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THE IDEA OF SPACE EXPLORATION

Bruce Mazlish

In the 1950s, man first ventured into outer space. At the end of the 1960s, he was on the Moon, having traveled over 200,000 miles and at speeds upward of 18,000 miles per hour. The modern Daedalus had taken his first step into reality. An age-old dream had been realized. A proud Wernher von Braun compared it to that moment in evolution "when aquatic life came crawling up on the land."

Now we seem to be crawling back. The Moon landing, for all the impact it had during that sultry July night in 1969, has scattered into small effects upon us. Our expectations fulfilled, we now seem to have lost interest. I am puzzled by the disparity between the greatness of the deed and the meanness of the result. How to explain it?

To explore further the gap between the deed and its estimation, we can proceed along two major paths: to compare space with past episodes of exploration and development; and to examine the contemporary context in and of itself. Both, even briefly examined, are revealing.

In comparing space with past episodes that bear a resemblance to it, we are engaging in historical analogy. Historical analogy gives flesh to a perception of vague resemblance. It is not a rigorous form of reasoning, but it is one of the more attractive. It is, too, a fashioner of myths—durable ones that survive, like a locust's brittle armor, even after life itself has departed. Analogy, finally, has but one eye, and it sees only similarities.

The analogy that immediately springs to mind is the Age of Discovery. One is struck by the similarities: a desire for national prestige; a hope of gain, both economic and military; an impulse to adventure; sheer curiosity. There also was a religious factor in the 15th century. Even that finds a 20th-century expression in our notion of scientific "mission."

In the end, however, I do not believe that the analogy of the space program, emphasizing its exploratory aspect, with the Age of Discovery is as useful as some others (e.g., with the railroad, as I shall attempt to show). We have inaugurated an age of discovery, but it is not *the* Age of Discovery, and it lacks the props and resonance we were conditioned to expect.

The major difference, I believe, is that in space there are no flora and fauna. There are no people on the Moon to be conquered or converted. There are no new animals to grace the parks of a Spanish king, no exotic

plants to nurture in the royal gardens at Kew. Columbus returned with naked savages. Lewis and Clark identified 24 Indian tribes, 178 plants, and 122 animals, all of them previously unknown. Even the voyagers of the Beagle sailed into port with exotic, if ugly, Fuegians that titillated the English public.

Space, in comparison, is "empty," and our chief harvest thus far has been in the form of rocks. The Moon is unpopulated; its "man," visible from 200,000 miles away, vanishes on close approach. The only earthly comparison is the arctic and antarctic, although they are, in fact, more richly endowed, and neither of these, for comparable reasons, has ever aroused much enthusiasm. Vast, cold worlds, they lie largely untapped and unsettled.

How can one become enthusiastic about such "inhuman" areas? Exploration of such "terrains" cannot give rise to a sense of "climates of opinion," which shake the traditional order. It does not leave us with the 19th century's feeling of being "Between Two Worlds," either in time or geography. Where early explorations were preceded by myths about gargoyles blowing off shore, or apes raping women (as Voltaire fondly imagined), or even abominable snowmen, the main equivalent titillation of the space effort was a scientific surmise about the possibility of some kind of extraterrestrial life. In this, we were soon to be disappointed.

In such an empty world, devoid of any presence other than one's own in a clumsy, bulky spacesuit, myths and imagination crumbled into computer bits. The symbolic nature of space dissolved. Physical and biological scientists might well be absorbed, but what was there to interest their social science and humanistic colleagues? Or the general public, for whom the latter served as interpreters?

If space and the Moon offered so little of "human interest," what of the explorers themselves? They, too, failed to capture our imaginations. They were fighter and test pilots turned astronauts, but not adventurers. They were not heroes, in spite of NASA's media hype (and though the age was antiheroic, it was ambivalently so). Instead, the astronauts were a team of replaceable men, with not a Columbus or even an Amerigo Vespucci among them. The Moon landing craft might be called the "Eagle," but no Lindbergh, in lone splendor, sat at its controls. The argument over manned and unmanned spacecraft was without "human" consequence, for the astronauts became replaceable and duplicable instruments just as much as the unmanned vehicles.

Norman Mailer, in one of the few attempts to respond imaginatively to the space effort—one thinks earlier of Camoens's *The Lusíads*, or Shakespeare's *The Tempest*—brilliantly attempts in *Of a Fire on the Moon* to kindle sparks of imagination to set aglow our hearts and minds.

