

**THE
CULTURE
OF
CONSUMPTION:
CRITICAL ESSAYS
IN
AMERICAN HISTORY,
1880—1980**

EDITED BY
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AND
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**SELLING
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THE U.S. MANNED SPACE PROGRAM
AND THE TRIUMPH
OF COMMODITY SCIENTISM

MICHAEL L. SMITH

“**B**y golly, we’ve done it!” were the first words millions of television spectators heard when the Apollo 11 lunar module touched down on the surface of the moon. They were spoken, not by the astronauts, or even by the Mission Control technicians in Houston, but by CBS newscaster Walter Cronkite. The ambiguous scope of his pronoun was apt. Spokespersons for the lunar mission defined that “we” with varying degrees of inclusiveness: the astronauts and technical crew, the nation, humankind. But Cronkite could have meant any of these, including the inner circle of direct participants, for he and the mass media “space coverage” he personified were an indispensable aspect of the event. Arguably, in what Guy Debord has called “the society of the spectacle,” media coverage of Apollo was the event. Never before had so ambitious an undertaking depended so thoroughly on its public presentation for significance.¹

The U.S. manned space program of the 1960s provided a salient chapter in the evolution of consumer culture—not just through its technical accomplishments, but by the forms of display its designers and publicists adopted. The project’s social function and presentation techniques approximated those of the most highly developed communication medium in American culture: advertising. In a sense, the twelve-year effort to put Americans on the moon constituted the most elaborate advertising campaign ever devised. Its audience was truly global. Eight hundred million people saw or heard the first men on the moon.

The product of this spectacular “advertisement” was not the hardware of space exploration. Missiles, astronauts, and lunar footprints simply provided a visually dramatic new iconography through which the real product could be conveyed: an image of national purpose that equated technological preeminence with military, ideological, and cultural supremacy.

Conceived in the wake of the Sputnik scare, the project’s desired effect appeared to be straightforward enough—a Cold War assertion of superiority over the Soviet Union. The merchants of space emerged from two institutions familiar with that goal: the “military-industrial complex,” as President Eisenhower called it, and the news media. The first group included Pentagon strategists, scientists, and engineers involved with defense-related research and development; defense and aerospace contractors; and their allies in government—civilian and military agencies, congressmen, and even Presidents—who found support of an aggressive manned space program politically useful. The second group consisted of publishers, editors, and reporters for newspapers, magazines, and the newly developing national television newscasts. The needs and powers of these two groups differed, and dissension between and within them emerged repeatedly.² Their shared interest in

the manned space program centered on its capacity to generate publicity: The first group sought it, and the second made an industry of supplying it. Their roles seemed simple: The defense establishment would deliver the "payload" for the public depiction of Americans in space, while the news media provided the vehicle.

The enterprise, however, quickly expanded in scope as its designers recognized that the project's success depended more on the impression it created than on the engineering feats it accomplished. To differentiate U.S. efforts in space from those of the Soviets, Apollo had to convey more than an extraterrestrial show of force; it must portray American use of technology as benign, elegant, beyond the earthbound concerns of military and diplomatic strategy. To succeed fully, the manned space program had to project an image directly contradicting its origins.

Such a task required compelling methods of presentation—methods previously developed by advertisers. The emblematic application of technology surrounding projects Mercury, Gemini, and Apollo embodied the government's increasing postwar reliance on the image-making techniques of the marketplace. Like the marketing of automobiles, the selling of the moon involved not just the problem-solving capacities of science and engineering, but above all the manufacture of a reassuring social image of technology and expertise.

Mission Control, of course, was not merely a Sunbelt efflorescence of Madison Avenue. To be sure, advertisers appropriated images, rituals, and eventually even astronauts from the manned space program. Conversely, NASA occasionally borrowed directly from the pantheon of names, images, and associations stockpiled by advertising. (As John Noble Wilford notes, the space agency named its first manned project Mercury "because a Greek god had a heroic ring and Mercury was considered to be the most familiar of the Olympians to Americans—thanks more to Detroit than to the god or the planet.")³

NASA and the news media, however, did not have to enlist the services of an ad agency in order to apply the techniques of advertising to space. By the 1960s any depiction of a man in a shiny new vehicle dealt with images and techniques already made familiar by advertising. It is in this capacity—as a principal source of public attitudes toward science and technology—that advertising influenced the state's depiction of the space race. The underlying relationship of the manned space program to the advertising industry resembled that of a guest conductor to a resident orchestra. NASA waved an impressive baton, but it was primarily because of advertising's ensemble of instruments and performers that the audience knew the score.

Long before Apollo, merchants and generals had discovered the social impact of parading new and exotic products. But in post-World

War II America the display value of technology had attained a new preeminence, often overshadowing the technical specifications for a given product, the managerial decisions leading to its development, and even its actual performance. This elevation of technological display marked the emergence of commodity scientism as the prevailing social idiom of science and technology.

The term "scientism" generally connotes a belief in the power and universal applicability of the scientific method. It represents an apparent fusion of opposites: a superstitious belief in the power of science and technology. One of its key assumptions is that science and technology (often referred to interchangeably) proceed in an inevitable sequence of events. Traditionally, the term has applied to those who equate this sequence with progress. The belief in technological determinism, however, is shared by many who consider the proliferation of science and technology to be as destructive as it is irreversible. Technophiles and technophobes alike tend to discern innovations of science and technology as not only inevitable but incomprehensible, and therefore magical. They simply disagree on whether it is white or black magic.

As the previous essays in this collection have noted, the emergence of a consumer culture in the United States has been marked by the transformation of social and personal attributes into detached, salable commodities. Technology has served both as handmaiden and as object of this process. When science itself is commodified, the products of a market-aimed technology are mistaken for the scientific process, and those products, like science, become invested with the inexorable, magical qualities of an unseen social force. For the consumer, the rise of commodity scientism has meant the eclipse of technological literacy by an endless procession of miracle-promising experts and products. For advertisers and governments, it has meant the capacity to recontextualize technology, to assign to its products social attributes that are largely independent of the products' technical design or function.

Commodity scientism emerged, in part, as a response to the steady removal of technological process from daily life. With each passing decade most twentieth-century Americans found technology to be more vital in their lives and less comprehensible. Not only machines but the decisions to create and apply them escalated in complexity and in public inaccessibility, withdrawing behind what Herbert Marcuse called a "technological veil."⁴ As public understanding of the social uses of science blurred, only the products of this mysterious realm of expertise periodically burst forth from behind the veil: a polio vaccine, permanent-press shirts, ballistic missiles. As a result, Americans increasingly identified these commodities, rather than the choices and techniques that produced them, as science itself.

This widening gap between process and product, however, did not develop purely as an autonomous and inevitable effect of industrialization. By the close of the First World War, the advertising industry had begun to recognize that the technological veil could serve as a projecting screen—that the half-discernible silhouettes of technological change could be manipulated into salable images. In the shadow-puppet realm of consumer culture, where images of things often appear more convincing and expressive than the things themselves, advertising has served as the principal social medium for commodity scientism. The arms race and the space race demarcate the steady progress of this manipulation of technological display from the private to the public sector.

Most interpreters of the manned space program have fallen into opposing camps—either celebrating it as a triumph (of science, of nationalism, or of our collective “sense of wonder”) or denouncing it as “an extravagant feat of technological exhibitionism.”⁵ Celebrants point to the exuberant public response—in the U.S. and abroad—to the first moon landing, as evidence of the program’s success. Detractors fault national leaders for creating the entire manned space program purely to generate and manipulate that exuberance. Neither of these characterizations tells us much about why the program evolved as it did, or what it signified.

In charting the genesis of the astronaut, historians generally point to the humble, 180-pound Sputnik as the ship that forced a thousand launches. But the social significance of the U.S. manned space program is fully discernible only when examined alongside the changing contexts for viewing technology in an advanced consumer culture: the evolution of technological display in industrializing America; the advertising industry’s perfection of commodity scientism; the role of the atom bomb in extending this social definition of science into national defense policy; and the U.S. government’s “crisis of national purpose” in the 1960s. Viewed in this light, the flight of Apollo 11 represents the triumph of commodity scientism as an agent of national self-definition.

TECHNOLOGY AS DISPLAY

Products of technology and science have always been assigned social meanings well beyond their apparent design or function. Americans were not the first to discover this tendency, nor did they have to wait until the twentieth century to do so. By the late nineteenth century, the United States had come to excel in two particularly revealing arenas of display: scientific survey expeditions and the great fairs. Both enter-

prises familiarized the nation with certain display rituals and associations that remained long after the Grand Canyon or the White City had receded from public attention.

From Lewis and Clark’s reconnaissance of 1804–1806 to the geological expeditions of Powell, Hayden, and King in the post-Civil War decades, explorer-scientists mapped and inventoried the continent, while—often unintentionally—abetting the acquisition and development of land and natural resources. At the same time they were amassing a collection of artifacts and images that contributed to the expanding nation’s public image. Their geological and biological specimens filled the country’s multiplying natural history museums. And as written accounts, illustrations, and stereoscopic viewcards of their expeditions drifted from the western mountains and plains into Victorian parlors, Americans learned to identify their growing country—and their scientists—with intrepid explorers, acting as advance scouts along an ever receding horizon of amazing curiosities and unimagined opportunities.⁶

As the nation reached the end of both the continent and the century, however, the need for such expeditions diminished. But the display value of the national explorer-scientist seemed to increase as his opportunities dwindled. The polar expeditions of the early twentieth century did not lead to startling new discoveries, annexations, or gold rushes; they did permit the planting of the flag in new territory, and a symbolic conquest in the names of science and national greatness. By mid-century, the “frontiers” of scientific exploration were no longer geographic; planting a flag on the moon created not the substance but a self-conscious simulation of territorial and scientific conquest.

