

## ✓ Question <sup>[2]</sup>

**What is the photograph's date, title, & creator? What does this suggest?** 2010, The U.S. Space & Rocket Center, Huntsville, Alabama, and Carol Highsmith. It shares with the viewing audience where and when the photograph was made. It also suggests that the large item at the center of the photograph is a (very likely retired) rocket. The buildings in the background are likely a "center" for US space and rockets.

**What type of person might have taken this photograph? For what purpose?** Carol Highsmith is an American professional photographer and author who has devoted her career to creating a permanent record of the United States by taking over 100,000 photographs of all 50 states, the District of Washington, and Puerto Rico. She donated her entire collection to the Library of Congress. She wrote more than 50 coffee-table books and has collected many artistic awards.<sup>[3]</sup>

**Was it random or posed, amateur or professional, private or published?** Nearly everything in the photograph is on permanent display and therefore, "posed" in a sense. Still, Highsmith made several decisions about what to include in the viewfinder and what to exclude. For example, the storm cloud at the very top of the photograph; could it have been excluded from the viewfinder? Could Highsmith have waited a few minutes until it passed? Was it intentionally included?

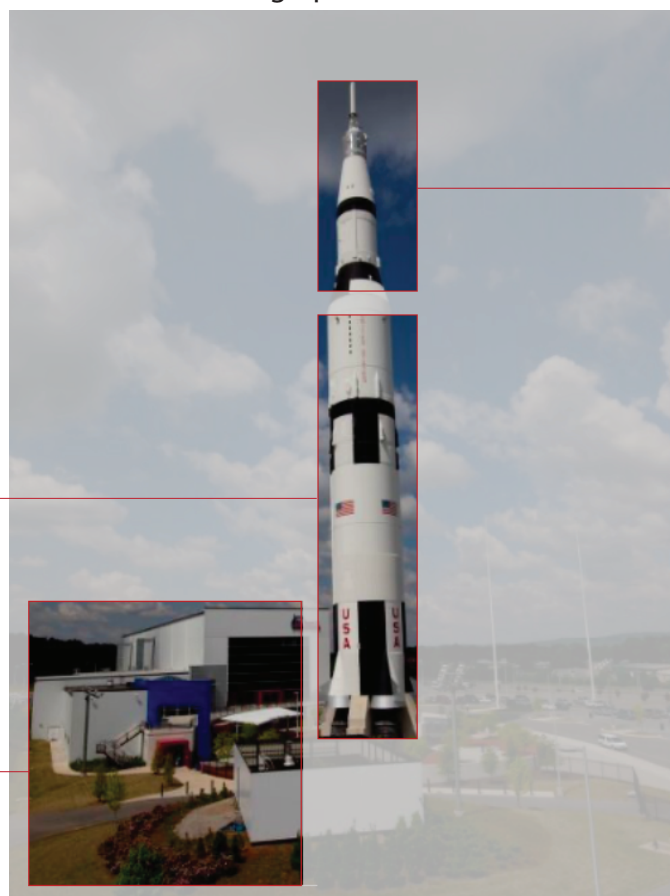
This building could be part of the museum complex at the US Space and Rocket Center in Huntsville, Alabama. Notice, the title of the photograph reads "The U.S. Space & Rocket Center" which is a very different facility from "The Marshall Space Flight Center." The Rocket Center is a museum; The Flight Center is nation's learning rocketry and spacecraft propulsion research center. The Rocket Center is operated by the state government and displays many achievements of the nation's space program. In 2020, the business of the US Space and Rocket Center—contributions, ticket sales, merchandise—reported a total revenue of \$12 million.<sup>[6]</sup> Commercial use and benefit of a nation's space program is acceptable by international law; however, there are strict limits to the commercial use and exploitation of outer space resources. The Outer Space Treaty of 1967 and the subsequent Moon Agreement 1979 mostly address weapons in space; however, they have also been interpreted to prohibit the unilateral and commercial exploitation of outer space resources. **Should nations participate in the commercial recovery and use of resources from outer space?**

