

# The Case for Space

by George Sowers

Last December, the Orion spacecraft was rocketed to orbit on top of a Delta IV launch vehicle. Just a test flight for the spacecraft, it still peaked our interest for a few days, recalling—if feebly—the glory days of Apollo and the moon landings, when we believed humanity was at the beginning of a new chapter in history. A number of Colorado companies, including my own, played significant roles in that flight as they do across the space enterprise. With nearly 170,000 space related jobs, Colorado has the highest per capita space employment in the nation.

However, we are far from repeating, much less surpassing, the moon landings. The space enterprise has stalled. As an enthusiast, this state of affairs is deeply frustrating. There are compelling reasons for human expansion into space, reasons that should appeal to us all as individuals, as Coloradans, as Americans—as humans. It's time to renew our commitment to the great adventure.

Three reasons stand out to me. First, humans have deep-seated psychological drives that can best be satisfied by the colonization and exploration of space. The spirit of colonization—the pioneer spirit—is the drive to seek a better life for oneself, one's family and one's descendents. It's the drive that produced the original dispersal of humans around the globe, and later the European settlement of the Americas and Australia. It's the drive that led our ancestors to settle this great state whether thousands of years ago for Native Americans or hundreds of years ago otherwise.

The spirit of adventure is the urge to test oneself against the harshest conditions imaginable. It is the drive to see new and different things. It is the spirit of Marco Polo, Magellan, Lewis and Clark, Amundsen, Hillary and Armstrong. Together, these two elements of our psychology embody what many regard as most noble, most admirable about the human spirit—that which is most human.

These needs are increasingly harder to satisfy within the modern world. Technology has shrunk our world and led to a mixing of peoples and a homogenization of cultures. The opportunities for adventure are contrived and the opportunities for colonization are non-existent. The establishment of extraterrestrial colonies can reinstate the variety of culture and the freshness of ideas necessary for our long term viability.

Second, humanity is a prodigious consumer of resources. From energy to minerals, from food to living space, the great bounty of our home planet is being depleted to satisfy our demands for an ever increasing quality of life. Only by breaking our bonds to Earth can we truly remove the resource constraint from the equation of increased living standards. For example, vast space-based solar arrays could supply carbon-free energy to Earth or some other colony. The asteroid belt contains great mineralogical resources. The average rocky asteroid contains a trillion dollars of minerals (mostly metals). The potential is limited only by our imaginations.

But the resource in most precious supply on Earth is living space. People need space, room to stretch, room to create, room to roam—room to be free. In part it was the lure of land that drove the westward expansion of the American frontier. Settlers wanted space for their farms and ranches and families, and would risk everything to get it. In today's world, it has become problematic just to find empty space for hiking. Even in our home state of Colorado, one of the least crowded places in the world, you can encounter

hordes of hikers on popular wilderness trails. On the other hand, Mars offers a land area equal to that of all the Earth's continents, completely untrammled.

Third, since the biblical flood, humans have worried about the risks of some catastrophic event causing our extinction or near extinction. Humanity is on an island called Earth. As long as we are confined to this one locale, we are vulnerable to global calamities: nuclear war, bio-terrorism, climate change, asteroid impact, invasion by a super intelligent race, or some nano-tech experiment run amok. Once humanity becomes dispersed among the planets we have far less risk of extinction by our own stupidity or just bad luck.

For myself, I am swayed by the emotion of space, the feeling of being part of the greatest era in human history, that time when we stepped off our lonely, comfortable home, as a child taking its first step into the endless ocean. Humanity has always sought to expand its boundaries. Whether to enlarge the known world, as did Lewis and Clark, or to enhance scientific knowledge, as did Einstein and Darwin, this expansion is a central theme in the saga of humanity. Space is the next great chapter in that story.