Fairs, too, performed an emblematic as well as a practical function. The proliferation of industrial exhibits, from local mechanics’ fairs to the great expositions, often presented fairgoers with their first glimpse of some recent innovation—electric lights, the telephone, new agricultural or industrial equipment. The dramatic display settings created by the fairs also provided symbols of technological prowess for the manufacturer, the consumer, and the nation. At the 1876 Centennial Exposition in Philadelphia, George Corliss’s forty-foot-high steam engine supplied the power for all of Machinery Hall; but it generated much more energy among its spectators, who viewed the Corliss engine as a triumph of man over nature, and as an embodiment of “the national genius.” The technical and emblematic functions, though distinct, coexisted in the same double towers of pistons, rods, and cylinders.⁷

In the decades to follow, manufacturers recognized and elaborated upon Corliss’s insight: that the display value of a product can be as important as its function. At the 1939 New York World’s Fair, the

most dramatic technological innovation on exhibit—the television—exemplified a growing emphasis on hidden function, projected image. Technological changes—particularly in electricity and electronics—abetted the disappearance of process from the consumer's view. But the general shift from process to product had less to do with technological change itself than with corporate marketing strategies. The 1939 fair's "theme center," unlike the Corliss engine, was a purely symbolic contrivance: "the Trylon, a slender, graceful spire, taller than the Washington Monument, and the Perisphere, a giant globe as high as an 18-story building."⁸ Inside the Perisphere, visitors glided on automated ramps past "Democracy"—a scale-model depiction of the thoroughly engineered city of the future. Everything they saw—Trylon, Perisphere, Democracy—bore the exotic futuristic names and precise white streamlined surfaces of an engineered utopia. Yet unlike the Corliss engine, these splendid new symbols of technocracy completed no tasks, presented no innovations; they embodied the elevation of display value over technical function. Their only industrial use came at the close of the fair, when the government reclaimed the steel girders of the Trylon and Perisphere for the production of bombs and tanks.⁹

The Corliss engine and the Trylon and Perisphere were only brief and unusually self-conscious artifacts in the history of American technological display. But they suggest an important pattern of change in the needs and techniques of display-makers. Fairgoers in 1939 were far more familiar with the products of technological change than their grandparents had been in 1876, but less sure of how or why these products had come into being. By 1939 technological display revealed less about the design of a new device than about its sponsor. The Machinery Hall of earlier fairs had diversified into a shopping center of separate structures, many of them (like the cash register-shaped National Cash Register building) serving as a corporate logos for the products on display. As products overshadowed process, the marketplace was overtaking the workplace as the major source of popular attitudes toward science and technology. The 1939 World's Fair, as one of its designers lamented, did not resemble the engineered society of the future so much as a "huge department store."¹⁰

The changing fairs reflected not just new technology but a fundamental shift in the culture's ways of seeing technology. By 1939 the principal function of technological display was to teach consumers to equate personal and social progress with technology, and technology with new products. The World's Fair attempted to do just that. Since 1876, however, another institution had evolved to replace the fairs: national advertising. What fairs and expositions did sporadically and on

specific sites, advertisers learned to do every day, in every community. More than any other institution, advertising by the mid-twentieth century had assembled and reshaped the images through which all mass depictions of technology gained public recognition.

In postwar America, only the federal government possessed the communications resources capable of matching national advertising in scale and sustained impact. Its two most ambitious campaigns of technological display—the nuclear arms race and the space race—applied presentation strategies that advertisers had perfected into a kind of dance of the technological veils. To trace commodity scientism's path to the moon, we must follow the variations on that dance—from Madison Avenue to Los Alamos to Houston.

ADVERTISING AND THE RISE OF COMMODITY SCIENTISM

Reflecting transformations in the commercial culture it served, advertising since the 1920s gradually redefined technology as a social force engaging consumers rather than producers. Henry Ford's assembly lines might reveal almost nothing to his workers about the automobiles they were constructing, but advertising taught them—and everyone else—what social and economic benefits to expect from a new car. Galvanized by the burst of production following World War II, advertising firms entered a new phase of impression management and market research; they repackaged popular images of technology into a consumers' hall of mirrors, where reflections reversed reality, and a product designed to create needs could appear to satisfy them. Thus modern advertising, as Raymond Williams has indicated, learned to operate socially as a form of "magic: a highly organized and professional system of magical inducements and satisfactions, functionally very similar to magical systems in simpler societies, but rather strangely coexistent with a highly developed scientific technology."¹¹

The success of the manned space program depended on a very similar kind of "magic." Advertisers and space publicists alike drew upon the culture's shared pool, or "ritual idiom," of technological display images.¹² For Cape Canaveral as well as Madison Avenue, the task was to link certain public expectations of technology with the product or event in question. And as their presentations accumulated, both gradually reshaped the public's perception of technology itself. But ad men preceded astronauts. Viewers might consider ads as trivial, and moonshots as compelling. National advertising, however, had per-

meated the culture with millions of images and techniques; and the conventions of technological display developed through ads provided the only nonmilitary view of technology and its social uses that remained available to a mass audience.

By the mid-fifties, national advertising firms had evolved several closely related patterns of technological display, three of which particularly influenced public presentation of the space program. Unveiling techniques dramatized the introduction of new products, often obscuring the product itself with lavish backdrops or innovative secret ingredients. Techniques of transitivity fostered the illusion of transferring the purported attributes of the product to the consumer, generally through actors with whom consumers were to identify. Among the variety of character types advertisers have evoked, one of the most pervasive figures is the helmsman, whose mastery over his environment through the products of technology provides a model for consumer aspiration. Together, the techniques of unveiling, transitivity, and helmsmanship so thoroughly permeated popular notions of science and engineering that every depiction of technology in postwar America showed signs of their influence. To understand why the manned space program emerged as it did, it is necessary to see what its audience saw—the patterns of technological display that confronted them daily through advertising.

In a culture that has traditionally associated physical mobility with individual autonomy and national destiny, the helmsman always has figured prominently. From sea captains to riverboat pilots to aviators, the appeal seemed to derive less from the helmsman or his craft than from the implied relation between them. The explosive acclaim following Lindbergh's solo transatlantic flight in 1927 celebrated both the man and the machine—as if the explorer-scientist had mounted the Corliss engine and taught it to fly. As Lindbergh himself insisted, neither he nor his plane, but rather the third entity that they formed together—"we"—had performed the feat.¹³

Advertisers soon learned the importance of this mutual legitimation. Each of the helmsman's display qualities conveyed value to the product, which in turn appeared to reinforce precisely those qualities in its owner. Foremost among them was his masculinity. In a male-dominated society in which mechanization has been perceived alternately as a source of power and a threat to independence, advertisers forged an alliance between technological and gender display that proved as inextricable as Lindbergh's "we." Technological sophistication and socially admired masculine traits were conveyed each through stylized variations of the other.

National advertising had portrayed technological literacy as a de-

finite male characteristic since the turn of the century. Depictions of the helmsman increased dramatically, however, in the fifties—a reflection, in part, of the changing work environment of middle-class "organization men" in the postwar years. "Bureaucratic values," Sara Evans notes, "emphasized 'female' traits of cooperation, passivity, and security," while "the older definitions of masculinity remained." As a result, "what one part of their consciousness valued, another part judged unmanly."¹⁴ The helmsman and his obedient machine offered a comforting escape from these contradictions.

Few images captured this alignment of masculinity and helmsmanship so succinctly as Marlboro cigarette ads. In 1954, when Leo Burnett's advertising agency acquired the account, Marlboros were considered a "woman's cigarette." Reasoning that in a male-dominated culture a masculinized product affects everyone, Burnett decided to create for his client's product "an exclusively male personality." Accordingly, he fashioned the consummate helmsman: the Marlboro Man. Effortlessly steering his way through the world of goods, he was a pilot, or a race-car driver, or a sailor. Invariably, he had an anchor tattooed on his wrist. (Reinforcing the transitivity of the Marlboro Man's helmsmanship, millions of washable anchor tattoos were distributed with the cigarettes.) To insure that he conveyed more than technical competence, in 1962 the Marlboro Man acquired a geographical realm all his own: Marlboro Country, where the helmsmen were cowboys. The Marlboro Man thus combined stereotypes of masculine America past and present: suffusing frontier autonomy with machine-age know-how, he was the Lone Ranger recast as Lindbergh.¹⁵

The helmsman proliferated throughout postwar advertising, but his most articulate portrayal came from car ads. The automobile was at once the most complex piece of machinery and the most symbolically charged social emblem the average consumer was likely ever to buy. As such, it elicited the ad industry's finest examples of technological display. And with the resumption of automobile production after World War II, advertisements developed the techniques of helmsmanship, transitivity, and unveiling to new heights of social ritual. Car ads of the fifties might seem remote from the launchpads of Apollo, but they merit close scrutiny; to a large extent, these ads perfected the images and associations through which manned space flight would reach the American public.

