Chapter 26

Spaceflight and Popular Culture

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Spaceflight in popular culture has served two important functions—apart from its entertainment value, that is. First, it served to inspire at a time when the entire notion of traveling into space or to other worlds was an idea beneath the contempt of most scientists and engineers. It not only inspired, it carried the torch for the centuries it took for technology to finally make space travel a reality. Second, it acted—and still acts—as a mirror or gauge of both public interest in spaceflight and the state of contemporary astronautical science. For instance, Jules Verne shot his fictional projectile into space by means of a giant cannon[1] simply because his readers would have never believed that contemporary rockets would have been capable of such a feat, while only 50 years later Arthur Train and Robert Wood were able to describe a spaceship propelled by a beam of alpha particles produced by the disintegration of uranium in their remarkable novel, *The Moon-Maker* (1917).[2]

The Dreamers

Astronautics is unique among all the sciences in that it owes its origins to an art form. Long before engineers and scientists took the possibility of spaceflight seriously, virtually all of its aspects were first explored in art and literature, and long before the scientists themselves were taken seriously, the arts kept the torch of interest burning.

Although there had been numerous early fantasies about trips to the Moon, no one really considered the genuine possibility of spaceflight until two important events occurred: first, the discovery that there *were* places in the universe other than Earth, and second, that there might exist the technology for getting there. These events took place about 250 years apart. The first occurred in 1610 when Galileo first turned his telescope toward the heavens and discovered that the planets were not just a special class of wandering stars but real worlds in their own right. Venus

1. Jules Verne, *From the Earth to the Moon* (New York: Thomas Y. Crowell, 1978).

2. Arthur Train and Robert Wood, *The Moon-Maker* (King George, VA: Black Cat Press, 2006).

showed phases just like the Moon; Mars had dusky markings; and Jupiter possessed four tiny moons of its own, like a miniature solar system.

At about the same time that Galileo and the astronomers who followed him were discovering new worlds in our solar system, so were other explorers finding new worlds on the other side of the Atlantic Ocean. That the Moon was now included in geographies such as Peter Heylyn's *Cosmographie* of 1682 is indicative of its new status as an equal among other new worlds such as North and South America.[3]

By the time Galileo had observed the craters of the Moon and Jupiter's satellites, hundreds of ships and thousands of explorers, colonists, soldiers, and adventurers had made the journey to the amazingly rich and fertile lands of the New World. Now that human beings had learned that were there not only new worlds here upon Earth, but unknown lands in the sky as well, it's not very surprising that the discoveries being made by astronomers were quickly followed by a yearning expressed by an unprecedented spate of space travel stories. If these new lands could not be reached in reality, then they would be explored by proxy. Although most of these authors had little or no interest in the realistic depiction of science, their books were nevertheless an accurate barometer of the ever-increasing interest in the possibility of exploring the planets.

Many authors wrote of trips to the Moon in the decades following Galileo's discovery. In 1622, Charles Sorel wrote of "great Engins" that might carry people to the Moon, or that they might get there by means of "all manner of structures, and ladders."[4] In 1638, Francis Godwin published *The Man in the Moone*, in which his hero is carried to that world by a flock of geese who regularly migrate between Earth and the Moon.[5] The great scientist Johannes Kepler—who established the laws of orbiting bodies—wrote a novel called *Somnium* in 1634.[6] Its hero is carried to our satellite by demons along the bridge of darkness that occurs during an eclipse of the Moon. Although his method of getting to the Moon was highly unscientific, Kepler's descriptions of the conditions there were very accurate in light of what was known about the Moon at that time (for instance, Kepler was aware of the fact that most of the journey would have to be made in a vacuum and that the surface of the Moon would be desolate, alternating between extremes of heat and cold).

