

The U.S. Space Program and the National Interest

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On October 4, 1957 the Soviet Union launched Sputnik I into a successful orbit around the earth. The satellite was an aluminum sphere, twenty-three inches in diameter and weighing 184 pounds. It also contained instruments which for 21 days radioed data concerning cosmic rays, meteoroids, and the density and temperature of the upper atmosphere. But for all the research data which the satellite was transmitting to earth, probably its most important radio broadcast was a steady but meaningless series of beeps which it transmitted over normal radio frequencies to be picked up with delight by all the Soviet citizens and admirers of the Soviet space program back on earth-and with consternation by all the U.S. citizens and admirers of the U.S. space program. Sputnik would crash into the earth's surface some fifty-seven days after it was launched into orbit, but its effects would be felt well into the next decade.

The Soviets then launched another Satellite into orbit on November 3 of that year, this one containing a dog, Laika. Throughout the media the terrible news read Soviets, 2, and the United States, 0, in the suddenly all-important new space race. What was wrong? How could the Soviets who we always thought to be so far behind in technology and scientific development have surpassed us? The fact that the United States was quickly able to launch two satellites of its own, Explorer and Vanguard II, into orbit on the heels of Sputnik II was of little consolation. America had been publicly beaten by the Soviets and second place was simply not good enough.

What came to be known as the Soviet/American "space race" was born of these events at the close of the 1950s and like all races it was built more on hysteria and mass psychological interest than on any substantial phenomenon. What gives a race meaning and importance are the psychological factors upon which the race is built: the fact that an audience is watching the event, that they know in advance what the participants are trying to achieve, and that, in the way that the race is

constructed, there can only be one winner.

The manner in which the American space program developed in the Kennedy years after Sputnik was primarily as a vehicle for American propaganda to promote American prestige throughout the world, and particularly in the Third World. Its purpose was to boost U.S. morale and competitive spirit and to display the superior abilities of the United States. The conscious and public decision to land a man on the moon as made by JFK in his address to the nation on May 25, 1961, is testimony to that premise.

Another, unspoken, purpose of the U.S. space program was a military one. Increasingly, the importance of accurate surveillance of Soviet military installations became a primary concern for the U.S. military and with the development of the Cold War this became almost exclusively a job for the space program and satellites; the policies of the Kennedy administration following the lead of the Eisenhower administration helped to formalize the military's leading, if secretive, role in U.S. space policy. Interestingly, the least important factor behind the development of the U.S. space program was the one for which it would constantly promote itself, scientific space exploration. Although scientific research would always be a part of NASA's mission, it played almost no role in the appropriation of funds and in the choice of which missions would be carried out and in what manner.

All three purposes for the U.S. space program were actually complimentary. The purpose of scientific exploration was often used as a cover to launch military surveillance satellites while the military aspect of the space program and the overall all strategic importance of space was often given as a rationale for undecided congressmen wary of the large expenditures of the space program and not convinced of its value as a propaganda vehicle. But despite these complimentary aspects of the various purposes of the space program, it was its value as a propaganda that caught the eye of the Kennedy administration.

To President Eisenhower amidst the hysteria of the Sputnik launch, there was no "space race." The United States had been working for some time on sending rockets into orbit and in his mind our program was functioning well and on schedule-of what difference was it that the Soviets had managed to put a satellite into orbit one month in front of the United States? Eisenhower was against the mentality developing in the United States that we were in a race with the Soviet Union. He was always sensibly concerned with the possibility of an hysterical state of competition developing between the United States and the Soviet Union particularly in the field of armaments. This hysteria Eisenhower saw as wastefully counterproductive and, with the memories of the McCarthy "red scare" still fresh in his mind from the beginning of the decade, potentially very dangerous. Eisenhower worked actively to calm the American public trying where ever possible to diminish their fears and to convince them that there was no cause for alarm.

Unfortunately, this was to no avail and the "space race" became a reality. The news media fueled peoples fears that the United States was falling behind the Soviets in the critical field of scientific research and consequently 82% of the American public believed that the U.S. was falling behind the Soviets in the development of advanced weapons.⁽¹⁾ A new call was put out to place more focus on the sciences in education. The public also became concerned that there was a "missile gap" in the Soviet's favor with regard to nuclear warheads-this, in fact, turned out to be utterly groundless and that, whatever missile gap there was, it was decidedly in our favor. With the approach of the election year of 1960, a young Senator from Massachusetts took up these concerns and made them a centerpiece for his presidential election campaign and an indictment of eight years of Republican "complacency." In many ways, the American space program made the ideal platform from which Kennedy could show case a new American commitment to excellence and reinvigorate American prestige throughout the world.

