“A Fast Ride into the Depths of the Earth”: Integrating Natural and Technological Wonders at Carlsbad Caverns National Park

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Abstract:

This paper argues that the 1931 installation of an elevator into Carlsbad Caverns National Park transformed the site into a unique, hybrid attraction where tourists could simultaneously celebrate nature and technology. While Americans resisted modifications to other national parks at this time, the elevators in Carlsbad Caverns drew almost no opposition. Media coverage that glorified the elevators and metaphorical language that rhetorically integrated technology into the caves led Americans to celebrate, rather than resist the elevators. This acceptance of large-scale technology in Carlsbad Caverns challenges historical understandings of nature and technology in the 1930s.

In 1931, the National Park Service installed a 750-foot elevator into Carlsbad Caverns National Park in New Mexico. Americans in the 1930s were becoming increasingly concerned with the preservation of natural spaces, and this construction seems as if it would have been out of line with environmental thinking of the time. Instead, Americans celebrated the technological feat of the elevator's installation. While in many other National Parks, landscape architects took great efforts to minimize the presence of tourist accommodations like roads and campgrounds so as not to disrupt the scenery, the elevators at Carlsbad Caverns became part of the tourist attraction. Through a combination of media coverage that glorified the elevators and rhetoric that integrated technology into this natural space, the elevators at Carlsbad Caverns became part of a unique, hybrid attraction of nature and technology.

Several scholars discuss attempts to keep manmade structures from altering the landscape of National Parks or other natural spaces at the same time that Carlsbad was dramatically introducing the elevator technology. Alfred Runte writes that while some Americans, like John Muir, began arguing for preservation early in the twentieth century, the bulk of Americans shifted towards this preference in the 1930s. At this time, Runte claims, Americans began to assert a desire for primitive conditions in the National Parks, with unmodified scenery.[1] As Ann Whiston Spirn writes, landscape architects, in many cases, undertook deliberate efforts to minimize the presence of tourist accommodations in national parks and other areas. Frederick Law Olmsted, she argues, is a prime example of a landscape architect who engaged in this work. At Yosemite, Olmsted recommended a one-way circuit trail whereby viewers would be isolated

[1] Alfred Runte, *National Parks: The American Experience* (Lincoln: University of Nebraska Press, 1997, Third Edition), 14, 60, 118.

by trees, and could enjoy the scenery without seeing artificial intrusions or other humans.[2] Paul S. Sutter writes of a dramatic reaction to the introduction of technology into natural areas. He finds that the formation of the Wilderness Society in 1935 was motivated by the founders' efforts to keep automobiles out of natural areas. They opposed the intrusion of cars because they brought the "sights and sounds of the machine-age world" into "primeval" environments, bringing "noise, ugliness, and congestion."[3] Conversely, the introduction of the "machine age" into primitive nature was celebrated in the writings about the elevators at Carlsbad Caverns. Since the reaction at Carlsbad Caverns differed from other perspectives of nature at the time, it is important to examine the ways in which the elevators at Carlsbad Caverns were rhetorically integrated into the caves, making them into an attraction rather than a point of contention.

As early as 1922, visitors to the caves complained about the strenuous trip required to see its scenic portions. This discontent laid the foundations for the movement to install the elevators. In one example of the public calls for the elevator, F.R. Elliot wrote to National Park Service Director Stephen Mather in 1928 about his experiences in the cave. The uneven nature of the trails particularly bothered Elliot; he claimed, at several points of the journey, tourists had to descend as much as forty feet into a small room, only to immediately climb out into the next room. After the trip through the caves, he claimed he was so tired he could barely climb the 200 steps necessary to exit the cave. The extent of his exhaustion seemed to be severe; he wrote, "I was so keyed up from the unusual exercise and altitude that I could not sleep that night. My heart pounded very vigorously all night and I was utterly exhausted for about a week after the trip through the cavern." Elliot offered two suggestions to Mather. The first was to build bridges

