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U. S. Civil Space Policy: Evolving or Revolving

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Introduction

The field of U. S. space policy is one of many dimensions. It covers military and civil government; commercial and science-oriented spaceflight; as well as the frequent interaction of these fields. The research for this paper examined the major pathfinding efforts of national space policy – those decisions, efforts, and outcomes that have had major impact on U. S. space programs and their subsequent results and accomplishments. Inevitably those with the most impact have been those involving programs that took humans into space and the largest part of this paper deals with these. As we consider the historical importance of such major initiatives, certain patterns appear. This paper hopes to bring these to the reader's attention.

Spaceflight Eras

In The Beginning

Following the introduction of practical rocketry in war during World War II by the German V-2 program initial space programs were research oriented. However, the demonstrated practicality of rockets for military purpose was obvious. This, combined with the development of atomic weapons led to U. S. proposals for long range rocket missiles as early as the late 1940s.

The impetus to develop higher-powered rockets also held the promise for the development of Earth-circling satellites. Several initiatives combined to provide the thrust for this development. In early 1954 U. S. president Dwight Eisenhower, concerned about the ability of a closed dictatorship to develop the capability to gain an advantage over an open society initiated studies by the Technologies Capability Panel (TCP) to review this concern. The TCP proposed that the United States give the highest priority for development of an Intercontinental Ballistic Missile (ICBM) by the United States Air Force as well as the development of an Intermediate Range Ballistic Missile (IRBM) capability for United States Navy and Army use. An additional concern was the need to increase intelligence gathering capabilities.

Also among the TCP recommendations was the concept of launching a scientific Earth satellite to establish the principle of freedom of space, including overflight of the USSR by U. S. reconnaissance satellites. In 1955 National Security Council document NSC 5520 noted the capability to establish a small satellite in the near future. It also noted the prestige value that would accrue to being the first nation to establish such a satellite, however, it proposed the U. S. not use a military rocket so as to enhance the peaceful characteristic of the flight. It gave primary importance to the military reconnaissance programs and stressed non-interference with military space programs. In the mid-1950s the study of the Earth, especially the geophysical aspects by an international scientific effort was proposed. This effort – termed the International Geophysical Year (IGY) – would be an 18 month assault on scientific unknowns by a world wide scientific effort. The period of June 1957-December 1958 was chosen as it was a period of maximum solar activity and this proposal won the support of the International Council of Scientific Unions. The American national committee on the IGY approved the launch of a satellite as part of the U. S. national contribution to the IGY.

A committee to review U. S. proposals for this project was established. The U. S. Army proposed "Project Orbiter" using the Army's Redstone rocket; The U. S. Air Force proposed a project using the Atlas missile; and the U. S. Navy proposed the use of a Viking research rocket in "Project Vanguard". The winner was the Navy's Project Vanguard. The major rationale was that of NSC 5520 in that the Vanguard project would use a civil research rocket launch vehicle and would not conflict with, or disrupt, military programs. The policy of the Eisenhower administration continued to support the IGY scientific satellite development while at the same time proceeding more heavily with the development of military missiles through the mid-1950s. Eisenhower and the National Security Council were more interested in eventually launching reconnaissance satellites than with winning the first round of the space race.

Sputnik's Challenge

The launch of the USSR's Sputnik on October 25, 1957 was not without warning. The USSR had indicated that it too would launch an Earth satellite during the IGY. The impact of the launch, however, had not been expected to be as great as it turned out to be. During the days following the launch American public surprise and awe quickly changed to anger and shock. The surprising weight of the satellite suggested the USSR had powerful rockets capable of launching ICBMs with hydrogen bomb capability. Sputnik had an extreme impact on the American public as well as leaders of the undeveloped world who viewed it as a victory for socialism.

Following the Sputnik impact it was obvious that the U. S. would be following an increasing space exploration program. President Eisenhower's initial inclination was to keep the space program within the Defense Department so as to restrain the growth of government as taking it out of the military's hands would mean creating an additional government agency. However he came to feel that a vigorous military program would enable the development of missiles and reconnaissance satellites, while an open civilian program would be the public face of American space exploration and undertake those programs with scientific or prestige value. Eisenhower's aim became a civilian agency able to resist military domination, a relatively modest program, and to restrain overall spending on space.

