¹

With Wernher von Braun as the driving force behind the creation of the SRCM, a silencing of Dora in its exhibits was a virtual certainty. This certainty was enhanced when Ed Buckbee became the SRCM's first executive director.⁴² As a local area newspaper reported, Buckbee, before that appointment, had been a member of von Braun's rocket team, serving as its

³⁵ Laney, *German Rocketeers in the Heart of Dixie*, 87.

³⁶ *Ibid.*

³⁷ Green, "For the Common Man," 6.

³⁸ Laney, *German Rocketeers in the Heart of Dixie*, 87.

³⁹ Green, "For the Common Man," 10.

⁴⁰ Walkowitz and Knauer, *Contested Histories in Public Space*, 5.

⁴¹ Laney, *German Rocketeers in the Heart of Dixie*, 87.

⁴² Kendall Hollingsworth "Ed Buckbee shares insight, memories working under von Braun during the Space Race," *The Madison Record*, December 19, 2018.

chief publicist.⁴³ As the SRCM director, he directed the initial design and operations of the facility.⁴⁴ Anyone who visits the SRCM immediately sees that Buckbee created a virtual shrine to von Braun, replete with numerous photographs, and a replica of his office that contains his actual briefcase.⁴⁵ Buckbee would have been the last person who would have wanted to have unsilenced Dora at the SRCM.

Even though Buckbee has retired, his legacy at the SRCM remains. On September 19 and 20, 2022, first by telephone and then in-person, the author of this paper conducted an interview with Dr. Susan McClamroch, a PhD historian who is on the staff of the SRCM. In the interview, Dr. McClamroch stated that the SRCM is focused on “protecting the legacy of the German rocket team.”⁴⁶ She indicated that many now-retired NASA scientists that members of that team had hired continue to act as docents at the SRCM.⁴⁷ Dr. McClamroch indicated that their “ownership” of the museum mitigates against an unsilencing of Dora.⁴⁸ Visitors to the SRCM can see these scientists, wearing their white lab coats, conducting group tours in the museum. These scientists are not interested in presenting a Dora story to visitors that would cast dispersions on their mentors and father figure heroes. They are not interested in educating visitors about war crimes associated with the scientists who gave them jobs.⁴⁹

In her interview, Dr. McClamroch repeatedly stated that the SRCM was an industry and heritage museum, as opposed to a history museum, whose mission was to inspire, educate and show technological advances and human achievements.⁵⁰ She stated that the SRCM was about

⁴³ *Ibid.*

⁴⁴ *Ibid.* See also Laney, *German Rocketeers in the Heart of Dixie*, 68.

⁴⁵ “Exhibit,” *Wernher von Braun office*, U.S. Space and Rocket Center Museum.

⁴⁶ Susan McClamroch, Interviews by author, Huntsville, AL, September 19-20, 2022.

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

⁴⁹ The author of this paper obtained personal knowledge of this when he broached the subject of the paper to a retired NASA astrophysicist and museum docent who had worked under one of the German scientists for many years. That person became angry and visibly upset when the author told him that he intended to write such a paper.

⁵⁰ McClamroch, Interviews.

NASA history, not von Braun history.⁵¹ Concerning Dora (of which she was aware) she stated that some visitors knew about it, some did not, and some did not want to know.⁵² In this same vein, she stated that an objective of the SRCM was to make it palatable to people who have different comfort levels.⁵³

Dr. McClamroch's interview is an expression of the current SRCM "party line." However, the SRCM is not just an industrial museum. Its presentation of Kennedy, Khrushchev, the Cold War, the U.S-Soviet space race, and nuclear terror make it an important historical museum. Dr. McClamroch's interview, however, makes it clear that an unsilencing of Dora is not on the SRCM's current agenda. The reasons for this are economical as well as philosophical. As the August 20, 2020, edition of the *Huntsville Times* reported, one effect of the Covid-19 pandemic was that the entire Space and Rocket Center was in danger of closing due to plummeting revenue.⁵⁴ At least until the SRCM returns to a firm financial footing, its addition of any "uncomfortable" exhibits is unlikely. Even then, its history indicates that it will be reluctant to address uncomfortable subjects in a matter comparable to the way public history sites such as Mt. Vernon and Monticello now address African slavery.

The Horrors of Dora

Understanding the significance of the SRCM's silencing of Dora requires some knowledge of Dora itself, its origins, what the Nazis did there, and what took place after the American Army liberated it. Michael Neufeld relates the idea for Dora's origins to an event

⁵¹ *Ibid.*

⁵² *Ibid.*

⁵³ *Ibid.*

⁵⁴ John Sharp, "Crumbling expectations: Plummeting tourism means lower lodging revenue for Alabama cities," *Huntsville Times*, August 20, 2020.

occurring on the evening and early morning hours of August 17-18, 1943, when British bombers conducted an all-out assault on Peenemunde, the Nazi rocket manufacturing facility off the Baltic coast.⁵⁵ Neufeld writes that Heinrich Himmler, who had been trying to gain influence for his SS over the V-2 rocket program, was with Hitler at his East Prussia headquarters at the time of the attack, and that Himmler used the attack to help convince Hitler that missile production should be done underground, using exclusively concentration camp prisoners.⁵⁶ Annie Jacobsen notes that Himmler's SS had recognized the value of slave labor in industrial production since the mid-1930's, and had, by 1939, conceived of a vast network of industrial slavery across occupied Europe in partnership with manufacturing entities such as IG Farben, Volkswagen and Daimler.⁵⁷