[2] Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton & Company Ltd., 1996): 91-97.
[3] Paul S. Sutter, *Driven Wild: How the Fight Against Automobiles Launched the Modern Wilderness Movement* (Seattle: University of Washington Press, 2009), 191.

across some of the smaller rooms, so tourists would not have to climb up and down so often. The second suggestion was to build an incline elevator at the entrance to aid their journey entering and exiting the cave.[4]

While many visitors immediately favored a mechanized transportation device, the Superintendent of Carlsbad Caverns, Thomas Boles, believed improving trails would ameliorate some visitors' difficulty traveling through the caves. In 1927, Boles proposed a solution he believed would "eliminate 90% of the demand for any elevator," since he believed "any kind of mechanical device would destroy the impressiveness which one first gets of the entrance of the Carlsbad Cave." Boles's plan was to eliminate all stairways except the lower ninety-six steps at the entrance. He wished to get rid of the short zigzag portions of the trail and instead use long trails with easy grades. He also proposed to smooth out the surface of the trails, so there were no bumps over which "fatigued" visitors could trip.[5]

Initially, Boles, along with Director Stephen Mather and Associate Director Arno B. Cammerer, resisted calls for the elevators. They frequently asserted the ease with which visitors, including women, children, and elderly individuals, undertook the trip through the caves. Among the many examples that Boles, Mather, and Cammerer used to show the cave's accessibility were a four-year old girl from Carlsbad who walked the entire way through, a blind woman, a man on crutches, and an eighty-three year old Confederate veteran who carried his granddaughter through the caves. Boles noted in regards to Mr. Montgomery, the man who traveled through the caves on crutches, "That a crippled man should make this entire cave trip and enjoy it is

[4] F.R. Elliot to Stephen Mather, 9 July 1928, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611 Part 1 Carlsbad Repairs and Improvements.
[5] Thomas Boles to Arthur Demaray, 21 November 1927, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 210, File 204-01 Part 1.

especially interesting at this time when there seems to be a demand from lots of our visitors for an escalator and a tramway to carry them through."[6]

While agitation for the elevators came from many directions, Governor Seligman of New Mexico was among the most influential in securing the congressional action to obtain the funds for building it. Initially, Governor Seligman desired an escalator at the entrance of the caverns, but surveys of the caves found it impossible. As the most expensive choice for mechanical lifts, the escalator would not even reduce the climb significantly; it would only eliminate one-third of the required climb. Although the escalator method seemed to be the most popular with the "touring public," the aid it would bring to the public did not justify the cost or trouble of engineering the ground to a lesser slope to build it.[7] Still, visitors' preference for an even more visible display of technological innovation, which would reduce less of the climb, shows they willingly and enthusiastically embraced the integration of technology into a previously "primitive" and natural location. They did not, like in other parks, prefer the most minimal invasion of tourist accommodations, but rather preferred astounding displays of progress and technology.

There was very little documented outside opposition to the elevator's installation. One unhappy man, however, wrote to Assistant Director Horace Albright when he heard there would be an elevator installed in Carlsbad Caverns. Caspar W. Hodgson was a member of the Explorers

[6] "Little Natalie Smith Visits the Cave," *Carlsbad Argus*, 20 September 1927 National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 213, File 501-03 Carlsbad Newspaper Articles; Thomas Boles to Director, 21 September, 1927, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 213, File 501-03 Carlsbad Newspaper Articles (Press Notices); Thomas Boles to Stephen Mather, 30 November 1927, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 213, File 501-03 Carlsbad Newspaper Articles (Press Notices); H. S. Hunter, "Uncle Sam Spending $70,000 on Carlsbad Caverns, N.M.," *El Paso Herald*, 28 July 1928, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 213, File 501-03 Carlsbad Newspaper Articles (Press Notices).

[7] "A. Van V. Dunn Report on Engineering Activities Carlsbad National Monument," page 12-13, Spring 1929, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 211, File 207.