Several nations have recently ventured into a new space activity: asteroid mining. Japan has twice sent robotic spacecraft to a small, near-Earth asteroid to collect samples and return to Earth. The cost of the two missions exceeds \$1.4 billion and less than one gram of material has been returned to Earth.<sup>[7]</sup> The United States launched its own \$1 billion asteroid study-and-sample-return mission in 2016. It is expected to return to Earth in 2023 with at least 60 grams from another near-Earth asteroid.<sup>[8]</sup> Also, the nation of Luxembourg has joined with Portugal and the United Arab Emirates to "jump-start an industrial sector to mine asteroid resources in space."<sup>[9]</sup> Asteroid mining has potential to produce great wealth for individuals and nations; astrophysicist Neil DeGrasse Tyson claimed the first trillionaire will likely be in the business of mining asteroids.<sup>[10]</sup> Some experts warn that asteroid mining could also quickly destroy Earth's existing economy of raw materials because asteroid resources could flood Earth's markets and rapidly devalue global resources. Others argue that Earth's developing nations will be disproportionately harmed from asteroid mining because they tend to rely heavily on mineral exports and often cannot afford the costs associated with building their own asteroid mining operations.<sup>[10]</sup>

While this object may appear to be a weapon (i.e., ballistic missile); it is actually a super heavy-lift vehicle for human exploration of outer space. It is called the Saturn V [the Roman numeral for five] rocket, and it was used in the United States during the 1960s and 1970s by the National Aeronautics and Space Administration, NASA, and its spacefaring Apollo Program (Apollo 11 astronauts Neil Armstrong and Buzz Aldrin were the first humans to walk on the moon: July 20, 1969). The Saturn V was developed at the Marshall Space Flight Center in Huntsville, Alabama, the nation's leading rocketry and spacecraft propulsion research center. The Marshall Space Flight Center provides the US with "its most vital propulsion systems and hardware, flagship launch vehicles, world-class space systems, state-of-the-art engineering technologies and cutting-edge science and research projects and solutions."<sup>[4]</sup> As the Cold War and its arms race began to include outer space (i.e., the development of Intercontinental Ballistic Missiles in the 1950s) many nations called on the United Nations to establish rules and responsibilities for the common, collective use of outer space. **Should all actions in outer space be directly or indirectly related to peaceful purposes?** The Outer Space Treaty of 1967 forms the basis of international law as it relates to space. Article IV specifically restricts use of the moon, planets, and other celestial bodies for peaceful purposes only. It also expressly prohibits their use for testing weapons of any kind, conducting military maneuvers, or establishing military bases, installations, and fortifications.<sup>[12]</sup>

## ✓ Observe

Highsmith, Carol. 2010. *The U.S. Space & Rocket Center, Huntsville, Alabama*. Library of Congress, Prints and Photographs Division.<sup>[1]</sup>



The compartments near the top of this object do not contain warheads as they would if this were a ballistic missile. Rather, because this is a vehicle, these compartments hold two rover-type motorized modules. One—the lunar excursion module—is designed to allow astronauts to explore the moon, and a second—the command module—carries the moon-visiting astronauts back to Earth. The Outer Space Treaty of 1967 states that outer space exploration should be done for the "benefit all countries" and that "space shall be free for exploration and use" by all nations. Article II of the treaty explicitly forbids any nation from claiming a moon or planet or celestial body as its own territory, whether by declaration, occupation or any other means. This means that although the flag of the United States is planted in the moon, the United States does not claim its ownership. The treaty also states that a nation that launches a space object, such as a satellite or space station is responsible for that object, including any damage it causes.<sup>[5]</sup> **Should a nation be able to claim sovereignty over any moon or other celestial body?** In 1976 eight Equatorial nations challenged the Outer Space Treaty with the Bogota Declaration that claimed sovereignty over the fixed portions of space above their earthly location (i.e., somewhat similar to a nation's "air space" in the Earth's atmosphere). Their claims were not supported by other nations and were abandoned.<sup>[11]</sup>

## ✓ Reflect

**How does this photograph compare with other information?** Much of the information gathered from this photograph coheres with texts from 1967 Outer Space Treaty. This photograph explores international law as it concerns "outer space," other photographs may explore conduct of war, national sovereignty, or the environment.

**Why might other information agree or disagree with this photograph?** Other photographs or texts may explore international law from different perspectives that answer the overarching question differently. Other sources may have different reasons for presenting data, such as to make their perspective seem more reasonable, or to present the "other side" in a worse way.

**What else do you need or want to know about this photograph?** To what degree was international law followed after the 1967 Outer Space Treaty? What subsequent conventions have met and what requirements have they added to international law? Do any new concerns exist related to "Outer Space" now, in the 21st century, that did not exist in the 20th century when the treaty was signed? What should policy-makers do when international law conflicts with their state's national interests?

Highsmith, Carol. (2010). *The U.S. Space & Rocket Center, Huntsville, Alabama*. Library of Congress, Prints and Photographs Division.<sup>[1]</sup>



Citations →

**Citations: [#] throughout the primer and lesson**

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