

**WHY SETTLE THE MOON?** G. Jeffrey Taylor, Hawaii Inst. of Geophys. and Planetology, U. Hawaii, Honolulu, HI 96822 ([gtaylor@higp.hawaii.edu](mailto:gtaylor@higp.hawaii.edu))

**Introduction:** The space program needs a viable long-term goal. I suggest that the central goal should be to learn to live and work in space by living and working in space. A sustained presence on the Moon, with a vibrant infrastructure in cis-lunar space, is an essential part of that goal. Achieving this goal requires extensive use of lunar resources, active roles by both government and the private sector, and a social contract that the venture is worthwhile and worth funding. But why do it? Here are some reasons for pursuing this goal.

*Challenge ourselves.* We need grand goals that bring out the best in us. As President John F. Kennedy said about the Apollo program, we go to the Moon not because it is easy, but because it is hard. Settling the Moon, learning to live and work in space, and eventually going to Mars and beyond is certainly hard, much harder than was going to the Moon during Apollo. It will test our educational system, research laboratories, and industries, making all more effective and innovative than they are now.

*New perspectives on our world, our problems, and ourselves.* Space exploration has already provided us with new perspectives on Earth and our place in the universe. The first full Earth pictures taken by Apollo astronauts during their Moon journeys showed us that we live on an isolated, fragile, and beautiful island in space. Seeing the pale blue dot, as Carl Sagan called it, made everyone realize that we ought to take care of it, which helped fuel the environmental movement during the 1970s and beyond. Lunar settlements far from home may give us new perspectives on addressing other pressing problems, such as energy, health care, and poverty. Perhaps most important, it expands our view of our place in the universe. We are part of something larger than ourselves, our towns, our nations, and even our world.

*Inspire all of us to become part of something larger.* Many of us have claimed that the Apollo program inspired a generation of students. Maybe. But a sustained human presence will not provide the thrill of a short Apollo mission. What is the equivalent of Apollo 8, its crew reading from Genesis on Christmas Eve, 1968, or of Apollo 11 making the first landing? Instead, the inspiration will come from the new opportunities in commerce, science, arts, and humanities. Students from K through college will see opportunities for them to contribute to culture and knowledge. The new perspectives our human perch on the Moon provides may inspire the creative people in our society to aim

high, to see the world differently, to think outside the box.

*National pride and prestige.* We have a growing number of space-faring nations. Believe it or not, the leaders of those nations are not driven to understand the details of magma ocean crystallization or searching for life in the cold deserts of Mars. They want to show the world that their nations can accomplish great feats.

*Establish global partnerships.* A good way for nations to work together is to collaborate on ambitious projects of mutual benefit. This is the other side of nationalism. It is pleasant to think about a coordinated effort involving many nations to establish a permanent, international settlement on the Moon, a settlement where differences were set aside for the common good, where governments, NGOs, companies, universities, and other entities from many nations worked together to learn how to live and work in space for the benefit of the citizens of planet Earth. This long shot is not a driving reason for space settlement.

*Create the capability to travel to Mars and other destinations.* The only way to develop the technical capability to travel anywhere in the solar system at affordable cost is to have a robust infrastructure in cis-lunar space that supports commerce. We need routine access to space, not one-off stunts funded entirely by a government or even an alliance of governments.

*It's what humans do.* Humans explore. If we did not, we would not find humans living in every nook and cranny of the world. Space is still a wide-open frontier, awaiting adventurous humans who want to become part of something bigger than themselves.

**How to begin:** Making travel throughout cis-lunar space and lunar settlement affordable requires the use of lunar resources. In turn, this requires a thorough knowledge of how to handle materials on the Moon to extract useful materials, and an understanding of how to protect humans and agricultural products from radiation and other space hazards. Addressing the questions can begin immediately with a series of robotic missions. Commercial ventures can join in this by providing payloads on government-funded landed missions. A rich set of robotic missions can be envisioned while we wait for a cost-effective transportation system to be developed.