In the new global climate, Kennedy's approach and the language of the "space race" had some merit. Eisenhower's point of view was valid domestically: we should not let our own self worth and our own endeavors as a nation be dictated by outside pressures and allow ourselves to be caught up in a competitive atmosphere that could threaten our very ideals and tranquillity. But the Cold War was shaping up as a battle for the future of the Third World, or as Kennedy put it in his speech to the nation on May 25th, "the battle for men's minds." Kennedy's larger point that quiet American resolve could all too easily be interpreted by the people of the developing world as American complacency and indifference was a more realistic one internationally. With the Soviets actively courting the nations of the Third World and trying to impress them with their superior abilities and skills, the United States could no longer afford the luxury of assuming that our own talents spoke for themselves. Kennedy was not tied to the space program in particular out of any overarching principle or great interest in space exploration. He was only determined to find some means of improving the prestige of the United States throughout the world. At times, expressing his own doubts about the validity or world-wide importance of space exploration, he even queried his aids to find some suitable equivalent to the space program in its level of grandeur that would also carrying with it some kind of tangible resolution to an immediate and pressing need-an affordable desalinization process was one such equivalent he had in mind.⁽²⁾ But, aside from the fact that it lacks the lyrical quality of the words "space race," a desalination race also does not seem to capture the imagination in the same way that space exploration does. For a number of reasons which I will discuss later, Kennedy began to focus increasingly on the fledgling U.S. space program as a show case for American ingenuity, putting his confidence in what was at the time an unproven and somewhat demoralized agency whose origins were far from the lofty

ideals Kennedy hoped for it to represent.

Starting with the first satellite, Sputnik, in 1957, there would be within thirty years more than 3,000 space launchings and in excess of 14,000 satellites put into orbit.⁽³⁾ A large number of these satellites were military satellites and, in fact, the U.S. space program, itself, began with the reconnaissance satellite program in 1954. Ever since the catastrophe at Pearl Harbor, the U.S. military has been obsessed with obtaining accurate military information. In the Cold War, starting with the U2 flights over Soviet military installations, the U.S. military had constantly strived to maintain the advantage over the Russian military in accurate and up-to-date information. Because of the relative openness of U.S. society compared to that of the Soviets this edge had to be maintained through superior surveillance technology as opposed to espionage. Initially the unmatched altitude capabilities of the U2 aircraft allowed U.S. air reconnaissance to be carried out over Soviet airspace with relative impunity and it may well be said that the shooting down of U2 pilot, Gary Powers, in 1960 over Soviet airspace actually put as much drive into the U.S. space program as did the successful Sputnik launch.⁽⁴⁾

At the same time that the U.S. space program was taking shape under NASA, the United States military decided to follow a path of dependency on satellite surveillance as their main source of intelligence gathering. This course created certain needs for the U.S. military which began to show themselves in how the United States was positioning itself in international organizations concerning the nascent field of space law. The great time and effort required to make a successful surveillance satellite launch, not to mention the expenditures in resources, in no way precluded the possibility of the Soviets exerting the much less demanding effort required to knock them out of orbit once they were installed. It is for this reason that the U.S. pursued a policy of peaceful use of space as opposed to what the Soviets would later call for, the non-military use of space. The U.S. had no intention of keeping the military out of space; it was one of its primary motives for going there in the first place. The U.S. also pushed for the restriction of sovereign airspace not to include outer space for much the same reasons. This course of action also forced the U.S. to reduce the visibility of the military in the U.S. space program-it is for this reason that the organization NASA was founded.⁽⁵⁾ Finally, to protect their vulnerable surveillance satellites, the United States worked to create an international ban on developing space weapons. Beneath much of the rhetoric of trying to prevent the Cold War from spreading to the heavens, there was, in fact, a deliberate attempt to allow the United States to do just the opposite by giving it cover with which it could set up satellites to spy on the Soviets.

Realizing the need not to appear as the aggressor in using space for military ends, the Congress and the heads of the National Science Advisory Committee put

pressure on Eisenhower to create NASA and to "officially" remove the space program from the Department of Defense. The organization set up to coordinate the newly formed NASA with what would be its biggest client, afterwards, even had its name changed from Civil-Military Liaison Committee to the Aeronautics and Astronautics Coordinating Board in 1960 to erase any public link between the military and the space program.