Eisenhower's method was typical of his hidden-hand method approach to leadership. In February of 1958 he asked James P. Killian and the President's Scientific Advisory Council (PSAC) to recommend outlines of the space program and to propose its organization, knowing full well that Killian shared his views on many aspects of the program and that the PSAC's position was that oversight of the civilian space program be accomplished by an enlarged National Advisory Committee on Aeronautics rather than the Department of Defense

This view prevailed and the bill to create the National Aeronautics and Space Administration - Public Law #85-568, 72 Stat. 426 - was signed by Eisenhower on July 29, 1958. The bill, termed the "National Space Act of 1958, also established a National Aeronautics and Space Council under the direction of the President, later the Vice-president. Meanwhile, Eisenhower continued to pursue the policy of emphasis on military ICBM and reconnaissance development. In an article in the magazine Saturday Evening Post he defined his central point. This was that he could not stress enough while that the cold war had many fronts and the U. S. should fight on those where it was strongest.

Apollo

The 1960 presidential election between Democrat John F. Kennedy and his Vice presidential co-candidate Lyndon Johnson and the Republican presidential candidate Richard M.

Nixon – former Vice president to Dwight Eisenhower was not fought primarily on the space and missile gap alone. However, no issue better symbolized the New Frontier concept that Kennedy and Johnson asked the U. S. people to support. They utilized this issue to contrast their image of a youthful and energetic party with that of an ineffective opposition.

During the 1960 campaign Kennedy did not call for a crash program to reach the Moon by 1970 but his campaign rhetoric pointed towards greater activity in space and charged that Eisenhower and Nixon had placed the United States in danger of slipping behind the USSR. Thus, after being elected Kennedy was compelled to use the power of his office to, as he said, “turn the tide” back in favor of the United States after narrowly defeating Nixon.

When NASA submitted its budget request in the spring of 1960 Eisenhower learned for the first time of its proposed lunar landing plans. He asked for a committee study of the NASA human spaceflight program and the report was presented to him in December of 1960. The report noted the status of the Mercury piloted space capsule program, then in early development and discussed the capabilities of the large Saturn booster rocket. The report noted that the Saturn had the capability to send an Apollo spacecraft around the Moon but further programs would be necessary to effect a human landing and return. The estimated cost for a lunar circling flight in 1970 would be 8 billion dollars while a landing after 1975 would cost 26-38 billion. Eisenhower stated that unlike Spanish Queen Isabella financing Columbus he was not ready “to hock his jewels to send people to the moon. The report indicated that man’s senses could be satisfactorily duplicated by unmanned instrumented spacecraft, that instrumented flights could be undertaken much earlier, and that human spaceflight could not be justified on purely scientific grounds. Eisenhower agreed fully with these sentiments.

None of these findings pleased Kennedy when he took office in 1961 and he sought his own report to inform him of the policies to be followed in space. Jerome Weisner who would later become his science adviser chaired his team. Weisner, a member of Eisenhower’s PSAC and his team reflected the skepticism as to the value and feasibility of human spaceflight.

Weisner’s report was not the ringing denunciation of Eisenhower’s position that Kennedy had expected and he was not pleased. He told reporters that “I don’t think anyone is suggesting that their views are necessarily in every case the right views”. The new NASA Administrator, James Webb, sensed Kennedy’s support for an expanded space program and in March of 1961 asked for a 30 percent increase in NASA’s budget. Kennedy, while supportive, told Webb he would not make any final decision on human flight elements of NASA’s request until the fall of 1961. Indeed Kennedy had come into office favoring cooperation with the USSR and had extended feelers in that direction. As late as September of 1963 while at the United Nations Kennedy continued to explore this avenue.

Within a few weeks, however, two factors had major impacts on Kennedy’s plans. On April 12 the Soviets launched Yuri Gagarin into Earth orbit as the first human in space. This created a worldwide sensation, as had the first Sputnik. One week later an American-backed invasion of Fidel Castro’s Cuba failed at the Bay of Pigs. To Kennedy, these cold war failures were precisely what he had denounced his predecessor for during the close 1960 presidential campaign.