Advertisers' predilection for concealed design and dramatic unveiling reached fruition in auto ads of the fifties. Borrowing from the clandestine image of weapons production (and the major automakers continued to serve as defense contractors after the war), car companies leaked aerial "spy photos" of their new models. The introduction of the

ill-fated Edsel during "Sputnik autumn" (1957) featured elaborate unveiling strategies. One advertisement revealed only the dashboard of the new model; another portrayed truckloads of canvas-wrapped Edsels en route to their public "debut." The following year, a two-minute television commercial for Chevrolet permitted only split-second glimpses of the car itself.¹⁶

Transitivity of power from car to driver was promoted through jargon and gadgetry. Through a deliberately unfamiliar configuration of initials, number, and neologisms, jargon provided what motivational researchers called "the illusion of rationality," conveying "inside-dopester" status to the consumer without requiring the slightest mechanical comprehension. Gadgets supplied the functionally marginal trappings that substituted for efficiency, safety, or durability as criteria for judging a product's design.

Gadgets and jargon were destined to play major roles in the popularization of the manned space program. As advertising features, they flourished in auto ads of the fifties. A Chrysler Corporation ad for its 1959 Dodge—"The Newest of Everything Great! The Greatest of Everything New!"—offered a characteristic profusion of both techniques. Two of the new models' feature innovations were simply new terms: the "HC-HE engine—high compression and high economy"; and "Level-Flite Torsion-Aire"—a "new kind of suspension" that "introduces the first 'three-dimensional' driving—ride control, road control, load control." Here were masterful creations of technojargon, studding the ad copy with hyphens and acronyms while revealing nothing about the actual engine or the suspension. In addition, the '59 Dodge offered an impressive array of gadgets. To facilitate the boarding of female passengers, it featured the "Swing-Out Swivel Seat that says 'Please Come In.'" And sitting at his "new elliptical steering wheel," the proud owner faced the "gleaming instrument panel" of "the first all-push-button car." The '56 Dodge had echoed an earlier, substantive innovation—automatic transmission—with a gratuitous one by replacing the commonplace gear-selection lever with pushbuttons ("The Magic Touch of Tomorrow!"). The '59 model added similar buttons for the windshield wipers and defrosters to create "pushbutton control of driving and weather." Like the elliptical steering wheel, the buttons added nothing more than the impression of innovation and control.¹⁷

But as "illusions of rationality," gadgets addressed the realm of wishes and fears. As long as they triggered interest in the product, their mechanical function could remain superfluous—even self-contradictory. Thus car gadgets often embodied two conflicting manifestations of technical power: the status conveyed by passive, effortless supervision of "automatic control," and the vicarious sense of technical competence imparted by their manipulation. The problem was not confined

to automobiles. As consumers became more removed from decisions regarding technology's social uses, all purveyors of technological display—including publicists for space flight—had to convince the public that the "labor-saving" status of increasingly automated technology (the hardware of transitivity) did not diminish the consumer's sense of control (or helmsmanship).

Perhaps the ultimate example of the gadget's conflicting illusions was the 1959 Cadillac's optional Autronic Eye. Earlier models had offered automatic light sensors to free drivers from manually switching their headlights from bright to dim. But automatic headlights tended to flicker erratically in response to minute fluctuations of light. General Motors solved that problem with a new gadget: "With a *twist of the dial* autronic-eye lets *you* control the automatic dimming of your lights."¹⁸ Thus the American driver could manually control an automatic device designed to eliminate the need for manual control. If buttons on his gear selector and defroster gave him "pushbutton control of driving and weather," the Autronic Eye gave him control of his symbols of control.

The public might dismiss—even ridicule—these stylized confluences of technical and personal power. From the advertiser's point of view, that mattered very little. The persuasive power of the Swing-Out Swivel Seat or the Autronic Eye derived not so much from the gadget itself as from the social context in which it situated the prospective buyer. It triggered anxieties—about sexual prowess, technical competence, or mastery of the environment—while offering symbolic conquest of them.

By the late 1950s, claims for the magical directive capacities of technology permeated not only the world of goods but, increasingly, the world of nations. Government dependence on commodity scientism reached a critical juncture in 1945 with the development of the atomic bomb. With each new phase of the ensuing arms race, U.S. leaders became more concerned with technological display. To be sure, nuclear weapons represented an application of technology very different from automobiles; and Washington did not set out to mimic Detroit. Yet the government's depiction of the bomb, and of the weapons systems it spawned, required persuasion techniques much like those of the car ad designer. The Manhattan Project led to the most dramatic unveiling strategy in human history. Presidents and generals promised the nation new autonomy and global helmsmanship through the mere possession of their new "products." They warned that the country's prestige depended on the transitivity of nuclear power from the testing range to the geopolitical conference table. And like advertisers, they developed a growing reliance on the manipulation of appearances. Advertising provided the paradigm for technological display in American culture; the atomic bomb ushered it into the geopolitical arena.

TECHNOPOLITICS AND THE BOMB

World War II was not the first occasion for the state's application of marketplace patterns of commodity scientism. The First World War introduced unprecedented opportunities for technological display, as weapons production and national image-making alike reached brief but spectacular levels of productivity. Not until what John McPhee has called the "technological piñata" of World War II, however, did a permanent, modern-scale defense bureaucracy evolve, enlisting both the research capacities and the display value of science in the service of militarism. Techniques that had been developed by advertisers were among the resources that government appropriated for the wartime effort.¹⁹ Among the factors contributing to the defense establishment's postwar policies, and its profound effect on public attitudes toward science and technology, nothing introduced so many changes so suddenly as the development of the atomic bomb.

"America stands at this moment at the summit of the world," Winston Churchill proclaimed in August 1945.²⁰ Churchill's remark was inspired by the deployment of two top-secret weapons, code-named "Fat Man" and "Little Boy," over two Japanese cities. The flashes that obliterated Hiroshima and Nagasaki etched permanent shadows of their victims onto the walls that remained standing. They inscribed an equally indelible message in the minds of a generation of world leaders: The nation that could claim scientific and technological superiority would dominate the globe.

What is often overlooked in dwelling on the destructive force and strategic weight of the A-bomb is the manner in which it was revealed to the world. Like nothing before it, the bomb exemplified the pattern of concealed development and dramatic unveiling that the advertising industry had perfected. The primary effect of this technique—a heightened capacity to manipulate the symbolic as well as the technical impact of a given product (or weapon)—had been glimpsed in previous wars. But the Manhattan Project constituted the most elaborate secret undertaking, and the most lavish concentration of scientific acumen, in history. As such, it created an unprecedented opportunity to stress the engineering of appearances as a vital attribute of the product itself.

Accordingly, two overriding aspects of U.S. government and military leaders' attitudes toward the atomic bomb determined the manner in which it entered the world: first, their adherence to a myth of inevitability concerning the use of the bomb once it was developed; and second, their preoccupation with the global impact of the new weapon's use in combat. In the summer of 1945, with Germany defeated, the Target Committee debated not whether use of the bomb against Japan

was necessary but how many could be dropped, and where. The committee's report to Truman stressed "(1) obtaining the *greatest psychological effect* against Japan and (2) making the initial use *sufficiently spectacular* for the importance of the weapon to be internationally recognized when publicity on it was released."²¹

As the committee's second point suggests, Japan was not the bomb's only target. Secretary of State-designate James Byrnes echoed a view shared by Truman and Secretary of War Stimson when he told nuclear physicist Leo Szilard, in May of 1945, that wartime deployment of the bomb "would make Russia more manageable." He suggested a more immediate audience for its combat demonstration when he added, "How would you get Congress to appropriate money for atomic energy research if you do not show results for the money which has been spent already?" As Martin Sherwin has observed, it was not simply the bomb's tactical value in defeating Japan, but the "*impression*—the psychological impact of a single bomb dropped from a lone aircraft causing damage equal to that caused by thousands of bombs dropped from hundreds of aircraft—upon which [Truman, Stimson, and Byrnes] based their policy."²²

The deployment of the atom bomb marked the accession of commodity scientism to the highest reaches of military and foreign policy. Like the marketplace before it, the state learned in the course of the century that each new product of technology was really two: the device itself, and the image of the device in the mind of the consumer or enemy. This second, symbolic weapon, as advertisers knew and generals had begun to suspect, was often the more powerful of the two. The bomb dramatically accelerated this reliance on the publicity value of military technology. By its unparalleled destructiveness, it forced the nation to rely for the first time on a weapon's image rather than on its use. As the first "atomic nation," the United States looked to its growing nuclear arsenal not just for the military supremacy it promised but for emblems of political and cultural supremacy as well.

Cold War diplomacy thus relied on a kind of nuclear transitivity, with the superpowers linking each new weapons breakthrough to functionally unrelated display attributes: the intelligence of its scientists, the wisdom of its leaders, the superiority of its political system. As the symbolic attributes of nuclear weapons overshadowed their technical function, the government became adept at the techniques by which advertisers invented social attributes for their products. Like the private sector before them, policymakers found themselves acting increasingly as agents of impression management.

