



Extended Reading Comprehension: Funding Space Exploration

IS FUNDING SPACE EXPLORATION STILL WORTH IT?

The author of this article presents one perspective on the topic of whether U.S. government funds should go toward space exploration programs. Read the passage, and then answer the questions that follow.

- 1 Each year, the United States government spends a significant amount of time debating the federal budget. How should public money, raised through taxes, be spent? With so many important programs to fund—such as education and infrastructure—why **allocate** money to impractical projects like sending humans to Mars? In the face of immediate public needs, should the government continue to invest in space exploration science? The answer is, without question, yes.
- 2 When NASA's *Apollo 11* landed on the moon in 1969, humans were inspired. That night, as people looked out their windows and saw the moon, they thought, "We are up there!" That moment exhibited the great possibilities of human knowledge and effort. It pushed people to pursue science. It challenged them to do the extraordinary, to follow their imaginations.
- 3 Some would argue that the inspiration of discovery alone is enough to justify funding NASA's programs. But space exploration also positively impacts humans in more concrete, though less direct, ways. Space exploration has advanced many aspects of daily life, although the uses of new scientific discoveries or inventions are not always immediately obvious.

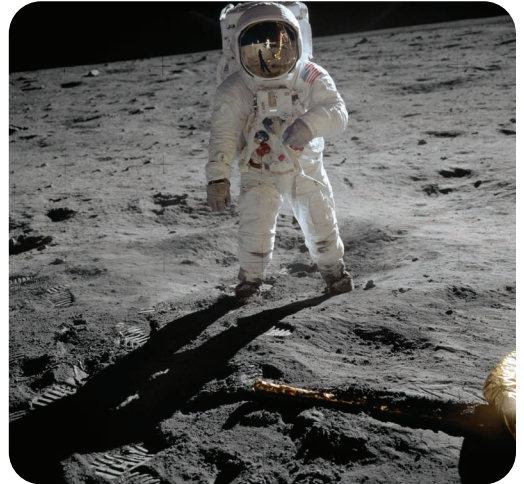


Image 1: *Apollo 11* astronaut Buzz Aldrin walks on the moon, July 1969

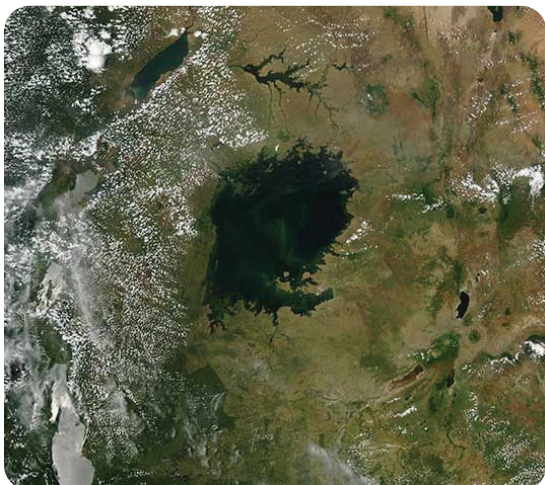


Image 2: Africa's Lake Victoria from NASA's Aqua Satellite. Radar Technologies International uses satellite data to locate underground water in arid regions.

- 4 When the first human-made satellite was launched into space in 1957, no one could predict the many uses satellites would have. Just over half a century later, many technologies directly rely on artificial satellites. They transmit information to the ever-present smartphone. They help meteorologists predict weather patterns, which allows agricultural managers to plan efficient farming practices and helps fight hunger. Satellites are also used to predict natural disasters such as hurricanes, allowing people to respond in time.
- 5 Countless other technologies developed for space exploration have practical uses as well. These range from the lifesaving to the convenient. Many medical, industrial, and commercial products have their origins in NASA inventions. A few of many examples include improved artificial hearts, thermoelectric cooling systems for computers, and wireless headphones.



Extended Reading Comprehension: Funding Space Exploration

Continue reading.

- 6 Yet despite these advancements, Americans are still divided on the government funding of space science programs. In 2015, a Pew Research Center Report revealed that almost half of Americans polled believe that the government should only have a minor or no role in advancing space exploration. Some believe that private companies should bear the cost of these scientific achievements. Others argue that government money should instead go toward immediate public needs and social programs. However, both of these arguments are flawed.