The place the Nazis chose for relocation of its missile production was an underground mining facility near Nordhausen in central Germany, consisting of two main tunnels, each about a mile long, with forty-six cross tunnels between them.⁵⁸ The Nazis designated the site as *Mittelwerk*, an innocuous euphemism for the Middle Works.⁵⁹ On August 28, 1943, the SS trucked 107 prisoners from the Buchenwald concentration camp to begin the work of refitting the tunnels for weapons production.⁶⁰ The Nazis code-named the facilities built to house the workers "Dora."⁶¹ Dora eventually expanded into a main camp and complex of approximately forty

⁵⁵ Michael J. Neufeld, "Introduction," in Yves Beon, *Planet Dora: A Memoir of the Holocaust and the Birth of the Space Age* (Boulder, CO: Westview Press, 1997), xi.

⁵⁶ *Ibid.*

⁵⁷ Annie Jacobsen, *Operation Paperclip: The Secret Intelligence Program that Brought German Scientists to America* (New York: Little, Brown and Company, 2014), 14.

⁵⁸ Gretchen Schafft and Gerhard Zeidler, *Commemorating Hell: The Public Memory of Mittelbau-Dora* (Urbana: University of Illinois Press, 2011), 25.

⁵⁹ Jacobsen, *Operation Paperclip*, 12.

⁶⁰ Beon, *Planet Dora*, xii.

⁶¹ Some sources refer to Dora as *Dora-Mittelbau* or *Dora-Mittelbeau*, both a version of Dora-Central Construction. See, e.g., U.S. Department of the Army, *Murder and maltreatment of Political Prisoners of war in Mittelbeau (Dora) Concentration Camp, near Nordhausen, Germany, April 11-May 14, 1945* "Mittelbau Main Camp: In Depth;" <https://www.army.mil/press/press-releases/2014/04/04/140414a.html>; Michael J. Neufeld, *The Rocket and the Reich: Peenemunde and the Coming of the Ballistic Missile Era* (New York: The Free Press, 1995), 260. For the sake of brevity, this paper uses the shortened version, Dora

subcamps.⁶² Ultimately, the Nazis shuttled between 75,000 and 80,000 forced laborers in and out of these facilities.⁶³

Unfortunately for the original 107 workers and several thousand who subsequently arrived, no housing initially existed. The Nazis instead housed them in four of the cross tunnels.⁶⁴ There, they first slept on straw or bare rock, and then on bunks built in the tunnels.⁶⁵ Michael Neufeld writes that by October of 1943, 4,000 workers, all male and predominantly Russians, Poles and French, were working in the tunnels.⁶⁶ He reports that by the end of the following month, the underground worker population had increased to 8,000,⁶⁷ and that at the beginning of 1944, approximately 4,500 workers were still sleeping in the tunnels.⁶⁸

Living conditions in the tunnels were deplorable. Neufeld writes that the tunnels never got warmer than fifty-nine degrees Fahrenheit.⁶⁹ The water supply was completely inadequate, and washing facilities were unavailable.⁷⁰ The only time that the workers saw the outside world was Sunday roll calls, where they had to stand in the cold, clad in rags.⁷¹ The tunnel improvement phase of the operation proved to be the deadliest for the workers. The death toll, Neufeld notes, steadily increased between October of 1943 and March of 1944: eighteen in October, 172 in November, 670 in December, and twenty to twenty-five a day thereafter from

⁶² “Mittlebau Main Camp: In Depth.”

⁶³ U.S. Department of the Army, *Murder and maltreatment of Political Prisoners of war*.

⁶⁴ Shafft and Zeidler, *Commemorating Hell*, 27.

⁶⁵ Neufeld, *The Rocket and the Reich*, 210; see also U.S. Department of the Army, *Murder and maltreatment of Political Prisoners of war*.

⁶⁶ Neufeld, *The Rocket and the Reich*, 209; In his introduction to *Planet Dora*, Neufeld, on page xx, gives the enslaved worker population census in November of 1944 as 5,051 Soviets, 3883 Poles, 2373 French, 557 Czechs, 472 Hungarian Jews, 377 Romani people, 275 Italians, and 271 Belgian. Dora is therefore not merely a story of Jewish persecution and extermination.

⁶⁷ *Ibid.*

⁶⁸ *Ibid*, 211-12.

⁶⁹ *Ibid*, 210.

⁷⁰ *Ibid.*

⁷¹ *Ibid*, 211.

