Lunar Colonies and Nuking the Moon: Science Fiction, Cold War Anxiety, and the U.S. Space Program

by

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Introduction

On 25 January 2012, Republican presidential hopeful Newt Gingrich addressed an enthusiastic crowd of 700 people. He began by calling for the creation of a new "generation of courageous people," who could "do something big, and bold, and heroic." This new generation would have to study math and science, so that a "bigger and better future" could be built for the American people. To Gingrich, young minds could be inspired to pursue these careers by reinvigorating the American space program. In light of this, he declared that "by the end of my second term, we will have the first permanent base on the moon. And it will be American." The announcement struck a chord with the crowd, which erupted into applause and gave Gingrich a standing ovation. Gingrich then continued, addressing some of his critics within the Republican presidential candidate race. He noted that many had attacked him for being grandiose in his bold plans for the American space program. In Gingrich's mind, however, this was not problematic. Citing influential Americans such as Abraham Lincoln, the Wright brothers, and John F. Kennedy, he gladly accepted the charges of grandiosity laid against him. In fact, he considered the entire American people "instinctively grandiose, because we believe in a better future."[1] The crowd rose to their feet in applause again, no doubt excited and inspired by the possibility of returning to the moon and ultimately a time of technological optimism.

Gingrich's candidacy floundered soon after. Faced with pressing economic issues, the Republican Party and the American people clearly believed Gingrich's space project was an expensive and risky anomaly that should not take priority over more immediate concerns. Yet, unbeknownst to Gingrich, his supporters, and most American citizens, this was not the first time in U.S. history that there had been serious discussion of establishing a colony on the moon. In the late 1950s and early 1960s, both the U.S. Air Force and the U.S. Army developed detailed plans

[1] "Gingrich promis

to establish permanent lunar settlements. In fact, these plans took the moon

approach the sense of wonder, fascination and pride that Americans felt when men walked on the moon.[3] Considering that most of Gingrich's supporters lived through this exciting period of American history, it is little wonder that he could stir public enthusiasm for an expanded space program and new moon missions.

Undoubtedly, the moon has captured many Americans' imagination for much of the second half of the twentieth century and into the twenty-first century. This is intrinsically tied to the Apollo missions, which have "cast a long shadow over American society" since the program

speech that “set in train” the series of events that culminated in the moon landings.[6] For his part, Andrew Reichstein ascribes the moon landings to Lyndon B. Johnson’s efforts, arguing that Johnson “grasped at the opportunity to make space an issue for the Democrats and thus enhance his own political career.”[7] In 1961, responding to a memorandum issued by President Kennedy after the Soviet Union’s launch of the first man in space, Johnson declared that “manned exploration of the moon… is essential as an objective.”[8]

Other accounts of the moon landings

Despite their strengths, these interpretations fail to account for American fascination with the moon. To explain this it is essential to examine the 1950s, before the Apollo program began development. From here, it is possible to observe cultural factors that caused the moon to permeate the American imagination. Of particular importance is the rise of the science fiction genre coupled with growing concern toward Soviet technological advancements. From radiation produced monsters and nuclear fallout to interstellar space travel, science fiction reflected American hopes, fears, and anxieties of the time and provoked new ways of thinking among the American public and officials. Along with the Soviet challenge, science fiction played a crucial role in placing the moon on the American "radar."

Divided into three chapters, this paper will seek to explain when, how and why the moon became so prominent in official U.S. discourse. The first chapter will examine the loss of confidence the U.S. experienced as Soviet military technology first matched and then seemingly surpassed that of the Americans. It will also explore the growing popularity of the science fiction genre, which reflected both the hope and anxiety of Cold War culture. The second chapter will continue to follow the Space Race, and by observing official concerns about Soviet moon colonization it will demonstrate how science fiction came to influence top U.S. military officials. Finally, the third chapter will examine U.S. plans for lunar bases and nuclear detonations by drawing upon recently declassified documents. These documents reveal BDC BT1 0 0 1 108.02 41 165.74 285.1

the proposed lunar bases and nuclear detonations never took shape, the moon was now grounded in realm of possibility which made the later Apollo moon landings possible.

