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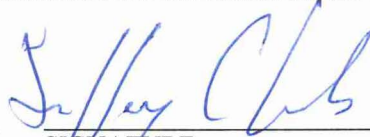
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DURING THE COLD WAR

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**American Futurism in the Atomic Era:
Popular Technological Visions and Marketed Conceptualizations of the
Future during the Cold War**

Gina Plumey

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Abstract

This thesis examines the significance of marketed visions of the future following the Second World War on the American public. Visions, predictions and forecasted depictions of the world of the future, collectively referred to as futurism, highlighted the ways in which *tomorrow* would improve the quality of life for the average American citizen through innovative transportation methods, sustainable urban environments, space exploration, and other technologies to ease the burdens of daily life. This thesis argues how these visions were used as a tool to promote consumerism, maintain nationalism, and by the late 1950s through the 1960s, stimulate interest in the space program. The later was a government sponsored goal that represented the metaphorical strength of the nation and capitalism as an ideology. On July 20, 1969, two American astronauts landed on the surface of the Moon. For the American population, this moment involved a lead up which predated the creation of NASA and President Kennedy's

announcement of getting American citizens to the Moon before the Soviets. Businesses, media corporations, government agencies, and artists utilized futurism to encourage Americans in their fiscal support, which would aid in these visions becoming a reality. Marketed futurism began in the 1920s and continued through the Second World War. However, the arrival of the Atomic Age, Red Scare tactics, and fears for the national economy during the Cold War, provided an atmosphere which made these visions a plausible reality for the average American. The overtly positive connotations of futurism are in reaction to the altered perceptions of science and technology following the world's public introduction to nuclear technology. Therefore, the democratization of science in the mid-twentieth century, as well as changes to the public discourse regarding science and technology, provide an important aspect to the contextual equation which explains why futurism was pushed on the public and why Americans were so receptive to it throughout the space age.

Keywords: Futurism, Atomic Culture, NASA, Consumerism, Cold War, Space Race, Technology

Introduction

On July 21, 1969, American astronauts successfully landed and walked across the surface of the Moon. That moment represented the culmination of eight years of intensive work at an enormous expense, but it also demonstrated a triumph of over two decades of marketing campaigns, which portrayed a vision of the future that involved American space colonization, personal robots, flying cars, jetpacks, and automated communities where even the weather would be determined by design. Those marketed dreams with the added help of political influence, carried the underlying goals of preventing the defeat of capitalist ideals and keeping the American citizenry content and prosperous.¹ It all seemed in the realm of possibility with Neil Armstrong's "one giant leap for mankind."² However, immediately following the Apollo 11 Moon landing federal funding was slashed, the public's interest waned, and after 1972, no one returned to walk on the Moon again. Just as with the Apollo program, many of the futurist visions that years of marketing and PR campaigns had fostered, disappeared as well.

This thesis project examines the post-Second World War period up through the space race and the initial years of the 1970s during which the National Aeronautics and Space Administration (NASA) saw immediate defunding by President Richard M. Nixon. The primary purpose is to consider how visions of the future changed from previous eras through the space race. This involves examining the public perceptions of technology during the arms race of the

¹ The Cold War environment encouraged the future studies movement through the contemplation of threats and solutions which trickled down to social aspects and consumerism. Government funded agencies such as RAND Corporation and the Stanford Research Institute, contracted futurists to come to develop military based strategic solutions to combat a variety of potential social issues. Kaya Tolon, "Future Studies: A New Social Science Rooted in Cold War Strategic Thinking," *Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature* (New York: Palgrave Macmillan, 2012) 45-62.

² Neil Armstrong, 1969, https://www.nasa.gov/wav/62284main_onesmall2.wav.

1950s and the space race of the 1960s. In doing so this thesis highlights how Americans' conflicting opinions of science and technology following the world's introduction to superweapons was addressed through national marketing campaigns that encouraged consumerism as a way to support the nation during the Cold War. Images of the future played a key part in this marketing campaign in a way that previous iterations of futurist imaginings had not been used before.

For the purposes of this project, the term futurism will be used to describe specific examples or the body of work, whether it be visual or literary, created with the intention of distributing to the public a specific vision of the future.³ Additionally, *futurist* describes individuals or collective entities who created or were involved in the process of creating concepts, images, stories, and visions of an imagined future.⁴ Futurist imaginings were not unique to the era but the proclamation of successful space travel in the late-1950s as a political move for scientific and intellectual dominance during the Cold War provided higher stakes for success than the routine predictions of economists, scientists, and creative futurists in the distant

³ It should be noted that this project is not attempting to lay claim that futuristic visions in all the potential variations (utopic, dystopic, technologic prediction, economic projection, etc.) were unique to the Cold War. It aims to highlight the specific context of the period which facilitated the dissemination of futurist visions to the general public in order to be utilized in such a way to encourage support for endeavors that could not show results with short-term progress such as the promise of viable space travel and colonization (for more see *NASA* and the *Futurism Space* sections).

⁴ David Nye, "Technological Prediction: A Promethean Problem," in *Technological Visions: The Hopes and Fears that Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Bal-Rokeach (Philadelphia: Temple University Press, 2004), 159-176. David Nye classifies variations of futurism to define the different purposes for a given futurist vision. However, his argument that visions are more about the dreams of possibility than the reality support the reasoning for why popular futurist visions that were embraced by the public during the Cold War began to decline following the space race (a question which is pondered in slightly outdated works, which predate contemporary space agency timelines of Extraterrestrial space missions, such as Marina Benjamin's *Rocket Dreams*, 2003).

past and post-space race era.⁵

As tensions rose between the United States and Soviet Union after the Second World War the prevalent fear that capitalistic systems would crumble had increased. Media outlets and government sponsored propaganda perpetuated this dystopic vision. Futurist images had been used throughout the 1950s as a tool to spur on American consumerism in an anti-communist effort. Businesses and government agencies used this fear to push citizens into spending to uphold a show of nationalistic pride. Even as anti-communist interest started to decline, the marketed materials of futurists during the Cold War was an integral part of keeping the national patriotic interest alive during the years of the space race. Examples of futurism were seen in various forms of popular entertainment, common advertisements, and at special national events such as the successive World's Fairs, and through the promotions of influential individuals like Walt Disney. Recent arguments demonstrate that NASA's accomplishments in the 1960s were not only a scientific achievement but a marketing and public relations triumph. Only through an aggressive marketing campaign and through cooperative efforts with film and television companies, did NASA successfully capture the attention of the public.⁶ This argument highlights the conflicting historical memory on the space race and demonstrates how heavily the American public was impacted by futurist imagery.

By the early 1970s, NASA's projects and the representations of scientists in futurism

⁵ John Perry Barlow, "The Future of Prediction," from *Technological Visions: The Hopes and Fears that Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Bal-Rokeach (Philadelphia: Temple University Press, 2004), 177-185. Barlow states in his article, attempting to distill historical futurism, "the best way to invent the future is to predict it—if you can get enough people to believe your prediction, that is," 178.

⁶ David Meerman Scott and Richard Jurek, *Marketing the Moon: The Selling of the Apollo Lunar Program*, (Cambridge: MIT Press, 2014).

seemed to have lost their appeal to the American public. Part of this can be attributed to federal budget cuts which immediately followed the American victory against the Soviets in the final leg of the space race.⁷ Before the launch of Sputnik into orbit in 1957, anti-Soviet rhetoric was on the decline. However, that rhetoric was revitalized as the space race kicked off and remained in the subtext of the marketing campaign pushing consumerism through futurism. By the end of the Apollo missions the American and Soviet Cold War had cooled into détente and the economy was beginning to be hit with war influenced stagflation. Dreams of the future were hard to sustain without a unifying goal while marketing and futurism parted ways. While individuals continued to present futuristic concepts, generally the ideas of specialists such as scientists, engineers, and tech professionals were kept within industry boundaries. Additionally, as the Cold War endured, the early panic of the looming nuclear threat ebbed away for the average citizen. Futurism also shifted course as technology evolved through computer advancements and the old visions were replaced with talk of artificial intelligence and the promise of “big data.” Dystopian and science fiction themes solidified as a marketed genre by the 1970s, with the catalogue exemplifying entertainment and narrative storytelling, rather than cautionary tales, predictions, and contemporary allegory, which defined the work in the early to mid-century.⁸

Scholarly work on the topic of futurism is spread throughout many disciplines. Futurism as a topic is viewed through the lens of the intellectual movement focusing on government funded think tanks, through economist predictions, and through literary and film critics who

⁷ NASA's budget cuts coincided with a minor recession towards the end of 1969 as well as an increasing call to redirect funds for immediate social concerns. Robert Heilbroner, *Visions of the Future*, (Oxford: Oxford University Press, 1995) 88.

⁸ The 1950s and 1960s saw the emergence of many new works and styles that impacted how the genre would be transformed in later decades. The speculative fiction produced through the space age focused on dystopian themes in relation to Cold War big brother fears, AI technologies, and imagined space colonies. The 1970s saw a transformation of the genre building upon itself with epic space operas like Star Wars.

focus on the growth and divergence of the science fiction genre during the mid-twentieth century. Additionally, there are numerous collections in publications and online databases showcasing images of the future from the mid-twentieth century. However, they are generally presented with a pop-culture enthusiasts' interest in mind and lack deeper analysis beyond the subtext commentary on the contextual background.⁹ The scholarly work available also has yet to take a close look at futurism through any particularly defined scope. The written work on the subject generally takes a broad look at the topic and covers a vast time period which aims to focus on the psychological relationship of technology's impact on societies.¹⁰ Some scholars attempt to tell the grand narrative of humanity's relationship with the future. Those that focus on the middle of the twentieth century largely view the interwar years with the beginning of the Cold War as marking the end of the futurist movement. Existing scholarship on futurist images has not given the primary focus to the Cold War years which this thesis aims to cover.¹¹

⁹ In a brief essay published to introduce a collection of futurist images titled *Future Perfect: Vintage Futuristic Graphics*, Bruce McCall argues that optimistic futurism ended in the early 1950s and the public interest in the topic was over. He also argues that the 1920s-1950s era of futurism contained no examples of pessimism or dystopian themes which were more prevalent during the Cold War years. While there is definitely a shift he fails to account for the marketed images which were still pushed on the public to stimulate consumerism and raise support of the space program. Additionally, his statement on dystopia ignores the existence of arguably the most significant works in the genre which were all published before 1950.