This social triumph of engineered appearances is just beginning to be understood. Writing at the outset of the postwar era, David Riesman observed that in the age of mass media the earlier social model of

a self-motivated, "inner-directed" personality has been giving way to a more self-absorbed, less confident "other-directed" type. The prevailing characteristic of this new personality, he noted, is the insatiable need for guidance from external sources—particularly from the bombardment of messages conveyed by the mass media; "[t]he goals toward which the other-directed person strives shifts with that guidance."²³

More recent scholarship has refined Riesman's notion of an other-directed personality, tracing its origins more directly to the needs and marketing techniques of corporate capitalism. Advertising's "progressive fragmentation of commodities . . . into assortments of attributes and messages" has led, according to William Leiss, to a corresponding "fragmentation of individual needs into smaller and smaller elements." The consumer's task, then, is no longer simply to buy an endlessly expanding array of products, but rather to reassemble a coherent aggregate of needs—that is, an apparently integrated personality—and to match them up with a corresponding assemblage of commodity attributes. When a social system depends for its prosperity on an ever growing supply of such impressionable, other-directed consumers, the result is what Christopher Lasch has called a "culture of narcissism," subordinating "being to having," and "possession itself to appearance."²⁴

The arms race and the space race demonstrated that the state as well as the consumer was susceptible to this fragmentation. Spurred on by the culture they governed, and by the immense display value they attached to atomic weaponry, postwar U.S. political leaders acquired a striking resemblance to the other-directed individual: repeatedly calling for recognized goals, but capable of sustaining only the appearance of relentless goal-seeking; so concerned with the "credibility" of their policies that credibility itself became the principal object of policymaking; obsessed with security, yet trapped in a spiral of arms acquisition that only increased the need for security. Just as the narcissistic personality learned to seek fulfillment through acts of consumption that diminished in satisfaction as they escalated in scale, so a "culture of procurement" arose among Cold War politicians, the military establishment, and defense contractors, providing the mass media with a shorthand equation of national purpose with multiple warheads and fallout shelters.²⁵

Most nuclear weapons, of course, were intended never to be used. They were touted not for what they did but for what they promised to prevent; their primary attribute was the posture of confidence they inspired in their owners. Publicity, not megatonnage, became the true measure of a weapon's effectiveness, and American military and foreign policy depended increasingly on impressions—at home and abroad—of its unused stockpile of weapons.

The postwar arms race thus became a succession of symbolic deployments, not unlike the annual announcement of new car models.

As each new weapon or detection system rendered its still unpaid-for, equally oversophisticated predecessor obsolete, the pressure to develop its replacement redoubled. Generals and contractors clamored for the greater "push-button control" of an increasingly uncontrollable defense environment—all in an effort to recapture the brief, euphoric moment when America alone possessed the bomb. For the nation and the consumer alike, security and identity had become subject to buying and exhibiting an accelerating progression of technical innovations, each more expensive and less discernibly improved than the one before it. "Once the purpose of military spending is to create 'perception,' and weapons are procured as symbols," Richard J. Barnet warns, "there is never enough."²⁶ Perhaps what was required was not just new weapons but an entirely new display arena. The time for space was ripe.

OCCUPYING SPACE

From a technical standpoint, the space race began as a diversion of payloads in the arms race. In conjunction with their development of nuclear weapons, both the United States and the Soviet Union devoted considerable research to the perfection of missiles to carry them—research spearheaded in both countries by former Third Reich V-2 rocket engineers who had been "liberated" (and divided up) by the Allies at Peenemünde. By the early fifties, both superpowers had begun designing intercontinental ballistic missiles. Unlike the Soviet Union, the U.S. had allies within short-range missile or bomber range of its adversary. Consequently, high-thrust, long-range missiles were far more crucial to the Soviets than to the United States. On August 26, 1957, when the Kremlin announced its first successful ICBM test launch, complaints arose among some U.S. military strategists ("We captured the wrong Germans," one general lamented); but neither the government nor the press sounded a general alarm. The American Atlas missile was well under way; the U.S. enjoyed an undisputed advantage both in number and placement of bombers; American military superiority remained intact.²⁷

On October 4 the Soviets once again fired one of their new ICBMs, this time extending its trajectory, and—by mounting a 36-inch diameter satellite in place of a dummy warhead—placed Sputnik I in orbit. The idea was not new. As early as August 1955 the United States had announced plans to launch a series of artificial satellites during International Geophysical Year (1957–1958). The Eisenhower Administration therefore expressed little concern over Sputnik. Defense Secretary Charles Wilson called the launch "a neat scientific trick." White

House aide Clarence Randall dismissed it as a "silly bauble . . . in the sky."²⁸

Elsewhere in the government, however, Sputnik became the subject of agitated warnings. Congressional opponents of the Eisenhower Administration—notably Senate Majority Leader Lyndon Johnson and House Speaker John McCormack—contended that Ike's "sluggish" response to the Russian satellite jeopardized national security. "It is not very reassuring to be told that next year we will put a 'better' satellite into the air," Johnson complained. "Perhaps it will even have chrome trim and automatic windshield wipers."²⁹

On December 6 Senator Johnson had just convened hearings on the inadequacy of U.S. space efforts when the first American satellite rocket—the Navy's Vanguard—exploded on the launchpad. Press coverage, featuring headlines like "Kaputnik" and "Stayputnik," interpreted the event as proof that a space race was under way, and that America was losing. On January 31, 1958, the first American satellite—the 31-pound Explorer I—rode an Army Redstone rocket into orbit. The Redstone's chief designer, former Peenemünde rocketeer Werner von Braun, became an instant media hero. Space news of every variety was guaranteed front-page status.

By the spring of 1958 opinion polls indicated that an initially unconcerned public had begun to contract "space fever" from Congress, the Pentagon, and the press. The actual threat posed by Sputnik proved difficult to identify. Strategically, the satellite was far less significant than the missile that carried it up. It was, however, the first "first" for the USSR since the arms race had begun, opening a vast new arena for emblematic display of technology. A growing number of American leaders convinced each other that nothing short of "the national purpose" would ride with the country's entry into space.³⁰

Politicians, editors, and social commentators saw in Sputnik a symbol of the postwar drift in American culture. Conservatives feared that the "flabbiness" of an increasingly materialistic and complacent citizenry had slowed the nation's reflexes in confronting the pervasive "Red menace." Liberals shared that concern, adding their lament that the constricted scope of public affairs—Cold War posturing abroad, McCarthyism at home—had diminished the nation's "imaginative vision." While implementing a space program, the nation's leaders also launched an elaborate search for goals. In 1960 President Eisenhower appointed a Commission on National Goals, a Rockefeller-funded Special Studies Project undertook the same task, and Henry Luce commissioned a series of essays for *Life* on "The National Purpose." The other-directed nation had begun to diagnose its malady.

The unanimous conclusion was that America stood in grave peril of losing its "sense of mission." Walter Lippmann warned that the So-

viet Union, unlike the United States, possessed "a sense of great purpose and of high destiny." George Kennan castigated Americans for the "overwhelming accent of life on personal comfort and amusement, with . . . a surfeit of privately sold gadgetry" but "no highly developed sense of national purpose." The Rockefeller study linked the "lack of purpose in Americans" with its "fear that our young people have lost youth's immemorial fondness for adventure, far horizons, and the challenge of the unpredictable." And most commentators stressed the global dimensions of this challenge. "Our goals abroad," the President's Commission concluded, "are inseparable from our goals at home."³¹

Stripped of its rhetorical flourishes, this "quest for national purpose" did not depart in substance from prevailing Cold War policies. What it called for was a new mode of presentation for these policies. If not purpose, then an *image* of purposefulness would redeem the nation—while providing banner headlines for the press, rejuvenated careers for "space" politicians, and a richly embellished network of aerospace managers, engineers, and contractors. And in 1960 preparation of that image was well under way—not in the pages of committee reports, but in the flight-simulator labs of Project Mercury. Spacesuits would provide the emperor's new clothes.

From the outset, then, the architects of the space program viewed it as a new source of national iconography. Accordingly, a durable and suggestive vocabulary had to be devised—one that could describe space exploits as well as link them, through analogy and repeated association, to familiar images of the nation's past and anticipated greatness. Foremost among the key words in this vocabulary was "science." Just as American culture had conflated science and technology, now "science" and "space" became synonyms. In the wake of Sputnik, major newspapers and mass-market magazines quickly acquired "science editors" whose columns were devoted almost exclusively to the space race. President Eisenhower appointed MIT president James R. Killian as his first Science Advisor purely in response to the furor over Sputnik. And Killian's Science Advisory Committee soon learned that its principal function would be as a public relations office for space policy. The committee's first assignment was to prepare an "Introduction to Space" for the "nontechnical reader" that could be "widely disseminated by all the news media."³²

Released in March 1958, the Killian committee's report specified "four factors which give importance, urgency, and *inevitability*" to a vigorous national space program. These "factors" deserve careful scrutiny, for they encapsulate the justifications, tirelessly repeated over the next dozen years, for sending Americans into space: (1) "the compelling urge of man to explore and to discover, the thrust of curiosity that leads men to go where no one has gone before"; (2) "the defense objective";

(3) "national prestige"; and (4) "scientific observation and experiment which will add to our knowledge and understanding of the earth, the solar system, and the universe."³³ Like an M&M candy, this list of "reasons why" concentrated its primary ingredients—"defense" and "national prestige"—in the center, with an outer shell of science and exploration to provide a smooth, colorful appearance.

