Sunita Williams & other space Odysseys

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At 3:27 am IST on Wednesday morning, 3 astronauts and 1 cosmonaut splashed down in the Gulf of Mexico. The event was live streamed by NASA and was watched by millions around the globe. Among the astronauts was Sunita Williams, an Indian origin astronaut who along with Butch Wilmore, had to spend more than 9 months on the International Space Station because of non-availability of a spacecraft to bring them back.

The fact that this "2025 Space Odyssey" has been followed by so many people around the world is testimony to the enormous fascination which space still holds for us. This might seem paradoxical- after all, in our hyper-technological world, we usually have only a fleeting interest in technological advances. Space exploration and especially human space travel, though is something which still excites us across generations.

Despite what is being propagated nowadays about ancient developments in aeronautics, it was only in the early part of the 20th century that a Russian schoolteacher Konstantin Tsiolkovsky laid out the theoretical details of using rockets for space travel. The scientific principle is the same that we use for rockets during Diwali. A propellant is burnt in a chamber and the exhaust gases cause a reaction which propels the rocket.

The science maybe straightforward but the technical expertise required for creating enough thrust to reach outer space is formidable. Outer space is conventionally defined as starting at a height of about 100 km. Though there were some developments in designing and building rocket engines in the early decades of the twentieth century, the real impetus came with World War II. The much feared V2 rockets from Nazi Germany, which wreaked havoc on London were the first objects to go into outer space.

Subsequent to the War, the Cold War provided the thrust for development of advanced rocket engines and guidance systems in the Soviet Union as well as the United States. The primary motivation was of course for use in Intercontinental Missiles, but these could be repurposed for space exploration. With the launch of the first artificial satellite Sputnik in 1958, Space Age as well as the Space Race had started.

The following decades saw tremendous progress in humanity's quest to explore deep corners of space. From landing men and instruments on the Moon to the development of the reusable Space Shuttle and the Space Station as well as explorations of our solar system, the technology has grown almost exponentially. With the coming in of private players like Space X and Blue Sky in the field hitherto dominated by nations, one expects space exploration to really take off!

It is possibly easy to understand why nations are so enamoured of space technology. There is of course the nationalist pride which comes with joining the elite club of countries who possess this technology. This is something we saw when the Soviets claimed the superiority of their socialist system with the Sputnik as well as when hundreds of millions of Indians were glued to their mobiles watching Chandrayan touchdown on the Moon. The use of space technology for military purposes is also a major factor in countries spending huge amounts for this technology-from drones guided by surveillance and GPS satellites, to anti-missile defense systems, modern warfare is as much dependent on this technology as it is on boots-on-the-ground. There are also possible economic advantages like mining of rare metals from the Moon though when and if at all, these would be realized is still an open question.

Apart from the purely utilitarian reasons to go into space, there is also scientific curiosity. Space exploration has allowed us to answer many questions about our universe. And here it is not just Moon landers or Mars rovers which are important. Think of the James Webb Space Telescope which is giving us an unprecedented view of the very early universe; or the many scientific satellites which have given us a window to the universe across the spectrum.

However, beyond all this, it is possibly our innate urge to know about the unknown which fuels our obsession with space. Much like the general public lapped up the account of the voyages of explorers during the Age of Exploration, we now are intensely curious about the progress of Perseverance and Curiosity rovers on Mars. Unlike our medieval counterparts who had to wait for years to read an account of the voyages of Columbus, we can watch the images and video in real time.

There is another reason why space exploration is important for humanity- it teaches us humility. For all our technological advancement, the vastness of space means that we will possibly ever only explore a miniscule part of it. And space exploration is

inherently risky as Sunita Williams' odyssey has amply demonstrated. The tech billionaires with unbridled ambition to master space might do well with a little dose of humility. Maybe they should go back to the myth of Icarus whose hubris ended in his nemesis.

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