

## COMMENT

# WHITHER THE GIANT LEAP?

Neil Armstrong put his foot down, but where do the tracks lead?

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It was a left boot, white, with a silicon-rubber sole and 14-layer sidewalls of aluminized plastic, custom-fitted to its intended wearer. When it was built, it weighed about four pounds, nine ounces. When it was used for its climactic purpose, it weighed about three-quarters of a pound.

It has been estimated that when Apollo 11 commander Neil Armstrong put his foot on the moon at 10:56 p.m. EDT on July 20, 1969, one in every five people on earth saw him do it, and one in every two knew about it. "That's one small step for a man," Armstrong said — a fair description of his descent to the surface of the moon from the bottom rung of the lunar module's ladder, even given that the act was probably the most-witnessed single event in human history. But of course there was more to the astronaut's instantly famous remark. The same step, he noted, was "one giant leap for mankind."

The small step and giant leap formed an apt comparison. Unfortunately, it is usually only the latter part that gets quoted these days. As it happens, I have rather an affection for the former, with its reminder that, despite the vast effort, cost and technological revolution involved in the accomplishment, it was the much smaller-scale presence of a couple of human beings that made the event such a large-scale milestone.

But what of the giant leap? Certainly there was the Apollo 11 flight itself, crossing the distance from earth to moon. But I doubt that's what Armstrong meant. Even at the time I had the sense, watching and listening from the control center in Houston as his words came back from Tranquility Base, that he was speaking not only of a leap just completed, but of one just beginning. The direction of the first was clear: outward, across a new frontier, with all its potential for opening human perceptions of Spaceship Earth and its newly felt vast surroundings. As for the second, even with a decade's passage its direction is hard to tell.

There were originally to have been 10 Apollo lunar landings. A year after the first

of them, the last three were cut from the list. (The final total, in fact, was only six, due to a mishap that forced Apollo 13 to return to earth without reaching its goal.) A planned follow-on effort called the Applications Program, intended to use manned Apollo hardware in a variety of lunar and earth-orbital missions, was abbreviated into Skylab.

Science: The Apollo moonrocks brought back by the astronauts and the instruments left on the lunar surface have revealed a great deal, not only about the moon but about the cratering processes that have shaped the earth, about changes in the sun and about dating the evolutionary stages of other planets. Yet science was hardly Apollo's strong suit. Only a single geologist — astronaut (now senator) Harrison Schmitt — was ever sent to the moon, and a proposed unmanned satellite called the Lunar Polar Orbiter, designed to expand Apollo's highly limited coverage into global information, was later rejected in budget planning for three years running, until NASA finally decided to stop trying. Other proposals for going back to the moon (NASA is studying the possibility, for example, of an unmanned lunar base with robot rovers to retrieve samples for automated analysis) are far in the future.

Obviously, many priorities have changed, and were changing even as Armstrong took that momentous step. That very summer, President Nixon recommended the largest space-spending cut in NASA's history, and Vietnam, inflation and energy crises continued to erode the potential for realizing dreams of the high frontier. In announcing NASA's fiscal 1977 budget request, for example, agency head James Fletcher said that the biggest NASA budget of all time — that of 1966 — would have amounted to \$11.4 billion in the shrunken currency of 1977. NASA, however, was seeking less than \$3.7 billion.

The space program continues, of course, but in a far different fashion than the one that left human footprints on the moon. That was a specific, directed effort — a national goal declared eight years before by President John F. Kennedy. Now there is a new "space policy," promulgated by President Jimmy Carter and credited by the White House with having the same weight and significance as the moon-landing directive. Yet the new policy stands accused from many quarters of being vague, noncommittal and short-sighted. There is no single, unifying goal toward

which to work, or even to aspire. Various groups advocate inhabited "colonies" in near-earth space, or huge, solar-powered, energy-producing satellites whose cost would make Apollo's seem like small change. Neither, however, is an expressed goal of NASA's planning — their constituency is in the private sector.

But perhaps that's a clue to where the "giant leap" is going. The arrival of human beings on the moon was certainly inspirational. Veteran airplane pilots whose roots are in the early days of flight have often expressed wistful regret that subsequent generations take their miracle for granted. Yet children born since the Apollo 11 landing still find awesome the launching of a big rocket, a new photo of Jupiter — even the activities of human beings in space. The most staunch opponents of expanded space programs can still be heard using the phrase, "If we can put a man on the moon, why can't we...?" as a metaphor for the ultimate in striving to achievement. For all the growing, down-to-earth concerns about high prices, energy shortages, pollution and starvation, many people still find time to hope that the giant leap can find not only direction but momentum.

For momentum may have been one of the moon program's major contributions. Hundreds of thousands of people worked to make it happen; new technologies and techniques sometimes seemed to spring up almost on demand. And indeed they did — with the emphasis on "demand." Such an effort could almost be inspirational in its own right, separate and distinct from its spectacular goal.

Many of today's goals, unfortunately, are harder to hit than the neatly pinpointed sphere of the moon. Cheap energy, for example, involves complicated trade-offs, the interaction of potential beneficiaries with very different needs, uncertain resource limitations, environmental effects and predictions of a fast-changing future. A cure for cancer may be not a single goal at all, but many, diffusing both the efforts to reach it and, perhaps more importantly, the satisfaction of reaching a clearly defined resolution.

Such goals are certainly more "practical" than that of landing people on the moon, but perhaps there is still a case to be made for the triumphs of exploration and discovery, even apart from the promise of unexpected knowledge (or, as with Apollo's beginnings, political advantage). The real gain may accrue not from the goal at the end, but from the seeking. □

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**"That's one small step for a man, one giant leap for mankind."  
— Neil A. Armstrong, July 20, 1969.**