Perhaps the best way to compare these two realms of motivation is to think of the discretionary functions of government, such as the manned space program, as a legislative variety of play. Roger Caillois has identified two contrasting varieties of play: "competitive" play, which provides a structured performance environment resembling combat, and "vertiginous" play, in which the participant seeks unfettered discovery or imaginative improvisation, without reference to competitors, stopwatches, or performance evaluation. Caillois's terms provide a useful distinction between two basic varieties of social display rituals. Most forms of play—and of display—are not purely of one variety or the other, but some amalgam of the two.³⁴

So it was with space policy. Some space enthusiasts emphasized its vertiginous aspects: "the compelling urge of man to explore and to discover," and disinterested "scientific observation and experiment." Others defended its competitive dimension: "the defense objective" and "national prestige." The key, however, to the public presentation of manned space policy rests in the fact that the overwhelming concern—the only substantive concern—of the political leaders, military strategists, and aerospace engineers and scientists who implemented the manned space program was its propaganda value, abroad and at home. The vertiginous "outer shell" of curiosity and scientific wonders attracted a vigorous following. Indeed, the merchants of space counted on that following. But U.S. space policy did not emerge from the sudden "compelling urge" among the country's political, military, and scientific elite to learn the origins of the solar system by 1969.

That fact was most clearly demonstrated by the decision to implement a *manned* space program in the first place. As most of the non-defense subsidized scientific community repeatedly stressed, nearly every measurable space objective—in communications, weather monitoring, exploration of the planets, even military reconnaissance—could be achieved far more effectively, and at considerably less expense, with automated satellites and probes rather than by manned expeditions. Sending men into space was preferable to unmanned projects for only one reason: It vastly enhanced the dramatic impression created by the nation's space exploits.

The question, then, is not whether the creators of American space policy acted from competitive motives; rather, why did they coat unequivocally competitive policies in elaborately vertiginous rhetoric?

Cynics have dismissed these accolades for curiosity and intellectual adventurousness, along with the astronauts themselves, as part of the candy coating that sweetened the nation's real objectives—greater power and prestige.

But perhaps more was at stake than that. The space race was consummately other-directed, revealing a curious mixture of unsurpassed power and deep insecurity among American leaders. In constant doubt of their global technological superiority, and unsure how to apply it, they rushed to outdistance their geopolitical rivals in every measurable contest for prestige. A vertiginous depiction of space policy—exploration, rather than a race—might contribute greatly to that prestige, lending the nation the appearance of a self-assured, mature state seeking knowledge for all humanity among the stars. The more other-directed they became, the more desperately Presidents and Congresses sought the inner-directed images by which to convince the world—and themselves—of their sense of purpose. A self-contradictory rhetoric emerged, as jeremiads on the enemy's impending "control of the universe" alternated with invocations of the "measureless wonders" of space.

Crucial to this appropriation of a vertiginous national image was the social characterization of science and technology. It is significant that Killian's committee grouped science with exploration rather than with defense, in spite of government funding's overwhelming preference for the latter.³⁵ The congressional hearings leading to the creation of NASA provided the first of many efforts to fashion outer space into an ultimate display context for the national identity—a task requiring a complete refurbishing of the public image of American science.

On April 2, 1958, Eisenhower asked Congress to create a civilian agency for the implementation of national space policy. On April 15 the new House Select Committee of Astronautics and Space Exploration began four weeks of hearings. On May 6 its counterpart in the Senate, the Special Committee on Space and Astronautics, convened for its own less extensive inquiry. The committees' respective chairmen, House Speaker McCormack and Senate Majority Leader Johnson, each opened their proceedings with warnings that the nation's military and international political prestige were at stake. "The Roman Empire controlled the world because it could build roads," Johnson noted; later "the British Empire was dominant because it had ships. In the air age we were powerful because we had airplanes. Now the Communists have established a foothold in outer space."³⁶ Nearly all of the House committee's witnesses were selected from among Defense Department officials, the armed services, defense contractors, or scientists and engineers connected with military or nuclear research. Despite the civilian status of the space agency-to-be, the hearings leading to its

creation were dominated by men with professional interests in an aggressive space policy—particularly in the military application of space technology.

Yet the transcripts of the hearings contain surprisingly little discussion of the defense objectives informing national space policy. Congressmen and witnesses alike mixed straightforward declarations of the space program's propaganda value with fanciful efforts to formulate a vertiginous rhetoric. "In space exploration, and the scientific breakthrough it implies," McCormack assured his committee, "we are beginning an era of discovery literally as far-reaching as the discovery of our own continent." Space, he added, would provide the country with a "new frontier"—"the greatest challenge to dynamic thought and deed that our pioneer spirit has ever received." The actual benefits of the undertaking, he explained, remained "beyond the threshold. What we will learn from the moon . . . no man can rightly say"; but surely "the advances will be literally beyond our present understanding."³⁷

In his testimony, von Braun agreed that the impact of an energetic U.S. manned space program "will be comparable to the discovery of America." Like McCormack, he stressed the analogy between the role of territorial expansion in the nation's past and the primacy of scientific inquiry in its future. When asked what significance a national space program might have "from a nonmilitary angle," von Braun replied, "Sir, I think the whole idea of exploration of space began with the same motives that have always triggered scientific progress." He concluded with a glowing endorsement of unfettered curiosity: "People are just curious. . . . What follows in the wake of their discoveries is something for the next generation to worry about." In light of his pioneering work on the V-2 rocket for Hitler, von Braun might have detected flaws in such a cavalier scenario for the social application of technology. But if the nation's "superspace scientist" had any doubts, he did not air them before the congressional committee.³⁸

Von Braun was merely one among a procession of distinguished experts who offered hymns to the unknown in the name of science. California Institute of Technology president Lee DuBridge had directed the MIT radiation lab during World War II; he had served for six years on the Atomic Energy Commission's advisory board, and had been a trustee of the Rand Corporation since 1948. He had witnessed firsthand the swiftly escalating role of the military in scientific research and development in the postwar years. Much of his testimony, however, did not address these pertinent areas of expertise. Instead, DuBridge dwelled on the space program's potential for uncovering "wholly unforeseen phenomena." "It is hardly fruitful to speculate as to what these unknown things might be," he explained, "but the history of science is replete with examples" of unanticipated discoveries. The sci-

entist, like the explorer, might expect to learn as much by accident as by design. "There is no reason to suppose that the other side [of the moon] hides any great or undiscovered phenomena of nature," DuBridge told the committee. "Nor will it add anything to scientific knowledge when a man first travels in space. Yet we are all curious to know." Space generated not just a "pure scientific interest," but also "the explorer's interest—the interest in satisfying human curiosity and human yearning."³⁹

As witness followed witness, an eloquent mystification of science emerged. The sheer presence of so many eminent scientists and engineers lent the hearings—and the very notion of a full-scale manned space program—the imprimatur of expertise. Yet by equating space, science, and the unpredictable discoveries of exploration, they advocated a national space policy based on a kind of Columbus Principle: Scientists, like the captain of the *Santa Maria*, have made some of their most startling discoveries by accident; therefore space exploration should proceed not on the basis of stated objectives but on the assumption that the equivalent of a New World will appear, justifying the undertaking in retrospect. Curiosity and purposefulness were the only prerequisites. The committee's witnesses did not conduct their own research in this wide-eyed fashion. Here they spoke not for science but for its display value. As many of them had done before on behalf of defense-related projects, they lent their expertise to the "illusion of rationality" Congress required to legitimate a vigorous manned space program.

In its final report, the House Select Committee enthusiastically embraced its witnesses' celebration of uncertainty. "The implications of man's entry into outer space," the report admitted, were "disturbingly imprecise." Yet "[d]iscovery is impartial and impersonal. It can be controlled by no blueprint. It can be contained by no laws." The nation, then, should not permit a lack of palpable justifications to deter it from "the most challenging and vital exploration feat of all time."⁴⁰

The committee's report also revealed its low tolerance for criticism of a swift and unrestrained entry into the space race. Hugh Dryden, director of the National Advisory Committee for Aeronautics, had been considered Congress's first choice to head the new space agency. But during his testimony, Dryden was one of the few witnesses who expressed doubts about the wisdom of a "crash program" to put Americans into space. "[T]ossing a man up in the air and letting him come back," Dryden observed, was "like shooting a woman out of a cannon." When the news media highlighted this remark, committee chairman McCormack notified the White House of his disapproval of Dryden as NASA director. He also took him to task in the committee's final report: "Some of our sober scientists may talk with disdain of stunts no more

useful, they allege, than shooting a woman out of a cannon. This may be so," the report conceded, "but we need not condemn 'stunting' out of hand. Such stunts, even if proved useless scientifically, can have a disturbing political impact." Policymakers thus spoke of the nation's space effort in two languages. When describing its intended effect, they could point candidly to the "political impact" of "stunting," but when they invoked the unpredictable wonders of science and exploration, they were fashioning the images with which to convey that effect.⁴¹

In December 1958 President Eisenhower initiated the selection process that would lead to NASA's first team of astronauts. In January 1961, when they completed their training, President Kennedy took the oath of office with much more enthusiasm for the manned space program than his predecessor. "Dramatic achievements in space . . . symbolize the technological power and organizing capacity of the nation," proclaimed a memo drafted by Vice President Lyndon Johnson, Defense Secretary Robert McNamara, and NASA's new administrator, James Webb. And only the inclusion of helmsmen could insure the effective expression of that symbol: "It is man, not merely machines, in space that captures the imagination of the world."⁴²

On April 12, 1961, Soviet cosmonaut Yuri Gagarin became the first man to orbit the earth. On April 17 a clandestine U.S.-sponsored invasion of Cuba ended in a humiliating rout at the Bay of Pigs. On April 20 President Kennedy sent a memo to Vice President Johnson—now chairman of the new National Aeronautics and Space Council—inquiring about the feasibility of a manned lunar mission, and asking whether there might be "any other space program which promises dramatic results in which we could win?" On May 5 Alan Shepard's seventeen-minute ride on a Jupiter missile brought him tumultuous acclaim as the "first American in space." On May 25 Kennedy called a joint session of Congress to announce "that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth. No single space project in this period will be more impressive to mankind," he proclaimed. "And none will be so difficult or expensive to accomplish."⁴³ For the next eight years, three Presidents embraced the astronauts as fellow helmsmen. What was the nature of these new seekers of the national grail?