Club and wrote of his discontent when other members of his club made an enthusiastic presentation on the modifications being made to the caverns. When the club began discussing the electric lights and "other modern conveniences" in the caverns, Hodgson and some unnamed others became so angry that they walked out of the meeting. His unhappiness with the modifications to the caves increased when he heard about the proposed elevator. He believed that the caves should remain unaltered, with visitors required to climb the whole way out.[8] His concerns seem to be less about the effects on the natural surroundings, and more about an elitist perspective on who deserved to see the caves. His letter implies that he believed only those who were willing to climb the entire way deserved to see the interior of Carlsbad Caverns, but he stands as a minority even within the Explorers Club. Many of the other members seemed perfectly willing to discuss and celebrate the modifications.

Another example of the rare, voiced opposition came from the Carlsbad Chamber of Commerce, as they were worried a shorter cave trip would make visitors less likely to remain in the town of Carlsbad overnight. Members of the Carlsbad Chamber of Commerce played an important role in the earliest development and publicity of the caves, hoping to reap some of the monetary benefits tourism would bring. Victor Minter, Secretary of Carlsbad Chamber of Commerce, was among the most enthusiastic boosters of Carlsbad Caverns, leading advertisement campaigns and lobbying Congress for recognition. Yet, by 1930, Minter and the National Park Service were in disagreement, as Minter did not want the elevator used "to any extent," fearing such a short trip would remove the necessity to patronize the town of Carlsbad after its citizens had worked for years to publicize the caves.[9] Frank Kittredge attempted to

[8] Caspar W. Hodgson to Horace Albright, 29 December 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.
[9] Director to Cammerer, 10 May 1030, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.

diffuse conflicts with the Carlsbad Chamber of Commerce, suggesting the elevators would, in fact, bring more business to Carlsbad. He estimated that there must be thousands of potential tourists who completely avoided the town of Carlsbad or passed through it without stopping because they believed the climb into the caverns was "entirely beyond their strength." Kittredge believed that advertising an elevator would bring a significant increase in visitation to both the caverns and the town of Carlsbad.[10]

Significantly, the opposition did not resist the elevators on the grounds that use of technology would be inappropriate for the setting. While such resistance to "improvements" was present in other national parks and natural areas, caves seemed to welcome improvement. Historian John F. Sears explains one possible reason why caves, Mammoth Cave in particular, were more inviting to manipulation: there was no "natural" way to see the inside of a cave, since its "natural state" was complete darkness.[11] This explains the readiness of tourists to accept lighting and footpaths, as they did in Mammoth Cave, but the elevator went beyond this need.

Before the elevators were built, a few people involved in the project were concerned about their integration into the caves, and whether they would disrupt the scenery. This concern seems in line with the landscape architecture used in other parks to minimize the disruption of the natural scenery, but in this case, it did not become a major issue. The A. Van V. Dunn Report on the engineering activities at the cave stated, "the disturbing of natural scenery can be disregarded in the following answers because an escalador or inclined tram at the natural entrance does not pass through any very beautiful scenery, and an elevator into the Left Hand Tunnel would be in a relatively unattractive location and only visible for 300 feet in any

[10] Frank Kittredge to Director, 10 July 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.
[11] John F. Sears, *Sacred Places: American Tourist Attractions in the Nineteenth Century* (New York: Oxford University Press, 1989), 47.

direction."[12] Some did not discount the disruption of scenery so easily, however, and sought ways to seamlessly integrate the elevator into the cave's natural setting. Frank Kittredge, the chief engineer on the project, suggested some ideas. In a memo, Kittredge noted that Chief Landscape Architect T.C. Vint wanted to locate the lower opening of the elevator shaft in the narrower portion of the lunch room, "in order that it might not be unsightly." Kittredge, however, believed it should not open in any room, but rather in solid rock. He believed the opening should be "framed in rock in such shape that the steel would not be evident." Kittredge also disagreed with a proposal to bring the elevator all the way to the surface, which would require a supporting tower. Instead, he wanted passengers to descend a ramp "through a rock tunnel." He thought this would be "very appropriate and a fitting entrance to a cavern."[13] In contrast, Junior Landscape Architect Peterson wrote in a letter to Vint that there could be nothing more appropriate than an entrance within the cave resembling "the lobby of a large office building."[14] Peterson's willingness to embrace the aesthetic of office buildings shows that minimizing the visibility of the new accommodations was not a priority.