¹⁰ Robert Heilbroner, *Visions of the Future*, (Oxford: Oxford University Press, 1995). Heilbroner attempts to tackle the concept of mankind looking towards the future from the beginning of recorded history to the present. The primary purpose serves as an introductory work to the study and a call for further scholarship which could aid in understanding the pattern of humanity's fascination with predicting *tomorrow*. See also, *Technological Visions: The Hopes and Fears that Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Bal-Rokeach (Philadelphia: Temple University Press, 2004).

¹¹ Joseph Corn and Brian Horrigan, *Yesterday's Tomorrows: Past Visions of the American Future*, (Baltimore: The Johns Hopkins University Press, 1996). Corn and Horrigan's work is a publication that provides commentary alongside the primary source images. He draws from various print ads such as *Popular Mechanics* but also considers commissioned works, such as was seen for vehicle designs, city planning, and military technology. However, aside from going into potential military schematics during the Cold War he largely avoids that period and focuses on the previous decades as well as the aftermath of the reception of science fiction in the 1980s.

Furthermore, work on futurism and the view of progress that was advertised during the Cold War remains dependent on a wave of interest, current space agency goals, and other current events. This thesis emphasizes how Cold War sentiments provided a new direction for futurism and that it was not until this period that visions of the future had been fully embedded into American culture.¹² While there were many individuals making various predictions on the impact of future technologies and economic prosperity for the previous century, many of those were kept within particular sectors of influence. Marketing capabilities reached new heights with the home television following the Second World War. Additionally, during the mid-twentieth century Americans experienced an unprecedented pressure to increase consumer habits which replaced long traditions of frugality formed through periods of scarcity.¹³

Works on the public perception of the space race are still significant to this study in their consideration of the historical memory in terms of how impactful futurism was on the public. Monographs such as Jesse Lee Kercheval's *Space: A Memoir*, published in 1998, and Marina Benjamin's *Rocket Dreams: How the Space Age Shaped Our Vision of a World Beyond*, published in 2003, combine historical context, journalistic investigation, and memoir to tackle the question of what happened to the public interest in space exploration, which was a significant part of futurist visions during the Cold War. In considering the sentiment of the age it remains important to question the legitimacy of nostalgic reflection, particularly from young space age enthusiasts of the time, and then the following generations rooted into a heavier science fiction

¹² A distinction which can be witnessed by examining the evolution of the science fiction genre, as it grew as a niche amongst different avenues in the arts and as works broke the genre lines into the mainstream.

¹³ Langdon Winner, "Sow's Ears from Silk Purses: The Strange Alchemy of Technological Visionaries," in *Technological Visions: The Hopes and Fears that Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Bal-Rokeach (Philadelphia: Temple University Press, 2004) 39.

boom. These reflections bring out the questions in regards to *promised*, or more accurately marketed, space age technologies.¹⁴ The large answer to that is expanded in David Meerman Scott and Richard Jurek's, *Marketing the Moon: The Selling of the Apollo Lunar Program*, which highlights the argument that the public interest in the space program has been exaggerated in historical memory and only seemed highly prevalent due to an aggressive nationwide public relations and marketing campaign.¹⁵

In placing visions of the future in the context of the historical period this thesis also examines shifts in culture, attitudes, and perspectives regarding the place of science during the atomic era. This thesis answers two questions: first, why visions of the future were so prolific in the public sphere during the Cold War and, second, why that era is unique for its proliferation of futurist visions in terms of the type of predictions and the scope of the audience. Through that examination this thesis will explain why these visions retreated so abruptly from prominence following the Apollo missions. In some ways the overt optimism and idealism of these marketed visions contributed to their decline in frequency and in the public interest. Changes in production techniques, influencing both standardized quality and increased quantity outputs, created a new kind of American consumerism. Advertising and marketing increased in prominence to move products into consumer hands. Additionally, the changing role and views of science immediately following the introduction of nuclear technology is a significant aspect under examination in order to understand the public's relationship with marketed innovations. In considering the ethics behind their profession, some scientists, particularly those directly involved with the Manhattan

¹⁴ Robert Heilbroner, *Visions of the Future*, (Oxford: Oxford University Press, 1995); Jesse Lee Kercheval, *Space: A Memoir*, (Chapel Hill: Algonquin Press, 1998); Marina Benjamin, *Rocket Dreams: How the Space Age Shaped Our Vision of a World Beyond* (New York: Free Press, 2003).

¹⁵ David Meerman Scott and Richard Jurek, *Marketing the Moon: The Selling of the Apollo Lunar Program*, (Cambridge: MIT Press, 2014) 34-53.

project, pushed to refocus their work on creating plausible ways of improving daily life for Americans.¹⁶ This resulted in an increased focus among those in the applied sciences, such as engineers, to work with companies and agencies who sell directly to the public. As such, science and marketing worked together utilizing futurism to promote a shared vision of *tomorrow's* ideal society and communities. This thesis looks at the ways visions of the future were marketed to the American public forming unique conceptualizations of progress rooted in the context of the Cold War. This manufactured concept of progress was centered on a show of economic power which would be made a reality through new consumer centered technologies and through the financial support of science and technology industries contributing to the national infrastructure.

Understanding the Development and Context of Futurism in the Cold War:

Before considering futurism during the Cold War, it must be examined from a wider scope due to the nature of progress in science and technological advancement, which is a linear progression that stands upon the building blocks of past innovation and discovery, and is not easily separated into minute categories. The following pages provide background information which help to explain how previous iterations of *futurism* evolved into Atomic Age and Cold War futurism and why they hold different significance to those who were exposed to those visions of the future. Additionally, these sections serves to explore the state and perception of science in the Cold War in order to understand how ideas and practices of science affected those attempting to predict the future through popular culture, consumer product marketing and government organizations.

The History of Futurism: The Distant Past to the Second World War

¹⁶ Richard Rhodes, *The Making of the Atomic Bomb*, (New York: Simon and Schuster, 1986) 124. Also, for further reading see *Futurism in the Past* page.

Humanity's relationship with looking towards the future has been dependent on cultural values and the view of *progress* prevalent at the time. However, futurism has been used in varying forms as a tool throughout history to achieve a number of goals, such as justifying power, weighing potential economic outcomes, avoiding civilizational catastrophe, and honoring the longevity of a culture.¹⁷ Although many ancient peoples valued their pasts instead of the future and viewed progress in terms of how well their present reflected that past, other ancient rulers emphasized prophetic visions showing their rule as an ordained plan which gave legitimacy to their power. Individuals of religious and spiritual significance also used predictions which served as advice and warnings with the goal of ensuring a given society would continue on. Even the various doomsday scenarios, such as the Christian apocalypse or the Norse Ragnarök, served to highlight how long a certain way of life or culture would be predestined to last.¹⁸ Additionally, there were attempts to predict matters of economic concern.

Past cultures had different ideas of progress, but there are numerous examples of futurism being used to consider their specific *tomorrows*. In the modern era examples of futurism cropped up for similar reasons but the focus shifted towards a better future rather than the sustaining of past values. With industrialization, the idea of progress began to shift from a focus of national economic prosperity to quality of life. Communication technologies then facilitated the first major shift which transformed how futurism was distributed and absorbed by wider audiences.¹⁹ Furthermore, as technology improved and ideas became accessible to wider audiences, the ability

¹⁷ Robert Heilbroner, *Visions of the Future*, (Oxford: Oxford University Press, 1995), 1-12.

¹⁸ *Ibid*, 12-43.

¹⁹ *Ibid*, 42. The industrial era highlighted the idea that progress was on a linear timeline and signified the idea of betterment.

for futurists to imagine new uses of technology was facilitated and increased on an exponential level.²⁰

From the last decades of the nineteenth century to the First World War, a theme began to emerge in literary works which involved the use of imagined technology in future societies. These technologies involved new ways to harness energy, the introduction of flying machines, and even early concepts of artificial intelligence and life. While there were instances of these imaginings in previous centuries, it wasn't until the late nineteenth and early twentieth centuries, a period defined by the proliferation of industry and science, that there was an increase of interest in these subjects as evidenced by the amount of literary and textual materials produced as well as the introduction of new publications such as *Popular Mechanics* and *Popular Science* magazines. Countless sketches and prints exist of models and plans for machinery which would not be realized for another fifty to a hundred years. Fiction writers such as Jules Verne and H.G. Wells ignited the public consciousness towards imagining the future.²¹ While some of these works introduced an air of apocalyptic and dystopian warning, the majority maintained that progress in machinery and the sciences was a necessary step for society's future. Even those works with a bleak outlook could be classified more as adventure stories rather than the cautionary tales which would not emerge until the aftermath of the First World War.²² Also in

²⁰ It should be noted that until the 1950s, scientific innovation was promoted as a venture for individual genius. Vivian Sobchack confirms a trend of biopics and media celebrating scientists such as Edison and Bell through the 1940s, which highlight the individualist approach. The post-war era begins a trending emergence in media of science as an institutional and communal effort. Vivian Sobchack, "Science Fiction Film and the Technological Imagination," in *Technological Visions: The Hopes and Fears that Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Bal-Rokeach (Philadelphia: Temple University Press, 2004), 152.

²¹ Jules Verne, *Journey to the Center of the Earth* (1864), *From the Earth to the Moon* (1865), *Twenty Thousand Leagues Under the Sea* (1870), *Around the World in Eighty Days* (1873); H.G. Wells, *The Time Machine* (1895), *The War of the Worlds*, (1898), *The World Set Free* (1914).

²² Jerome Franklin Shapiro, *Atomic Bomb Cinema: The Apocalyptic Imagination on Film*, (New York: Routledge. 2002), 13.

the growing United States economy, industry was witnessing innovations in design such as that done by futurist King C. Gillette with the safety razor and Henry Ford's assembly line produced automobile.