Chapter One: The Sputnik Shock

On the morning of 5 October, 1957, the American public awoke to shocking newspaper headlines announcing "Reds Fire 'Moon' into Sky!"[12] The previous day, the Soviet Union had successfully launched the first artificial satellite into space, using the newly developed R-7 booster rocket. Officially named Sputnik I, the satellite was little more than a metal sphere that emitted a radio signal that could be heard by anyone with a radio as it passed overhead. While this "red moon" posed no direct military threat, Americans who had their radios tuned to Sputnik I's frequency could be reminded every 96 minutes that the Russians had surpassed them in ballistic missile technology. Indeed, the launch of Sputnik I was not the only event that concerned the American public and officials in the 1950s. Throughout the decade, Soviet technological advancement continually reminded the U.S. that it might no longer be at the cutting edge of scientific progress. Nevertheless, Sputnik I was significant because it served to crystallize American fears that the nation had fallen behind the communist world, and it exacerbated the anxiety and insecurity that characterized the 1950s and early 1960s.

Before analyzing the launch of Sputnik I and its effects on American officials and public, it is important to understand its historical context. This begins with the history of American technological and military superiority in the immediate post-World War II period. As Thomas Mahnken has noted, "the U.S. entered the Cold War with a sense of confidence."[13] The successful use of nuclear bombs in Hiroshima and Nagasaki convinced Americans that they had a trump card they could pull if the communist threat reached new heights.[14] This trump card, in the form of nuclear bombs, was expected to be effective for decades to come. As Mahnken

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[12] "Reds Fire 'Moon' into Sky!," *Chicago Tribune*, October 5 1957, 1, accessed January 20, 2017, http://archives.chicagotribune.com/1957/10/05/page/1.
[13] Thomas G. Mahnken, *Technology and the American Way of War* (New York: Columbia University Press, 2008), 16.
[14] Ronnie D. Lipschutz, *Cold War Fantasies: Film, Fiction and Foreign Policy* (Maryland: Rowman & Lifflefield

observes, General Leslie Groves (the former head of the Manhattan Project) estimated that the American nuclear monopoly would last for at least two decades. Other officials agreed, including Vannevar Bush, who chaired the Office of Scientific Research and Development under the Franklin Roosevelt presidency. Noting in early 1949 that "to build a large stock of atomic bombs is an undertaking that will strain the resources of any highly industrialized nation," Bush also agreed that the American nuclear monopoly was durable and likely to last for some time.[15] Assuming their nuclear monopoly was secure, U.S. officials believed they could

information to the Soviets. With their nuclear monopoly broken and the spread of communism proceeding seemingly unchecked, the Americans' confidence that characterized the late 1940s gave way to "war fear, fever and fervor."[20] Nevertheless, the Americans had almost five years to build up their nuclear arsenal. Surely the existing nuclear stockpiles would be able to stave off the communist threat for some time to come.

Although the U.S. had a much larger nuclear stockpile at the outset of the 1950s, American officials feared that the Soviet Union would surpass them in nuclear and military capability. In April 1950, the CIA estimated that the Soviet Union could accumulate two hundred nuclear bombs by 1954. To CIA officials, this was the number that could allow the Soviet Union to defeat the U.S. in a war, so increasing urgency was placed on the U.S. nuclear program. In August 1953, fears escalated even further as the Soviets tested their first hydrogen bomb, only a year after the United States.[21] It was not, however, only nuclear weapons that concerned American officials at this time. In addition to the Soviet nuclear threat, the Soviets' rapidly advancing ballistic missile program and expanding bomber fleet further contributed to the Americans' anxiety. Following the successful flight of a Soviet R-5 intercontinental ballistic missile (ICBM) in March 1953, a report from the Strategic Missiles Evaluation Group noted that "most of the members believe that the Russians are probably significantly ahead of us in long-range ballistic missiles."[22] Taking into consideration the emerging missile gap, the CIA warned that "the U.S. is losing, if it has not already lost, its longstanding invulnerability to crippling attack."[23] Then, in May 1954, the Soviets unveiled their first strategic jet bomber, the M-4 Bison. Months later, they revealed the Tu-95 Bear as their second jet bomber. These aircraft came on