December to March.⁷² He pegs the death toll for the first six months of Dora's existence at 2,882.⁷³

Even after the Nazis relocated all the workers to completed barracks, working conditions in the tunnels remained horrible. According to Annie Jacobsen, the workers labored for twelve-hour shifts, seven days a week.⁷⁴ She writes that blasting went on day and night, producing dust so thick that workers had difficulty seeing five feet ahead.⁷⁵ Michael Neufeld, in his introduction to *Planet Dora*, writes that in addition to strenuous physical labor, the workers endured poisonous gases and horrific hygienic conditions that brought on lice, flees and threats of cholera.⁷⁶ A U.S. Army report, issued on May 25, 1945, stated that many workers also died from heart ailments brought on by their being subjected to the underground atmospheric pressure in the tunnels.⁷⁷ The report also noted that SS guards shot workers upon the slightest pretext.⁷⁸

Many workers additionally died as the result of the calorie computations made by people such as the Nazi mathematician in Joseph Kanon's *The Good German*.⁷⁹ In his memoir, Yves Beon writes that hunger was "the one continuing, haunting reality."⁸⁰ The U.S. Army report indicated that the daily prisoner diet consisted of 400 grams of bread, one liter of very thin soup, and fifty grams of margarine, augmented by seventy grams of ersatz beef three times a week and one spoonful of marmalade and one of cream cheese once a week.⁸¹

⁷² *Ibid.*

⁷³ *Ibid.*

⁷⁴ Jacobsen, *Operation Paperclip*, 14.

⁷⁵ *Ibid.*

⁷⁶ Beon, *Planet Dora*, xiv.

⁷⁷ U.S. Department of the Army, *Murder and maltreatment of Political Prisoners*.

⁷⁸ *Ibid.*

⁷⁹ Kanon, *The Good German*.

⁸⁰ Beon, *Planet Dora*, 30.

⁸¹ U.S. Department of the Army, *Murder and maltreatment of Political Prisoners*.

The death toll that *Mittelwerk* produced was staggering. Michael Neufeld gives an estimate of 20,000 deaths at the *Dora-Mittelwerk* camps, with approximately 10,000 being related to V-2 production, twice the number of Allied deaths that the V-2 caused.⁸² He notes that the Nazis initially brought in a portable crematorium to handle the ever-increasing number of deaths.⁸³ However, when the death toll reached 5,000 sometime between late December of 1944 and late March of 1945, the number of deaths overwhelmed the crematorium, and the Nazis began burning corpses in the open air.⁸⁴ As Annie Jacobsen graphically writes: “Humans and machine parts went into the tunnels. Rockets and corpses came out.”⁸⁵

The words of Dora survivors both give the best images of its horrors and the stark reality of its silencing at the SRCM. Dr. Susan McClamroch writes that recounts began circulating in the 1960’s and 1970’s in survivor memoirs.⁸⁶ (She notes that an East German expose of Dora had appeared in 1967 that the U.S. Government dismissed as Communist propaganda.⁸⁷) Dora survivor Michel Depierre described his time at Dora as being “in the most cruel hell.”⁸⁸ In his memoir, Yves Beon cataloged the inhumanities. These, according to Beon, included beatings of workers carrying staggering loads by SS guards using electrical cables covered in rubber, called *gummis*;⁸⁹ men having their feet crushed by falling loads;⁹⁰ tunnel railroad cars derailing and crushing workers;⁹¹ the utter fear in prisoners when SS guards took worker counts;⁹² fights and killings among different ethnic groups of workers;⁹³ food rations rarely reaching tuberculosis

⁸² Neufeld, *The Rocket and the Reich*, 264.

⁸³ Beon, *Planet Dora*, xiv.

⁸⁴ Stephen Waring et al, “Dora and the V-2.: Slave Labor in the Space Age,” <http://www.dora.uah.edu>.

⁸⁵ Jacobsen, *Operation Paperclip*, 14.

⁸⁶ McClamroch, “Memory of Wernher von Braun in Rocket City,” 25.

⁸⁷ *Ibid.*

⁸⁸ Waring et al, “Dora.”

⁸⁹ Beon, *Planet Dora*, 4.

⁹⁰ *Ibid*, 10.

⁹¹ *Ibid*, 17.

⁹² *Ibid*, 26-27.

⁹³ *Ibid*, 19.

ward patients;⁹⁴ kitchen staff workers beating prisoners on the head with heavy soup ladles when ration fights broke out;⁹⁵ and an infirmary nurse clubbing a worker on the ear who had come to seek treatment for dysentery.⁹⁶ Michel Depierre recalled that when the liberating American Army investigated the tunnels and camps of Dora, they discovered, in addition to dead bodies, nearly 100 men dying in the infirmary.⁹⁷

Perhaps the most chilling information Dora gives us deals with worker hangings. Annie Jacobsen writes that as many as fifty hangings occurred daily,⁹⁸ some from a crane that ran directly above the V-2 production line.⁹⁹ Michael Neufeld relates Yves Beon's recollection of tunnel workers going to their workstations having to push aside the corpses of prisoners who had been left hanging for hours.¹⁰⁰ Beon recalled that pushing aside these bodies meant brushing against legs soaked in urine.¹⁰¹

As the result of the above-described horrors, a war crimes tribunal convened in August of 1947 near the Dachau concentration camp.¹⁰² The United States Army brought criminal charges against nineteen Dora Nazis.¹⁰³ None of these were the V-2 engineers.¹⁰⁴ Of the nineteen accused, thirteen testified in their own defense.¹⁰⁵ Those who testified either claimed that they were not present at the commission of war crimes or that they were only following orders.¹⁰⁶ The trial resulted in convictions of fifteen of the nineteen, including one death sentence and seven

⁹⁴ *Ibid*, 22.