No matter what public face the U.S. government put on NASA, between 75 and 90% of all of NASA's work would still come from the military.⁽⁶⁾ By and large, however, this public relations spin put on by NASA was highly effective and it could well be argued that supplying NASA with an appealing civilian profile may even have had greater "military" impact on the Russians than any other similar program run by the Pentagon because it gave U.S. policy the appearance of taking the higher moral road.⁽⁷⁾ Americans were able to cloak actions taken in our own national interest in the broad rhetoric of mankind. The fact that, particularly with regard to space, this was not true is almost irrelevant because, for better or worse, truth in the Cold War became largely just a matter of public perception.

A number of analyses concerning media coverage given to the U.S. space program have lamented its largely uncritical stance and even a brief sampling of the coverage of the *New York Times* from this era illustrates this point.⁽⁸⁾ The space program coverage at the time of the Shepard mission and the Kennedy pledge to land a man on the moon is overwhelmingly favorable to the space program. Whatever arguments that are made against the objectives of the program are represented poorly and buried in the back pages. Instead the *Times* focuses the issue of the U.S. space program with almost unflinching consistency as a comparison with the program of the Soviet Union. Hardly an article is printed on the U.S. program without mentioning its counterpart in Russia. The overall point of the importance of the U.S. space program to the national interest is impossible to miss.

This bias is, of course, not entirely the creation of the *New York Times* but is instead more reflective of a general atmosphere throughout the country, what the *Times* itself described following the successful mission of Shepard as "one of ...the highest peaks of exultation since the end of World War II."⁽⁹⁾ Political leaders promoted and were also swept up in that atmosphere of exultation. Senator Robert Kerr, in commenting on the Shepard mission, said it was "the most climatic thing that happened in my lifetime" (presumably even more important than WWII).⁽¹⁰⁾ Senator Fulbright called the event "the most encouraging accomplishment in technological affairs in recent years" and it was "extremely successful from the point of view of the individual and of the country" in overcoming what he described as a defeatist attitude.⁽¹¹⁾ Even leaders who were critics of the space program had to preface their remarks with their overall support for the program. Representative

John Blatnik of Minnesota in expressing his misgivings about the program and its tremendous budget had to concede at first that the proposal to land a man on the moon was "important, of course," as if there was no dispute at all as to its essential value to the nation.

The central role of the U.S. space program in the nation's overall foreign policy and military objectives is evident in the way Kennedy presented it to the nation on the night of May 25, 1961. He justified the pledge to land a man on the moon as needed to promote a "freedom doctrine" around the world. The popularity of the space program was made clear in the unquestioning way it was accepted as the ultimate goal of the nation. In commenting on the speech, the *New York Times* on the following day listed the major government initiatives proposed as: the space program and the moon landing, increased foreign economic and military aid, and the strengthening of the Army and Marine corps. The space program has catapulted in a short time from obscurity to the nation's number one priority. Nowhere in the *Times* for that day is there any questioning of the connection between promoting a "freedom doctrine" and the program to land a man on the moon. A connection which on the face of it seems tenuous at best in the rhetoric of the Cold War becomes axiomatic. The U.S. space program had become the centerpiece of the nation's foreign policy.

Not surprisingly, NASA has probably turned out to be better at dealing with the media than any other U.S. government agency, but its creation in 1958 would have far reaching effects beyond its value as a simple public relations vehicle. NASA's creation represented a consolidation of what can be called technocracy in America. The increased government coordination of science, education, industry, and government that it represents has redefined relationships between the public and the private sector and has made them more interdependent. ⁽¹²⁾ The powers granted to NASA were unprecedented in their scope. It is by and large an independent organization made up of America's scientific and educational elite and backed by America's largest corporations.

With the arrival of the space race in the Cold War era, a large amount of America's faith in itself would be placed in its technological capabilities. Most Americans would come to believe in America's superiority based for the most part on the superiority of our technology as made possible through this cooperation between government, education, and industry. In a full page ad run across the nation following the Shepard Mercury mission, B.F. Goodrich (the tire and rubber company) exclaimed: "Astronaut probes space in a B.F. Goodrich suit." This ad, and other ads like it, reinforced in the public's mind a link between the confidence Americans had in their consumer product technology, their space program, and their patriotism in general. The subtle message behind the B.F. Goodrich ad is that the same expertise that keeps astronauts safe in space keeps you safe on the road and all of this comes not

only from the greatness of B.F. Goodrich but from the American nation and the American system in general. It would be somewhat ironic that so many Americans would go on to gauge the value of their own nation based on technological feats designed initially to impress Third World people. In this respect one can see made manifest the early concerns of Eisenhower that an unbridled state of competition with the Soviets might well obscure from the American people their very own values. [\(13\)](#)

The largely autonomous technocracy that helped to promote this sort of American "cult of technology" was what Eisenhower warned about in his farewell address, referring to it as the dangers of the military-industrial complex. He cautioned Americans of the influence this powerful new complex could bring to bear on America's "economic, political, and even spiritual" character. He concluded that "[w]e must never let the weight of the combination endanger our liberties or democratic process. We should take nothing for granted."