Cyrano de Bergerac made fun of such fanciful voyages in his *Comic History* (1657), in which he tried to come up with as many utterly ridiculous methods of space travel as he could think of. Ironically, one he thought was funniest was the use of rockets! Although he was probably the first person in history to suggest the use of rockets for launching a spacecraft, he only gets half a point for thinking it was a silly idea.[7]

3. Peter Heylyn, *Cosmographie* (London: Thoemmes Press, 2003).

4. Ron Miller, *The Dream Machines* (Malabar, FL: Krieger Publishing Co.,1993), p. 9.

5. Ibid., p.11.

6. Ibid., p.10.

7. Ibid., pp. 12–14.

The second great event in the history of the popular conception of space travel occurred in 1783 when two Frenchmen, brothers Étienne and Joseph Montgolfier, invented the balloon. For the first time, human beings were able to ascend above Earth farther than they could jump. These two events launched avalanches of speculative literature about the possibility of traveling beyond Earth and what might be found on these new worlds. Here at last seemed to be an answer to all those who had been looking at the starry sky with longing. If human inventiveness could devise a way of rising a few thousand feet above the surface of Earth, what was a mere quarter-million miles to the Moon but a matter of degree? Science and technology had conquered the sky—it had to be only a matter of time before they conquered space as well.

Needless to say, writers quickly abandoned their swans and dream-demons and turned to balloons to carry their heroes to the Moon and all over the solar system. But if science was marching ahead, so were the ever-more-knowledgeable readers of these books. The widespread fascination with science that occurred at the end of the eighteenth century also meant that most readers were becoming too knowledgeable about the subject to accept even balloons as a realistic method of getting to the Moon, let alone anything less scientific or technological. Authors were forced to come up with more realistic, believable methods of space travel.

One of the first to do so was the American author George Tucker. Although the spaceship in his 1827 novel, *A Voyage to the Moon*, employed an imaginary antigravitational material, Tucker gave great thought to the actual conditions that might exist beyond Earth's atmosphere and how his vehicle would have to deal with them.[8] What he ended up with might be the very first description of a spaceship that took into account the conditions of outer space as they were known at the time. For instance, the spacecraft—a 6-foot (2-meter), copper-clad cube—is carefully tested to make sure that it is perfectly airtight, while compressed air for breathing is carried in tanks. The walls are even insulated to protect the astronauts from the cold of space.

Tucker was one of Edgar Allan Poe's instructors at the University of Virginia and his novel may have inspired Poe to write his own Moon travel story, "The Unparalleled Adventures of One Hans Pfaal" (1835).[9] Although Poe used a balloon, he still paid more careful attention to science and technology than had any other author before him. For instance, the sealed, spherical gondola of his hero's balloon closely resembles those used by stratosphere balloonists and his descriptions of high-altitude flight and Earth as seen from space might have been written by a present-day astronaut.

Poe rationalized the use of a balloon by assuming that Earth's atmosphere extends as far as the Moon, albeit very tenuously:

8. George Tucker, *A Voyage to the Moon* (King George, VA: Black Cat Press, 2006).

9. Edgar Allen Poe, "The Unparalleled Adventures of One Hans Pfaal," in Richard Adams Locke and Edgar Allan Poe, *Journeys to the Moon* (King George, VA: Black Cat Press, 2006).

> I . . . considered that, provided in my passage I found the *medium* I had imagined, and provided that it should prove to be *essentially* what we denominate atmospheric air, it could make comparatively little difference at what extreme state of rarefaction I should discover it—that is to say, in regard to my power of ascending—for the gas in the balloon would not only be itself subject to similar rarefaction . . . but, *being what it was*, would, at all events, continue specifically lighter than any compound of whatever mere nitrogen and oxygen. Thus, there was a chance—in fact, there was a strong probability—that, *at no epoch of my ascent, I should reach a point where the united weights of my immense balloon, the inconceivably rare gas within it, the car, its contents, should equal the weight of the mass of the surrounding atmosphere displaced*.[10]

To rise into this infinitely thin atmosphere, Poe's balloon is filled with a new gas "37.4 times lighter than hydrogen"—and he also had his hero take advantage of the diminishing gravitational pull of Earth as the balloon traveled farther and farther from it.[11]

Almost all of this was sheer pseudoscientific mumbo-jumbo, of course, but Poe's readers did not know this. No one had ever spoken about a trip to the Moon in such detailed, scientific-sounding terms before. What is important is that for the first time it had become *necessary* to provide an interplanetary story with the trappings of real science. This is what makes Poe's story so significant. He realized that it was no longer sufficient to simply enable a character to reach the planets by fiat. By the time Poe was writing, the conditions at high altitudes were becoming well known and astronomers were becoming more assured about the nature of outer space and the prevailing conditions on our own satellite. An author writing a story set in these places could no longer blithely ignore this knowledge.