The 1920s was a time of economic prosperity for many Americans. As such, consumerism transformed along with marketing, and as a result concepts of the future began to be seen in many forms of popular media. However, despite the early attempts to market consumer products and with so much new technology available, the public wasn't as receptive to these early efforts to promote futurism. Cities and industries were growing and transforming but many technological changes had not yet taken root on a wide scale as they would by the start of the Cold War (see "Wheels of Progress" video produced by the US Department of Agriculture, 1920s). During the interwar era, science had made significant advances, but much of what was being done in physics in relation to missile research remained classified.²³ The concepts of alternative energy gained popularity with particle research and advancements in science.

Moving closer to the Second World War the interest in researching nuclear energy and power can be attributed to reports of European scientists fleeing to the United States with knowledge and rumors of super weapons being researched in Germany.²⁴ These reports created a dual effect of advancing technology for national security, national pride, and national progress as well as launching a new wave of speculative cautionary works regarding the dangers of going

²³ James Mahaffey, *Atomic Awakening: A New Look at the History and Future of Nuclear Power*, (New York: Pegasus Books, 2009, 180.

²⁴ Ibid, It remains under debate whether or not the rapid advancements from the start of the war by American research teams were because they were under pressure of an invented arms race.

too far with technology.²⁵ However, changes in the American industrial complex facilitated new technologies and accessibilities of new products to wider audiences. These innovations created an initial burst of excitement over the potential of the new and also an initial spike in futurist visions in advertising. While there are many examples of futurism from the 1920s to the 1940s, the end of the Second World War marked several significant changes in this theme. For one, technological advancements, such as household television, altered the way American citizens received information. Additionally, it took time for those ideas of progress to root themselves in societal consciousness, rather than being viewed as a passing trend.

Above all, however, was the dropping of the atomic bombs on civilian populations towards the end of the Second World War, which not only altered the popular American conception of what could be accomplished with science but altered their moral perceptions and raised the questions of *what should* or *should not be explored* with science. The bombs not only introduced the world to an important new advancement in science but they did it in a way which negatively shaped the public's view of nuclear technology as a whole and with such influence much of the work involved since has been either kept hidden or been reported on with deliberate vagueness.²⁶ There was support for nuclear research with the argument and promotion of renewable resources, however there was also a significant amount of warning in the advertising in the form of safety preparedness. In response, dystopic science fiction grew as a genre and trend in other media forms.²⁷

²⁵ See page on Democratization of the Sciences for more on reflections on nuclear technology.

²⁶ Mahaffey, *Atomic Awakening*, 17.

²⁷ Mick Broderick, "Is This the Sum of our Fears?" from Scott C. Zeman and Michael A. Amundson's, *Atomic Culture: How We Learned to Stop Worrying and Love the Bomb* (Boulder: University Press of Colorado, 2004), 127. Broderick tracks and categorizes the changes in dystopic and apocalyptic themes in media from the end of the Second World War through the 1980s.

History of Futurism: Pop Futurism - Urban Design, Streamline Design, and the World's Fairs

Technical magazines such as *Popular Science*, first published in 1872, and *Popular Mechanics*, following in 1902, were both published with the purpose of sharing scientific and technological progress with the common, but still educated, man. While both publications began to emphasize rocket research, nuclear technology, and other pop futurist elements in as early as the 1920s and 1930s, there was a shift in the space race era that showed the influence of rocketry and atomic culture in the designs of vehicles, architecture and everyday products.²⁸

The 1930s saw the emergence of streamline influence in architecture and vehicle design. This could largely be attributed to the growing industry and interest in flight transport. Local diners, train stations, museums, and big businesses like Coca-Cola, erected buildings inspired with aerodynamic design in mind. These designs were featured in magazines as representing modern aesthetics. Personal automobiles debuted at the Chicago World's Fair of 1933-1934, which reflected these elements as well. Pullman, Budd, Chrysler, and General Motors premiered new vehicles with this futurist design. Budd also introduced their stainless steel Zephyr train resembling the Zeppelin airship design. The designs of Norman Bel Geddes took these further and his influence at the 1939 New York World's Fair predicted the future of motor highways.²⁹ The Second World War briefly shifted the focus of consumer goods and early visions of space to militaristic scientific progress with an emphasis on missiles and transportation. The research and development being done during the war years accelerated the progress that later made space

²⁸ Joseph Corn and Brian Horrigan, *Yesterday's Tomorrows: Past Visions of the American Future*, (Baltimore: The Johns Hopkins University Press, 1996) 93-96.

²⁹ *Ibid*, 76-77. Industrial designers Norman Bel Geddes and Raymond Loewy are largely credited with the early examples of streamline design of which the aesthetic later evolved into.

travel possible. The streamline design of the 1930s would shift in the 1950s to feed off the space race fervor incorporating elements of rocket design.

Science and Media: Atomic Research and Culture

In the early 21st century, most references of futurism, with the exception of economic and environmental examples, are brushed aside with cynicism as either too impractical or *fictional* fantasy. However, in previous generations, with the growth of industry and everyday technologies, many people believed the technology in specific works of fiction, could not only be plausible but would come about in time. An important aspect of this belief was the relationship between artists and scientists. There was more collaboration and appreciation of the other field. Additionally, the lines between the sciences, the arts and the humanities were not yet strictly drawn. The nineteenth century saw the emergence of the speculative fiction genre which quickly transformed into early forms of science fiction with authors such as Shelley, Verne and Wells. As the conventions of the genre have solidified over the years, a key aspect of it generally attempts to show the world what challenges society would face if certain technologies were to become a reality.

Since the late 1800s the work of artists and writers have increasingly been influenced by scientific advancement. In tandem their futurist imaginings influenced scientists. In 1914, H.G. Wells published *A World Set Free*, a book based on the concept of destructive nuclear technology, which was influenced by recent work on elemental reactions and atom research. Wells named the superweapon the atomic bomb, which was the first use of that name.³⁰ In 1932 nuclear physicist Leò Szilárd read that book before conceiving of chain reaction concepts which

³⁰ H.G. Wells, *The World Set Free*, (London: W. Collins Sons, 1924).

would be necessary for the science behind the technology for the weapons which would be built.³¹

The general public knew little about nuclear research until the aftermath of the Second World War. However, for those who did have information, in the early days of atomic research the idea that nuclear technology was the answer for sustainable and limitless energy was popular.³²

Although this early view was shaken with the world's violent introduction to nuclear technology, by the 1950s, futurist imagery involving scientific progression had been imbedded in American marketing and seemed to have been embraced by the public transforming the genre of science fiction. So what was it about Cold War visions of the future that appealed to people?

A Unique Vision of Futurism: The Atomic Age and the Early Cold War

The Cold War era gave rise to a collective national feeling of fear, which in turn instilled hope for progress. The perceptions of the future in American media and advertising were rooted in Cold War conceptions of a race to save capitalism against the communist threat. A significant component of this rivalry involved the changing attitudes among the American public with regard to the level of impact science should have on the future. During the Cold War the promotion of nuclear research and the international arms race associated science with opposing messages: sustainable energy and potential destruction. However, leaning on the positive side, visions of the future implied a promise of technological solutions to matters such as consumer products, architecture, urban design, and transportation, all of which helped science retain its association as an avenue of progress.

³¹ Richard Rhodes, *The Making of the Atomic Bomb*, (New York: Simon and Schuster, 1986), 301.

³² *Ibid*, 11-20.

The introduction of the atomic bomb catapulted the world into a new age in which altered perceptions of science, technology and international relations would bring fear and uncertainty. The Atomic Age instilled second guessing over the purpose of science, a lack of faith in the ability of technology to provide a better quality of life and the notion that the American national ideologies were being threatened directly by foreign powers with antithetical ideologies. These concerns and ideas were reported in various forms of American media, such as radio, newspapers, films, and popular fiction. The influence of the atomic bomb was also seen in schools and product and service advertisements. This technology, “transformed not only military strategy and international relations, but the fundamental ground of culture and consciousness . . . the atomic bomb had caused an explosion in men’s minds as shattering as the obliteration of Hiroshima.”³³ Weapons technology developed during the Second World War brought about questions in regards to the limits of damage that should be inflicted in war. However, one of the ways nations answered these fears was to build weapons capable of causing more devastation than the atomic bomb. This, however, did little to gain the public support for scientific advancement, the burden of which fell to businesses and marketing campaigns to popularize the image of atomic culture.

One of the more significant issues with the bomb was the negative attention non-weaponized nuclear technology received. Concerns over sustainable energy were already being brought up in this era. Many physicists believed in the pre-war years that nuclear technology was the answer for the coming energy crisis.³⁴ One of the common futurist images seen in magazines

³³ Paul S. Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (Chapel Hill: University of North Carolina Press, 1994) xxi.

³⁴ Mahaffey, *Atomic Awakening*, 153.

and advertisements involves the society of tomorrow being filled with sustainable and clean energy communities. It is hardly a pointed image, in comparison to the imagery of destroyed cities due to the bomb, but it remained prolific in the post-war decades. The first tests of the hydrogen bombs in 1952 unfortunately did not help scientists' cause for promoting nuclear energy. Early failed efforts at containment of nuclear waste further hurt their cause. Shortly after the first hydrogen bombs were developed and tested in 1952, scientists determined that a finite number of hydrogen bombs being deployed would make life on earth inhabitable. However, thermonuclear weapons were argued to be psychologically necessary as a deterrent in the modern world even if they were never intended to be used. Justified by the Cold War, American citizens accepted the quiet development of this technology but it never fully was embraced. While there was a push for nuclear research upon the promise of energy and progress mixed messages were also common, such as the promotion of the ever-present bomb threat in schools.