He speaks of dreams that border on either madness or ecstasy, of Hemingwayesque courage, and dread of death. All to almost no avail. NASA, in its very concern that an *Apollo 11*-connected death would result in the end of support for space investigation, unknowingly aborted the public's interest. As Mailer puts it, "The irony was that the world, first sacrifices in outer space paid, would have begun to watch future flights with pain and concern." Death fears and dreams gave way to a TV picture, whose dramatic appeal was almost nil. Tranquillity Base took on, unintendedly, a soporific quality that spread out over the entire space program. So much for the Age of Discovery analogy.

The other major analogy useful to make is with what elsewhere I have called "social inventions."¹ I define it as an invention that is technological (e.g., missiles, launching pads), economic (e.g., involving large-scale employment of manpower, widespread use of materials), political (e.g., involving new forms of legislation, and new dispositions of political forces), sociological (e.g., affecting kinship groups, communities, classes), and intellectual (e.g., changing man's views of space and time). Such an invention has a profound effect on us; it is literally "revolutionary." The lowly cotton industry in the early 19th century and the railroad in the mid-19th century, in Britain, were of this nature. Thus, the innovations in cotton manufacturing had enormous secondary and tertiary effects, helping to spark the Industrial Revolution, or what W.W. Rostow has called "sustained takeoff": cotton manufacturing brings into being the factory, and its operatives (or proletariat, a new class); groups the workers in an increasingly populated urban setting; stimulates the growing of cotton and the cotton trade (not to mention the slave trade); and strongly affects the coal and iron industries by its demand. A Manchester, as well as a Manchester School of Free Trade, symbolizes its impact. There is no comparable "Manchester"—Cape Canaveral will not do—in space development.

The railroad is of a similar magnitude to cotton manufacturing, but more analogous to the space program in its use of engines for transportation, though without the element of exploration. The railroad, like the space program, for a while also annually consumed about 2½ percent of the GNP as its investment requirement. But think of the railroad's impact on communities, on social structure, on related technologies, on the economy as a whole in comparison to the space program, i.e., its return to society!

And now remember the optimistic predictions. In 1963, Robert Jastrow and Homer E. Newell predicted that the space program would mean "the benefits of basic research, economically valuable applications of satellites, contributions to industrial technology, a general stimulus to

education and to the younger generation, and the strengthening of our international position by our acceptance of leadership in a historic enterprise." Erik Bergaust exalted: "Fifty years from now? Who knows, perhaps we will terminate the use of the title doctor—because everyone will have at least a Ph.D. degree. That might well become a typical result of our current Space Age brainpower drive." Toby Freedman, Director, Life Sciences, North American Aviation, Inc., announced that in his own field of "medical miracles," contributions exist "that to my mind have already paid back the cost [of the whole program]."

Critics of the program, on the other hand, point to its huge costs—40 billion dollars plus for Saturn, 12 billion dollars alone for the construction of the Space Shuttle, and another 15 billion dollars projected to operate it—and ask whether the touted side effects of the space program could not have been achieved directly and more effectively by the expenditure of lesser sums of money. Most of us want less "spaced out" reasons for spending the enormous amounts involved to loft such massive payloads as *Saturn V/Apollo 11*, with such seemingly minuscule payoffs, whether in material benefits or psychological rewards.

If anything, the overblown claims of space enthusiasts have come back to haunt them and to add to public disillusionment. Wayne Biddle is typical when he concludes his article on the Space Shuttle² by detailing its problems, as much political as technological, and saying that "the real driving force is clearly not the solid promise of cheap, routine access to space." Space exploration, in short, has not revolutionized our lives, or any part of them, though it is clearly powered by mundane as well as purely scientific motives.

The justification in terms of national prestige today fares no better. We see an American space program, whose liftoff took place as a result of the Cold War. The impetus in 1957 was clearly rivalry with the Soviet Union; that was justification enough for huge expenditures. Earlier explorations, e.g., in the 16th century, did result in military conflict. Macabre as is the thought, even a small-scale conflict in space would rivet public attention on the program. Science fiction is filled with such wars—and hence "human" interest: we think of the movies, "Star Wars," and the TV shows, "Star Trek" and "Battlestar Galactica." (Incidentally, "Star Wars" also appeals because of its peopling outer space with strange other humans and with imaginary animal-beings.) Our more fortunate and peaceful present lacks such daring, and pays the price in public boredom with space. In addition, with the change in public opinion after the Vietnam war, plus our Pyrrhic victory in the space

race—how has this really advanced us against the Russians? The military and national prestige motive has lost much of its force.

What is left? The "high" has been taken out of the adventure—a humanless space and a heroless program have seen to that. There are no heathen to missionize, no or little further military and national prestige to be gained immediately, and either paltry or very long-range economic gains to be reaped.