Poe himself was perfectly aware of the uniqueness of what he had done. In his postscript to "Hans Pfaal," he reminded his readers that the intent of earlier Moon journeys had been

> satirical; the theme being a description of Lunarian customs as compared with ours. In none, is there any effort at *plausibility* in the details of the voyage itself. The writers seem, in each instance, to be utterly uninformed in respect to astronomy. In *Hans Pfaal* the design is original, inasmuch as regards an attempt at *verisimilitude*, in the application of scientific principles (so far as the whimsical nature of the subject would permit), to the actual passage between the earth and the moon.[12]

10. Poe, "The Unparalleled Adventures of Hans Pfaal," p. 82.

11. Ibid., p. 108.

12. Ibid., p. 112.

By the time Poe was writing, the world had been undergoing an industrial, technological, and scientific revolution. By the time the Montgolfiers had flown their first balloon, the steam engine had already been invented, as had the spinning jenny, the circular saw, and electric generators. Only two years earlier Uranus, a brand-new planet, had been discovered, revealing that the classical solar system known since ancient times was not the limit to the new frontier in the sky. In the half-century following the balloon came the iron plow, the power loom, the first crossing of the Atlantic by a steamship, the first railways, the electric storage battery and motor, the telegraph, cameras, and the revolver. People living in the nineteenth century had good reason for thinking that science could do anything. There seemed to be nothing that scientists or engineers could not understand or conquer. The worlds of the solar system differed only in a matter of scale from Africa or the Poles. Surely, if humans were going to leave Earth and travel to these other planets, then it would be science and technology that would provide the means. By the middle of the century, generals, admirals, and explorers had been replaced by a new hero: the *engineer*.

Still, no one seriously considered the actual technological problems of spaceflight until 1865, when French author Jules Verne wrote his classic novel *From the Earth to the Moon* (its sequel, *Round the Moon*, was published in 1870).[13] Before then, all space travel stories had been fantasies to a greater or lesser degree. But Verne had been a great fan of Edgar Allan Poe and took his lead from Poe's invention of scientific verisimilitude—developing it to a degree Poe never imagined.

In Verne's story, a group of American arms manufacturers find themselves with nothing to do after the close of the Civil War. As an outlet for their energies and creative genius, they propose building an enormous cannon—actually a 900-foot (275-meter) deep, cast iron–lined well with 400,000 lbs (181,000 kg) of explosives at the bottom—and launching a projectile to

Figure 26.1—This illustration of the launch of Jules Verne's projectile accompanied the original edition of From the Earth to the Moon. Although Verne's giant cannon was impossible (at least so far as launching passenger-carrying spacecraft is concerned), he was well aware of this and took great care in making the device at least appear plausible. The result was a novel that inspired generations to take the idea of spaceflight seriously, including many of the seminal founders of astronautics. (*Author's collection.*)

13. Verne, *From the Earth to the Moon*.

the Moon. It eventually dawns on them that it would be much more interesting to not just launch an ordinary projectile but one carrying passengers. Of course, this would never really work—the shock of going from a standing start to 7 miles (11 km) a second in 900 feet (275 meters) would have been instantly fatal to his heroes—but there is compelling internal evidence that Verne realized this and consequently filled his book with so much science and math and engineering that his nineteenth-century readers accepted his story without question. So much so, in fact, that when the novel was originally serialized in France, people wrote to the author volunteering to be passengers in the projectile!