⁹⁵ *Ibid*, 34.

⁹⁶ *Ibid*, 5.

⁹⁷ Waring, et al, "Dora."

⁹⁸ Jacobsen, *Operation Paperclip*, 31.

⁹⁹ *Ibid*, 32.

¹⁰⁰ Neufeld, *The Rocket and the Reich*, 262.

¹⁰¹ *Ibid*.

¹⁰² Jacobsen, *Operation Paperclip*, 259.

Ibid, 31.

¹⁰³ U.S. Department of the Army, *United States of American v. Kurt Andrae, et al, April 1948*.

¹⁰⁴ Waring, et al, "Dora."

¹⁰⁵ *Ibid*.

¹⁰⁶ Dept. of the Army, *USA v. Andrae*.

sentences of life imprisonment.¹⁰⁷ Annie Jacobsen writes that the Army, in furtherance of its defense of Operation Paperclip, classified the trial's entire record, that laid bare Dora's horror, and kept it secret for thirty years.¹⁰⁸ The SRCM maintains that secrecy to its visitors.

The Arthur Rudolph Dilemma

The crown jewel of the SRCM is the Saturn V Hall. It opened, as Patrice Green writes, in 2008, aided by a grant from the Save America's Treasures Act.¹⁰⁹ She notes that in telling the story of Alabama's involvement in America's space program, it presents a physical space history timeline, beginning with Russia's *Sputnik I* in 1957 and ending with American's *Apollo* program.¹¹⁰ The timeline in Saturn V Hall in fact begins with the exhibited V-2 and pictures of von Braun and his rocket team. This timeline belies any argument that the SRCM is not an historical museum.

At the time the Saturn V Hall opened in 2008, Operation Paperclip information, including the records from the Dora war crimes trial, was available to public historians. Michael Neufeld's *The Rocket and the Reich*, published in 1995, had catalogued Dora's horrors. Arthur Rudolph's expulsion from the United States, discussed below, had occurred. At that point, therefore, the silencing of Dora by the SRCM was due to its own silencing factors.

If the Saturn V Hall is the SRCM's crown jewel, the crown jewel of the hall itself is the Saturn V rocket suspended from its ceiling, broken down into its stages so visitors can view its motors. Unlike the Saturn V replica that lets motorists traveling east on Interstate 565 know that they are approaching Huntsville, it is a real rocket. As Dr. Susan McClamroch writes, NASA

¹⁰⁷ *Ibid.*

¹⁰⁸ Jacobsen, *Operation Paperclip*, 260.

¹⁰⁹ Green, "For the Common Man," 22-23.

¹¹⁰ *Ibid.*, 24.

used it for vibration testing, is one of only three still in existence, and is the only one that has a National Historic Landmark designation.¹¹¹

Arthur Rudolph was the chief production engineer for the Saturn V rocket.¹¹² For that work and other contributions to America's space program, NASA bestowed upon him its highest award, the Distinguished Service Medal.¹¹³ But Arthur Rudolph had a troubled past. That past is the SRCM's second silencing. In Germany, he had been a Nazi since 1931.¹¹⁴ Operation Paperclip documents that the Army kept hidden from the American public for nearly forty years described him, according to Annie Jacobsen, as "100% Nazi" and "a dangerous type."¹¹⁵

Rudolph had been the head of rocket production at *Mittelwerk*.¹¹⁶ Army war crimes investigators determined his importance there through a telephone list that the Nazis had left behind.¹¹⁷ According to Michael Neufeld, Rudolph, who had accompanied the rest of von Braun's V-2 production group from Peenemunde to *Mittelwerk*, was an early proponent of the use of slave labor in rocket production.¹¹⁸ Along with von Braun, he had requested that the SS supply additional prisoners for V-2 production.¹¹⁹ The track of the overhead crane on which prisoners were hung ran right by Rudolph's *Mittelwerk* office.¹²⁰ According to Jacobsen, the Nazis left these bodies hanging and did not remove them until one of Rudolph's engineers told him that their presence was interfering with rocket production.¹²¹ One can easily argue that this information about Rudolph presents a *prima facie* case for his unsilencing at the SRCM.

¹¹¹ McClamroch, "Memory of Wernher von Braun in Rocket City," 63.

¹¹² Michael Hirsley, "Deported Nazi Scientist Still Has Many Supporters," *Chicago Tribune*, September 24, 1985.

¹¹³ *Ibid.*

¹¹⁴ Neufeld, *The Rocket and the Reich*, 180.

¹¹⁵ Jacobsen, *Operation Paperclip*, 96

¹¹⁶ Neufeld, *The Rocket and the Reich*, 206.

¹¹⁷ Jacobsen, *Operation Paperclip*, 48.

¹¹⁸ Neufeld, *The Rocket and the Reich*, 187.

¹¹⁹ Waring, et al, "Dora."

¹²⁰ Jacobsen, *Operation Paperclip*, 427.

¹²¹ *Ibid*, 32.