Democratization of the Sciences: The Changing Rhetoric of Science

One aspect of the Cold War which made visions of the future unique involves the perception of science. Marketed examples of futurism in the United States saw an increase in prevalence during the Cold War years. While the topic of futurist imaginings gets significant attention in public history spaces due to the accessibility and appeal of the imagery, there is very little academic scholarship on the topic. What is available argues that the primary period of American futurism sits between the interwar years due to the introductions of new innovations of particular concepts of the future. However, while the images were first being produced then, they were not yet immersed into every day public life the way they would be in 1950s and 1960s.³⁵

³⁵ Lynn Spigel, "Portable TV: Studies in Domestic Space Travel," 110-133. Consumers' interests had redefined the purpose of information technology such as the television, facilitating the spread of marketed visions of the future.

The dropping of the atomic bombs at the end of the Second World War damaged the view of science and progress for many people. This resulted in businesses and agencies pushing forth marketed materials to normalize the idea of superweapons in the world. Nuclear research was supposed to provide humanity with an answer to clean renewable energy and launch humanity into a more productive future. At the same time, leading social science experts, with assistance from government funded think tanks, were working to apply methods of science to their fields in order to contribute to the effort of predicting the future for potential threats.³⁶ In order to understand the impact of the world's introduction to the atomic bombs it is necessary to look at the changes in science in the previous decades. Overall, the historiography of scientific progress is highly concerned with understanding the intellectual and psychological implications of modern technology and science on society.

Concepts of the future began to be seen in many forms of popular media by the 1920s as consumer habits prompted new marketing techniques. However, despite the early attempts to gain support for new products and with an abundance of new technologies available, the public wasn't as receptive to these early efforts. Polls conducted by government agencies and private entities show that many people considered new technologies, such as television, to be short-lived fads.³⁷ Cities and industries were growing and transforming but many technological changes had not yet taken root on a wide scale as they would by the Cold War. This period was also less

³⁶ Theodore M. Porter, "Positioning Social Science in Cold War America," *Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature*.

³⁷ Marita Sturken and Douglas Thomas, "Introduction: Technological Visions and the Rhetoric of the New" 3-12. Many technologies are noted to be viewed as passing curiosities before consumer interest later transforms its original purposes into their own uses.

impactful in terms of long-term middle class consumerism with the Great Depression and in the late-1930s a second marketing push was stalled with the Second World War.³⁸

During the interwar era, science had made significant advances and continued during and after the Second World War with weapons and missile technology research. The concepts of alternative energy gained popularity with particle research and advancements in science. Moving closer to the Second World War the interest in researching nuclear energy and power can largely be attributed to reports of European scientists fleeing to the United States with knowledge and rumors of super weapons being researched in Germany. It remains under debate whether or not the rapid advancements from the start of the war by American research teams were because they were under pressure of an arms race which may not have existed to the severity that was feared and reported on.³⁹

While there are many examples of futurism from the 1920s to the 1940s, the end of the Second World War marks several significant changes in this theme. For one, technological advancements, such as household television, which had then been widely embraced, altered the way American citizens received information. It took time for those ideas of progress to root itself in societal consciousness, rather than just becoming a passing trend. Above all, however was the use of atomic weaponry on civilian populations towards the end of the Second World War, which altered the popular American conception of the impact of science and altered the moral perception as well as raised the questions of whether or not limits should be imposed on scientific research. The bombs not only introduced the world to an important new advancement

³⁸ L. Winner, "Sow's Ears...", 39-40.

³⁹ James Mahaffey, *Atomic Awakening: A New Look at the History and Future of Nuclear Power*, (New York: Pegasus Books, 2009).

in science but it did it in a way which negatively shaped the public's view of nuclear technology as a whole and with such influence, much of the work involved since has been either kept hidden or been only vaguely described.

At the beginning of the twentieth century, the atomic hypothesis was only just being embraced by scientists, but even that was still just a theory. The advancements in the first decades of the twentieth century, seen in chemistry, physics, and mathematics, not only catapulted humanity into a new age where science could produce practical advancements but also made possible the instruments of war which would define the modern era.⁴⁰ The changes were rapid and the scientists who studied the widely accepted theoretical laws about the universe, at the turn the of the century, were mostly the same individuals working on secret government projects by the Second World War, who were rewriting humanity's greater knowledge about the physical universe.

The perspective of these scientists are important to understanding futurism because of the changing discourse surrounding science education and their profession before and after the war. Before the Second World War, students of science in America had very loose standards. The curriculum was not the modern one intended to make well-rounded citizens. Instead students pursued a topic in science and focused on personal research with the guidance of faculty. Scientists involved in the Manhattan Project questioned the culpability of current researching scientists and many were voices in the argument to redefine the sciences and science studies in

⁴⁰ Thomas S. Kuhn, *The Structure of Scientific Revolutions*, (Chicago: University of Chicago Press, 1996).

American universities.⁴¹ Previously, scientists portrayed themselves as unconcerned with societal affairs and tried to insulate research processes from political concerns.⁴²

The discourse following the war altered to encourage the idea of a general education which would have the purpose of creating scientists who emphasized human concerns about the potential affects their research avenues could have on humanity. James B. Conant, Philipp Frank, and J. Robert Oppenheimer, scientists influential to the changing standards of university education following the war, aligned themselves and their work with that of artists and writers.⁴³ This was a complicated argument that involved anger and disrespect for the categorization of social sciences, such as psychology and economics, as a science that would see human processes objectively quantified like matter and data in the physical sciences. Many scientists instead preferred to identify themselves as creative individuals like artists and writers.⁴⁴ That is a relationship that, arguably, is as old as humanity's ancient astronomers but directly ties into futurism from the century before.

As felt in the aftermath of the Second World War, the development of atomic instruments of war altered the public estimation of science as an instrument of progress. In *Science, Democracy, and the American University*, Andrew Jewett argues that the discourse of scientists in the post-Second World War period trickled down to affect American conceptions of the future. He explains how in the late 1940s, physical scientists who shaped discourse on science in

⁴¹ Rhodes, *The Making of the Atomic Bomb*, 124.

⁴² Andrew Jewett, *Science, Democracy, and the American University: From the Civil War to the Cold War*, (Cambridge: Cambridge University Press, 2012), 310.

⁴³ *Ibid*, 314.

⁴⁴ *Ibid*, 314.

America increased their efforts to define their objectives in the university system and separate themselves from the social sciences. He states, “they began to actively align themselves with literature and the arts . . . creativity anchored a postwar epistemological discourse that identified scientific knowledge as a product of individual creativity.”⁴⁵ Not only does this shed light on how scientists saw themselves and their work moving forward but it also shows how other fields increased efforts to apply scientific principles and methods. Despite it seeming like society would take a step back from the concept of scientific progress after the dropping of the bombs, people were still embracing the practices of scientists in various applications.

However, there were other effects as a consequence of these changes. Not only were scientists redefining their work but they were considering the morality behind it. Before the Second World War it was not uncommon for a young individual to enter university and have significant control over the coursework they would complete or to work strictly on their personal research with a team or advisor. The concept of general education requirements in universities took prominence only after the Second World War. From the perspective of academics in the sciences they wanted to ensure that the young scientists considered societal implications before embarking on scientific research. This was an obvious response to, at the very least, the promoted guilt of those associated with the Manhattan project. There is a prevalent theme in the historiography, in which the subjective questions of hope for a better tomorrow or fear of the current situation are always at the center in an attempt to rationalize the sentiments of the era.⁴⁶

⁴⁵ Ibid, 314.

⁴⁶ Heilbroner’s *Visions of the Future*; Mahaffey’s *Atomic Awakening*; Corn’s *Yesterday’s Tomorrows*; Barlow’s “The Future of Prediction.”

Hope and fear may have sparked movement in the discourse in regards to the, *what should scientists do*, and *how should they be limited* questions, but the discourse itself affected the advertised perceptions of science and the marketed future of tomorrow. The discourse that was ignited around the democratization of science and the redefining of scientists' place in the universities is a significant aspect in explaining the images which were marketed to Americans in regards to the future.⁴⁷ Engineers began to separate themselves from the theoretical sciences and those concerned with the greater answers to the universe.⁴⁸ It was the physical scientist first that had a part in the products being produced and marketed.

Along with scientists redefining their roles, social scientists were pushing towards aligning their work with the physical sciences more directly. This aided in the legitimacy of prediction but also facilitated the transference of those ideals to businesses and the public. Futures studies developed as an intellectual movement during the 1960s and gained traction through the 1970s.⁴⁹ Government funded think tanks attempted to merge scientific principles and social policy. In 1963, with the use of mathematicians and statisticians, RAND Corporation developed the Delphi Method in an attempt to quantify the communist threat. While these predictions were aimed at military strategy, the goal behind it was centered on applying scientific principles and techniques to unquantifiable data in order to present objective arguments on subjective social relationships.

⁴⁷ C.P Snow, *The Two Cultures*, (New York: Cambridge University Press, 2008). C.P Snow, a professor of Physics at Cambridge, argued in his 1959 lecture that the oppositional attitudes of the scientific disciplines and the humanities was harmful to the very purpose of academic research and human progress.

⁴⁸ Jewett, *Science, Democracy, and the American University*, 315.

⁴⁹ For further reading see works on The Future Studies movement.

The merging and divisions of research fields were also reflected in how scientific research was being publicized. The advancement of nuclear technology in the 1950s was followed by research on intercontinental ballistic missiles. This led into the interest in breaking the Earth's atmosphere. Aside from the scientific achievement of leaving the earth, this theory appealed as a strategic advantage militarily. It was thought it could help with spying, message transmission and provide easy access to other nations.⁵⁰ These ideas however were based on varying perspectives. On the one hand it would be a benefit to a nation's power. On the other, the realization of such technology means other nations would have those same powers or for a time, would be ahead, hence, the advent of the arms race. Those fear based predictions on what missile and satellite technology could provide have all proven to be true.