[20] Lipschutz, *Cold War Fantasies: Film, Fiction and Foreign Policy*, 35.
[21] T.A. Heppenheimer, *Countdown: A History of Space Flight* (New York: John Wiley & Sons, 1997), 77.
[22] Ibid.
[23] Heppenheimer, *Countdown: A History of Space Flight*, 77.

the heels of the Americans' B-52 jet bomber, which had only been developed a year earlier. To

San Francisco and Seattle began providing citizens with military dog tags for post nuclear attack identification purposes.[27] Clearly, many Americans perceived themselves to be on the brink of destruction.

This paranoia found expression in the rising popularity of the science fiction genre. As John Griffiths observes, "by the 1950s science fiction had become a firmly established genre… with a wide non-specialist following." Considering science fiction has been reported to be a "particularly sensitive form of [entertainment] for reflecting the moods and psychoses of its host society," it quickly became a popular medium through which American Cold War paranoia was reproduced, and disseminated.[28] This popular new genre would play a significant role in casting Americans' attention towards the moon.

The science fiction genre focused on timely issues through all of its mediums (movies, T.V. shows, comic books, etc.). In the early 1950s, with the beginning of the nuclear arms race, science fiction writers and producers created "a speculative but still devastating appraisal of radiation hazards and their consequences."[29] This led to the rise of the "radiation-produced monster" sub-genre, which depicted various mutants and monsters that were created by radioactive explosions or leaks.[30] An example includes the movie *Them!* (1954), in which a nuclear test in a New Mexico desert causes a colony of ants to mutate to enormous sizes. In

communist hoards" that the Americans so deeply feared. [31]

technology."[36] Although both the Americans and the Soviets were yet to launch anything into outer space, the Space Age had certainly arrived in the U.S. by the mid-1950s.

With science fiction serving as their "graphic inspiration," American scientists and officials embarked on the Space Race with the Soviet Union.[37] Preliminary discussions on space operations had begun by the early 1950s, as U.S. officials began seeking new and innovative ways to spy over the Iron Curtain. Then, in 1955, plans for rockets capable of reaching outer space left the drawing board when U.S. scientists began working on a satellite program in preparation for the 1957 International Geophysical Year (IGY).[38] Yet, despite the Americans' obsession for technology and all things space related, progress towards an outer space capable

astronaut John Glenn, “the American-made television sets, transistor radios, and cars with tail fins… seemed frivolous next to the evidence of Soviet scientific achievement beeping overhead.”[44] Foh Kohler and Dodd Harvey have accurately characterized American reactions following the launch of Sputnik I, which they refer to as “an orgy of self-denigration.”[45] Not only did the Soviet Union seem to have surpassed them, the launch of Sputnik I also appeared to “reflect genuine merit in the Communist system” as the Soviets had lagged tremendously behind in bombers and nuclear weapons only a few years earlier.[46] The American press had a field day with the event and exacerbated the hysteria. In an interview with U.S. military official Major General John Homer, the *Chicago Daily Tribune* reported that the same rocket used to propel Sputnik I into space “could be used to hurl deadly transoceanic missiles.” In addition to new long range strike capabilities, Homer believed that the Soviet Union could use their new satellite technology to spy on the entire world and locate western defence systems and nuclear stockpiles, requiring a “