INVENTING THE ASTRONAUT

From the moment plans for a manned space program were announced, newspapers, magazines, and television networks recognized it as an

unparalleled media event. NASA public affairs officials quickly discovered that their image-making duties would be minimal; what Congress had begun, the media took up with alacrity. Long before the first astronaut left the launchpad, space enthusiasts experimented with the analogies and associations that might be attached to the event. The editors of *Newsweek* saw rejuvenative powers in space travel. "[T]he moral energies that drove America to true greatness lately seem diluted," they warned at the outset of "The Sixties: Decade of Man in Space." For too long no new arenas of conquest awaited at the national horizon. Now, however, "Man is embarking on the supreme adventure; he is heading into the universe."⁴⁴

For those who stressed the restorative powers of this "supreme adventure," the presence of helmsmen in space was an essential aspect of the enterprise. Only when the first "awe-struck pilot" experienced "the giddy buoyancy of weightlessness" would man "break free of his terrestrial bonds." Projection of the national imagination into space required a human emissary so that "all mankind may ride along vicariously." The first astronaut's "epochal adventure," *Newsweek's* "Space and the Atom" editor asserted, "will signal, as no satellite could, the dawn of the space age." "Machines alone will not suffice if men are able to follow," a columnist observed in *The Nation*. "The difference is that between admiring a woman's photograph and marrying her."⁴⁵

Growing emphasis on manned space exploration as the great "collective adventure" of the sixties reflected a nervous evasion of the inadequacy of the project's scientific justification. Press coverage turned with apparent relief from "Why manned?" to "Which men?" as NASA began to select its astronauts. In spite of the project's purported importance to science, no scientists were to fly a U.S. spacecraft until the final Apollo moonshot in 1972. Instead, NASA began its search exclusively among the nation's five hundred active military test pilots. Candidates had to meet four requirements: an engineering degree "or its equivalent"; fifteen hundred hours of flight time; age limit forty; height limit five feet eleven inches; weight limit 180 pounds (precisely that of Sputnik I). One hundred ten men qualified; half of them volunteered. An exhaustive battery of physical, psychological, and intelligence tests eliminated all but the "Magnificent Seven." On April 9, 1959, the nation met its first astronauts: Carpenter, Cooper, Glenn, Grissom, Schirra, Shepard, Slayton.

Those who lamented the nation's atrophied "moral energies" found the ideal restorative talisman in the ethos of the astronaut. Stress-seeking, uniformly white Protestant, primarily of small-town or rural origins, they seemed to personify the legendary traits of an imagined earlier America. And the astronauts quickly learned to speak of themselves in frontier terms. Alan Shepard attributed his interest in

Project Mercury to "an urge to pioneer." Gus Grissom acknowledged a similar "spirit of pioneering and adventure," adding that "I think if I had been alive 150 years ago, I might have wanted to go out and help open up the West."⁴⁶

In 1959, however, the "pioneer spirit" required revision. The appeal of the astronauts, like that of the Marlboro Man, rested in their capacity to combine the pioneering image of "150 years ago" with a forward-looking mastery of technological change. NASA's tendency to equate engineering with science helped to transform the astronauts into "space scientists." Their briefcases bulging with operation manuals, they were depicted as scouts on the technological as well as the physical frontier. Their contributions to engineering and design problems, however minimal, received emphasis in NASA press kits. (John Glenn, for example, suggested the addition of a window to future Mercury capsules.) "Fearless, but not reckless," they combined the youthful panache of a Lindbergh with the sobriety of the seasoned expert. "Here Are the U.S. Spacemen," *U.S. News and World Report* announced, "—Married, Mature, Fathers."⁴⁷

NASA's unveiling strategy evolved with the project. Unmanned test launches were planned—and sometimes executed—in secrecy. Then in February 1961 the agency focused national attention on Alan Shepard, Gus Grissom, and John Glenn when it named them as pilots for the first Mercury flights. Torn between security precautions and a desire to maximize publicity, NASA chose not to reveal which of the three would "command" the first flight until just before lift-off. After Shepard's success as America's first man in space, press restrictions were dropped. Unlike the Manhattan Project, or the Soviet space program, the U.S. manned space project would occur before the eyes of the world. If this apparently unrestricted media coverage tended to obscure more than it revealed about the justifications and strategies of the space program, it nevertheless increased the display value of each flight dramatically.

As publicity exceeded even NASA's expectations, the personalities of the helmsmen became an obsession of the national press. Shepard's "driving urge to get into space," *Time* explained, grew out of a lifelong "personal flair" with fast machines. "Particularly fond of his white, high-powered Corvette sports car," *Life* reported, "he would love dearly to drive just as fast and hard as it would go." Through Shepard's eyes the awesome hardware of the launchpad acquired the familiarity of his Corvette: "A capsule is quite a bit like an automobile," he observed. Inspecting the Redstone rocket poised for his flight, America's first space hero "sort of wanted to kick the tires."⁴⁸

Shepard's suborbital flight on May 5, 1961, yielded most of its anticipated prestige to cosmonaut Yuri Gagarin's orbital flight of April

12. Nevertheless, as *Time* observed, "the voluntary hero-making mechanisms of the U.S. worked at full blast." Central to the adulation Shepard received was the news media's determination to depict him as an autonomous, self-sufficient pilot—despite a wealth of facts to the contrary. Editors and television reporters effervesced over his "liberation from gravitational force" in a vast "playground of the imagination," "totally free of boundaries." *Time*'s cover illustration of Shepard's flight depicted him free-floating in space. In an otherwise ground-controlled flight, Shepard briefly deflected the capsule's pitch and yaw in a manual operation experiment—not unlike the Cadillac's Autronic Eye. Press coverage seized upon this incident as the key to the flight. "He did not fly as far, fast, or high as Russia's Yuri Gagarin," *Life* conceded; but "he controlled the flight of his capsule—which Gagarin did not." Felix Morley proclaimed Shepard a new Lindbergh who had revived the nation's traditional strengths by asserting "the individual's control over his destiny."⁴⁹

The distance between Lindbergh's "we" and the Mercury astronauts' "we seven," however, was marked by the emergence of a dizzying bureaucratic network of government agencies, committees, and aerospace contractors, with NASA personnel serving as coordinators. As Tom Wolfe has observed, the Mercury astronauts were so superfluous to the piloting of their capsules that many test pilots were unwilling to give up the likes of an X-15 to volunteer for a ride in a mere "tin can."⁵⁰ Confined to a space suit, strapped to a form-fitting chair, Shepard viewed the "measureless horizons of space" by squinting through a periscope. His functional role in the flight was not unlike that of a rather elaborate hood ornament. The imaginative leaps by which publicity freed the astronaut's image from the facts of his flight experience borrowed as much from Walter Mitty as from Lindbergh.