Events that began in 1982 amplified the case for unsilencing. They also changed Arthur Rudolph's life forever. Retired from NASA and living in California, he received, upon his return in late September of that year from a vacation in Germany, a registered letter from the U.S. Department of Justice Office of Special Investigations (OSI) requesting his presence for an interview.¹²² Annie Jacobsen writes that at the interview, OSI attorneys informed Rudolph that they were interested in two specific things: what were the principles that had governed his decision to join the Nazi party, and what did he know about *Mittelwerk* executions, specifically those that had involved workers being hanged on a crane.¹²³

Jacobsen reports that the interview lasted five hours.¹²⁴ During the interview, the OSI lawyers used documents from the previously sealed proceedings of the 1947 Dora-Nordhausen trial, which included an interview that Rudolph had given on June 2, 1947.¹²⁵ That interview had taken place at Ft. Bliss, Texas, where the Army had kept Rudolph and the rest of von Braun's rocket team before their transfer to Huntsville.¹²⁶ In that interview, Rudolph had admitted that he had been the V-2 production manager at *Mittelwerk*.¹²⁷ He had also admitted that he had known that the workers slept in the construction tunnels during the building of their barracks.¹²⁸ He initially denied ever seeing workers hanged or beaten, but later in the 1947 interview admitted that he had witnessed six or twelve hangings.¹²⁹

¹²² *Ibid*, 426.

¹²³ *Ibid*.

¹²⁴ *Ibid*.

¹²⁵ *Ibid*, 426-27.

¹²⁶ U.S. Department of the Army, *Interrogation of Arthur Rudolph, Ft. Bliss, TX, June 2, 1947*.

¹²⁷ *Ibid*.

¹²⁸ *Ibid*.

¹²⁹ *Ibid*.

In the 1982 interview in California, Rudolph admitted that he had known that workers had been dying from maltreatment and starvation.¹³⁰ When he told the OSI lawyers that he had never seen any workers hanged other than the six to twelve he had disclosed in his 1947 interview, the OSI lawyers showed him a drawing that four of his fellow engineers had made in 1947, and that the Army had used in the Dora-Nordhausen trial.¹³¹ The drawing identified the path of the overhead crane where the SS had performed the hangings, which, the lawyers pointed out to Rudolph, ran directly by his office.¹³² He then admitted that he witnessed other hangings under duress but had had nothing to do with them.¹³³

Annie Jacobsen writes that several months after the 1982 meeting, Rudolph received a letter from the U.S. Justice Department informing him that the government intended to bring charges against him for his enforcing of the slave labor system at *Mittelwerk*, including the passing on to the SS of dubious reports of sabotage that resulted in worker hangings.¹³⁴ The Justice Department told him that he could either hire a lawyer and stand trial, or he could renounce his American citizenship and leave the country immediately.¹³⁵ Rudolph chose the latter and left the country on March 27, 1984. An OSI attorney even went to the airport to make sure that Rudolph got on his flight.¹³⁶ According to Jacobsen, when, seven months later, the Justice Department made public Rudolph's renunciation of his American citizenship, the story made front-page news around the world.¹³⁷

¹³⁰ U.S. Department of Justice, *Interrogation of Arthur Rudolph, San Jose, CA, October 13, 1982.*

¹³¹ *Ibid.*

¹³² *Ibid.*

¹³³ *Ibid.*

¹³⁴ Jacobsen, *Operation Paperclip*, 428.

¹³⁵ *Ibid.*

¹³⁶ *Ibid.*

¹³⁷ *Ibid.*

If the Rudolph story stopped here, the SRCM's failure to present at least some information about the "father" of the Saturn V rocket would be highly suspect. Instead, it presents no information about him at all. He appears in some group photographs in the Saturn V Hall, but these photographs identify none of the people they show. However, this anonymity may have more to do with an Ed Buckbee decision not to glorify anyone other than von Braun rather than with Rudolph's actual silencing by the museum.¹³⁸ The latter likelihood became even more apparent from an interview a *Chicago Tribune* reporter conducted with Buckbee several months after Rudolph left the country.¹³⁹ Buckbee told the reporter that if von Braun had still been alive, he would have called for a congressional investigation, where he would have personally appeared to proclaim Rudolph's innocence.¹⁴⁰ The same article notes a NASA engineer espousing Rudolph's innocence, and also reports that Rudolph's supporters, who included other NASA officials, politicians, and retired Army generals, had instituted a letter-writing campaign to Congress and the White House on Rudolph's behalf.¹⁴¹ In addition to asking that the government clear Rudolph's name, the letter writers demanded that the government disband the OSI.¹⁴² A later newspaper article identified Ohio Democratic congressman James Traficant, former California Republican congressman Pete McCloskey, and presidential hopeful Pat Buchanan as being among the politicians who backed Rudolph.¹⁴³

The Rudolph ambiguities continued. Monique Laney writes that German authorities declined to prosecute him following his 1984 return to Germany due to the fact that the German

¹³⁸ At one time, there was a row of portraits in the original museum building of individual scientific contributors to the U.S. Space program. Along the row was a gap where one of the portraits may have previously hung. Because of ongoing renovations in that portion of the museum, there is no way to determine if this gap still exists. Therefore, this paper's identification of Rudolph's portrait as the one that the museum removed would only be conjecture.