Chapter Two: Reds on the Moon

6 December 1957 dawned as a possible day of redemption for the United States. The Navy had finally finished the Vanguard rocket, and the most recent model stood patiently on its launch pad at Cape Canaveral. At the top of the 72-foot rocket sat the TV3 satellite, which weighed in at three pounds and was not much larger than a grapefruit. “Yet,” as historian T.A. Heppenheimer observes, “it was weighty indeed, for it carried the hopes of the nation.”[50] This was the Americans’ first attempt to join the exclusive club of space-fa

orbiting around up there."[52]

Eisenhower began to search outside the military for a new organization into which the nation's top rocket scientists could be consolidated.[55] Initially he tasked the National Advisory Committee for Aeronautics (NACA) with overseeing all space exploration efforts, but it quickly proved to be incapable of making the kind of progress needed to match the Soviet program. Therefore, Eisenhower turned to the President's Science Advisory Committee (PSAC) for further proposals. PSAC recommended that NACA be transformed into a new and effective organization, to be called the National Aeronautics and Space Administration (NASA). The new agency would assume the responsibility of all space exploration efforts, and the development of space rockets would be shifted from the military to NASA's scientists. In fact, NASA would be completely separate from the military, as it would be designated a civilian government organization. Eisenhower agreed, and on 29 July 1958 he signed the National Aeronautics and Space act which transformed NACA into NASA.[56] Surely, now that the nation's top rocket scientists were consolidated into a single organization that held a "blank cheque" to pursue its goals, the gap between the Soviet and American space programs could finally be closed.[57]

Despite the formation of NASA, the Americans would still need a significant amount of time to catch up to the Soviet space program. In January 1959, the space gap was further widened with the Soviets' launch of Lunik I. This time, however, the gap was not the only issue concerning U.S. officials; the nature of the race had been changed completely. The Soviets were now shooting for the moon. Indeed, the Soviets' first "moon shot" was only a partial success, as the Lunik I probe missed the moon by nearly six thousand kilometers. Nevertheless, it became the first spacecraft to escape earth's orbit, the first to pass near the moon, and the first to enter an

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[55] Joan Johnson-Freese and Roger Handberg, "Realigning NASA's Destiny" in *Technology in Society* 13, no. 4 (1991): 435, http://www.sciencedirect.com.ezproxy.library.uvic.ca/science/article/pii/0160791X9190045X.
[56] Reichstein, "Space-The Last Cold War Frontier," 117.
[57] Johnson-Freese and Handberg, "Realigning NASA's Destiny," 434.

to treat the Soviets' promise as an idle threat.[62] In light of this, Project Horizon warned that the Soviet Union stood to gain a number of political and military advantages if it were to establish a presence on the moon. Politically, the project's analysts feared that the establishment of a Soviet lunar colony would be "disastrous to our nation's prestige and in turn to our democratic philosophy." Officials further suggested that the Soviets could establish moon-based weapons systems with which they could strike both earth and space targets. They also feared that the Soviets could use their moon bases to prohibit any American landings or colonization attempts, thus preventing the U.S. from gaining any of the "highly advantageous" benefits that came alongside lunar colonies.[63] Project Horizon's message was clear: it was very possible that the Soviets could establish military bases and colonies on the moon in the next decade. If they did this, the Soviet Union would hold an invaluable advantage in the Cold War.

Project Horizon's analysts did not limit their scope to political and military advantages that the Soviet Union might gain by establishing lunar bases. They took their study as far as a consideration of legal issues that could arise from a Soviet colonization of the moon. These make up a large portion of the second half of Volume I, and are presented as a series of "problems" and then subdivided into a number of different scenarios. Problem I, for example, asked what the legal implications for the U.S. might be if the Soviets hard landed (a landing where a vehicle does not slow itself down prior to impact with the surface) an unmanned vehicle on the moon and proceeded to claim the entire lunar surface for themselves. It then expanded the issue, asking if these claims would hold more legitimacy if the Soviets landed men on the moon who then claimed the moon for their country. Finally, the analysts wondered how the U.S. would react if

[62] United States Army, *Project Horizon, Volume I: Summary and Supporting Considerations*, 20 March 1959, 3, accessed February 1-15, 2017, http://www2.gwu.edu/~nsarchiv/NSAEBB/NSAEBB479/docs/EBB-Moon01_sm.pdf.
[63] Ibid., 3, 2.

