Space Exploration: A Way To Decide Urgent Problems

Space exploration has marked a major turning point for the future of the human race. Space exploration is the use of astronomy and space technology to explore outer space. Space exploration has often been used as a proxy competition for geopolitical rivalries such as the Cold war. The early era of space exploration was driven by a “space race” between the Soviet Union and the United States. The idea of space exploration was thought of by scientists for centuries until the 1940s when they started experimental rocket launches into outer space but none could reach their desired altitudes. This is what led to the “space race”.

People think that space exploration is a waste of their money. Their think that the money that they are being taxed should be put into problems happening on Earth instead of putting it into space exploration. What people do not realize is that if we don’t put money into rockets to go and destroy the asteroids headed for Earth, we will have even bigger problems then we do now. Even if we take some funding out of space exploration people should know that other companies are spending more money on researching and developing than it costs to build a rocket, for example, Gillette spent $750 million for its 1998 three-bladed razors. While SpaceX only spent $299.9 million to build a rocket. Other examples that spend more money than space companies are as followed, the US spent an average of $14 billion on cosmetic surgery and the replacement for the Hubble Space Telescope, the James Webb space telescope only cost $8.8 billion. India spent more on firecrackers than on a satellite, the Indian Space Research Organization launched a Mars rover for only $75 million, but every year the country spends over 10 times that amount on firecrackers for the festival of Diwali which adds up to about $800 million. The Olympics could have sent 721 people into space. As of right now the only way to get into space is to take a Russian Soyuz launch vehicle. NASA has to pay $424 million for 6 seats. Russia’s Olympics cost $51 billion, to cover those costs Russia would need to send 721 people into space.

If we do not want to go like the dinosaurs did then we need to protect ourselves from the threat of an asteroid. “Typically every ten thousand years, an asteroid the size of a football field has the potential to crash into earth and cause a tidal wave big enough to inundate coastal areas. But in reality we only need to fear the ones that are 100 meters across or bigger. A collision from an asteroid this size could unleash a firestorm and heated debris and fill the atmosphere with sun-blocking dust, which would lead to human and animal starvation” NASA says. To avoid asteroids from hitting Earth, like we have been, is to put money into a space program that can spot an asteroid long before it reaches Earth, and to send a spacecraft to plant and detonate an explosive that could move it off of its previous course and/or destroy it. Some people would rather put the money going into this into helping natural disaster victims but in reality if we take the money away from the space programs then the asteroids will hit Earth and cause even worse disasters then we are currently facing.

Before the first satellite was launched, US leaders recognized that the ability to observe military activities around the world from space would be an asset to national security. In addition to providing protection, satellites offer the potential for improved communications, weather observation, timing, navigation, and position location. Another space application that began under government sponsorship but quickly moved to the private sector is the relay of voice,

video, and data via orbiting satellites. People do not recognize that the money that goes into these satellites is extremely important because they are very helpful in the security in our country, and when people want to take out money from the satellites they don't realize it could put our country at risk of attack.

We have 7 billion people on Earth, from today there will obviously be an increase in that number over the next decade, which means there will inevitably be an increase in the demand for the world's natural resources. The six main resources we are falling short on are water, oil, natural gas, phosphorus, coal, and rare earth elements. Freshwater only takes up 2.5 percent of the total volume of the world's water, which equals about 35 million km3. Saying that 7 percent of that freshwater in frozen in glaciers and/or permanent snow cover. Out of the 35 million km3 we only have access to about 200 thousand km3 of it. The total amount of oil we have is about 188.8 million tonnes, at the rate we use our oil this would only be enough for the next 46.2 years, that is if the global production rate stays at the current rate it is at. A similar picture to oil exists for natural gas, with enough gas in proven reserves to meet 58.6 years of global production at the end of 2010. Without phosphorus, plants cannot grow. This element is crucial for fertilizer, and without plants, humans will go extinct. The Global Phosphorus Research Initiative predicts we could run out of phosphorus in 50 to 100 years unless we find new places where this element is. Coal has the largest reserves left of all of the fossil fuels, but as bigger nation develop a bigger want for coal demand could outstrip supply. As of right now we have enough coal to last us 188 years of global production, but knowing that the majority of first world countries will keep a steady rate of growth they will need and will use more and more coal each year. Rare earth elements are used in everything from wind turbines to circuits in smartphones. The name rare earth metals don't exactly fit because they are not as rare as they seem but China holds 97 percent of rare earth metals and could restrict access to them whenever they want to.

The majority of the problems we have require a long-term investment. Society's greatest advances come from hard work, research, development, and often are only realized years decades or even generations after that specific investment is made. Investing in science is investing the betterment of humanity.

There are a lot of reasons why colonizing space is so interesting. Neil deGrasse Tyson argues that it would stimulate the economy and inspire the upcoming generation of scientists. Elon Musk the founder of SpaceX, says " there is a strong humanitarian argument for making life multi-planetary…to safeguard the existence of humanity in the event that something catastrophic were to happen" The former administrator of NASA Michael Griffin frames it as" survival of the species". Stephen Hawking has conjectured that if humanity fails to colonize space within 100 years, we could face extinction. If we can hop from Earth to Mars, and from Mars to nearby, potentially habitable exoplanets then this could mean a number of different things, the main one being that each of the exoplanets near Mars have their unique ecosystem, meaning that if we send different people to different exoplanets that could mean that each group of people could evolve differently, this is very similar to when an isolated animal moves to a different landmass on Earth, they would evolve and adapt to their surroundings, because that is just how living animals act.

This decade was the beginning of a new era in space exploration in which NASA and other space exploration programs have been challenged to develop systems and capabilities required to explore beyond low Earth orbit, including destinations such as translunar space, near-Earth

asteroids and eventually Mars. Explorers may visit near-Earth asteroids where we may get answers to the questions humans have been wondering for a long time. Robotic missions to Mars have shown us evidence of water but if life exists beyond Earth it still remains a mystery.

For the people debating the worth of space exploration, things usually turn towards the issue of how many problems we have here on Earth. As people argue about the same things, climate change, hunger, overpopulation and underdevelopment, we have got enough challenges here at home, and these should take priority over exploring and/or establishing a human presence on other planets. Throughout the years there has been an increase in people against the idea of space exploration, they believe it is foolish and a waste of money. Though space travel is not wasting money or blindly throwing resources away, space exploration is an investment as we progress forward and continue to develop as a society, space exploration will set a stepping stone for human development and assist humans in learning about their capabilities and limitations.

Almost half of Americans believe that life exists somewhere else in the cosmos, and a quarter of them think that extraterrestrials already have been to our planet. But so far, telescopes have scanned the sky for signals that might be beacons from distant civilizations have been proven fruitless, the Earth’s atmosphere could interfere with such messages reaching us, so other planets could have tried to contact us but we cannot receive the message.

The major question everyone has about space exploration is that, when will we be able to move to a different planet. Our ability to put satellites into space is helping us to monitor and fight problems on Earth. But our population, greed, and thoughtlessness about environmental consequences have already done pretty severe damage to our planet. As of right now, scientists do not know how long it will take until we can colonize Mars or any other neighboring exoplanets.