



# Unmanned Is Better

BY JAMES A. VAN ALLEN

**O**NE OF my vivid recollections is the television picture of Neil Armstrong backing out of the Apollo lander, lumbering down the short ladder, and setting his heavy boots onto the crunchy surface of the moon 20 years ago. But despite enormous expenditures since then, no achievement by human crews in space has come close to eliciting as much popular interest as did that one. Nor has any uniquely valuable function of such crews been demonstrated convincingly.

Indeed, space technology's true importance to mankind has been and continues to be elsewhere.

In the civil sector, a network of relay satellites provides unprecedented capacity for rapid and high-speed telephone, telefax and television communications on a global basis. Weather patterns over the entire Earth are monitored continuously by another group of satellites; a continuous survey of the Earth's water, mineral and other resources is provided by another group of high-quality, remote sensing satellites; and a new system of satellites is making great advances in the accuracy and reliability of air, sea and land navigation.

These capabilities are being expanded to the global study of atmospheric and oceanic pollution, the threat of "greenhouse warming," the depletion of ozone in the upper atmosphere, and other natural and man-made influences on Earth's long-term habitability.


Also, our national security is served by networks of sophisticated satellites for a wide variety of purposes, some of which are technically similar to those in the civil sector.

Nearly all of the important contributions by space technology have been, are being, and will continue to be the province of unmanned, long-lived spacecraft, controlled remotely by engineers and scientists on Earth. Some of the spacecraft have been, but need not have been, released from the shuttle with the on-board assistance of human crews. But viewed broadly, manned space flight has had no essential or distinctive role inasmuch as all of the spacecraft could have been launched by unmanned vehicles — at much less cost and with minimal risk to life.

In the arena of basic science, space techniques have yielded many discoveries and have revolutionized our knowledge of the Sun and its multifold effects on the Earth; of the planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus (and, prospectively, Neptune) and their rings and satellites; of comets; and of distant astronomical objects. This diverse knowledge contributes an inspiring and much fuller understanding of the universe — one of the profound intellectual quests of mankind. Again, these advances are almost entirely dependent on unmanned spacecraft, monitored and controlled from Earth stations.

I am among those who get a vicarious thrill by observing courageous and highly trained men and women performing simple tasks under the hazardous and exotic conditions of space flight. It may well be that such activities serve legitimate cultural objectives.

But I submit that such objectives are peripheral to the important human benefits that flow from the skilled application of space technology. In brief, I urge cancellation of woolly-headed but enormously expensive projects such as the proposed space station, and I urge a greatly diminished emphasis on the flight of human crews.

Let us concentrate our resources in a common-sense manner on activities that yield tangible results. 

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