This military-industrial complex would eventually come into its own during the Vietnam war which was coincidentally also the height of the U.S. space program. The farewell statement of Eisenhower, however, as prophetic and pithy as it was also has the air of a Frankenstein warning the world of the creature he had created. These branches of the government that the Eisenhower administration formed and the corresponding industries in the private sector as well as the expertise in higher education which the president and his staff helped coordinate would ultimately be driven by some sort of self will independent of any intelligible control on the part of Eisenhower or his successors. While Eisenhower could not escape his responsibility in the process through his warning farewell remarks he at least showed his concern for what was at stake. Unfortunately, in a culture increasingly content to believe in professional "experts" and to take things for granted, this concern was not shared with sufficient vigor in the public.

Despite all the government and public support behind it, NASA actually got off to a very rocky start and some were at the time even predicting its quick demise. The main problem it faced at the beginning of the space program were its rockets. The Atlas rockets which were meant to provide the thrust for the Mercury space program were actually designed for the military's nuclear missile program; this was the same for the Russians as well as almost all work in rocketry was carried out by the military. The irony of the situation for the Americans was that because their missile program was so much more advanced than that of the Soviets, they were able to build much more weight efficient warheads for their missiles which required much less thrust than did the equivalent missiles of the Soviet Union. Therefore, coming into the space race, the Soviets had the advantage of having much more powerful rockets at their disposal than did the United States. Consequently, at the start of the Kennedy administration in 1961, because of the difficulties posed by

refitting these missile rockets, the U.S. suffered two discouraging and very public failures of their Mercury rockets.

The heads of NASA, being well connected to the scientific and education community, were also aware of the skepticism brewing in those areas concerning the Mercury program as a worthwhile scientific endeavor, beyond its technical problems with the Atlas rockets. A study of physicists at Berkeley conducted at the time showed a large majority convinced that the U.S. space program was largely being carried out for militaristic and propagandistic purposes and that as far as good research was concerned the public was wasting its money.⁽¹⁴⁾ The new president elect, John Kennedy, had at that time just received a memo from his chief scientific advisor, Dr. Jerome Wiesner of MIT, counseling him to cancel the Mercury program. In his words, the problem with the Mercury program was that it "[s]trengthened the popular belief that man in space is the most important aim of our non-military space effort ... [a] crash program aimed at placing a man into orbit at the earliest possible time cannot be justified solely on scientific or technical grounds."⁽¹⁵⁾ It seemed that the scientific and education community were upset about the concerns of other groups-government, industry, and military-unduly influencing *their* space program.

With two failures on their hands, NASA was worried that the new president would sour on the idea of a manned space program and they were well aware that his advisor, Wiesner, was filling him with all sorts of fears of a potential public disaster and the possibility of a dead astronaut on his hands. Consequently, they stepped up plans for their next launch. On January 31, 1961, Ham-a highly trained chimpanzee-was blasted off into space and landed safely in the ocean back on earth. His mission was exactly the same one that would be carried out by Alan Shepard a few months later. Everything was set. It was next to impossible, NASA thought, for Kennedy to cancel the Mercury program on the very threshold of success; as it turned out, the ensuing run of events would make it completely impossible.

NASA, of course, was completely unfounded in their fears of Kennedy's dislike of the U.S. manned space program as he would eventually turn out to be probably the greatest presidential booster of NASA in its history. Unlike Eisenhower who seemed so sentimental about America's past, Kennedy was almost impatient for its future. Even though Johnson helped create NASA and was fundamental in giving it such sweeping powers, it was Kennedy more than anyone else who came to be identified with the ideals and premises of the U.S. space program; NASA became Kennedy's tool and the astronauts were Kennedy's friends.⁽¹⁶⁾

On April 12, 1961, the Soviets became the first nation in history to put a man into orbit. Yuri Gagarin orbited the earth a number of times and returned safely back to

earth to be received with a hero's welcome in the Soviet Union. He was honored with a tremendous parade through Red Square and all around the world curious and undecided eyes watched the Soviets celebrate what was promoted as a stunning achievement of the potential of their system and their own capabilities. A man had climbed into the very heavens and peered down on creation, and that man was a Soviet Communist.