Cold War Anxieties over Science

Popular sentiment among Americans during the Cold War veered from complacent faith in progress to apocalyptic dread. Media sources portray a range of feelings from hopeful optimism spurred on by economic growth to growing fears about nuclear catastrophe and the communist threat (see "It's Everybody's Business," 1954, a propaganda video encouraging Americans to spend to support capitalism and the nation). It is difficult to authoritatively state the cause and effect of particular events, policies and media. Generally, historical accounts rely on philological evidence to denote trends and significant movements. However, a significant amount of textual and visual material produced during the Cold War was based on manufactured sensationalism. This exaggerated push of marketed futurism distorts the significance that can be given to particular evidence, no matter how abundant. Science fiction works, such as *1984*, *2001: A Space Odyssey*, and the literature produced by Ray Bradbury and Robert Heinlein explored the

⁵⁰ Harold John Blackham, *The Future of Our Past: From Ancient Greece to the Global Village*, (University of Michigan Press: 1996) 259.

questions and issues surrounding how technology will negatively affect society. Anxieties regarding nuclear weapon usage were suppressed in many mediums but the metaphor in science fiction was obvious. Post-apocalyptic civilizations, mutations caused through nuclear catastrophe and mind-control narratives expressed the concerns of unchecked scientific progress. These films and narratives show the dichotomy of how Americans viewed science in the post-war world by assigning archetypes to scientists. Professor of Communications, Victoria O'Donnell, explains that scientists were either, "responsible for the problems that arose, or they were responsible for finding solutions to whatever was threatening the planet."⁵¹ The primary themes of the science fiction genre popularized in the 1950s emerged through the context of the Cold War and the new place of scientific advancement. In contrast, films and documentaries were produced showing only the positives of scientific progress (see "American Engineer, Part 1," 1956, a video promoting engineering advancements for example).

Consumer Culture

The post-war decades mark a significant transformation in American consumerism. The Cold War heightened fears for in defense of capitalism and the future of the American way of life. The arms race and the space race, at their core, were the battles for economic domination. With government organizations, private businesses, and media outlets working together, the 1950s and 1960s were prosperous times for white Americans who were part of a growing middle class economically. Production shifts and population booms were significant contributors to this economic change, however, technological advancements allowing for increased marketing as

⁵¹ Victoria O'Donnell, "Science Fiction Films and Cold War Anxiety," *History of the American Cinema*, Encyclopedia.com, (Accessed September 3, 2019), <https://www.encyclopedia.com/arts/culture-magazines/science-fiction-films-and-cold-war-anxiety>.

well as the push for expenditure during the Cold War also deserve credit. Futurism was a tool in this marketing, both as a goal for production ventures and a theme for public consumption. These changes mark a beginning of the consumer culture period which continues into the 21st century.⁵² Trends in promoting spending had occurred in the interwar years, particularly with the introduction of art deco and early streamline design, however, that marketing was selling the idea of being on trend of the modern period, not necessarily the future push seen in the Cold War. Lifestyle magazines such as audience targeted the variations of *Life* magazines and men's magazine, *Colliers*, embraced the themes of futurism as a tool to promote spending and support of public expenditure on ventures that were technologically aligned.

The announcement of President John F. Kennedy's intentions to put an American astronaut on the Moon in 1961 allowed businesses and agencies to capitalize on the fervor of the space race. Anti-Soviet rhetoric had been on the decline in general news outlets leading up to the launch of Sputnik and Kennedy's speech renewed the sentiment that positive steps were being made to win the race of ideologies. However, the novelty of going to space won out in marketing in the 1960s as people were also interested in new technologies that were made possible through industrial advancements. The evolution of plastics, synthetic materials and transportation technologies propelled this transition forward for the consumer.⁵³

The Futures Studies Movement

⁵² See Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962*, (New York: Blast Books, 2010); and Branden Hookway, *Cold War Hothouses: Inventing Postwar Culture, from Cockpit to Playboy*, (New York: Princeton Architectural Press, 2004).

⁵³ Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962*, (New York: Blast Books, 2010), 10-40, 10.

While futurism spans the work of scientists, artists, and laymen in providing their visions of the future, in the 1960s a specific branch of visionaries united in a combined effort to make economic and policy change. This group included think tanks such as RAND Corporation and the Stanford Research Institute which collectively studied science and social issues to predict future outcomes and eventually affect change. Futurists were contracted to develop military based strategic solutions to combat a variety of social issues in the present and as predicated would crop up in the future by perceiving quantitative data. By using science, they believed they could find a scientific and systematic solution to the world's problems.⁵⁴

Jenny Andersson's, *The Future of the World: Futurology, Futurists, and the Struggle for the Post-Cold War Imagination*, examines the international futurist intellectual movement as it emerged in the Cold War. Andersson studied the futurists, such as Hannah Arendt, Walter Benjamin and RAND Corporation researchers, Olaf Helmer and Theodore Gordon, and their motivations for seeing future studies as a necessary tool for progress. Andersson describes this view of the future as a political issue in the post Second World War era. According to Andersson, "the future emerged as a core problem of human action after 1945 the post-war world was, more than any previous historical world, marked by the idea of human influence, and with the idea of unprecedented influence came new conceptions of consequence, reach, and responsibility."⁵⁵ Andersson delves deep into archives that explain the motivations and impact of 1960s futurists.

⁵⁴ Kaya Tolon, "Future Studies: A New Social Science Rooted in Cold War Strategic Thinking," *Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature*, (New York: Palgrave Macmillan, 2012) 45-62. Futurists Olfa Helmer and Norman Dalkey attempted to use statistics to craft logic based predictions.

⁵⁵ Jenny Andersson, *The Future of the World: Futurology, Futurists, and the Struggle for the Post-Cold War Imagination*, (Oxford: Oxford university Press, 2018) 2.

Kaya Tolon has also recently examined the application of social science in application to Cold War strategy. In an article titled, “Future Studies: A New Social Science Rooted in Cold War Strategic Thinking,” Tolon examines organizations such as the World Future Society, Institute for the Future, and the World Futures Studies Federation. Tolon looks at the RAND Corporation’s use of the Delphi method, an attempt to quantify the damage that could be done if nuclear war were to break out between nations. While acknowledging the impact of futurism on popular culture, Tolon focuses on how the futures studies movement itself affected, “organization of governments, businesses and military forces.”⁵⁶ Tolon credits the impact of the futurist movement to the Cold War period because communication advancements facilitated a global reach.

Businesses Embrace Futurism

The concept of futurism flourished as a trend in the late Victorian era, as a result of speculative and fantastic fiction, which reached wide audiences but was also bolstered with significant advancements made in the sciences. In terms of historical memory, in the 21st century, the idea of continued progress in the past century and a half remains a prominent theme when discussing technology and society’s embracing of science. However, it is often distorted with misrepresentation in regards to the reception of change by wider sects of society. The question must be asked of how much of that can be attributed to hindsight and the contemporary values imposed due to nostalgia over the notion of change and progress from the nineteenth and twentieth centuries.

For the mid-twentieth century it is important to consider the changes science and production had on society and the average consumer. Streamlining of the assembly line, the

⁵⁶ Kaya Tolon, “Future Studies: A New Social Science Rooted in Cold War Strategic Thinking,” 45-62.

introduction and maturation of plastics, the realization of previous theoretical technologies and the changes to the supply and demand equation allowed for unprecedented growth in manufacturing and the American economy. None of those would likely have been possible without the advancements in communications and transportation technologies.⁵⁷ Another aspect to consider along with the changes in advertising and industrial production is the effect of the post-war baby boom. The census data reports the United States population at 140 million in 1944 and increased to 200 million in 1969.⁵⁸ Not only did this shift give companies a constant stream of projected growth but it also provides a significant target audience in children, who were particularly susceptible to the flash of artistic futurist images during the height of the space race.⁵⁹

Of the few significant scholarly works which consider visions of the future, the primary focus on futurist images is given to the interwar years because those visions represent the beginnings of new products, most particularly of vehicles, and marketing techniques which would later be instilled in the American experience.⁶⁰ However, those works focus on the initial change and not the reception of the citizenry which does little to characterize the sentiment of the age in regards to progress. Think tanks, such as the RAND Corporation and the Stanford

⁵⁷ Communications was facilitated by in home marketing tools such as the radio and television. Additionally, changing concepts of space were facing exponential growth with communications speeds and the ability to physically move faster over distances with automobiles and other transportation innovations. Marita Sturken, "Mobilities of Time and Space," and Lynn Spiegel, "Portable TV: Studies in Domestic Space Travels."

⁵⁸ "Years of US Consumer Spending," US Bureau of Labor Statistics, Consumer Expenditure Survey, 21-25.

⁵⁹ See Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962*, (New York: Blast Books, 2010) and others.

⁶⁰ Corn, *Yesterday's Tomorrows*.

Research Institute, attempted to tackle social issues by considering Cold War threats and the current state of technology.⁶¹ Polls conducted by the RAND Corporation show attempts to evaluate and quantify the contemporary interest in new technologies such as home television. The evidence shows that despite the push in advertising many people brushed aside such gadgetry as a *fleeting trend*.⁶² While many of the more recognizable images associated with Cold War futurism were created and marketed before Sputnik, the fervor of the space race encouraged businesses to push a marketable reality of aerospace science. This vision included distance travel, extraterrestrial settlement and large manned teams working on projects in space. Both the publicity surrounding the space race and the consumer marketing resulted in a significant increase in manufactured interest from the public.⁶³

Public Relations efforts during the space race are largely responsible for the issues with historical memory of the period. The promotion of NASA's work, as well as the work of adjacent engineering, aerospace, and defense industries was misleading, as the reality of advanced mathematics and technical jargon was uninteresting from a promotional perspective. That is why it remains important to examine the marketing of consumer product businesses and forms of popular media which utilized futurism as a tool during the space age. The capability of increased production in addition to national goals set during the Cold War, prompted a push for

⁶¹ Kaya Tolon, "Future Studies: A New Social Science Rooted in Cold War Strategic Thinking," *Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature*, New York: Palgrave Macmillan, 2012, 45-62.

⁶² Langdon Winner, "Sow's Ears from Silk Purses: The Strange Alchemy of Technological Visionaries," in *Technological Visions: The Hopes and Fears that Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Bal-Rokeach (Philadelphia: Temple University Press, 2004), 35-38.