Vint found Kittredge's plan to enter through a rock tunnel impracticable. Additionally, he claimed most people would expect the elevator to come to ground level, and recommended that construction accommodate this expectation.[15] Vint's argument won, and the elevator came fully to the ground level. While Kittredge's concerns about minimizing the visual effects of the elevator mirror concerns about altering the character of natural scenery in other parks, the fact

[12] "A. Van V. Dunn Report on Engineering Activities Carlsbad National Monument," page 12, Spring 1929, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 211, File 207.
[13] Frank Kittredge, memo, 25 February 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.
[14] Peterson to Vint, 24 May 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.
[15] Vint to Kittredge, 24 July 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.

that his argument lost to more practical concerns shows that this was less of an issue in Carlsbad Caverns.

The media's reaction to the installation of the elevators, which was partially directed by National Park Service press releases, did not focus only on the capacity of the elevator to bring new visitors into caves. Instead, even as the construction crews began installing the elevators, publicity began to glorify the technological aspects of the project. The language the media used to discuss the elevators emphasized the technological feat, rather than the reduced strain of the trip. The introduction of this modern technology changed the meaning of Carlsbad Caverns and added a technological attraction to the natural wonders of the caves.

Carlsbad Caverns was not the first cave made accessible by elevator. According to *Popular Mechanics Magazine*, Shenandoah Caverns in Virginia had operated a passenger elevator "for a considerable length of time" before the construction of the elevators at Carlsbad. This elevator ran from a hotel above the caverns to the floor of the cave.[16] The total depth of Shenandoah is only about one hundred feet, and the lift of the elevator was only sixty feet, so the elevator was not nearly as technologically impressive as the one built in Carlsbad.[17] There was very little press coverage of this elevator, and therefore Carlsbad's elevator was considered much more of an important feat of engineering.

The scale of the Carlsbad Caverns' elevator was extraordinary for a passenger elevator in 1931. A press release in December 1930 compared the elevator to those in the Woolworth and Chrysler buildings in New York. The release noted, however, that the elevators in the Woolworth and Chrysler Buildings did not operate as single lifts, which means that passengers transferred from one elevator to another before reaching the top of a building. This would make

[16] "Another Cavern Elevator," *Popular Mechanics Magazine* (September 1931): 397.
[17] "The Yellow Barn at Shenandoah Caverns," Shenandoah Caverns, 2013, http://www.shenandoahcaverns.com/v.php?pg=43.

the elevator in Carlsbad Caverns "the longest single lift in the world in the strictly passenger class."[18] In November of 1930, the National Park Service contacted representatives of those buildings to verify the information regarding their elevators to use as a comparison. In the Woolworth building, the elevators ran from the ground floor to the fifty-fourth floor, covering only slightly over 700 feet. The speed was 700 feet per minute.[19] The Chrysler Building's representative replied that although their elevators were designed for a speed of 1000 feet per minute, ordinances prohibited their operation at over 700 feet per minute.[20] The height and speed of Carlsbad Caverns' elevator made it comparable to what the press release refers to as "metropolitan wonders."[21] The comparison to these two buildings was repeated in many newspapers.

Construction of the Empire State Building was simultaneous with the construction of the elevator at Carlsbad. In November of 1931, Acting Director A. E. Demaray received confirmation that the elevators in the Empire State Building spanned from the ground floor to the eightieth floor, with a rise of 956 feet. "This is a single lift," they wrote, surely disappointing those who had hoped Carlsbad would hold the record for the longest single lift. The elevators in the Empire State Building operated at 1000 feet per minute.[22] While Carlsbad could no longer claim the record for longest single lift, those who wrote about the elevators could compare it to the brand new Empire State Building, a symbol of technological progress.