¹³⁹ Hirsley, "Deported Nazi Scientist Still Has Many Supporters."

¹⁴⁰ *Ibid.*

¹⁴¹ *Ibid.*

¹⁴² *Ibid.*

¹⁴³ Brett Davis, "War over Rudolph still rages," *Huntsville Times*, June 18, 2000, A.8.

statute of limitations had expired for all but one possible charge, and that with regard to the remaining charge--base motive murder--prosecutors would have had substantial proof difficulties.¹⁴⁴ (Under German law at the time, a conviction for murder, as opposed to manslaughter, required murderous intent to satisfy sexual desires, or out of greed or other base motives, or in order to commit or cover up another crime.¹⁴⁵) This proof difficulty may have been at least in part due to the fact that George Rickhey, who was Rudolph's supervisor at *Mittelwerk* and the factory's chief production engineer for all weapons systems being manufactured there, escaped conviction at his trial for war crimes associated with Dora.¹⁴⁶ On the other side, when Rudolph attempted to clear his name by engaging in a court battle in Canada, a Canadian appeals court found reasonable grounds for concluding that he had been involved in war crimes.¹⁴⁷

The ambiguities surrounding Rudolph continued after 1984. A PBS documentary that aired in 1987 contained an interview from Germany with Rudolph that was interspaced with an interview of Dora survivor Yves Beon.¹⁴⁸ In that interview, Rudolph said that he personally saw to it that *Mittelwerk* workers were treated well.¹⁴⁹ Notwithstanding the fact that he had been an early proponent of the use of slave labor in rocket production,¹⁵⁰ and contrary to what previous records revealed, he said that he had been shocked when he learned that he had been working with slave laborers.¹⁵¹ When the reporter attempted to question him further about worker conditions and hangings, Rudolph stopped the interview.¹⁵²

¹⁴⁴ Laney, *German Rocketeers in the Heart of Dixie*, 160.

¹⁴⁵ *Mord*, Section 211, German Penal Code of 1941.

¹⁴⁶ Jacobsen, Operation Paperclip, 260.

¹⁴⁷ "The Rudolph file," *Huntsville Times*, December 20, 1999, B.4.

¹⁴⁸ Jane McFadden, "The Nazi Connection," *PBS*, February 24, 1987.

¹⁴⁹ *Ibid* 4.

¹⁵⁰ Neufeld, *The Rocket and the Reich*, 187.

¹⁵¹ McFadden, "The Nazi Connection," 4.

¹⁵² *Ibid*, 7.

Given the entirety of the above, the author of this paper believes that no placard placed close to the SRCM's Saturn V rocket could adequately present the Arthur Rudolph story. Rudolph's situation is far too complex for that. People will have to make their determinations about Rudolph through books, magazines, newspapers, television, and the internet. While some people may find that limitation intolerable, this paper reluctantly excuses the SRCM from presenting this complex information as part of its exhibits.

Conclusion

The pressures this paper documents that mitigate against lifting the silence at the SRCM concerning its V-2 rocket are as real as the horrors of Dora this paper catalogs. Those pressures make the SRCM an outlier regarding acknowledging the dark side of the manufacture of V-2 rockets by the Nazis. The writings of Michael Neufeld, Monique Laney, Joseph Kanon, and others this paper references have educated the reading public about slave labor and the V-2. But what about the junior high and high school students from across North Alabama and the rest of the country who come to the SRCM on "educational" field trips, or who their parents bring to the museum to see the wonders of the Space Age? What about the young people who attend its acclaimed Space Camp? Should the SRCM not educate these groups also? The Smithsonian's National Air and Space Museum in Washington, D.C., has its own V-2. It has chosen to provide, along with the rocket itself, information about Dora, its horrific working and living conditions and its deaths.¹⁵³ It does not include with this information any disturbing pictures or drawings. This paper argues that similar information, perhaps, at the very least, in the form of a non-pictorial plaque or placard adjacent to the V-2, would be appropriate at the SRCM. This is particularly appropriate since the SRCM is a Smithsonian-sponsored Museum with many of its

¹⁵³ Smithsonian Institution National Air and Space Museum, "V-2 explanatory information," https://airand.space.si.edu/collection-objects/v-2-missile/nasm_A19600342000.

artifacts on loan from there. Why should the fact that children visit the SRCM be a defense to the museum's continuing to silence its V-2 rocket if it presented the information in this fashion?¹⁵⁴

The answers to the above questions become even more complex when one considers the relationship between Huntsville and the German rocket scientists. As Monique Laney writes, Huntsville residents viewed them as neighbors and friends, with many working side by side with them.¹⁵⁵ To these neighbors, friends and co-workers, the German scientists were not villains.¹⁵⁶ They were "our Germans."¹⁵⁷ As an example of this, in researching her dissertation that formed the basis of *German Rocketeers*, Laney interviewed a prominent Huntsville resident who served on the local symphony board with the wife of one of the German scientists.¹⁵⁸ One Huntsville resident, John Rison Jones, who had been a member of the U.S. Army unit that liberated Dora and who took photographs of the dead bodies the Army found there, could have educated Huntsville about Dora and its horrors when he returned to the city after World War II. However, he had been so profoundly shocked by what he had seen that he remained silent and did not reveal either his knowledge or his photographs until a Holocaust denier came to speak in Huntsville several decades later.¹⁵⁹