⁶³ David Meerman Scott and Richard Jurek, *Marketing the Moon: The Selling of the Apollo Lunar Program* (Cambridge: MIT Press, 2014), 1-15.

consumers to constantly be buying new products. Advertisements encouraged people to embrace progress and their future selves through material goods and services. The 1940s saw a significant increase in the presentation of space as the next area to be explored. It was presented as adventure and an opportunity to bestow glory on oneself and the nation.⁶⁴ From the early days of the space program, scientists and engineers knew space travel would be very different from the fiction presented to the public, which promoted the potentiality of a future life of leisure, luxury, adventure and novelty. However, it is important to consider not only their recruitment ads and the imposition of the view of space research, exploration and colonization but how other businesses supported that effort and capitalized on the boom in that manufactured interest. Those other businesses using space as a theme for tomorrow affected the impact people believed space would have on their immediate future. The phrase “*we were promised...*” can be seen in countless iterations of scholarship, personal commentary, and articles in regards to the space race.⁶⁵

Singular examples of advertisements which show a particular viewpoint are not enough to consider the impact of futurism, even when those examples result in patterns and trends. Many futurist designs presented in popular media from the middle of the twentieth century show concerns over safety, environment, consumerism and wastefulness.⁶⁶ The amount of advertising

⁶⁴ For more see *Youth* section in Marketed Audiences Page.

⁶⁵ From 2003-2004, futurist artist Arthur Radebaugh’s work, which is featured on the companion scalar site to this thesis, was exhibited in a traveling show entitled, “Radebaugh: The Future We Were Promised.”

⁶⁶ Joseph Corn and Brian Horrigan, *Yesterday’s Tomorrows: Past Visions of the American Future*, (Baltimore: The Johns Hopkins University Press, 1996), 33-87. Corn and Horrigan’s work emphasizes 1930s and 1940s images of futurist city planning and streamline design for prosperous communities. However, they also provide examples of futurist images influenced by wartimes and atomic culture such as *Popular Mechanics* features of military transportation and Robert C. Scull and Jacques Martial’s atom bomb house.

for companies and technology to entice new scientists and fiscal support were not enough even to make an overarching commentary on the era. If anything it gives more weight to the idea that the aerospace industry used marketing as a tool to manufacture support for technological advances because the facts of their profession could not actually gain enough support alone.⁶⁷

Similar to present day entrepreneurs expressing their interest, both intellectually and with financial investment, in the potential of leisure space travel to Mars, significant public figures emerged whose connection to the space industry only came out of the mutual interest of technological progress. Walt Disney was one of the most prominent individuals who not only publicly supported the space program but made significant steps in directly marketing the real and fictionalized ideas of progress to the American public. In 1955, Disney partnered with German aerospace engineer, Werner Von Braun, to produce a televised docuseries, educating the public on space research.⁶⁸ Despite an elementary picture of the history of science relating to rocket technology, comical cartoons, and the typical futurist promises of adventure, the Disney-produced documentary, "Man in Space," actually provides some hard science which remains the issue NASA's engineers had when communicating with journalists.⁶⁹ However, due to the wide audience and clever framing of the programing, the average viewer didn't feel hindered the way they would have by reading the technical explanations of the typical NASA scientist. Von Braun concludes the first program with the hopeful message, "man has taken his first great stride forward in the conquest of space. His next goal will be the exploration of the Moon, then the

⁶⁷ For more see Marketing and the *Public Opinion* Page in NASA page.

⁶⁸ "Man in Space" from "Disneyland" series. Original airdate, March 9, 1955.

⁶⁹ Nelson, *Rocket Men*, 17-31.

planets, and the infinite universe beyond.”⁷⁰ While an objective viewer may consider the documentary dull in comparison to other examples of futurism in marketing it must be noted that Disneyland opened a few months after the premier of “Man in Space.” Tomorrowland, the ride Rocket to the Moon and Monsanto’s House of the Future which opened two years later, aided in altering the view of the synonymy of space and entertainment.⁷¹ Businesses such as Monsanto, associated with the agricultural industry, used futurism to demonstrate how new plastics would be utilized in tomorrow’s communities.

Futurist visions in the 1950s and 1960s presented a false reality of what scientists already knew space exploration and research would look like. Businesses utilized imagery of workers in large teams conducting research experiments in colonies despite the knowledge that a consensus had long since been made that single manned missions or small teams were all that would have been feasible to send to space. Additionally, there were opponents of manned flights altogether. Lee DuBridge, the President of CalTech was highly critical of manned spaceflight arguing it to not be a justifiable expense when the effort should be on robotics missions.⁷² Companies used artistic and exaggerated imagery of space to not only put their products in the context of tomorrow but to contribute to the interest of technology consumerism. Such companies include brands such as Van Norman industries, Thokol, Stafoam, Acronca, Melpar, Lockheed, Goodrich, and Hoffman electronics.

⁷⁰ “Man in Space,” from televised *Disneyland* series, 48:40.
<https://www.youtube.com/watch?v=WFXza9RH7-E>

⁷¹ The additions of those physical spaces were highly anticipated due to the influence of Disney at the World’s Fairs.

⁷² Megan Prelinger, *Another Science Fiction*. It should be noted that CalTech is the overseer of JPL in Pasadena by contract with NASA.

The 1962 and 1964 World's Fairs, hosted in Seattle and then New York City, heavily focused on technology and consumer goods being marketed as necessities for the world of tomorrow. Along with Disney and Monsanto Company, other notable industry leads, such as General Electric, Ford, and Pepsi-Cola presented exhibits with futurism at its core.

Newness in technology and futurism are commonly marketed as a transformative force bringing, "freedom, democracy, and by implication, enlightenment."⁷³ However, this message primarily came from technologists and innovators selling their brand of science before the Cold War. By the 1950s businesses regularly utilized futurism to sell their products. They were also investing in brand loyalty, future nostalgia, and consumer growth which would allow them to have stock in future endeavors if space colonization became a reality. The vision consisted of a utopian leisurely future where technology would one day take over contemporary daily struggles. After the Moon landing and the images of the earth from the outside were presented, the futurist images heavily turned back to earth showing concerns, above all, over how to make daily life better for American citizens. Government contracts were given to businesses with the hope of renovating public spaces and services to fit the image of the ideal society, and to encourage the general populace to look forward to tomorrow.⁷⁴

NASA: Boosted by Futurism

Within less than a year of the Soviet's launch of Sputnik, the United States officially established NASA in its effort to win against the communist threat on the front of technological superiority. While the *dream* of space had already been decades old from a marketing standpoint,

⁷³ Marita Sturken and Douglas Thomas, "Introduction: Technological Visions and the Rhetoric of the New," 3.

⁷⁴ David Meerman Scott and Richard Jurek, *Marketing the Moon: The Selling of the Apollo Lunar Program* (Cambridge: MIT Press, 2014) 34-53.

the momentum in applied sciences to the endeavor as well as in public and commercial support was unprecedented. Partly, this could be due to the late 1930's and early 1940's emphasis on war technology. Additionally, the evolution of rockets into the space race was necessary for adjacent technological progress to be achieved. The space race provided ample inspiration from a marketing standpoint. The result was a boom in advertising material and popular culture that centered on the message of a particular vision of *tomorrow* which promised the American public a leisurely future if they collectively got on board.⁷⁵

Post-War Nuclear Research and Rocketry Advancement

Before the Second World War scientists had theorized for decades that nuclear research was the key to push towards a new era of humanity's knowledge and ability to control the physical world. However, the dropping of the atomic bombs in part negatively affected the perception of nuclear technology.⁷⁶ Yet once the technology was realized globally, it was duplicated, expanded, and reworked. Following the Second World War the arms race began to ensure nations had the capabilities of protecting themselves should catastrophic war break out. Research of nuclear technology in the 1950s led into the emphasis on intercontinental ballistic missiles which would be necessary for achieving satellite orbiting. Militarily nations saw this as a necessary advancement but also knew it would mean competing governments would have the same advantages over them.

⁷⁵ David Meerman Scott and Richard Jurek, *Marketing the Moon: The Selling of the Apollo Lunar Program* (Cambridge: MIT Press, 2014) 1-15.

⁷⁶ Paul S. Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (Chapel Hill: University of North Carolina Press, 1994). The reaction is nuanced in that while there was near unanimous support before, atomic culture following the Second World War saw both, the celebration of bomb technology but also inspired numerous dystopian themes in art, fiction, and discourse surrounding the future.

During the 1950s the former ally of the United States from the Second World War, the Soviet Union, was the main target of concern as far as technological advancement went. The debate of capitalist versus communist systems was a core part of the Cold War, however, the center of Red Scare rhetoric that was marketed to the public, focused on the potential of weapons development, impending war, and the potential destruction of American values. Despite this fear-mongering, the anti-communist effort did little to dissuade the public from their mistrust of the sciences and weapons-related research.

Due to the Cold War and the public perception of nuclear technology, missile research and what was reported was handled carefully. The proposal for the International Geophysical Year (IGY) was brought up in a gathering of American scientists in 1950. The IGY was to be a continuum of the International Polar Year, previously held twice, 50 years apart in 1883 and 1932. The event was a scientific Olympics, where experts from around the world would work to contribute to the collective knowledge of the earth sciences and it would be an opportunity where they could also highlight what their nations' researchers were contributing to scientific progress. The IGY was predesignated to be set from 1957 to 1958 due to high solar activity which would occur at that time. The publicized goal of the IGY would be for nations to provide innovative research which could be shared internationally and to demonstrate advancement in the earth sciences.⁷⁷ At the time of the initial proposal, space exploration had its share of scientific speculation by American researchers but it remained a far off dream until technology would be ready and was mostly relegated to the fictional realms.

At a scientific convention in Rome in 1955, the official start date of July 1, 1957 was set

⁷⁷ Ronald E. Doel, Dieter Hoffmann, and Nikolai Kremenstov. "National States and International Science: A Comparative History of International Science Congresses in Hitler's Germany, Stalin's Russia, and Cold War United States," *Osiris* 20 (2005): 49-76.

for the IGY. Several weeks before the convention however, the Soviet Union had announced its intention to launch objects into space to record atmospheric data for scientific research. Shortly after the Soviet announcement, the Eisenhower administration announced the United States' intentions to launch the first artificial satellites into orbit for the IGY. The importance of both announcements so close together when the IGY was still in talks can be summarized by both nations having ulterior motives. Journalist Mathew Brzezinski explains how the United States and the Soviet Union needed a "peaceful, civilian excuse to test the military potential of its hardware . . . [also] a research satellite blessed by the international scientific community would set the precedent for an 'open skies' policy where sovereign airspace did extend beyond the stratosphere."⁷⁸ Several branches of the US military had their own missile projects underway, but due to the tensions of the Cold War, government officials were vetoing their use for space research as an international PR maneuver. The plan was to first use sounding rockets developed by civilian organizations as opposed to military technology.