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[18] Release for 27 December 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 part 1; Frank A. Kittredge, "Facts Concerning Elevator and Shaft," 16 January 1932, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 2.
[19] Hogan to Director, 29 November 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.
[20] Illegible to Moskey, 1 December 1930, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 1.
[21] Release for 27 December 1930.
[22] Illegible to Demaray, 25 November 1931National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 2.

The safety devices used in the elevator at Carlsbad Caverns also elicited wonder as technological advancements. Engineers Walter G. Attwell and Ira Stintson's final report on the construction of the elevator described the safety features in terms of how well they replicated or exceeded the capacity of the human worker. "It is so nearly human in operation," they wrote, "that should the operator go to sleep at his post the car simply goes on and levels itself in at the top or bottom entrance, coming to an easy, comfortable stop within a quarter of an inch of the floor level." Likewise, if the operator was to "become confused and throw the controls over, going from full speed in one direction to full speed in reverse, the car simply slows down and acting like a high pendulum changes direction and accelerates up to full speed again with no jar or discomfort whatsoever." Additionally, the car would not work if the doors were not closed.[23] The artificially intelligent technology added to the wonder of a 750-foot elevator shaft in a cave. In addition to being independently remarkable, these features were also comparable to office buildings, providing additional connection to modern spaces of technology. As Frank Kittredge states in a fact sheet, the elevator at Carlsbad was "designed with the same regard for safety and comfort of the passengers as are embodied in the latest installations in modern office buildings."[24]

The tone of press coverage of the new elevator was outstandingly celebratory. A *New York Times* article touted the modernity of Carlsbad Caverns' improvements, stating that tourists would find the "machine age has done them a good turn" if they visited that summer.[25] The article ignores the contradiction that some might imagine between a cave and the machine age, and instead framed the entrance into the machine age as an asset to the caverns. In another

[23] Walter G. Attwell and Ira Stintson, "Final Report on the Excavation of a Shaft and the Construction of a Passenger Elevator," 25 January 1932, page 42, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 215, File 611-1.
[24] Kittredge, "Facts Concerning Elevator and Shaft."
[25] "Elevators for Carlsbad Cavern," *New York Times,* 12 April 1931, E6.

publication, the *Tombstone Epitaph*, A.H. Gardner referred to the lifts as "mighty elevators."[26] Not only were the elevators celebrated for their capacity to bring visitors into the caves, they were also seen as independent victories for technology. The *New York Herald-Tribune* referred to the elevators as an "engineering feat, unique in that the digging of the shaft is being done from the bottom up and from the top down at the same time, the workingmen to meet somewhere near midway."[27] The triumphant nature of press coverage shows that the public was captivated by the ability of engineers to build an elevator into a cave. Since many articles of this tone appeared, it is clear that the newspapers capitalized on the technological aspects of the elevator installation, rather than the new potential to access a national park.

Historian David Nye describes the comparison between the wonder at natural phenomena and the wonder at technological advancements in *American Technological Sublime*. He characterizes the sublime feeling as an "essentially religious feeling, aroused by the confrontation with impressive objects." Nye suggests that Americans were able to experience the same emotion when viewing grandiose technological endeavors as they felt when viewing sublime natural wonders.[28] With the completion of the elevators at Carlsbad Caverns, Americans gained the opportunity to experience the natural and technological sublime simultaneously. They viewed the natural features of the caves with awe, but the introduction of a high-speed passenger elevator, one of the longest in the world, allowed Americans to glorify man's progress while also viewing nature's wonders.

