## Should we spend money on space exploration?

By Netivist. May 26, 2023

The launch of SpaceX's Falcon Heavy rocket into has brought back media attention to space exploration. Elon Musk's private aerospace company is in the process of becoming a major player and a partner for many space programs. However, most of the efforts to discover what's out still depend mostly on public funding.

Space exploration is costly, and many argue that in poor economic times, we should focus on solving problems here on Earth, especially since the knowledge gained from space exploration has few immediate benefits. On the other hand, people in favour of space exploration argue that the knowledge to be gained is invaluable, and that it is in the very nature of humankind to explore. In addition, proponents of these programs argue that they have had significant benefits and resulted in the discovery or popularization of many useful new technologies. Furthermore, space exploration could be the only way to escape human extinction in case living conditions become unsustainable on Earth.

These space programs and agencies are very costly. It is estimated that the total annual budget of space agencies around the world is $41.8 billion. Are all these costs justified? Are there better ways to spend public funding? Should we mainly rely on private investors such as Elton Musk to promote space exploration?

**Pros**

Knowledge generation. Thanks to space exploration programs we are discovering many things that help us understand the universe. For instance, learning about planets, comets, stars, etc. can help us find solutions for some of the problems our civilization will face, such as overpopulation and the need to colonize other planets.

Exploration and discovery are beneficial. Humans have always engaged in exploration to satisfy their sense of curiosity and look for opportunities. During the Age of Discoveries in the 15th and 16th centuries, countries such as Spain and Portugal heavily invested in expeditions, but thanks to them they became super-powers and gained many riches. Later, during the second age of explorations in the 18th and 19th century, the discoveries of pioneers such as Captain Cook or Livingstone heavily contributed to scientific discovery.

Scientific advancement and by-products. Space exploration programs help introduce and test new technologies. Much of the research carried out to find solutions for space travel have applications elsewhere. For instance, NASA research has contributed to develop velcro, fire-resistant materials, medical devices to relieve muscle and joint pain, new precise thermometers, artificial limbs, new air conditioning systems, land mine removal systems, improved radial tires, etc.

Space race may save humanity. Life on Earth may be threatened by climate change, pollution, depletion of resources, infectious diseases, or nuclear war. Further, space exploration is necessary to find another planet on which humans could pursue their lives. Space programs also help find solutions to adapt human lives to space or other planets.

**Cons**

Space travel is hazardous. Many lives have been lost in space expeditions. Space missions are very dangerous and can often cost lives and stress to the families of the astronauts or cosmonauts. Should highly qualified professionals and scientists risk their lives traveling outside Earth?

New source of international tensions. The space race is not over. There is a growing international competition to be the first in fulfilling some challenges in space exploration. Control over other planets and satellites, and over their resources, will become a controversial issue. With the advancement of technology domination of outer space may tip the balance of power on Earth.

Priorities and opportunity costs. Even if there are benefits to space exploration, spending so much money and effort in reaching other planets is highly questionable. That money and brain power could be used to solve other more important problems for us. For instance, governments could invest much more to prevent global warming, reduce crime rates, and find a cure for cancer or Alzheimer's Disease.