To make matters worse, the U.S., just days after the launch of Gagarin, suffered the humiliating and tragic defeat of its specially trained Cuban émigré forces at the Bay of Pigs in Cuba. While the Soviets were navigating the heavens, the United States was bogged down in the Bay of Pigs; the contrast could not possibly have been more striking. After the debacle, president Kennedy sent a memo to vice president Johnson, who had been requested by him to head the Space Council, asking Johnson a number of questions as to the future of the U.S. space program. His first question was: what chance do we have of beating the Soviets to the moon? He then inquired about the cost of these proposals and wanted to know if we were doing everything possible to succeed in this endeavor—were we "working twenty-four hours a day?"⁽¹⁷⁾

Of course, between the successful Soviet orbit launch and the fiasco in Cuba, the media went into a frenzy and special hearings were set up in Congress for James Webb, the new Kennedy appointee to head NASA, to explain to the American people what was going on in the U.S. space program. Representative Fulton put the situation bluntly before Webb: "tell us how much money you need and we on this committee will authorize all you need. I'm tired of being second to the Soviets. I want to be first. I would work the scientists around the clock and stop some of this ...scientific business."⁽¹⁸⁾ If the American scientists were concerned about being able to do their "scientific business," the huge appropriations which Congress was to provide proved adequate comfort.

For 1961, the budget of NASA was increased by 11%. For 1962, it was increased by 44%. And in every year from 1963 to 1967, NASA would see its appropriations rise by at least 5 billion dollars; Mr. Fulton was true to his word. These were just the direct appropriations to NASA and of course do not include all the funds included in research grants and spread liberally throughout the scientific academic community or the various subcontracts made with U.S. industry to provide support for the space program.

Alan Shepard became the first American in orbit on May 5th of that year and with that success Kennedy felt sufficiently confident to go before the Congress on May 25th and in a speech often referred to as his second inaugural show his public support for the U.S. manned space program and pledge the United State's commitment to land a man on the moon before the end of the decade.

Project Apollo represented a fundamental change in the philosophy of government as promoted from the White House. It was obviously a broad departure from the fiscal conservatism as practiced by Kennedy's predecessor, Eisenhower. But it also marked an evolution of Roosevelt's philosophy of the New Deal that was so profound that it was almost revolutionary. As opposed to government merely interfering in the private sector, when dire circumstances required it, as a corrective agent, this new philosophy promoted, instead, constant and long term action, in good times or in bad. The new administration came to view project Apollo as part of a broader challenge to the traditional role of federal government. Proponents of the Apollo program within the administration were dissatisfied with existing management of national resources. Viewing the space program as a "catalyst" for social progress, technological revolutions, and the restructuring of institutions, Kennedy and his advisors laid out the blue-prints for an activist federal government that would seek to change society in a progressive manner and effect a positive influence on its citizenry and industry. ⁽¹⁹⁾

The Apollo project, for all its awe-inspiring display of pyrotechnics and skill, had the advantage of falling into an easily recognizable and understood narrative. It involved perhaps the biggest non-military appropriation of funds in U.S. history and created a tremendously large and for the most part unaccountable federal bureaucracy but it did so under the premise of an appealing narrative. The romance and intrigue of the moon, coupled with the story of the frontier, gave Kennedy a way of depicting a march to the moon that was both exciting and familiar to Americans. It took the form of a story-a heroic adventure-complete with heroes and villains. ⁽²⁰⁾ All this drew attention away from what would be normally, in other institutions, seen as dangerously large expenditures and ill-defined systems of public accountability.

In conclusion, the U.S. space program was far different from what its lofty public goals and rhetoric made it seem. Its origins were in the U.S. military and the U.S. military would remain its main client. Also, NASA's impact would have repercussions far beyond its given field of space exploration. By promoting a more activist federal government and by setting a precedent for public and private sector cooperation it represents as well a broad based change in the philosophy of American government in addition to a fundamental change in how American government is implemented. But perhaps the most important element of U.S. space program resides in the very psychological realm of the space race from which it rose to prominence.