Coverage of Shepard's flight, and of Gus Grissom's follow-up suborbital flight, frequently implied a direct link between the astronaut's mission and "national purpose." With John Glenn's orbital flight the following year, the transitivity of achievement from the astronaut to the nation reached its zenith. In the months of preparation and delay preceding his flight, Glenn's personality became the paramount feature of the Mercury program. Raised in New Concord, Ohio, "a quiet shirt-sleeves-and-overalls town," he read Buck Rogers, studied chemical engineering at the hometown college, married a hometown dentist's daughter. Like Shepard, he followed "the bent I always had for mechanical things" to become an ace pilot. A member of his World War II combat squadron recalled how Glenn "would fly up alongside you and slip his wing right under yours, then tap it gently against your wing tip." But for Glenn, the technological sublime and national destiny were inseparable. To him, *Life* reported, the astronauts carried a man-

date "not just to make the flights work out well but also to become symbols of the nation's future." "Purposeful Glenn" represented a purposeful America.⁵¹

And Americans welcomed the message. On February 20, 1962, 130 million television viewers watched Glenn's Friendship 7 launch into its three-orbital flight. A commemorative stamp appeared the moment he stepped on board the recovery carrier. Its jubilant crew marked Glenn's footprints with white paint "just as the touch-down spot of the Spirit of St. Louis was marked at Paris' Le Bourget Field." Hundreds of babies born on the day of the flight received Glenn's name. (One helpless infant in Ogden, Utah, was christened "Orbit.") The new hero's exclamation of wonder—"I've never seen anything like it!"—referred not to his flight but to the week of celebration marking his return. Writing in *Newsweek*, Raymond Moley cheered the flight as a reaffirmation of "the copybook maxims which in earlier years sustained [our] forefathers." *Time* portrayed him as "a latter-day Apollo, flashing through the unknown, sending his cool observations and random comments to earth in radio thunderbolts, acting as though orbiting the earth were his everyday occupation." And *America* dubbed Glenn "the Marine Magellan," "a Frank Meriwell of the cosmos."⁵²

Like Shepard, Glenn encountered irrepressible adulation of his helmsmanship. Toward the end of his first orbit, the automatic pilot system in the Friendship 7 capsule began to malfunction; Mission Control considered aborting. But Glenn corrected the craft's yaw axis, prompting journals as diverse as *Aviation Week* and *The New Republic* to hail his flight as proof of "the primacy of man in space," a "human triumph over impersonal technology." However impressive the image of pathbreaking new technology, it was also vaguely threatening; the importance of "the man in command" remained. "Now we can get rid of some of that automatic equipment," Glenn exulted after splashdown, "and let man take over."⁵³

As Project Mercury gave way to Gemini, and Gemini to Apollo, the lone helmsman was joined by a crewmate, then by another. Space publicists found that the simple elegance of the Lindbergh display format—one pilot, one craft—suffered from overcrowding and repetition; the public began to lose track of astronauts' names and personalities. Moreover, as the decade's civil rights and antiwar activities gained momentum, the appeal of a John Glenn, brimming with self-assured piety and patriotism, proved more difficult to evoke.

Not until the first lunar landing approached did the lionization of the astronaut return so exuberantly; and in the intervening years, the tone of presentation shifted. Publicity for Apollo 11 depicted the crew in more "professional," less all-encompassing terms. Their credentials as helmsmen remained prominent: Neil Armstrong, the nation learned,

"had his pilot's license before his driver's license," and had "always wanted to do something daring and different." He had gone on to become "the hottest pilot ever to wear the wings of an astronaut"—"the kind of man virtually every father dreams his son will be—Eagle Scout, war hero, aeronautical engineer, test pilot and astronaut." Both he and Buzz Aldrin served as fighter pilots in Korea; he and Michael Collins were test pilots at Edwards Air Force Base, where Armstrong flew the X-15 to an altitude of 200,000 feet.⁵⁴

But compared with their Mercury predecessors, they were more "cosmopolitan" (Collins was "born in Rome," the son of a military attaché to the U.S. embassy; Aldrin's father, a former Air Corps aviator, had been a close friend of Orville Wright, Charles Lindbergh, and rocket pioneer Robert Goddard). And their educational background received more emphasis (Aldrin held a doctorate in astronautics from MIT and had "the best scientific mind we have sent into space"; Armstrong had done postgraduate work in aeronautical engineering). "A new breed of cosmic explorer has emerged," one newsmagazine wrote of the Apollo generation. "Gone is the earlier image of the rocket-riding daredevil, the superman of the 'wild blue yonder.' The astronaut now is seen as a dedicated scientist concerned more with discovery than with setting orbiting records."⁵⁵

For the most part, Apollo coverage focused less on individual astronauts and more on the gadgetry of space flight. Like car salesmen, reporters found that the size, speed, and special features of the spacecraft provided a welcome substitute for discussions of the mission's long-range value. Diagrams of each flight's itinerary covered the nation's newspapers, demonstrating the precision with which Houston could determine its direction. The Saturn 5 rocket that carried Apollo astronauts aloft was acclaimed as the "largest, most powerful machine ever built," with enough power ("150 million horsepower") to carry its payload "ten times faster than a bullet." At 363 feet, it stood "higher than a football field"—or, as the *Chicago Tribune* calculated, "equivalent [in length] to six Santa Marias or four Mayflowers," weighing as much as "four Santa Marias, five Mayflowers, and the United States frigate Constitution."⁵⁶

It was through jargon, however, that space flight became most accessible to its audience. The Mercury flights had established "A-OK" and "lift-off" as passwords for national well-being and determination. Apollo generated an inexhaustible array of technojargon, fusing the telegraphic abruptness of bureaucratese with Pentagon-style obfuscation. If advertisers had been the first to discover the recontextualizing capacity of jargon, Vietnam-era military strategists and arms industries became, in Anthony Sampson's words, the new "masters of newspeak," transforming weapons into "capabilities" and "systems," arms

exports into "defence transfers," and the strafing of peasant villages into an agenda of "conflict configurations" wherein helicopters with high "fire growth capability" pursued "objectives" of "optimum interface." Not simply new terms but a new descriptive mode was emerging, insulating operator from technical function, and function from social impact.⁵⁷

Apollo propelled this value-neutral, elegantly opaque language into the vacuum of space—an uncontested field in which to recite the catechism of American technological superiority. Space illiterates might still speak the archaic language of "rockets to the moon"; Houston spoke of "deploying Lem [the lunar module] on the lurain [lunar terrain]." For the uninitiated, Walter Cronkite patiently explained the meaning of "apolune" and "perilune." Like the Marlboro Man's tattoo, the language of Apollo provided an illusory transitivity of expertise. Only three men would make each flight; the rest of us could be jargon-nauts, vicariously participating in Mission Control's ethos of competence.

That ethos was never articulated directly. The Apollo 11 press kit issued to reporters by NASA offered 250 pages of acronyms and charts, but no mention of the project's purpose or social significance. Encoded into its elaborate terminology, however, was an ideology of "systems analysis"—a managerial vision of control, the very terms of which ("systems stabilization and control," "attitude control," "thrust vector control") implied the Marlboro Man's ability to command his social environment as well as his ship. Apollo 11 astronauts, the press kit explained, would launch into EPO (Earth Parking Orbit), from which a lengthy interval of TLC (Translunar Coast) would carry them to the critical LOI (Lunar Orbit Insertion). Having made lunar contact, they would engage in EVA (Extravehicular Activity), culminating in deployment of their SRCs (Sample Rock Collectors). Their mission completed, they could look forward to a Transearth Coast before final Re-entry and Splashdown would bring them back to earth. Once home, they would don their BIGs (Biological Isolation Garments) to insure against contamination.⁵⁸

The detached, problem-solving specificity of NASA jargon served a further purpose. As the crew of Apollo 11 made clear at a pre-launch press conference, their mission was to convey a sense of mission. Self-contained details of the flight's agenda insulated them from awkward questions concerning substantive goals or justifications for the enterprise. "The objective of this flight," Neil Armstrong announced, "is precisely to take men to the moon, make a landing there, and return. That is the objective. There are a number of secondary objectives," he added; "[b]ut the primary objective is the ability to demonstrate that man, in fact, can do this kind of job. How we'll use that information in

the centuries to come," he concluded on a familiar note, "only history will tell."⁵⁹

As the Apollo program replicated its moon landings, their display value began to diminish. As they grew in scale, they lost immediacy. Loudon Wainwright, who had covered the manned space program for *Life* since the first Mercury launches, attributed his "growing sense of non-excitement" at the moon launch to "the attrition of 10 years," adding that "precision has a way of dehumanizing adventure." But the major difficulty with the display value of the moonshot was its sponsors' inability to keep the technology of spaceflight apace with the overriding demands of technological display. What advertising had that Apollo lacked was the fathomless resilience of the quack. The actor in the doctor's smock could—and must—change his pitch to match the moment. That was precisely how his sponsor achieved a predictable market; the product could stay the same because its image was free to change.⁶⁰

For example, in 1958, when national space policy was first coalescing, Vought Aircraft portrayed its Crusader III carrier fighter planes ("Cru-SAD-er") streaking across a two-page ad in national newsmagazines ("Automated, missile-armed, missile-fast, it will extend the Nuclear Navy's knockout power to the edge of space"). By 1969 Vought—now Ling-Temco-Vought—was one of the nation's primary defense contractors. At the height of an unpopular war, it still placed ads in national newsmagazines. Now, however, a typical ad depicted a thoughtful young man with stars and spinning electrons in his head. "We're in the business of extending man's senses," the caption declared. ("We can turn a mission concept into sophisticated hardware faster, better, at lower cost than just about anyone." "Our mission: Extending man's senses. What's yours?") For its part, presentation of the man-in-space program proceeded as though the intervening decade had never happened.⁶¹

Were the merchants of space, then, simply less adept at display modification than a good advertising agency? Or was Apollo's lag in image more willful? In an earlier culture's mythology, Mercury fashioned and delivered to Apollo a harp so beautifully executed that when Apollo played it all Olympus fell into a dream. In many respects the Apollo space capsule was also a time capsule, allowing the nation's Space van Winkles to carry a vision of the fifties intact through My Lai and Watts, assassinations and campus riots, and the Tet offensive. For many commentators, both friend and foe, the social function of Apollo was to sustain a pre-Vietnam dream of conquest.