"the USSR states that the Russians on the moon have the capability to destroy any aggressor."[64] Problem II posed a more specific question about lunar claims: would the U.S. be obligated by international law to respect Soviet lunar claims if they covered a "reasonable area" of approximately 2000 square miles?" The study then presented a number of "opinions" on the aforementioned problems. In consideration of Problem I and its subsections, the analysts suggested that the "landing of men or flags or even a ship bearing a flag would have no affect [sic] upon territorial claims to the lunar surface as a matter of law." They acknowledged, however, that if the Soviets threatened to destroy American landing attempts, "a new principle of lunar law" would have to be postulated and the issue may be left to resolution by force.[65] With respect to Problem II, the analysts suggested the legitimacy of a specific claim would depend on "effective occupation" of the territory in question. They also recognized once again that "national strength and even resort to war" may be required for resolution of the issue.[66] Although both the Soviets and the Americans were far away from developing the technology necessary to establish moon colonies, U.S. officials had clearly began to perceive the moon as the next Cold War frontier. To them, "the world beyond tomorrow," as depicted by the science fiction series of the time, had arrived by 1959.[67]

Official U.S. concerns

landing. Noting that the Soviets had launched three unmanned lunar vehicles that year, the report asserted that the Soviets continued to hold a strong interest in lunar exploration. Observing the "considerable technical progress" the Soviets had made in lunar exploration and their development of new booster rockets, the report estimated that the Soviets could attempt a manned moon landing between 1967 and 1969.[68] While the 1963 CIA report considered only the possibility of manned lunar landings, other reports mirrored Project Horizon in their science fiction-like predictions. According to John O'Hara's declassified NSA report, many American officials believed that the first soft lunar landing (a landing where a vehicle slows itself down in order to land on the surface gently), achieved by Lunik IX in February 1966, was a precursor to a Soviet moon colonization attempt. Some of these officials went as far as to predict the Soviets would place "nuclear weapons on the moon and use it as a launching site."[69] Clearly, a trend had developed: each time the Soviets reached a new lunar exploration milestone, American officials reacted by vastly overestimating Soviet capabilities.

The Soviet accomplishments further exacerbated American anxieties and insecurities. By the 1960s, the Soviets had made astounding technological progress; they had developed the first ICBM, placed the first satellite into orbit, launched the first animal into space, and sent probes to the moon all within the span of two years. Meanwhile, the American space program was forced to play catch up. More often than not, the Americans took months to match Soviet space accomplishments. Even with the creation of NASA, which consolidated the nation's rocket scientists and had access to vast monetary resources, the Americans remained

fiction infused imaginations running wild, some American officials began to fear Soviet lunar colonies were on the horizon. Considering the speed at which outer space technology was developing, it seemed only a matter of time until the moon became the next, and perhaps final, Cold War frontier. Thus, motivated by the speed at which space technology had been advancing and the possibility of a red moon, American officials began planning their approach to the Space Race for the 1960s. If the moon was going to be the next Cold War arena, they would have to get there and militarize it first.