In a country whose very culture is engrossed in the principles of advertising and promotion and particularly in a president who proved in his election campaign his own adeptness in the manipulation of imagery, the potential value of the moon in

ingraining the image of the United States in the minds of all the worlds people was undeniable. And the spectacle that such a feat would provide the media was equally irresistible; it would be in the words of one American TV journalist-reflecting the words of that great American showman P.T. Barnum-a great expense, some ten dollars per capita, but it was fair enough for "what is by far the greatest show on earth."⁽²¹⁾ A cosmonaut goes up into space and comes down; afterward there is hardly a trace of his achievement. But to land on the moon is almost to touch the eternal and universal. If the United States could land a man on the moon, afterward, when every child learns the name of the moon in his or her own language and gazes up at it in wonder, as everyone is bound to do at some point, they will probably also learn that men from the United States walked at one time across that very surface. A subliminal billboard promoting the United States would be placed before the eyes of all the earth's people in the form of the moon; no advertising agency could ask for better penetration than that.

Despite all the rhetoric to the contrary, NASA and the U.S. space program as it took shape in the early sixties was built almost entirely around the premise of national interests. This duplicity, as unfortunate as it is, is in and of itself not the main problem, however. Equal measures of duplicity and misleading rhetoric were made by the Soviets to the people of the Third World as were done by the United States and, although it could be argued that two wrongs do not make a right, it would have been foolhardy to allow the Soviets to seduce the world with the inflated and deceptive merits of their system based on the hopeful belief that people will be able to recognize truth over bombast. The United States had to promote itself and its prestige throughout the world and NASA was an instrumental tool in that endeavor. The real problem is the unbridled and naive enthusiasm into which the American public was allowed to drift while under the distorting influence of American Cold War rhetoric. In presenting an idealized omnipotent image of ourselves to the Third World we ultimately fell victim to the danger of actually confusing that exported image to the world with our own understanding of ourselves. The grand rhetoric of president Kennedy and the U.S. space program was undoubtedly inspirational but its value was largely in the image of commitment, dedication, and achievement which the administration wanted to express to the other nations of the world in the face of what Vice President Johnson described as Communist doubts about the "resolution of the free world and especially ...the United States."⁽²²⁾ Great nations must maintain great appearances. Kennedy understood that in a way that Eisenhower did not and he succeeded in presenting a compelling image for the United States to uphold to the world in the great struggle that was the Cold War.

The media's enthusiastic coverage of the Mercury and Apollo programs probably went a long way in helping Americans loose their sense of perspective. Once the frenzy reached a critical mass, of course, any word of restraint would be looked

upon as being reflective of poor patriotic spirit and eventually things would become so distorted that the lunar landing would commonly be seen by many Americans as one of the greatest achievements of the American people. The problem in this, of course, is that this was supposed to be how the people of other nations should see it as it was done with them primarily in mind and had no intrinsic value for the nation itself. It is impossible for political leaders to proscribe one set of rhetoric for international consumption and another for domestic consumption and unfortunately for many Americans this divergence of appearances from reality that became a byproduct of the Cold War was too much for them to work out. Eisenhower was right in pointing out the dangers of the military-industrial complex. The consolidation of power under the rubric of technocracy within that complex is of grave concern. But, perhaps, the real tragedy that came of these events was not so much in the balance of power as it was in the distortion of ideals and the subsequent distortion of the American character and identity.

1. Claus Jensen, *No Down Link*, trans. Barbara Haveland (New York, 1996), 50.
2. James L. Kauffman, *Selling Outer Space: Kennedy, the Media, and Funding for Project Apollo, 1961-1963* (Tuscaloosa, 1994), 15.
3. William J. Durch, *National Interests and the Military Use of Space* (Cambridge, 1984), 2.
4. *Ibid*, 35.
5. *Ibid*, 34.
6. Jensen, *No Down Link*, 54.
7. *Ibid*, 52.
8. Kauffman, *Selling Outer Space*, 17.
9. *New York Times*, May 6, 1961.
10. *New York Times*, May 10, 1961.
11. *New York Times*, May 6, 1961.
12. *Ibid*, 4.
13. Information for this and the next three paragraphs taken from Jensen, *No Down Link*, 61.
14. *Ibid*, 62.
15. Walter A. McDougall, *The Heavens and the Earth: A Political History of the Space Age* (New York, 1985), 309.
16. Jensen, *No Down Link*, 74.
17. *Ibid*, 66.
18. *Ibid*, 64.
19. Kauffman, *Selling Outer Space*, 4.
20. *Ibid.*, 5.
21. Jensen, *No Down Link*, 69.

22. *New York Times*, May 3, 1961.