Kennedy met with Lyndon Johnson on April 20, He asked if there was a chance of beating the Soviets by putting a laboratory in space, or by a trip around the moon, or by a rocket to land on the moon, or by a rocket to go to the moon and back with a man. Johnson, now chairman of the Space Council and a vigorous supporter of space exploration while in the Senate,

asked NASA for information. The reply was that there was a chance for the U.S. to beat the Soviets and be the first to land on the Moon and return if a determined national effort were made. They estimated 1967 for about \$33 billion – then a figure \$10 billion more than NASA's entire budget could do the job for the next ten years. Johnson had also asked Secretary of Defense Robert McNamara his opinion and McNamara supported an accelerated space program. He had a personal motivation in that he was trying to cut back defense spending and the accelerated space program would make a perfect customer for defense firms irate over cutbacks.

Vice President Johnson brought his considerable political skills into building support for the concept of a manned flight to the Moon. On May 8, 1961 NASA Administrator Webb and McNamara jointly wrote to President Kennedy urging the adoption of a manned Moon mission. Johnson was out of the country when Kennedy discussed the letter with his cabinet. Although not all attending agreed with the project, Jerome Weisner noted that when McNamara reported that without Apollo there would be a dangerous oversupply of manpower in the aerospace industry that took away all argument against the space program.

Kennedy, planning to meet with Nikita Khrushchev at the end of May, did not want to do so in the wake of American failures. He set May 25, 1963 for a non-traditional Second State of the Union address dealing with "urgent national needs" at which he would announce the lunar landing program. The question of the date for completion was discussed and, while Webb argued for 1968 as a climax to Kennedy's second term, White House aides suggested "before this decade is out". Accordingly, on May 25, 1963 before a joint session of Congress John F. Kennedy told the legislators that "I believe 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 the earth".

Post Apollo – One

Following John F. Kennedy's assassination in November of 1964, now-President Lyndon B. Johnson pushed to keep the space effort on track. However, the decision to press ahead was now resting less on the foundation of national security. Johnson, himself was now looking into cooperative agreements with the USSR to explore space and had sent NASA's Hugh Dryden to Geneva to seek a widening area of agreements with Moscow. For Johnson, the Apollo mission did make excellent economic sense and he felt that it fit within his "Great Society" concepts.

Although Johnson gave support to Apollo he was thinking about the future. He wanted to know what big projects might come next. In January of 1964 he asked James Webb to describe NASA's plans. Webb provided a tentative response in May. It was not until January of 1965 that Webb gave a precise response to the question. Webb was reluctant to identify NASA goals and priorities without expressions of political support. He preferred that NASA identify options and that the policymakers decide which to pursue. The report was divided into existing programs, intermediate programs using boosters, facilities, and spacecraft developed for current programs, and long-range programs utilizing as yet unforeseen technologies. Existing programs included lunar and planetary probes, progression in launch vehicles, while human existing objectives included one to two-week orbital flights with rendezvous in space. The intermediate objectives included unmanned observatories and planetary probes; one to two month human stays in earth orbit, and lunar stay times of three days to two weeks. Long-range objectives included unmanned probes and landers at distant planets; solar and galactic probes; permanent space laboratories, lunar bases, human planetary exploration, launch vehicles capable of placing one million pounds in Earth orbit, recoverable boosters, and nuclear and electric propulsion.

Ambitious as post Apollo plans may have been, pressures were rising to reduce space goals and transfer funding to foreign and domestic purposes. President Johnson, although trying to preserve the Apollo moon landing, was sympathetic to reductions in the future space programs as the Vietnam War and Great Society program costs continued to rise rapidly.

During the late 1960s James Webb and Lyndon Johnson battled over the declining NASA funding. Johnson won. He maintained that the reductions would allow the Apollo lunar landing to continue and that they did not represent a lack of support for space. Johnson had the support of key congressional leaders and a survey in late 1966 showed that their sentiment was for keeping Apollo on track but for cutting post-Apollo programs. Public support for the manned space program received a further blow when a fire in an Apollo spacecraft undergoing testing at the launch pad resulted in the deaths of three astronauts in early 1967. Although Johnson repeatedly told Webb that he hoped the NASA reductions in funding could be made up in the future, budget impacts and spending cuts were impacting post-Apollo planning. James Webb became increasingly bitter and offered to resign in September of 1968. Johnson accepted.

Post Apollo – Two

Following the elections of 1968 the America had a new president – Richard Nixon as well as a new NASA Administrator – Thomas O. Paine. The Nixon transition team report noted that the U. S. should not compete in space with the USSR in detail but should be seen to be as strong overall. It also called for a new look at the balance between instrumented and human spaceflight programs with expanded research and development in the instrumented area. The functions of humans in space was not seen to be clear, however the report favored the continuation of the lunar landing program while opposing the construction of a large space station. It called for continuing the Apollo Applications program utilizing Apollo hardware and assets in scientific efforts, opposed human planetary flights, and was also opposed to low cost booster development. International cooperation opportunities, it noted, should be exploited.