What is more, space science has been caught up in the same revulsion that has manifested itself so strongly against general science in our contemporary culture, a revulsion whose symbolic expression has become the nuclear protest. True, the revulsion is flamed by a small, activist group, while the general public remains silently supportive of science, as polls show. But the activists have made physics and its kin appear as a Pandora's box more than a cornucopia. The "Idea of progress" has lost its automatic conviction.

The forces justifying space exploration, therefore, have become discretionary. As a discretionary matter, and not a matter of unquestioned national purpose, the space program is now weighed against other discretionary expenditures—cancer research urban renewal—often found wanting and wasteful by comparison. Until space colonization or stepped-up military conflict in space come along to rekindle public interest, the space program's chief ally seems to be leftover momentum: the fact that certain programs, planned long ago, happen to be under way.

Yet, to my mind, there are two arguments that suffice to justify a leap into space, both of them as unprovable as they are irrefutable. The first is that the flight into space changes our whole view of ourselves and the Earth. The fact of sheer flight itself, while enormously significant, is not of the same order of importance. One could, of course, say, "Well, the spacecraft is simply an extension of the airplane. Man has flown already, and that's the big breakthrough." In part, this argument is correct: by leaving the Earth in sustained flight, even if only 20 feet off the ground, man changes his nature, extends it to the aves class. Within a few decades of Kitty Hawk, Hubert Wilkins, later Sir Hubert, flew over the barren wastes of the Arctic and Antarctic, followed by Richard Byrd over the North and South Poles. Armstrong and Aldrin flying past equally barren wastes on the Moon, even setting foot on it, in this sense do nothing new.

The newness, the greatness, resides in the fact, not of flight, but of man's thrusting himself out into space past his terrestrial abode and the atmosphere that has nourished and protected him. As Hannah Arendt noted, man now occupies a position from which he can observe his own

abode as an "outsider," both physically and philosophically, poised to explore further the rest of his solar system—and beyond. It is not the mechanical flight, awesome as that is, but the spacial reorientation, mental as well physical, that marks the new evolutionary step.

Put very simply, the Earth is now perceived as itself a spaceship. Suddenly, all Earth is turned into a larger form of the very vehicles it sends into space—a macrocosmic form of the microscopic projectile that is powered into a fixed orbit. The Earth is now conceived of as a "ship" navigating the "ocean" of space, carrying its human crew and their life-sustaining equipment.³ Now, too, there is the sense that the ship, Earth can go down, i.e., be shipwrecked. Only in this case, it will have been the human crew, not the oceans of space, that inundate or befoul the ship, and thus wreck it.

The Earth as spaceship, therefore, is a newly imagined way of conceiving our terrestrial abode. A comparison with previous attitudes toward "Mother Earth" shows how the conception of a "spacecraft" frees us—in a terrifying way—from the old reassurances embodied in the notion of *terra firme*.⁴ The whole Earth has become Daedalus—with no fixed landing place, psychologically, to which to return from its flight.

The second argument justifying the space program is that it is man's destiny continually to test himself against the unknown, to know himself by his exertions. And to my defense I call upon an earlier traveler in unknown spaces, Ulysses, encountered by Dante in the Inferno:

"O brothers," I said, "you who
through a thousand perils have come to the West,
to the brief vigil of our senses

which is left, do not deny
experience of the unpeopled world
to be discovered by following the sun.

Consider what origin you had;
you were not created to live like brutes,
but to seek virtue and knowledge."

Source Notes

1. *The Railroad and the Space Program: An Expedition in Historical Analogy*, ed. by Bruce Mazlish (Cambridge, MA: MIT Press, 1965).
2. *New York Times Magazine* (June 22, 1980) p. 40.
3. The romantic depiction of a "spaceship" returning from the Moon by the French illustrator Gustave Doré (1833-83) [in *The Wilson Quarterly*, Autumn 1980], with its craft an actual sailing ship in the sky, halfway between the Moon covered by scudding clouds and the heaving waves of the terrestrial ocean, graphically links the images of ship, sea, and space—and rightly reminds us of the pull of the Moon upon the tides, thus connecting the two "worlds."
4. One form our anxiety has taken is in the "sighting" of UFOs. They can be explained, psychologically, as a projection of our own intrusion into space—we project our intentions and actions unto others. (For a fuller analysis, see C.G. Jung's article, "Flying Saucers: A Modern Myth of Things Seen in the Skies," in *Civilization in Transition*, vol. 10 in the Bollinger Foundation series of the collected works of Jung.) Of course, earlier centuries, too, have always assumed interventions from heaven, but these were in the form of gods, plagues, etc. The UFOs, naturally, mirror our current beliefs.