Each chapter of the book is devoted to a different problem facing the space explorers: the method for leaving Earth, the design and construction of the giant cannon, what its explosive charge would consist of, where the cannon would be located, what the projectile would be made of, what its speed and trajectory would need to be, the best time and date for the launch, safety precautions, experimental tests, provisions for life support, methods for tracking the projectile, and how all of this was going to be paid for. All of these questions and more Verne answers in precise detail, even to the point of quoting the actual math used in his calculations (actually performed by his cousin, Henri Garcet of the Lycée Henri-IV).[14]

With the publication of Verne's novel, the possibility of spaceflight was instantly transformed from the realm of the fantastic to a mere exercise in Victorian engineering. For the first time, the problem of space travel had been put on a firm mathematical and technological basis. Indeed, there is some reason to argue for Verne having literally invented the science of astronautics. Verne's method for getting his astronauts into space would not work in reality, but what was important was that he suggested a method that employed nothing but known materials and contemporary technologies. His astronauts did not need to rely upon impossible balloons or imaginary antigravity metals. He demonstrated to his readers one monumentally important fact: the conquest of space was to be a matter of applied mathematics and engineering and nothing else.

Although Verne used a giant cannon instead of rockets to launch his heroes into space, he was perfectly aware of the potential rockets had. But he was also aware that the state of the art of rocketry in the mid-1800s was such that his readers would have never believed that the unreliable, inefficient, and not very powerful rockets then available would ever be capable of speeding a spaceship to the Moon. Still, Verne did have his astronauts carry rockets on board for their eventual (albeit aborted) landing on the Moon and for steering the projectile. In this, Verne was one of the very first to realize that rockets would work in a vacuum and would be the ideal source of propulsion in space—a fact that eluded all but a very few writers and scientists until the early years of the twentieth century.

14. Miller, *The Dream Machines,* pp. 47–54.

Verne's novel was a great success and was translated and published all over the world. It had readers and admirers in almost every nation, and some of these readers were not just admirers—they were inspired to actually *do* what Verne had only *written* about. Konstantin Tsiolkovskiy, Hermann Oberth, Robert Goddard, and many other early pioneers of rocketry and astronautics were directly inspired by the space novels of Jules Verne and others.

By the time the first spacecraft was launched in 1957, most of the problems facing engineers had been solved—or at least dealt with—by the writers of space fiction. This is not because science-fiction writers were more prescient; it's simply because they were forced to solve many of the same problems long before engineers had to, and there are only so many different plausible answers.

The Rocketeers

The period between World War I and World War II was a mixed bag as far as popular interest in space travel was concerned. Aviation was the great technological craze of the time (rivaled only by radio) and rockets seemed something of a trivial side-issue. Robert Goddard had, of course, launched the world's first liquid-fuel rocket in 1926, but the news of this was barely known within scientific circles, let alone the general public. Goddard was much better known as the man who was going to send a rocket to the Moon. In April 1920 he had written an article for *Popular Science* magazine in which he described the possibility of hitting the Moon with a rocket carrying 14 lbs (6 kg) of flash powder—enough, he had calculated, to create a flash visible from Earth.[15] This article immediately made Goddard something he had never had any wish to be: a media celebrity. Scientists and popular-science writers in publications ranging from the *London Graphic* and *Scientific American* to *The New York Times* took Goddard to task for what they considered his utter lack of rudimentary scientific knowledge, while at the same time popular magazines took Goddard dead seriously and published scores of articles on the possibility of spaceflight, often comparing it, rightly, to the advances then occurring in aviation. Many of these were translated reprints of articles originally written by Austrian Max Valier, one of the most enthusiastic and colorful of the rocketry and space travel enthusiasts who were just then beginning to organize in Europe. Valier's ubiquitous writing and spaceship designs (beautifully illustrated by the Römer brothers) influenced science and science-fiction writers, and even appeared in some of the first space movies ever produced, in much the same way that Wernher von Braun's widely distributed designs influenced the public perception of spacecraft in the 1950s and 1960s.[16]

15. Ibid., pp. 123–124.

16. Ibid., pp.144–146.

On the whole, however, the era of the 1920s and 1930s was not a bright one for the depiction of space travel in the media or for its impression on the public at large. Most work on liquid-fuel rockets was being done either in secrecy (by a humiliated and bitter Goddard, who now wanted more than anything else to avoid publicity) or by small groups of amateurs in Europe. "Rocket" to the general public still meant the gunpowder variety familiar to Fourth of July celebrants and Civil War veterans. Although Valier and others had shown that rockets could efficiently propel every sort of vehicle, from cars to sleds to aircraft, these were for the most part seen for the publicity stunts they were and, since almost all of these employed powder rockets, they really did not go very far in educating the public on the possibilities of the liquid-fuel rocket.

