Power struggles in space

On the 50th anniversary of the first Moon landing, Cameron Dunn asks if China is catching up with the other ‘space powers’, and what the benefits of a presence in space might be.

It is 50 years since humans first landed on the Moon. On 20 July 1969 NASA’s Apollo 11 astronauts were the first human beings to visit an extraterrestrial object. This was the high-point of the Cold War ‘space race’ between the USA and USSR.

The last time a human walked on the Moon was in 1972. So have the ambitions of sending people to other planets, such as Mars, gone forever?

Deep pockets
In the mid-1960s, 4% of all US government spending went to NASA, its space agency, to support the mission to the Moon. By 2018 this had fallen to 0.5%. Today, global spending on space exploration is in the $40–60 billion range: tiny in comparison to the $1,700 billion spent on defence each year. The budgets of major national space agencies are shown in the table. The USA is by far the biggest spender, but China is catching up.

Dark side of the Moon
Space-exploration ‘firsts’ bring considerable prestige to superpowers. The USSR claimed the first satellite (1957), the first human in space (1961) and the first woman in space (1963). The USA beat the USSR to
the Moon, and landed the first rover on Mars in 1997. China claimed a first in January 2019 when the Chang'e 4 mission landed on the dark side of the Moon, and deployed the Yutu-2 rover. The graph shows the extent to which China has ‘caught up’ with the traditional space-powers over the last 20 years.

The USA, China, Russia and Europe have all publicly declared their intention to send humans to Mars (as has the US-based private company SpaceX). The costs, and risks, are very high but the prestige of a successful mission to Mars would likely eclipse that gained by the USA in 1969.

**Other benefits**

Other than international kudos, the benefits of space exploration may not be obvious. However, there are a number of linkages that help explain the surge in Chinese interest in space:

- Rocket, navigation and robotic technology is widely used in military missiles and aircraft.
- Space exploration requires highly advanced research and development, helping propel China from making advanced technology for others (iPhones) to innovating for itself.
- Advanced electronics, AI, communications and miniaturisation have crossovers with consumer technology.

In addition, a high-profile space programme could provide a unifying focus within China, distracting from difficult political questions over the Chinese state’s record on individual freedom and human rights.

A twenty-first-century ‘space race’ could bring benefits, but also costs. If outer space becomes ‘crowded’ by competing government and private interests the potential for conflict, environmental damage such as ‘space junk’ and wider governance issues is likely to rise.

**Questions**

1. Given the huge technological advances in communication, robotics, electronics and other fields since 1969, do we need to risk sending humans into space or could exploration and research be done by robots?
2. Are space exploration ambitions a good indicator of rising or falling status of superpowers and emerging powers, or are there better measures?
3. There are international treaties governing ‘space law’, such as the 1967 Outer Space Treaty, but is there a danger that one country could claim part of space as its territory? What risks might this bring?

**Further research**

You can research international law on outer space here: [https://tinyurl.com/ycsrmptz](https://tinyurl.com/ycsrmptz)

Some insight into China’s often secretive space exploration programme can be gained by reading these articles: [https://tinyurl.com/ybqvfqh3](https://tinyurl.com/ybqvfqh3) and [https://tinyurl.com/y9o9a4re](https://tinyurl.com/y9o9a4re)

There is an environmental downside of space exploration, namely ‘space junk’ polluting what many consider to be akin to a global commons. You can read about the problem here: [https://tinyurl.com/ybvdjp7y](https://tinyurl.com/ybvdjp7y)