The reality of the love affair between Huntsville and its German rocket team is apparent in an event that took place in Huntsville on April 15, 1955. Dr. Susan McClamroch writes that on that day, forty-one German scientists, headed by von Braun himself, along with their families,

¹⁵⁴ Anyone interested in seeing a more complete presentation of Dora can do so at the museum located on the actual site. It is a site of remembrance, mourning and idealization of the people who had been victims of and had stood up to fascism. The museum offers disturbing images about life and death in the *Mittelwerk* tunnels and the Dora camps. It gives guided tours, often to school classes, that include a visit to the only slightly improved, dimly lit and cold tunnels. It also conducts seminars where young people and others can question actual Dora survivors. Shafft and Zeidler, *Commemorating Hell*, 132-49.

¹⁵⁵ Laney, *German Rocketeers in the Heart of Dixie*, 72.

¹⁵⁶ *Ibid.*

¹⁵⁷ *Ibid.*

¹⁵⁸ *Ibid.*, 181.

¹⁵⁹ John Rison Jones, "Video," UAH Library Archives. Jones' graphic photographs of Dora are also available there for viewing.

assembled as a group at a local high school to take their oaths as American citizens.¹⁶⁰ She says that an estimated twelve hundred people attended the ceremony, and that Huntsville's mayor declared the day New Citizen's Day.¹⁶¹ Such an outpouring of affection runs counter to any local support for the lifting of Dora's silence at the SRCM.

Nevertheless, the currents for removing the silence are there, flowing under the surface. In her 2021 PhD dissertation, Dr. McClamroch presented compelling reasons why the SRCM should lift the silence. In her dissertation, she referenced a *Wall Street Journal* article in which the head of the American Dora survival group castigated Huntsville.¹⁶² The fact that Dr. McClamroch, who is now a professional historian at the SRCM, included this article in her dissertation seems to indicate that she may be concerned about the silence. Additionally, a YouTube interview of her conducted shortly after she assumed her current position supports this belief.¹⁶³ During the question-and-answer portion of that interview, she acknowledged that "something is missing" from the SRCM¹⁶⁴ which she hoped could be rectified "in five or ten years."¹⁶⁵ Clearly, the SRCM knows it is not only an industrial/technical museum, but also an important historical museum that is unreasonably silencing Dora's horrors when presenting its V-2. As for its Saturn V, the SRCM has at least some justification, some might say unfortunately, to continue its silence due to the complexities and ambiguities of the Arthur Rudolph story.

¹⁶⁰ McClamroch, "Memory of Wernher von Braun in Rocket City," 68.

¹⁶¹ *Ibid.*

¹⁶² Jeffrey Zaslow, "In Huntsville, Ala., Rocketeers' Legacy Has Complex Echoes," *Wall Street Journal*, Nov. 10, 2004, A1-14.

¹⁶³ Susan McClamroch, "Challenging the Memory of Wernher von Braun in Huntsville, AL, a.k.a Rocket City," May 10, 2022. Educational video. 1:04.30. <https://youtube.com/watch?v=AiUgSeo09s>.

¹⁶⁴ *Ibid.*

¹⁶⁵ *Ibid.*

Images of Dora



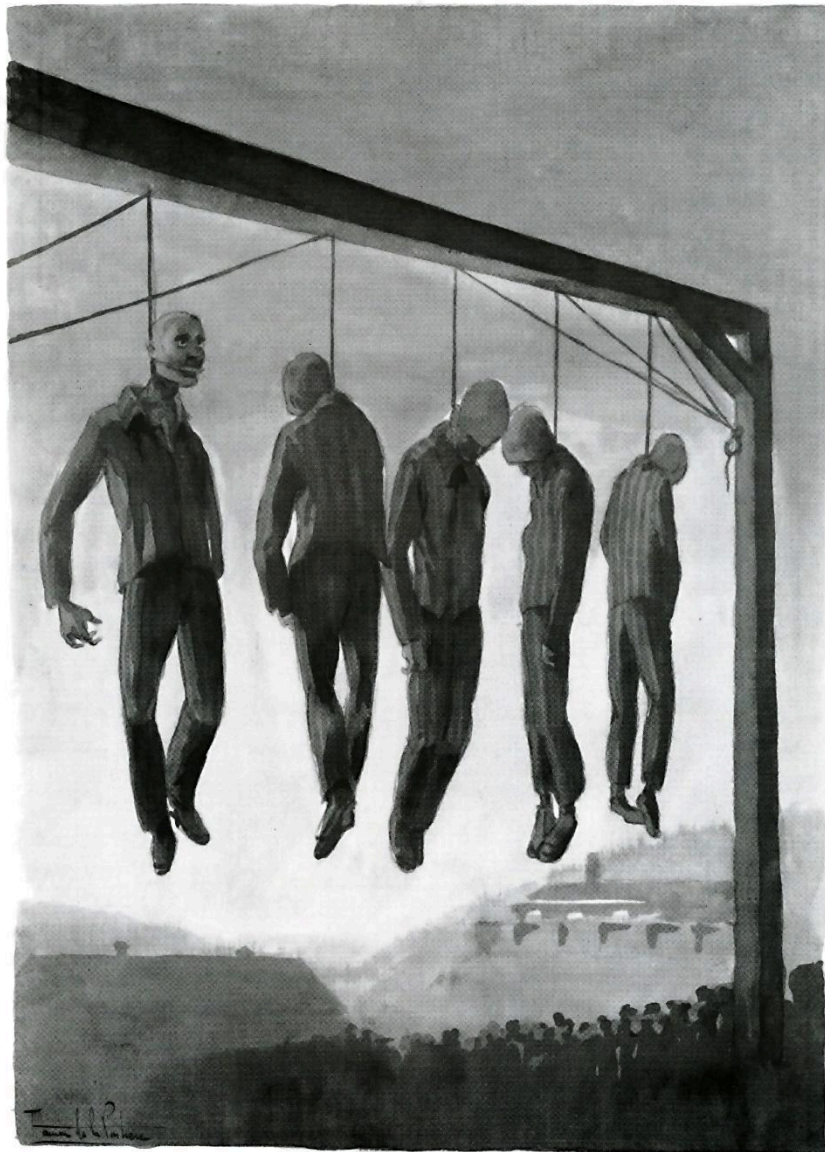
Survivor's rendition of slave laborers in the *Mittelwerk* tunnels¹⁶⁶