The ideas published by Goddard—and the reporting and misreporting of them in the media—combined with the popular writings of Valier and the publicity generated by his experiments, impacted popular culture in only one major way, and it was in a form that was actually a setback for the acceptance of astronautics. This was the introduction of, first, Buck Rogers and then Flash Gordon, two wildly popular comic strip characters whose improbable adventures in space quickly made the transition from the newspaper comic pages to motion picture serials that are still shown today. Inspired by the success of his 1929 novel, *Armageddon 2419 AD*, author Philip Nowlan adapted his hero for a newspaper comic strip, drawn by Dick Calkins. Although Buck Rogers's name has become synonymous with space travel, spaceships did not make an appearance until 1930, after nearly 400 daily strips had been published (although rocket-powered aircraft were introduced in strip 90 in 1929).[17]

Although the early space travel strips had a relatively high standard of scientific accuracy, this was not maintained. By the 1940s, Buck Rogers had descended into utter fantasy. The believable spacecraft of the early 1930s had degenerated into art nouveau monstrosities that would have done credit to Dr. Seuss. This left a lasting impression on a prewar generation who came to derogatorily refer to space travel as "that Buck Rogers thing."

The Golden Age of Spaceflight

It may seem odd to say so, but the Golden Age of space travel occurred before space travel became a reality. It was a period between the end of World War II and 1961 that is analogous to, say, the 1920s and 1930s in aviation—a time when the public had gone aviation-mad.

Much the same thing occurred in the two decades following World War II. Fueled in large part by postwar optimism combined with a faith in technology and engineering like that of the nineteenth century, the possibility of spaceflight

17. Ibid., pp. 182–183.

took a firm hold on the public imagination. There were references to rockets and space travel everywhere one looked, from television and movies to the pages of the Sunday comics to the hood ornaments of the latest-model Oldsmobile Rocket 88. There were rocket toys and space games, bubblegum cards and gumball machines, cigarette lighters and bedside lamps, breakfast cereal premiums and Buck Rogers Popsicles, and comic books and television serials.[18] A recent collectibles catalog lists more than 300 toys inspired by the most popular children's television space shows of the 1950s: *Space Patrol, Captain Video*, *Tom Corbett,* and *Rocky Jones*.[19]

Hardly a week went by without an article in at least one national magazine about the coming age of spaceflight. All of this—bad science and good—helped counteract some of the negative effects the depiction of spaceflight in popular culture had created. The popularity of Buck Rogers and Flash Gordon in the 1930s and 1940s—abetted by the series of movie serials they inspired—did little to help the cause. Their emphasis on swashbuckling romance and utter disregard for anything resembling science led too many people—layman and scientist alike—to dismiss the entire concept of space travel as "that crazy Buck Rogers idea."

There has been nothing since the Golden Age that remotely parallels its frenzy about spaceflight, perhaps for the same reason the Golden Age of aviation finally ended: spaceflight became a reality. Just as transatlantic flights stopped making headlines when anyone could get a seat on a regularly scheduled airliner, much of the hold space travel had on the popular imagination faded as flights into space became commonplace.

Why this sudden postwar enthusiasm for space travel, especially since a decade earlier it had been considered a subject fit only for comic strips? A lot of it had to do with advancements in science and technology generally that occurred during the war. Jets and rocket-powered aircraft had shown their mettle as being more than hare-brained publicity stunts. American bomber crews and fighter pilots had brought back stories of incredible German aircraft such as the Messerschmitt Me-109 Komet and Me-262 rocket and jet fighters. Then, of course, there were the giant V-2 rockets that had fallen on England. It was obvious to more than just scientists and space travel enthusiasts that if the V-2 was not a real spaceship, it was mighty close to the real thing.