Paine recognized that space planning and policy had not been vigorous during the latter stages of the Johnson administration and on February 26, 1969 he noted that the previous administration had deferred the setting of the nation's goals in human spaceflight and warned against the U.S. again being placed in the position of reacting to Soviet initiatives. Paine indicated "that failure during the past three years to make timely decisions and take necessary future-oriented actions has placed our manned space flight program in a serious and difficult position".

President Nixon appointed a Space Task group under the Chairmanship of Vice President Spiro T. Agnew to make a detailed study of Post-Apollo plans and they submitted the report "The Post-Apollo Space program: Directions for the Future" on September 15, 1969. The report called for the development of a large space station and a space shuttle as keystones to the nation's space program's next major accomplishments. It called for the large station to be launched by Saturn-class boosters and serviced by space shuttle flights. Later, a lunar polar orbiting space station would support extended stay time moon surface expeditions. Human Mars exploration would follow, using nuclear propulsion, in the 1980s.

Nixon had inherited a number of policy headaches from Johnson who had delayed attacking a number of policy issues. These were characterized by upward spiraling costs. In addition Nixon was moving toward a more balanced approach to space that favored cooperation, a more ordered approach, and an emphasis on frugality. Analyst Joan Hoff, however, believes that there were four major reasons for the deceleration of the space program under Nixon, and later Ford and Carter. (1) The first she denotes as personnel in that Nixon had no close advisors

promoting the space program as opposed the situation of his other domestic programs. Thomas Paine and his successor, James Fletcher, did not have influence with presidents. Significantly, the only major project initiated during Nixon's terms, the Space Shuttle, announced on January 7, 1972, had the vigorous backing of Office of Management and Budget Deputy Caspar Weinberger

(2) The second issue was budgetary. Cost overruns and the failure to grasp the necessity of complying with and understanding the Bureau of the Budget affected the space agency's relations. (3) The third issue involved foreign relations in that the space program would probably have been somewhat reduced in any case as it had originated in a cold war context. Favorable expectations about these relations and a reduction in cold war tensions reduced the need to address "beating" the Soviets in space. (4) The fourth issue was political, as Nixon was, until 1988, the only 20th century president elected with both houses of Congress in the hands of the opposition party. He was continually attempting to co-opt liberal opinion on issues such as welfare. When the chairmen of the House Committee on Science and Astronautics and the Senate Committee on Aeronautical and Space Sciences both opposed the idea of a human flight to Mars Nixon and his advisors became convinced they would lose little by trimming the NASA budget. The same reasoning characterized the Ford and Carter administrations.

We may, then, consider that the space policies of this period were strongly affected by an unexpected change from the earlier policy environment of the 1960s. Although an overworked term, it is reasonable to cite an unexpected presidential personnel-budget-foreign policy-political factor "paradigm shift" as having a negative impact on space policy and space planning.

The Carter Years

While no major new space initiatives were announced during the Jimmy Carter presidency several space policy documents were issued. Following a review of U. S. space policy early in the Carter administration National Security Council document NSC-37 "National Space Policy" was issued on May 11, 1977. NSC-37, in addition to the usual concepts of advancing U. S. goals and cooperation with other nations, rejected the idea of national claims to sovereignty over celestial bodies and it recognized the right of passage through and operations in space.

National Security Council document NSC-42 "Civil and Further Space Policy" was issued on October 10, 1978. Recognizing that the Space Shuttle was nearing operations, NSC-42 addressed possible new large-scale space programs. Among other general recommendations it held that space policy should be evolutionary rather than centering on large-scale space initiatives and that "it is neither feasible nor necessary at this time to commit the U. S. to a high-challenge, highly-visible space engineering initiative comparable to Apollo.