Chapter Three: Star-Spangled Moon Bases

Fifteen minutes before a scheduled press conference, General Greene gave a quick personal interview to journalist Polly Prattles. The topic of their interview was the upcoming circumlunar flight, which was to be flown by none other than the crack female pilot Colonel Briteis. General Greene began with a quick outline of the mission, which was to be launched from the newly developed U.S. military space station. After launch, the flight was to proceed to the dark side of the moon, take a handful of pictures, and then return to the space station. Upon hearing this, Prattles prodded General Greene for the objective behind the circumlunar flight. After all, she had heard numerous complaints that the upcoming flight was simply "just another way of wasting tax money." Without missing a beat, General Green informed her that the circumlunar flight was "a necessary step before establishing a base on the moon." Going into greater detail about the proposed moon base, General Greene explained that "if there is going to be a base on the moon, and there will be, it's in my business to see that it's in safe hands – our own." The immediate purpose of this base would be the military security of the United States, which General Greene considered "the most important thing in the world." Its importance went beyond American security concerns, however, as the moon base would ultimately be used to "consolidate the safety of the free world."[70] It was only a fictional conversation, played out by actors Hayden Rorke and Barbara Morrison on the set of the 1953 film *Project Moonbase*. Yet, what the directors, actors, and audience of *Project Moonbase* did not know was that almost identical conversations would be carried out at the top levels of the U.S. military in only a few years.

The 1950s had witnessed an unprecedented level of scientific advancement, particularly in the fields of rocket and space technology. With new outer space milestones being reached

[70] Richard Talmadge, *Project Moonbase*, 1953, accessed February 11 2017, http://www.dailymotion.com/video/xms8x1_project-moon-base_shortfilms.

every few months, the American public of the 1950s was “left to wonder about the line between reality and fantasy.”[71] Indeed, as historian Lincoln Geraghty notes, American citizens during this time could very well ask themselves why they might bother watching science fiction films “when you could turn on the TV and watch the real thing as it happened.”[72] There was a strong perception that real science was beginning to take over from the world of fiction, and the result was a nation-wide feeling of technological optimism.[73] Naturally, this feeling was a cause for both excitement and fear among the American people. As explored above, it was not difficult for American officials to observe the Soviet lead in space technology and predict that moon bases were the next logical progression of the Soviet space program. Now that their attention had been drawn to the moon, however, these same officials began to consider a variety of different ways the U.S. could use the moon to its advantage. Pulled from the realm of science fiction, the moon came to be perceived as the next arena in which Cold War competition would be played out. If the U.S. could get to the moon before the Soviets and use it effectively, the Cold War scale could very well be tipped permanently in the Americans’ favour.

One of the first studies submitted for the purpose of recommending American military action on the moon was the

aspects of the lunar base plan. Volume I, entitled “Summary and Supporting Considerations,” provided a broad overview of the project and a number of justifications for the development of American lunar bases. Volume II, entitled “Technical Considerations and Plans,” went into further detail about the development schedule, launch procedures and the lunar base itself.

Volume I begins with a number of justifications for the lunar base project. Although the analysts specified that the moon could provide the U.S. with invaluable commercial, military, scientific and political benefits, they seem primarily concerned with the military considerations. Specifically, the analysts considered earth and space surveillance systems and military communication via moon based relay stations to be both possible and effective. Furthermore, they predicted that “the employment of moon-based weapons systems against earth or space targets may prove to be feasible and desirable.” Indeed, moon-based nuclear launch sites appeared to provide the U.S. with an escape from nuclear stalemate. With the ability to launch nuclear weapons from the moon, the U.S. would possess a strong deterrent to war because of the “extreme difficulty, from the enemy point of view, of eliminating our ability to retaliate.” In addition, if the U.S. established these outposts first, it would be in a position to counter or neutralize enemy moon landing attempts, thus ensuring that this wealth of military advantages would belong to the U.S. alone.[74] In light of these advantages, Project Horizon’s analysts recommended that “the establishment of the outpost should be a special project h004C/ay pr2Dth(of thorTBT1 (

While Volume I did offer a broad outline of the lunar base itself, Volume II went into far greater detail about the specifics of the proposed base. Each aspect of the lunar base received its own extensive subsection, which are too detailed to explore fully in this study. Broadly, however, t