Given the history of astronautics' close relationship with the arts, perhaps it is only natural that the prime instigators of the Golden Age were a rocket scientist and an artist. The team of Wernher von Braun and Chesley Bonestell were as responsible for the almost universal public enthusiasm for spaceflight as anyone. Bonestell's first book, *The Conquest of Space* (1949), had galvanized its readers. The reaction was much the same as to Galileo's revelations more than 300 years earlier. Although

18. Marek S. Young, Steve Duin, and Mike Richardson, *Blast Off!* (Milwaukie, OR: Dark Horse Books, 2001).

19. T. N. Tumbusch, *Space Adventure* (Radnor, PA: Wallace-Homestead Book Co., 1990).

most people were aware of the planets in a kind of abstract sense, few had thought of them as real worlds like Earth, with landscapes and scenery as fascinating as anything that existed on our own planet. Bonestell's depictions of Mars and the moons of Jupiter and Saturn did not bear the stigma of "artist's impression"—they looked instead like postcards from the future. There was no sensationalism or exaggeration, just a cold-blooded, matter-of-fact representation of places that really existed, presented with no more fanfare than your neighbor's snapshots from their summer vacation in Yosemite.[20]

It was pretty much a given that Bonestell would be invited to illustrate a series of magazine articles being created by von Braun about the near future of spaceflight. The series, written by von Braun and a number of other space experts, repeated Jules Verne's accomplishment by demonstrating that spaceflight could be achieved using only contemporary technology and materials available at the time. It is true that von Braun's giant ferry rockets (the first stage of which would have had 51 separate rocket engines!), lunar landers, and space station might not have been the most practical possible designs, but that was not his point. Anything else would have required speculating on future developments; he wanted to show that spaceflight was possible in 1952, not 2002.[21]

It is difficult to gauge the full effect the subsequent *Collier's* magazine series had on both the public imagination and the contemporary development of America's fledgling space program. Perhaps one way to judge this is by looking at the artifacts of the time. *Collier's* spaceships were literally everywhere. When Bonestell's paintings were not being legally reprinted, they were plagiarized. And where they were not being copied outright, they were being inspirational. One can find *Collier's*-inspired spacecraft

Figure 26.2—This painting by Chesley Bonestell was created for the Wernher von Braun book, *The Exploration of Mars* (1954). von Braun had developed a detailed, consistent, incremental plan for the exploration of space. In much the same way that Jules Verne had, a century earlier, shown that spaceflight was merely a matter of applied mathematics and engineering, von Braun's magazine series and books helped to not only convince a skeptical public that spaceflight was possible using contemporary techniques and materials, but to also make the idea of spaceflight wildly popular. *(Artwork copyright © Bonestell Space Art, used with permission.)*

20. Ron Miller, *The Art of Chesley Bonestell* (London: Paper Tiger, 2000).

21. Frederick I. Ordway and Randy Liebermann, eds., *Blueprint for Space* (Washington, DC: Smithsonian Institution Press, 1992), p. 135.

throughout those decades, from plastic model kits to coloring books, from science-fiction movies to sterling silver money clips! A number of years ago I started a file of Bonestell-inspired artwork and had to quit when it grew to more than two inches in thickness.

In the movie theaters, space travel films had not yet begun to descend into the abyss of alien-ridden space opera. Films such as *Destination Moon* (1950), *Conquest of Space* (1955), and even *Forbidden Planet* (1956) were filled with good science and positive images about the future of spaceflight. On television, series such as *Tom Corbett* employed the advice of experts such as Willy Ley to lend their programs authenticity, while the arrival of a full-size *Space Patrol* "rocket ship" in a town or city was a full-scale media event.[22] Meanwhile, more nonfiction books about rocketry and space travel were being published for young readers than at any time before or since.