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[26] A. H. Gardner, *Tombstone Epitaph* 25 May 1933, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1933-1949, National Parks Carlsbad Caverns, Box 855, File 501-03 Part 2 Carlsbad Newspaper Articles.
[27] "740-Foot Elevator is Being Built by U.S. In Carlsbad Cavern," *New York Herald-Tribune* 11 March 1931, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 215, File 611.1 Part 1.
[28] David E. Nye, *American Technological Sublime* (Cambridge, Mass.: The MIT Press, 1994), xiii, 19-25, 61, 106, 133.

Some newspaper articles even predicted that the elevators would become attractions unto themselves, drawing visitors to see the technological display, rather than the natural wonders. An article in *Popular Mechanics* suggested that the elevators would rival the geological features for attention, saying that the elevator offered "engineering and mechanical features as startling as those of nature displayed in the cavern."[29] Others believed that the elevator would become the main attraction. A 1931 news article quotes Kittredge, suggesting that more people would visit the caves to see the "thrilling accomplishments of man." The article also predicts visitors may "enjoy the spectacular in 'rides,' as well or even more than scenic wonders."[30] Another 1931 article from a Montana newspaper refers to the elevator as a "new thrill," which would offer visitors a "fast ride into the depths of the earth."[31] For tourists from outside the east coast, who might not have had the means to travel to New York to see the new skyscrapers and ride in their elevators, the elevator at Carlsbad presented an alternative way to experience the technological sublime embodied by skyscrapers. Another Montana newspaper predicted, "some people will go up in it just because it is a record-maker. Others will go to see the caves."[32] The prediction that some travelers would go to the caverns simply to ride the elevator was likely quite accurate. The elevator was opened for public use for the first time during the last days of January 1932. In the balance of the month, Boles calculated that less than three percent of people rode down, while fifty-eight percent rode up. In his observation, the crowd seemed to be caught up in the novelty of the elevator, and he predicted percentages would decrease in the future.[33] Over the next six

[29] "Elevator to Reach Underworld Wonderland," *Popular Mechanics* (June 1931): 963.
[30] "Midnight Lake" Paper Unknown, 20 October 1931, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 215, File 611.1 Part 1.
[31] "Caves and Caverns," *Montana Standard*, 5 February 1931, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 215 File 611.1 Part 1.
[32] "The Carlsbad Elevator" *Montana Post*, 17 January 1931, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 215, File 611.1 Part 1.
[33] Thomas Boles to Arno B. Cammerer, 18 February 1932, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 3.

months, the percentage of visitors who rode down remained between one and three percent, while the percentage of visitors riding the elevator up to the surface initially dropped to thirty-three percent, but rose to seventy-two percent by July.[34]

The enthusiasm for elevators in a national park may seem contradictory, but the language used to describe Carlsbad Caverns prior to the construction of the elevators made it seem as though technology was as natural to the park as the geological features. In a 1924 article on an expedition to the caves for the National Geographic Society, Willis T. Lee described the flight of the bats as resembling "smoke pouring from a smokestack."[35] This was more than just a visual comparison between bats and smoke. Since he imagined the bats as the particularly industrial type of smoke emerging from a smokestack, rather than a fire, volcano, or other natural source, he framed the bats, and indirectly the caves, as compatible with the industrial world. Similarly, journalist and amateur adventurer Frank Ernest Nicholson also described the bats in terms of industrialized products. When, he heard the noise the bats emitted, he first described it as similar to the sound "produced by filing a steel saw." He described the noise as changing "into a deep hum that grew until it resembled the motors of an airplane as the bats flapped their wings and circled overhead."[36] By describing the bats in terms of industrial and technological entities, Nicholson created associations between Carlsbad Caverns and technology in the minds of the readers.

Such descriptions were also present after the installation of the elevators, continuing to naturalize their presence. A 1939 article in *Popular Mechanics* referred to the constant temperature of fifty-six degrees in the caves as Nature's own air conditioning, saying, "Engineer

[34] Untitled Chart Showing Number of Visitors Using Elevator Services, 1932, National Archives, College Park Maryland, Record Group 79, Entry 10, Central Classified Files, 1907-1949, Box 214, File 611-1 Part 2.
[35] Willis T. Lee, "A Visit to Carlsbad Cavern," *The National Geographic Magazine* XLV, no. 1 (January, 1924).
[36] Frank Ernest Nicholson, "Cavern Explorers See Bat Festoons," *New York Times*, 2 March 1930, 2.

