

# Mankind Is Going Back To the Moon!

by Marsha Freeman



NASA

*Astronaut Buzz Aldrin descends the Lunar Module ladder as he prepares to walk on the Moon in the 1969 Apollo 11 mission. The photo was taken by Astronaut Neil Armstrong.*

*China, Russia, India, Japan, and newer spacefaring nations are planning multigenerational great projects to go to the Moon and beyond. Will the United States join them?*

Space visionary Krafft Ehrlicke was well known for his maxim: "It has been said, 'If God had wanted man to fly, He would have given man wings.' Today we can say, 'If God wanted man to become a spacefaring species, He would have given man a Moon.'"

Fifty years ago, Earth's atmospheric barrier was crossed when the Soviet Union orbited Sputnik. During the 1960s, the Soviet Union crossed cislunar space, and visited the Moon with spacecraft, and the United States followed with machines, and then men.

Over these intervening decades, new nations have joined the two first space powers in the ability to launch craft into

space. These spacefaring nations are now ready to “break the bonds of Earth-orbit” and send their first probes into deep space. As Krafft Ehrlicke noted, the natural destination of such an endeavor is the Moon.

The ability to so clearly see the Moon with the naked eye, and its proximity as compared to any other orb in the sky, has inspired men to discover its nature, and eventually to go there, since ancient times.

Not only the nearness and the beauty of the Moon make it a preferred destination. Our natural satellite is the depository of billions of years of history of the Solar System. Minerals and materials there are of potential value on Earth. The Moon is a unique venue for making astronomical discoveries, and it will be the proving ground and stepping-stone to Mars and even farther destinations.

Since the 1960s Apollo program, it has been a widely held American belief that if we could master the science and technology required to go to the Moon, we should be able to solve any of the other problems we face on Earth. Today it can be said that if men can learn to live on the Moon, it should be possible to live elsewhere in our planetary neighborhood, not only in terms of the development of the technology, but through the success of a multi-decade, generational commitment to such an inspiring and great project.

The next step in the intensive study of the Moon is being prepared for liftoff this Spring, with the launch of the Chinese Chang’e mission. India, the United States, Japan, and Russia are also preparing unmanned missions to the Moon, during 2007-2008. By the end of the next decade of this century, men



William Jones/EIRNS

*Sun Laiyan, head of China's National Space Administration: "If we each exchange an apple, we each still have only one apple. But if we exchange ideas, we each have two ideas."*

should be returning to the Moon, to begin an exploration effort that will continue for decades.

### A Goddess to the Moon

In 2007, China will take its first step into deep space. The Chang’e spacecraft, named after a goddess who flew to the Moon in a Chinese fairy tale, will be launched to observe the Moon for one year. China’s lunar program actually began in 1978, when the United States presented the Chinese government with 1 gram of a lunar sample brought back from the Moon by the Apollo astronauts. After many years of preparation, in 2004, the government of China approved a three-phase lunar exploration program, which is that nation’s first foray beyond Earth orbit.

The Chang’e spacecraft will be placed in a 200-kilometer polar orbit. Its scientific objectives include creating a three-dimensional “portrait” of the Moon, especially in the polar regions; analyzing 14 minerals on the surface, to determine the Moon’s chemical composition; and studying the cislunar environment, between the Earth and the Moon. A suite of five scientific instruments will carry out these experiments.

According to lunar program chief scientist Academician Ouyang Ziyuan, China will also focus on improving the understanding of the Moon’s reserves of helium-3, an isotope not available in abundance on Earth, but resident in the soil of the Moon. In the future, helium-3 will be needed as a fuel for fusion power plants. “The current estimate is between 1 million and 5 million tons [of helium-3 in the lunar soil], and we will try to improve [that estimate] a little,” he told *China Daily* last Summer. Were fusion energy to be used to meet global energy demands, he explained, “each year three Space Shuttle missions could bring enough fuel for all human beings across the world.”

In order for the lunar program to have the widest impact upon its scientific community, China has established an “expert committee” on the scientific applications of the Chang’e program. Up to 100 universities and institutes will participate, and carry out research using the lunar data sent back from the spacecraft. The committee is to decide on the distribution of research and ensure a wide participation among educational institutions. It has been proposed that scientists from other countries will join the data analysis.

China has had to create a deep-space network to be able to communicate with Chang’e. Large-diameter radio antennae to send commands to, and receive data from, the spacecraft are being built around the country, and China has several monitoring stations in Pakistan, Namibia, and Kenya. In addition, the European Very Long Baseline Interferometry network will join China’s deep-space monitoring, during the Chang’e mission. During the European Space Agency’s SMART 1 lunar mission, China’s antennae contributed to monitoring that spacecraft.

Responding to criticism of China’s expenditure of \$175 million for its lunar program, Ouyang reported that, compared



*China's lunar mission is named after the mythical goddess Chang'e, who flew to the Moon. China's first mission beyond Earth-orbit is scheduled for launch this year. Inset is the logo for the Chang'e mission.*



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