One of the most important of the legitimate spinoffs of the *Collier's* articles was a series of programs broadcast as part of Walt Disney's *Disneyland* television show, which had begun airing in 1954. Inspired by the popularity of the recently published magazine series as well as by the increasing public interest in space travel, Disney produced three short films about the future of space exploration: *Man In Space, Man and the Moon* and *Mars and Beyond*. Employing state-of-the-art animation and special effects, combined with the expertise of von Braun, Heinz Haber, Ernst Stuhlinger, and Willy Ley, the shows outlined the history of rocketry and a von Braun-inspired, step-by-step program for the exploration of space—upgraded from the scheme he had earlier proposed in *Collier's*. The series also introduced the American public to the concept of the electric space ship, as proposed by Stuhlinger. The first show was broadcast on 9 March 1955 to an audience of nearly 100 million people—more than half the total population of the United States.[23]

One of these viewers was President Dwight Eisenhower, who borrowed a copy for two weeks to show to officials at the Pentagon. On 29 July, Eisenhower announced that the United States would include the launch of an artificial Earth satellite as part of its role in the coming 1957–1958 International Geophysical Year.[24]

The *Collier's* series and its endless permutations is a perfect example of an event that incorporated the two basic qualities of spaceflight in culture: it not only reflected contemporary fascination with space travel (one that had been gradually growing since the 1930s); it helped fan it into a blaze. Like Verne's stories, the *Collier's* series also served as a self-fulfilling prediction of the future of spaceflight. It was instrumental in raising public awareness of the reality of imminent spaceflight, and it also informed a government that was about to spend many billions of dollars on a space program that it had the enthusiastic support of its taxpayers.

22. Miller, *The Dream Machines,* p. 316.

23. Ordway and Liebermann, *Blueprint for Space*, pp. 145–146.

24. Ibid.

TODAY

In spite of the fact that today we are nearly 50 years into the Space Age (if one counts from the launch of Sputnik 1), there appears to be less interest in space travel than there was in 1957, or even 1947, for that matter. In fact, public enthusiasm is virtually nil—at least compared to the frenzy of the 1950s and 1960s. I believe this is largely due to the fact that we *are* in the midst of the Space Age and no longer at its threshold. There are few great "firsts" any more to claim newspaper headlines. There is no race upon which to base national pride. Even an extraordinary accomplishment such as that of *SpaceShipOne* does not result in ticker-tape parades or even children's books and toys. Where are the *SpaceShipOne* table lamps, pillow cases, and cocktail coasters? It took only a few days before the story was moved to the back pages of the newspapers and probably not one person in a thousand today could tell you what the event was all about, what it accomplished, or who accomplished it.

In some ways this is good; it means that spaceflight has been accepted as a commonplace, just as flying nonstop across the Atlantic was eventually accepted. An event does not create headlines when tens of thousands of people routinely do it every day. Making spaceflight an ordinary, everyday occurrence had once been the dream of people like von Braun, but few of them thought about the price that would have to be paid. One cannot have that kind of public acceptance while at the same time maintaining enthusiasm at a high pressure. We have regular transatlantic airline flights but at the expense of not having transatlantic pilots as heroes any longer.

Will space travel ever regain the popularity it had in the 1950s and 1960s? What will it take to regain that kind of support and enthusiasm? What will capture the public imagination in the way that Wernher von Braun and the first astronauts did? Perhaps space travel needs someone as charismatic as von Braun or Carl Sagan had been—an individual upon whom the public can focus and who has the talent and knowledge to maintain and heighten that focus, to say nothing of the traits of leadership and persuasiveness. But such people are vanishingly rare.

Perhaps we need a focused space program, some specific goal that is as exciting conceptually to the general public as it is scientifically important to the scientist. There was a hint that an ember of enthusiasm for space exploration is still alive in the public breast when the Pathfinder Mars rover became one of the media heroes of 1997. For weeks, the official NASA Pathfinder Web site was receiving more hits than any other site in the world. It is no small feat for Pathfinder to have inspired some of the first space-related toys in nearly 40 years; even *SpaceShipOne* did not get a Hot Wheels replica. What was it about that tiny machine that so captured imaginations? Perhaps it was the image of a lone explorer—even if it was only a robot the size of a large toaster—having to fend for itself 30 million miles from home.