This point is further proven by Volume II's exploration of details beyond the construction of the lunar base and transportation methods. The analysts went as far as a consideration of everyday essentials for an astronaut's life on the moon. The "lunar clothing system," as it was called, was planned from the protective metal outer layers all the way down to cotton undershirts, woollen socks and cotton undershorts.[79] The astronauts' sustenance was also accounted for, as each astronaut was to be allocated four pounds of food per day, divided into pre-packaged individual portions. Astronauts working outside the base would be provided with paste foods in collapsible containers, which would be locked into the helmet as to prevent loss of internal suit pressure. In addition, each astronaut would be provided with three quarts of water per day. Even the utensils were considered; knives, forks and spoons would be made of a special type of polystyrene.[80] The astronauts' hygienic needs were considered as well, as 40 pounds of launch weight was reserved for electric shavers, nail clippers, brushes, and deodorant.[81] Once again, it seems clear that lunar bases were not just a matter of speculation for Project Horizon's analysts. Lunar bases appeared to be the next logical progression of the Space Race, and the Army was fully prepared to embrace the challenge.

The U.S. Army's Project Horizon was not the only military study that explored the possibility of manned lunar bases. In April 1960, the U.S. Air Force also submitted a two-part proposal for American lunar bases entitled the Military Lunar Base Program. Unfortunately, we have access only to Volume I of this study; Volume II has either been lost or has yet to be declassified by the U.S. government. Nevertheless, Volume I provides us with an informative summarization of the program. In its justifications behind the lunar base project, the Air Force

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study closely resembled Project Horizon. Air Force analysts perceived the moon to have immense strategic value, and argued that it could "provide a site where future military deterrent forces could be located." It also considered the possibility of moon-based weapons systems, as the analysts believed a "lunar based earth bombardment system" could have an accuracy range of two to five nautical miles. Since the analysts had concluded a manned lunar base was "technically feasible," they recommended that the project be started immediately so that the base could be completed by December 1968. [82] Furthermore, although it was less specific, the recommended lunar base itself was similar to that suggested by Project Horizon. Striving to meet military requirements, the analysts believed the base should be located underground and "should provide suitable accommodations to support extended tours of duty." In total, the analysts predicted their project to cost 7.7 billion dollars.[83] Thus, the lunar base concept was not exclusive to the U.S. Army. Considering that two different military branches produced similar proposals for the moon, it seems that lunar bases were not uncommon ideas at the time. The perception of the moon as the next Cold War frontier was one that spanned the U.S. military.

U.S. plans for the moon were not limited to lunar bases. The Study of Lunar Research Flights, completed by L. Reiffel on 19 June 1959 for the Air Force Special Weapons Center, examined the possibility of detonating nuclear devices on the surface of the moon. To Reiffel, the explosion of a nuclear bomb on the moon could provide the United States with valuable military information. In particular, Reiffel believed the United States would learn to detect nuclear space tests performed by other countries, and gain a better understanding about the "capability of nuclear weapons for space warfare." Reiffel's study also asserted that a nation

Epilogue

Despite the enormous amount of time and effort

the fear of nuclear fallout and radiation, as demonstrated by the prominence of the radiation produced monster sub-genre. Then, in the mid to late 1950s, writers and producers shifted their attention to outer space as discourse on rockets and space travel became more popular among both the American public and officials. The result was an obsession for all things space related, as demonstrated by the popularity of television space operas and tail-finned automobiles. Therefore, when the Soviets launched Sputnik I, the dramatic American reaction was two-fold. Not only was it made clear that the Soviets had surpassed the U.S. in terms of missile and space technology, it was also humiliating that a nation so proud of its technological advancements and futuristic amenities had been beaten into space by the communists. One way or another, the U.S. felt obligated to close the gap between the Soviet space program and its own.

Unfortunately for the Americans, the Soviet space accomplishments continued. Hoping to

With the lines between science fiction and reality already blurred, U.S. military officials set out to claim the moon. Using military and political advantages as justifications, both the U.S.

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