The Vanguard rockets were being developed in the United States and were supposed to be responsible for launching the first satellites but, as the IGY approached, financial and testing corners were cut to meet the deadline and launch attempts were met with failure. At least on the US front it was thought that as soon as the first satellite was in orbit, a "precedent would be set that would govern the legality of all future launches. In that regard, a purely scientific satellite, such as the Naval Research Center's entry into the civilian IGY competition, was the perfect foil for establishing the open, international nature of outer space that would make extraterrestrial

⁷⁸ Matthew Brzezinski, *Red Moon Rising: Sputnik and the Hidden Rivalries that Ignited the Space Age* (New York: Henry Holt and Company, 2007) 96.

spying lawful.”⁷⁹ However, on October 4, 1957 the Soviet Union unexpectedly had a successful launch of the first manmade satellite, Sputnik. Like the Americans, the Soviets were developing powerful military missiles. Unlike the Americans, the Soviets had no qualms about using military grade missiles in this public venture. They did it for the “vast propaganda value” and because of the celebrated success in the name of human achievement, no fallout ensued.⁸⁰ In Washington, the National Academy of Sciences building was being used for an IGY conference when the news came. At the Soviet Embassy, a party was being held attended by Americans, Soviets, and representatives from other nations to celebrate the progress being made in rocket science. The Soviet scientists received a call in private and informed their American counterparts who in turn announced Sputnik’s launch to the rest of the conference members including press officials.⁸¹

With the realization that Soviet technology was more advanced than previously thought, military officials and scientists panicked. The arms race had not only led to the creation of powerful weapons but necessitated scientific agencies in creating defensive security measures. As Political Scientist Ronnie D. Lipshutz notes, the revelation of Soviet advancement had shown that “the nuclear-tipped NIKE missiles devised to shield American cities from Soviet bombers were obsolete even before they became operational—they could not protect against the new ballistic missiles that were soon to be deployed.”⁸² Ultimately Sputnik had shown that

⁷⁹ Ibid, 134-135.

⁸⁰ Von Hardesty and Gene Eisman. *Epic Rivalry: The Inside Story of the Soviet and American Space Race* (Washington, DC: National Geographic, 2007) 67.

⁸¹ Ibid, 76.

⁸² Ronnie D. Lipschutz, *Cold War Fantasies: Film, Fiction, and Foreign Policy* (Lanham: Rowan & Littlefield, 2001) 85.

America was “vulnerable to attack by a foreign power and was virtually powerless to prevent it.”⁸³ These realities heavily impacted futurism both thematically and as a tool to encourage consumer change.⁸⁴

Space Race

In the early years of Cold War Americans witnessed the ingraining of anti-communism in political and daily life and culture. In 1949, when the Soviet’s detonated their atomic bomb, the American view shifted to one of stock piling into one of a garrison state.⁸⁵ The 1940s through the mid-1950s represent the peak of this sentiment. The arts and pop-culture emphasized the constant potentiality of the “enemy within” with the goal of destroying the *American* way of life.⁸⁶

The space race emerged as a direct result from the 1950s arms race. In 1957, to the dismay of American scientists and politicians, Sputnik was launched. In an immediate response, NASA was born and three years later John F. Kennedy announced his intention of having an American be the first person to step foot on the Moon. The space race was utilized in essence as a marketing tool which would allow nuclear technology and the potential for intercontinental ballistic missiles to be explored in a manner which would receive less backlash than the atomic

⁸³ Ibid.

⁸⁴ Sobchack, “Science Fiction Film and the Technological Imagination,” 149. While there were examples of dystopic fictions before, Vivian Sobchack notes significant changes in the trends of the science fiction genre which emerge in the 1950s and continue through about 1968. Many works emerge highlighting the dangers of technology on man and consider the corporate element which had previously been missing. She cites this as being routed in Cold War political discourse calling for technological superiority and encouraging consumerism.

⁸⁵ Lasswell, Harold. “The Garrison State.” Coined by Eisenhower in 1941, he predicted paranoia and over armament could lead to destruction from within.

⁸⁶ Stephen Whitefield, *The Culture of the Cold War*, (Baltimore: The Johns Hopkins University Press, 1996).

bomb. Previous generations were led to believe that nuclear technology would be the answer to threat of an energy crisis but the bombs made the public and financial backers wary of certain technology. Futuristic concepts were the core of marketing in the hopes that the American public would embrace and support the research efforts.

On October 4th, 1957, the knowledge of Sputnik's presence in orbit came as a surprise to most Americans. The discovery came from many corners of the globe at once as the signals Sputnik was emitting were picked up. The Soviet Union kept its plans and timeline secret and "as if to mock how sleepy the U.S. space program was by comparison, the bleeping ball of metal actually passed twice over the American continent before it was detected."⁸⁷ By the next day headlines emerged announcing the achievement of the Soviet Union and the resulting failure of the United States. As the weeks rolled on, nationally circulated publications such as *Life* magazine, ran multiple features on anything of relation to the Soviet Union, Russians, Sputnik, or space travel.

Within one month of the first launch, using the 40th anniversary of the Bolshevik revolution as an excuse, the Soviets launched Sputnik II. This time the stakes were upped as the Soviets not only used even more advanced technology for the satellite but sent the first living creature into space, a dog named Laika. For Americans, this period brought them "to the grim realization that these Sputnik launches represented a milestone: No longer could the Americans dismiss their Cold War rivals as technological inferiors."⁸⁸ Data mining of popular publications such as *Life* magazine and *Time*, reveals that in the years before the launch of Sputnik and the

⁸⁷ Marina Benjamin, *Rocket Dreams: How the Space Age Shaped Our Vision of a World Beyond* (New York: Free Press, 2003) 41.

⁸⁸ Von Hardesty and Gene Eisman. *Epic Rivalry: The Inside Story of the Soviet and American Space Race* (Washington, DC: National Geographic, 2007) 80.

kick off of the space race, anti-Soviet rhetoric had been on a decline. It was even non-existent for several months in many major publications.

America's first satellite was launched on January 31st, 1958. In the later years of the space race the Soviet's remained ahead for many milestone events with the US following just a few months behind. Some scholars argue that in order to drum up support for US nationalism and the space program during this era a massive media and PR campaign was unleashed which revived the use of anti-Soviet rhetoric as a nationalistic tool.⁸⁹ Along with the political discourse came a push of marketing which used futurism as a tool to support the nation through consumer purchases. The stimulation of the economy was only one result of this. The other was placing direct funds into the hands of businesses which would be responsible for bringing Americans the designs and products of the future.

Marketing and the Public Opinion

The immediate reaction to Sputnik cannot be characterized as simple shock. There was definitely a sense of fascination at this new potential endeavor that was unlocked for mankind. The satellite caught international attention and the public imagination resulting in "scientists, amateur ham radio operators, military intelligence operatives, and countless spectators [drawing] to rooftops with their binoculars."⁹⁰ Sputnik resulted in embarrassment at the failure of the United States to compete. However, it also resulted in concerns over Soviet intentions. Anti-Soviet rhetoric and Red Scare tactics had declined in the year leading up to the IGY, however, the advanced military technology demonstrated by the Soviet Union with their space program

⁸⁹ David Meerman Scott and Richard Jurek, *Marketing the Moon: The Selling of the Apollo Lunar Program* (Cambridge: MIT Press, 2014) xi-x.

⁹⁰ Von Hardesty and Gene Eisman. *Epic Rivalry: The Inside Story of the Soviet and American Space Race* (Washington, DC: National Geographic, 2007) 76.

had unearthed some unsettling facts about their ability to attack the US without distance being a hindrance.⁹¹

In the late 1950s and through the 1960s other publications and media sources show a significant increase in features on space travel and colonization from a futurist perspective. However, these images weren't just targeted at what the nation's leading scientists could accomplish but what the average consumer could achieve. Magazines features, comics, shows and product advertisements carried the implication that every man and child would soon be traversing the stars.

The Apollo program ran from the early 1960s to the 1970s. The missions were a multi-step process involving advancing technology until manned missions to the moon could be done safely. The risk of astronaut's lives meant that missions were to be carried out in stages to test the theories behind space travel. News outlets and magazines regularly featured the astronauts while in training to give an American face to the heroic endeavor to reach space. The first Apollo mission in 1967 resulted in a cabin fire and the deaths of the three astronauts set to launch. Manned missions were suspended for a significant time until October 1968, less than a year before the successful moon landing, when the Apollo 7 crew orbited the earth. In 1970, the Apollo 13 mission was aborted due to technical failure but the crew returned to Earth safely. The missions continued until December of 1972, with the Apollo 17 crew. Given the defunding of NASA immediately after the Apollo 11 mission in July of 1969, many Americans and space enthusiasts have asked over the years what happened to the mass interest in space exploration.⁹²

⁹¹ Joseph M. Goldsen, "Public Opinion and Social Effects of Space Activity," (RAND Corporation, 20 July 1959) 3-5.

⁹² Jesse Lee Kercheval, *Space: A Memoir*, (Chapel Hill: Algonquin Press, 1998); Marina Benjamin, *Rocket Dreams: How the Space Age Shaped Our Vision of a World Beyond* (New York: Free Press, 2003); Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962*, (New York: Blast Books, 2010).