As late as October 1968 Werner von Braun warned readers of *U.S. News and World Report* that preoccupation with the Vietnam War, the "riots in the cities, and so forth" had "distracted from interest in space"

to the point that the nation may have "settled for no. 2 in space." Of recent cuts in NASA's budget, he lamented, "It is like being ordered to disarm while the war is still on."⁶²

The following summer *U.S. News and World Report* proclaimed the first moon landing to be above all "a symbolic 'conquest'": By "harnessing natural resources on a wartime scale," and by designating private industry rather than the state to construct the project, America "has emerged, after a decade of self-doubt, as the most technologically and scientifically advanced of all nations." In the years to come, *U.S. News* predicted, Americans would lead the conquest of space, mining and colonizing the moon and planets. Interplanetary military bases, it conceded, seemed less likely than in the early Sputnik days; missiles from the moon, for example, would require two or three days' travel time, as opposed to fifteen minutes for earthbound missiles. "Nevertheless weapons on the moon . . . might be *psychologically intimidating*."⁶³

Both supporters and critics of Apollo agreed that the Eagle flew like a hawk. William F. Buckley declared the moon landing an "unmitigatedly glorious" "aristocratic venture." His *National Review* blasted "Flat-Earth Liberals" for "ignor[ing] realities of national competition for the sake of abstract UN-type pieties." Carey McWilliams, editor of *The Nation*, agreed that Cold War competition dominated the confusion of motives surrounding the project, but found nothing "glorious" in that fact. Asking "What Price Moondust?," McWilliams noted with trepidation that NASA director Thomas O. Paine had "defended NASA's budget by saying that the technology involved would be helpful in 'winning the next war,' a comment that somewhat tarnishes the 'Space Olympics' image of the moon race."⁶⁴

A few of Apollo's interpreters located the object of its "conquest" closer to home. Eric Hoffer called the landing "the triumph of the squares"—a reaffirmation of traditional middle-class values that had recently endured pervasive denunciation and ridicule. Writing from a different perspective, Peter Collier agreed. "Of, by, and for middle-class America," he wrote in *Ramparts*, "the astronauts were its revenge against all the scruffy third-worlders and long-haired deviants who had stolen arrogantly onto the center stage." The first men on the moon "were to be our Aeneas, removing America's household gods—a flag and a television—to a foreign clime." No need to defoliate or tear-gas the moon; no guerrillas crouched behind those craters, no noisy demonstrators could march into the Sea of Tranquility.⁶⁵

Such visions of vicarious conquest often melted into dreams of escape. Some scientists and science fiction writers (who occupied nearly interchangeable positions of authority in the mass media) argued that moonflight signaled an evolutionary leap forward. Isaac Asimov

exulted in the *New York Times Magazine*: "The Moon Could Answer the Riddle of Life." Apollo's objectives might be unclear at the moment, but he provided "the answer (or anyway, *an* answer) to those who ask why we are spending billions to reach the moon, when it is so much more important to cure cancer on earth. All science is one. If we push back the boundaries of the darkness in any direction, the added light illuminates all places, and not merely the immediate area uncovered." The Columbus Principle still reigned in the form of the "spin-off." Space men were hailed as deliverers of a storehouse of unanticipated wonders, from Teflon to improved electrocardiographs—as if the way to develop a better electrocardiograph were to send men to the moon.⁶⁶

For some of Apollo's defenders, the sense of discovery and escape was more generalized. Louis J. Halle proclaimed the Apollo flights to be "man's liberation from this earthly prison"—a vicarious release from "intellectual claustrophobia." "Our position is simply that of the intelligent creatures confined to the ocean deeps," he asserted in *The New Republic*. "Now, however, that we are at last beginning to escape from our native confines, there is no telling what light we may find in the larger universe to dissipate the darkness in our minds."⁶⁷

Several of the manned space project's more outspoken critics agreed that the lunar landing constituted an "escape," but of a less laudable variety. *Ebony* wondered what the astronauts might say to any extraterrestrials they might encounter: "Are they going to say, 'We have millions of people starving to death back home so we thought we'd drop by to see how you're faring?'" Novelist Kurt Vonnegut held a similar view. "Earth is such a pretty blue and pink and white pearl in the pictures NASA sent me," he wrote in the *New York Times Magazine*. "It looks so *clean*. You can't see all the hungry, angry earthlings down there—and the smoke and the sewage and trash and sophisticated weaponry."⁶⁸

Mission Control, once an overarching emblem of American use of technology, appeared to many by 1969 to be an arcade of evasions. "The moon is an escape from our earthly responsibilities," Anthony Lewis concluded in the *New York Times*, "and like other escapes, it leaves a troubled conscience." Our discomfort did not stem simply from the discovery of poverty and ugliness in a nation of unprecedented wealth; these problems we had the "technical apparatus" to solve, if we so desired. "What we lack is any agreed moral basis for their solution, a common vision of the good society. Perhaps we are the twentieth century Vikings," Lewis mused, "driven, conquering without humanizing qualities. We would know the stars but we do not know ourselves."⁶⁹

The lunar landings were a triumph of engineering. They also signified the victory of impression management over substantive policy in American government. The manned space program demonstrated

that the national purpose had joined the other commodities of consumer culture as something that could be televised and sold. One widely reprinted photograph featured Apollo's Saturn 5 rocket poised alongside the rising moon, suggesting a lavish reincarnation of the Trylon and Perisphere: beautiful, richly evocative, but rather useless once the exposition was concluded.

And if Apollo proved far less disappointing and destructive than the war in Vietnam, those two campaigns of state-sponsored technological display had more in common than crater-pocked terrain. Whether in the hills of Khe Sanh or on the Sea of Tranquility, the deployment of American technology evoked similar questions at home and abroad: How could so much power accomplish so little real improvement? Faith in appearances and the impression of "credibility" might sell millions of oversized, inefficient automobiles; but the lunar module—and the ship of state—could not be so quickly traded in. The years following "moon summer" brought the "credibility crisis" of Watergate, the "energy crisis," new awareness of the environmental and health hazards of industrial technology, an accelerated arms race, and a depressed economy. Decisions concerning the social use of technology, and the masking of those decisions through commodity scientism, were no longer—as Werner von Braun had hoped—"something for the next generation to worry about."

SPLASHDOWN

Even after the final Apollo flight in 1972, American advertisers had not forgotten the similarity between the helmsman and the astronaut. Although forbidden to endorse products during their years in the space program, several astronauts appeared in advertisements in the 1970s—almost always for automakers, airlines, or other transportation-based industries. In 1972 Buzz Aldrin, with a "Doctor of Science from MIT and a walk on the Moon under his belt," praised Volkswagen's "new computerized Self-Analysis System" for being "wired along the same principle of a space craft": "Keeping that print-out sheet after the check-up," he observed, "is like checking in with Mission Control when you're 200,000 miles out in space. It gives you a nice, secure feeling."⁷⁰

More often than not, astronauts were called in to improve the image of some ailing corporation in the transportation industry. Wally Schirra, one of the Original Seven, commander of Apollo 7, and Cronkite's co-anchorman for CBS coverage of Apollo 11, appeared in a commercial for the nation's railroads. Eastern Airlines moved to reverse a slump in sales by hiring Apollo 8 commander Frank Borman

as its president—a position that entailed appearances in commercials for his new employer. McDonnell-Douglas, a prime contractor for NASA since the early Mercury days, received considerable criticism for its defective DC-10s—first in 1974, and again in 1979, when two disastrous accidents and a series of near-crashes touched off a national controversy. In 1980 Apollo 12 commander Pete Conrad appeared in a series of commercials to praise the safety and dependability of McDonnell-Douglas products.

Chrysler Corporation, another long-term NASA contractor, producer of the "all push-button Dodge" and two generations of tanks, adhered to its faith in oversized cars throughout the skyrocketing oil price hikes and shortages of the 1970s. In 1979, on the brink of financial losses so devastating that only massive federal funds would keep the company afloat, Chrysler hired Neil Armstrong to praise its superior engineering. "Long ago I learned that all engineering is a matter of designing machines to solve problems," Armstrong announced in a full-page newspaper ad. In a commercial unveiled during the telecast of the Super Bowl, the first man on the moon advised the nation to look to Chrysler "to meet the driving needs we all have today."⁷¹

The hardware of manned space flight, too, remains the object of display. In the central exhibit area of the Smithsonian's Air and Space Museum, visitors can take in, with a single panoramic gaze, Kitty Hawk, the *Spirit of St. Louis*, Glenn's Friendship 7 capsule, Apollo's Columbia, and a moon rock. But perhaps the most revealing artifact of the first decade of American space policy is at the now deserted Mission Control headquarters in Houston. The roomful of computer terminals, already archaic in appearance, calls to mind an electronic variation on Plato's parable of the cave, in which prisoners sit immobilized, their backs to the firelight, able to see nothing "except the shadows cast from the fire on[to] the wall of the cave that fronted them"—as if the world had been devised by "exhibitors of puppet shows." On the day the Eagle landed, the *Washington Post* proclaimed that "[t]he creature who had once stood blinking at the door of his Paleolithic cave has come a long way. . . . At long last, man is on the brink of mastering the universe." "Then in every way," Plato concluded, "such prisoners would deem reality to be nothing else than the shadows of artificial objects."⁷²