¹⁶⁶ Stephen Waring, et al, "Exhibit," *Dora and the V-2: Slave Labore and the Space Age*, 2010, UAH Library Archives.



Dora crematorium¹⁶⁷

¹⁶⁷ *Ibid.*



31. ...Ensuite, la potence

DLP 31

Survivor's rendition of Dora hangings¹⁶⁸

¹⁶⁸ *Ibid.*

Epilogue

This paper was the project of a graduate school history course. One month after its completion and submission, a new exhibit appeared at the Space and Rocket Center Museum. There was no advance notification or pre-appearance publicity for the new exhibit.

The Museum has placed the exhibit near the entrance to the Saturn Hall. It is quite large and has the appearance of being a long-term exhibit. It contains two large panels that visitors pass on their way to their observing the rockets and space paraphernalia on display. Photographs of these panels follow this Epilogue. One of them shows a completed *Mittelwerk* tunnel, prisoner workers and a V-2 rocket assembly. The other is a narrative panel superimposed over a familiar photograph of Americans observing a Saturn V launch. That panel contains the following paragraph immediately above a picture of a civilian-attired Wernher von Braun sitting at his desk in Peenemunde:

“The Third Reich relied heavily on forced labor. The production facilities at Peenemunde and Mittelwerk were no exception. Jews, captured combatants and political prisoners suffered harsh conditions and thousands died building the factories and assembling the missiles produced there.”¹⁶⁹

Presented to the public more than fifty years after the Museum’s opening, this exhibit constitutes the Museum’s first acknowledgment of the realities of Germany’s V-2 production that this paper explores. The exhibit has some obvious shortcomings. It contains no mention of Dora. Its reference to Jews appears to overstate the Jewish component of the slave labor population (see p. 12, fn. 66). Laborers in the photograph appear much healthier than the ones shown in the survivor’s rendition of tunnel construction laborers (see p. 26), enhancing the likelihood that it was a staged

¹⁶⁹ “Exhibit,” *From Missiles to Moon Rockets*, U.S. Space and Rocket Center Museum.

photograph. Nevertheless, it is a significant first step in the Museum's unsilencing of the darker side of America's space program's past.

By offering these two panels, the SCRM acknowledges both that it is more than a technology museum and that it is willing to present things that might make some people uncomfortable. The fact that the Museum does not position them immediately adjacent to the V-2 and does not give any further explanation or implications of the word "*Mittelwerk*" probably means that people unfamiliar with the horrors of Dora will have less understanding of their contextuality. This will be particularly true regarding children who tour the museum either in school groups or as Space Camp participants. For the near future, it will therefore be up to the retired NASA scientist-docents who lead tours to offer further explanation of matters that place their mentors in an unfavorable light. Their willingness to extend their own comfort levels and do this will be key to the degree of unsilencing that the new exhibit represents.

Panels from New Space and Rocket Center Museum Exhibit



From Missiles to Moon Rockets

Developing Rockets for Space

The successful development of the Saturn V rocket built upon the research of Dr. Wernher von Braun and German army scientists' V-2, a liquid-fueled, long-range ballistic missile developed during World War II.

Although von Braun's interest was developing rockets for space, the German army wanted a missile that would travel long distances and deliver a powerful warhead.

Von Braun began working for the German army in 1932, and when Adolph Hitler's Nazi party took control of German government in 1933, missile research became part of the military build up to war.

The V-2 engineering team was centered at the military proving ground of Peenemünde, along the Baltic Sea.

The Third Reich relied heavily on forced labor. The production facilities at Peenemünde and Mittelwerk were no exception. Jews, captured combatants and political prisoners suffered harsh conditions and thousands died building the factories and assembling the missiles produced there.



Technical illustration of the V-2
Credit: U.S. Space & Rocket Center Archives



A young Wernher von Braun at his desk at Peenemünde
Credit: U.S. Space & Rocket Center Archives

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