Boles could have rigged up an air conditioning system had not Nature beaten him to it."[37] By referring to the modern uses for nature's creations, this article and several others compared natural features to modern technologies, making the integration of actual technologies seem more natural.

Furthermore, publications made claims that Nature had created the scenic wonders in anticipation of "improvements by man." This worked as a rhetorical technique to explain and justify the integration of technological features into Carlsbad Caverns. Historian David Nye explains this as the "doctrine of second-creation," which was the idea that Nature created its features with the intent that man would later improve them. This doctrine also claimed that "improvements are latent within the earth, which awaits human beings to fulfill its destiny."[38] This framework is helpful in understanding the ways in which Americans perceived technological integration in Carlsbad Caverns. Nicholson's *New York Times* series did the most to suggest that nature's creations awaited man's improvements. In discussing the artificial lighting, Nicholson suggested, "while nature has created these magnificent examples of her handiwork in absolute darkness, she tinted them with a variety of colors in preparation for the eventual invasion of man and his artificial light."[39] If "Nature" created certain features of Carlsbad Caverns in anticipation of the technological interference of man, the manmade features of the cave could be integrated with the natural, creating little discord in the minds of Americans.

Nicholson used this rhetoric specifically in reference to the elevator as well. Nicholson's trip into the caverns was in March of 1930, after the National Park Service initiated plans for the elevator's installation, but before construction began. He described the proposed location of the

[37] "Greatest Show Under Earth," *Popular Mechanics* (July 1939): 52.
[38] David Nye, "Technology, Nature, and American Origin Stories," *Environmental History* 8 no. 1 (January 2003): 9.
[39] Frank Ernest Nicholson, "Asbestos Believed Found in Cavern," *New York Times*, 9 March 1930, 18.

elevator shaft, saying, "the engineers will have only to dig through the ceiling of our mystery room, then the floor of the room we see below, allowing the elevator to pass through the natural shaftway and making it possible for the car to stop at three distinct floor levels, instead of cutting through 750 feet of solid rock as they had anticipated."[40] By describing the elevator's proposed location as a "natural shaftway," Nicholson made the caves seem suited to technological progress. If "Nature" provided such a shaftway, it was only fitting that man should build an elevator into it.

Another spot Nicholson described in the caves also reminded him of an elevator shaft. He described a "shaftway that appeared to be some fifty feet in diameter like a huge elevator shaftway in a skyscraper."[41] His comparison of the cave to a skyscraper anticipated the rhetorical link between Carlsbad Caverns and the Woolworth, Chrysler, and Empire State Buildings. Nicholson clearly favored building the elevator, and by asserting that the cave naturally provided shafts for the elevator, his writing may have helped other Americans imagine a 750-foot elevator lift descending into a cave.

The rhetorical naturalization of the elevators into Carlsbad Caverns contrasted with efforts to introduce tourist attractions as discreetly as possible into other national parks. Instead, Americans glorified the technological innovation of a 750-foot elevator into a cave, and the technological attractions began to rival the natural attractions of the caverns themselves. As Americans viewed both attractions as simultaneously "sublime" or fascinating, Carlsbad Caverns transformed from a primitive cave into a space of modernity, exhibiting wonders of technology rivaling those in modern cities. This made Carlsbad Caverns into a unique attraction, where Americans could revere nature at the same time as they glorified progress and technology.

[40] Frank Ernest Nicholson, "Find Oldest Recesses of Carlsbad Cave," *New York Times,* 12 March 1930, 24.
[41] Frank Ernest Nicholson, "Land of Palaces in the Cavern Depth," *New York Times,* 6 March 1930, 14.

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