Image 3: Private companies like SpaceX are playing a bigger role in space exploration than ever before.

- 7 Indeed, several prominent companies have entered the private business of space exploration in recent years. Amazon's founder Jeff Bezos launched a rocket return program called Blue Origin, and Elon Musk's company SpaceX provided transport for NASA astronauts from Earth to the International Space Station in 2020. At first glance, these programs seem like smart ways to ease government costs. They appear to justify a decrease or discontinuation of U.S. space science spending. However, this viewpoint is shortsighted and overlooks the government's unique role as a leader in space exploration.
- 8 Private space projects emerged only after governments took risks to prove that similar missions were possible. This distinction is key according to prominent astrophysicist Neil deGrasse Tyson. He argues that private enterprises will not advance knowledge in the same way that government-funded programs have. The reason is motivation. Governments are often motivated by national pride, such as being the first to do something, rather than by financial return. Private enterprises, on the other hand, are dedicated to making money. True pioneering in space is too risky to their profits. Tyson acknowledges that private companies have an important role to play, though. They could take over established space activities, like orbiting the Earth in the lower atmosphere, near-space tourism, and maintaining satellites. But relying solely on private companies to fund the space program would lead to fewer innovations and discoveries due to companies' limited interests in truly pushing the boundaries of exploration.

- 9 Finally, Americans who disapprove of government funding of space exploration should review the relative size of that spending. The percentage of the U.S. budget allocated to NASA has varied since its beginning. It peaked at over 4 percent in 1966. However, it has hovered around and mostly below 1 percent for over 45 years. By comparison, in 2015, total federal spending on Social Security, unemployment, and labor was about 33 percent, and spending on the military was 15 percent of the total budget.
- 10 Therefore, the United States should not focus on whether money currently set aside for space exploration could be better spent. Instead, it should celebrate how space science funding invests in the frontiers of who we can be, in our quality of life, and in our pride as Americans.



Extended Reading Comprehension: Funding Space Exploration

Answer the following questions about the article.

1. Outline the author's argument from the article. Include the central claim, the supporting reasons, evidence, counterpoints, and rebuttals.

Central Claim:

Supporting Reason 1:

Evidence:

Supporting Reason 2:

Evidence:

Counterpoint 1:

Rebuttal:

Counterpoint 2:

Rebuttal:

- 2a. How is the first paragraph organized?

- A. a series of claims followed by evidence
B. a series of questions followed by a claim
C. a claim followed by several counterclaims
D. a claim followed by evidence

- 2b. Why might the author have structured the first paragraph that way? Select two reasons.

- A. to draw the reader in with rhetorical questions
B. to explain the process of how the federal budget is decided each year
C. to acknowledge possible counterarguments that will be addressed in the text
D. to show that space exploration is widely agreed to be a worthwhile investment

3. What is the author's purpose in comparing the motivations of private companies and governments in terms of space exploration?



Extended Reading Comprehension: Funding Space Exploration

Answer the following questions about the article.

4. What idea from the text is supported by the information in Image 2?

5. Cite a claim that is supported by evidence; include a brief explanation about why that evidence is reliable.

6. Cite one claim the author makes that is NOT supported by evidence.

7. What is the meaning of **allocate** as it is used as it is used in paragraph 1?

- A. to set something aside for a specific purpose
- B. to give without expectation of any return
- C. to find the location of something hidden

8. What is a likely reason the author included the Pew Research study in the article? How does it relate to the author's point of view?

9. Which of the following visual aids would best support the author's claim that government funding for space exploration is relatively small?

- A. a line graph showing the change over time in the dollar amount spent on space exploration
- B. a bar graph showing the yearly percentage of the federal budget spent on space exploration
- C. a pie chart showing the percentage breakdown of the all federal budget items from 2015
- D. a flowchart showing the process of how the federal government decides on its annual budget

10. What does the author hope the reader will do after reading this text?

11. Do you agree or disagree with the author's claim? Did the author's argument persuade you to reconsider your original opinion of the topic? Explain why or why not.