The Shuttle and the Space Station

On December 19, 1980 Reagan's NASA transition team noted that U. S. leadership and preeminence were threatened and seriously eroded. It recommended an early recognition of the importance of the space program and addressed the need to define the purpose and direction of the space program. It called for allowing current Space Shuttle and ELV plans to be allowed to stand until after acquiring Shuttle flight experience. In 1981 Reagan issued National Security Decision Document NSDD-8, which reiterated the central role of the Space Shuttle. A comprehensive review of U. S. space policy followed, resulting in National Security Decision Document NSDD-42. This document superseded several space policy documents of the Carter years, designated the Space Shuttle as the primary launch system for civil and military government missions, made the Shuttle available for authorized domestic and foreign commercial and government use, and also established the Senior Interagency Group for Space of the National

Security Council as the primary forum for space policy formation. A further NSDD, number 94 in May of 1983, addressed the commercialization of ELVs.

The January 1986 Challenger accident resulted in the investigations of the Shuttle program by the Rogers commission, which viewed the accident in terms of technical and communications issues. However, Launius raises the possibility that the accident had more to do with NASA organizational patterns and decisions made in the austere times of the early 1970s. An additional result of the accident was the expansion of plans for ELV use. Although the Shuttle returned to flight in September of 1988, in 1991 the National Aeronautics and Space Council issued a report calling for NASA to employ a mixed fleet of STS and ELV launchers.

The Space Shuttle and had always been considered as a partner to a potential space station. During 1982, with Shuttle development underway, NASA decided to push for presidential approval of a space station. Accordingly on April 11, 1983 National Security Decision Directive NSDD 5-83 "Space Station" was signed by President Reagan. This directive called for a study of the proposal on the station and specific policy issues involving the proposed project. After the completion of the study effort President Reagan, in an Apollo-like announcement during the State of the Union address on January 25, 1984 stated that the U. S. would build a space station within a decade.

From the outset the intention was for the station to be an international effort and station managers felt this would provide some political stability to funding. They recognized, however, that international partners would also dilute the managers' authority to execute the program and require that some engineering, managerial, and schedule rights be given up.

Almost from the beginning costs were issues and multiple redesigns of the station occurred over the succeeding years. As budgets were impacted, so too were the station's capabilities and reducing functions also meant reducing support and incurring rebellion from those impacted. In addition the collapse of the Soviet Union and reduction in cold war activity resulted in the threat of massive loss of jobs. Station managers faced one set of politicians demanding that jobs be maintained, another set demanding costs be reduced, while station user communities demanded that capabilities be maintained. In the spring of 1993 President William Clinton directed NASA to restructure the space station program so as to reduce its budget, maximize scientific use, and ensure that jobs were not lost. As this was going on the international situation was being dramatically revised. As a result the station program brought Russia into a major role with impacts to operational aspects of the station while Russia and a number of other nations were became producers of station major components. The initial space station program component – a Russian module – did not launch into Earth orbit until November of 1998.

Summary and Conclusion

1). In the 1950s Eisenhower space policy stressed no impact to military development, reconnaissance satellites, and IGY satellite as American science centerpiece.

But, American public shock and worldwide reaction to Sputnik influence formation of NASA. The close result of Kennedy-Nixon presidential election suggests space issues may have influenced the outcome.

2). Kennedy pursues study efforts with no immediate need for major human spaceflight increase. But, Soviet's first flight of a human and Bay of Pigs failure make the U. S. image inferior to the Soviets, triggering the decision to proceed with Apollo human flights to the moon.

- 3). Kennedy institutes Apollo to regain U. S. prestige versus the Soviets.
But, by mid-1960s the Soviets are no longer perceived as superior and domestic issues dominate American government.
- 4). Post Apollo planning envisions building on Apollo success to go to Mars.
But, Johnson now engaged with Vietnam War and domestic turmoil. Space policy is delayed until Nixon administration.
- 5). Nixon's NASA plans ambitious program with human planetary flights, extended lunar missions, shuttle and space station.
But, presidential "paradigm shift" of personnel-budget-foreign-political issues precludes all but Space Shuttle program.
- 6). Space Station "Freedom" is envisioned as a Reagan initiative against Soviets in the cold war.
But, collapse of Soviets and domestic American politics results in their becoming major partners in the station with significant affects on mission planning and technical issues.

It would appear that the past half century of major U. S. space policy determination has been predicated on the assumption that the future domestic or international political environments are not of great importance. In practice it appears so if not in theory. It would also appear that our space policy efforts have not, in fact, been evolving but rather revolving as we move from major policy initiative to major policy initiative without contingency planning at these levels. We have not yet learned Scottish poet Robert Burns' dictum "The best laid plans of mice and men go oft astray".

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