India's Lunar Heritage: A Historical Overview of Chandrayaan Missions

India, a land of rich cultural heritage, has also made significant contibutions to the realm of space exploartion. Over the years, the Indian Space Research Organization (**ISRO**) has emerged victorious in its missions and emerged as a prominent player in the global space. The Moon has long been a source of fascination for humans, and India has a long and proud tradition of lunar exploration. One of the most astonishing achievements by ISRO is its "**Chandrayaan**" Missions, which played a pivotal role in India's lunar heritage. Let's revisit our beautiful heritage again.

Chandrayaan-1:

This was the first Indian lunar mission under the Chandrayaan progarmme. It was launched by ISRO in 2008. India launched a spacecraft using a **PSLV-XL rocket** on **22 October 2008** from **Satish Dhawan Space Center, at Sriharikota, Andhra Pradesh**. This project gave a boost to major India's space programs. The vehicle was inserted into lunar orbit on 8 November 2008.

One of the most significant findings of Chandrayaan-1 was the **discovery of water** on the Moon. This discovery was made by the orbiter's **Moon Mineralogy Mapper (M3)**. This instrument detected **water molecules in the soil** there and even found profound **evidence of water** ice near the moon's south pole.

It was launched during the tenure of Prime Theater Manmohan Singh, with an estimated cost of about **₹386 crore**. This was a **huge Success**.

Chandrayaan-2:

The second Chandrayaan mission was launched in **2019**. The spacecraft was launched from **Satish Dhawan Space Center, at Sriharikota, Andhra Pradesh** on 22 July 2019. It was a more ambitious mission than Chandrayaan-1, and it consisted of an orbiter, a lander, a rover, and a small impactor. The lander, Vikram, and the rover, Pragyan, were designed to land in the Moon's south pole region. However, the lander crashed during its descent, and the rover was not deployed.

Despite the crash of Vikram, the Chandrayaan-2 orbiter has been a success. It has been mapping the Moon's surface and studying its atmosphere. The orbiter has also been used to test new technologies, such as a lunar laser ranging instrument. **High velocity descent resulted in a hard landing, leading to Chandrayaan 2's failure.**

Chandrayaan-3:

It is the third and the most recent lunar exploration mission under “Chandrayaan” programme. It has a lander named “**Vikram**” and rover “**Pragyan**” similar to Chandrayaan-2. The launch of Chandrayaan-3 took place on 14 July 2023, at 2:35 pm IST from **Satish Dhawan Space Center, at Sriharikota, Andhra Pradesh.** The lander and the rover are expected to land near the lunar south pole region on 23rd August 2023.

The Main Objectives of this Mission are:- **Landing safely and softly** on the surface of the Moon, Observing and demonstrating the rover’s loitering **capabilities of the Moon**, and In-site observation and **conducting experiments on the materials available on the surface of the Moon.**

We as Indians, are wishing this project to become a Huge Success and this is a stepping stone towards many many ISRO’s future missions.

India's lunar heritage is a **testament** to the country's growing capabilities in space exploration and its commitment to scientific discovery. The Chandrayaan missions have not only expanded our knowledge of the Moon but have also inspired a new generation of scientists and engineers in India and around the world.