The multi-entity marketing campaign that led up to the Apollo 11 mission not only bolstered the public's interest in space travel but it also concealed many of the facts. The reality behind the artistically illustrated veil covering up the real work of scientists and astronauts was not the grand adventure promised but far too mundane to sustain mass interest. Further, the reality behind the projects which involved the fact that true space travel lays beyond many generations, and the capabilities of known science and technology was disappointing from an immediate gratification front. As the base interest waned, questions began to rise over the justification of the expense of the program. These realizations are proof that part of the reason mass interest in space exploration was so high during the Cold War was because it was manufactured.

Many scientists, scholars, and space enthusiasts who write about space exploration delve into the question of why the interest in space reached such a fervor in the Cold War only to fizzle quickly and silently.⁹³ Many works of scholarly research focus specifically on NASA's motivations and that of other aerospace industries. Hindsight is significant in this not because it demonstrates what technologies were realized and incorporated into American daily life but it provides insight into the motivations of the aerospace industries push to creatively market their work and research.

One significant surprise that occurred once mankind got into space was that collectively, American's interests and the attentions of the media heavily turned back to the earth. The first earth day commemorations in 1970, came about as a result of photographs of the world taken by

⁹³ See Marina Benjamin's *Rocket Dreams*, Corn's *Yesterday's Tomorrows*, Scott and Jurek's *Marketing the Moon*, Chertok's *Rocket's and People, Creating a Rocket Industry*, Kauffman's *Selling Outer Space*, as well as recent popular media examples such as films *Tomorrowland* (2015), *Interstellar* (2014) and documentary series *Cosmos* and *The New frontier*.

astronauts. Many questions emerged in this time which turned into political and social movements informed by environmental concerns. How could people justify the expenditure of something like space exploration, travel, and colonization, which may not see results in many lifetimes, when there are so many environmental and humanitarian needs on the earth?

Visions of NASA and Reservations About the Space Program

The earliest visions for NASA as presented to the American populace came as a result of the victory over communist nations by being the first to hit major milestones in space travel. This started off with difficulties as Soviet victories dominated the first years of the space race and carried a dual effect of instilling reservations in regards to the immense budget and providing motivational material in encouragement of consumer spending. The early missions, Mercury, Gemini and the Apollo project created a significant wave in space flight interest and subsequently inspired consumer products, space themed entertainment, and attractions.

However, despite the interest spurred on by mass marketing in support of NASA's efforts, their scientists and representatives were aware that there was a discrepancy between true space exploration and the public's hopes. The goals of those involved in the space program include the engineering achievement of developing the technology to safely launch humans into space and return them to earth, discovering other life in the universe, and furthering scientific research.⁹⁴ Additionally, NASA hoped to expand interest in science and space research, whether through external marketing or through victories achieved on an international level.

NASA scientists were also aware of the shortfalls of their program, particularly with the spotlight on all their activities as a public branch. It was predicted that the public would not react

⁹⁴ Joseph M. Goldsen, "Public Opinion and Social Effects of Space Activity," (RAND Corporation, 20 July 1959) 3-5.

well to a “chemical and biological contamination of other planets,” or that if “an attempt to put a man in space which resulted in his death would seriously disturb the public.”⁹⁵ Furthermore, there was an awareness in this post-McCarthyism period that the public would not easily accept a Big Brother watchdog figure as a result of space satellite technology. The reservations in regards to NASA, of course, all tie-in to the issue of sustained funding and justifying the expense of the program.⁹⁶

Marketed Audiences

Futurism heavily influenced Cold War culture and impacted American perceptions of product consumption. However, government agencies, consumer businesses and creative futurists presented their visions of tomorrow by exploring methods of audience targeting. The rise in popularity of the automobile facilitated the migration of middle class families from cities to suburban neighborhoods. This created new markets for companies to essentially advertise new trends in home ownership. Post-war shifts in jobs, population, and redefined gender roles also aided in this directed form of marketing. Additionally, businesses embraced the growing impact of marketing towards the youth demographic in the baby boom era through consumer goods, popular culture, and Cold War propaganda. Finally, marketed futurism had a strong appeal to those involved in science and technology industries. The promotion of futurism was done both through the consumer good marketing and the recruitment efforts into these businesses promising prospective employers that the work they could achieve at their respective companies would write the course of the future.

Suburban American

⁹⁵ Ibid, 5.

⁹⁶ David Novick, “A Discussion of Space Program Costs,” (RAND Corporation, February 1964).

During the Cold War the average middle-class American was assaulted with futurist imagery from multiple fronts such as television broadcasts, radio transmissions, and print media as well as through popular entertainment mediums that were gaining traction like film and literature. The idea of the world of tomorrow was steadily promoted in the interwar years, but prosperity, consumerism, and communication advancements facilitated these images in the 1950s and 1960s, increasing the impact of the collective future vision. These audiences involved the potential workforce, the housewife, but above all the rising middle class.⁹⁷ The G.I. Bill aided American men returning from the war to gain an education, an avenue that may likely have been closed to them depending on their families' economic backgrounds. Education also opened up interest in that demographic moving into the sciences or at least having an interest in technical processes.

The television and the automobile had a significant impact on middle class families. Both concepts facilitated in altering the sense of space and community.⁹⁸ Additionally, post-war efforts encouraging women back into the home sphere heavily evolved through consumer marketing. The 1950s focus on women's stories in the home in science fiction marked both a change in perceptions on the genre but had the added consequence of pushing an interest in gadgetry and new technology onto women in a traditional role.

Youth

⁹⁷ The 1950s saw the creation of the subgenre of science fiction, housewife science fiction, which depicted various domestic woes being solved through technology. Professor of Literature, Media, and Communication, Lisa Yaszek, "On Women in Science Fiction" from *Geek's Guide to the Galaxy* podcast #346.

⁹⁸ However, the tie to mobility with a positive association is regulated to the white middle class during the era. Highways marketed as improvements to society harmed minority communities. Spigel, "Portable TV..." 133.

The post-war baby boom meant the younger generation were significant targets of pop futurism imagery and marketing during the late 1950s through the 1960s. The new generation born at the tail end or following the war were targeted particularly for what they could contribute to American society. With growing science industries, youth were susceptible to the imagery of the space frontier explorer that was being promoted by space industries. Additionally, the increase in disposable income from their parents made the post-war generation a lucrative target audience to encourage consumer spending. The youth-influenced marketing is particularly important because that generation has been significantly impactful on representing issues with the historical memory of the reality of space exploration during the Cold War.⁹⁹ One explanation for the decline of public interest in space travel advancements and the decline in the progress of that conquest can be attributed to the youth targeted marketing.¹⁰⁰

Cold War propaganda had a prominent impact on youth culture. Red Scare tactics and the proliferation of atomic culture imagery emphasized the dystopian theme by the 1960s. With those themes in place children were asked to predict the future in schools in time capsules left for future generations.¹⁰¹ While children of a certain socioeconomic background were targeted for particular avenues of interest and potential careers with the technology that would one day be realized, they were receiving mixed messages of the future. During the 1950s they were

⁹⁹ Such as why space travel did not go further and why certain marketed technologies did not come to fruition in an accessible format. See Jesse Lee Kercheval, *Space: A Memoir*, (Chapel Hill: Algonquin Press, 1998); Marina Benjamin, *Rocket Dreams: How the Space Age Shaped Our Vision of a World Beyond* (New York: Free Press, 2003); Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962*, (New York: Blast Books, 2010).

¹⁰⁰ Michael Scheibach, *Atomic Narratives and American Youth: Coming of Age with the Atom, 1945-1955* (Jefferson: McFarland & Co., 2003) 204.

¹⁰¹ Matt Novak, Paleofuture.gizmodo.com, (accessed February 20, 2017).

presented with propaganda in the form of “Our Friend the Atom,” among others, a child – friendly explanation of the benefits of nuclear power and research. Langdon Winner describes the film as a “Disneyesque friendly atom in the same classrooms that instructed them in the ‘duck and cover’ drills and primed them for nuclear war.”¹⁰² The emphasis on nuclear technology shifted to aspirations for space exploration with the formalization of NASA through the 1960s. The children of yesterday, raised in the height of the space age, were part of this targeted marketing and are often the ones left wondering what happened to those visions and continue to question their memory of the era and the failures of the present.¹⁰³

Specialized: Scientists, Technologists, Industrial

Magazines such as *Popular Science* and *Popular Mechanics* utilized futurism to target readers more interested in the hard sciences, which included engineers and more enthusiastic hobbyists. This kind of promotion involved marketing more directly from NASA and adjacent aerospace companies. Advertisements from companies, such as Lockheed, Goodrich, Douglas Aircraft, and Hoffman Electronics used futurism to promote how their technology was going to propel man to new frontiers.¹⁰⁴ Additionally, various industries used magazine ads as a form of recruitment for new talent while heavily relying on futurism to convince potential workers that their businesses would have longevity and significance in producing greater innovations.

¹⁰² Winner, “Sow’s Ears...,” 36.

¹⁰³ Marina Benjamin, *Rocket Dreams*.

¹⁰⁴ Megan Prelinger, *Another Science Fiction: Advertising the Space Race 1957-1962*, (New York: Blast Books, 2010) 10-40.

Specific industries, such as agriculture, embraced growing technology in their field to encourage forward thinking, and a cultural community centered on futurism.¹⁰⁵

Futurism by Theme

Images and concepts of the future appear in many different forms and media. When examining specific visions of the future, themes emerge which highlight the values and aspirations of middle class Americans in the Cold War era. These themes reflect technologies that had evolved rapidly during the mid-twentieth century. Communications and transportation technologies were emphasized during war times and then adapted to fit into and improve upon a marketed idyllic image of the average American citizen. For example, futurism boasted ideas of weather control with a dual purpose in representing total human control over the environment and as a protective measure from international threats. Push-button technology was advertised to emphasize how new consumer goods would make daily life easier. This emphasis on convenience and leisure was seen in the home but implemented in public spheres as well. The idea of the home of tomorrow provided an outlet for multiple industries to promote their products and services. Finally, the space race and nuclear technology not only popularized design elements but informed unique conceptualizations of the future in regards to how advertisers marketed aspects of American life concerning communities, leisure, and the environment.

Communication

¹⁰⁵ Curtis Marez, *Farm Worker Futurism: Speculative Technologies of Resistance*, (Minneapolis: University of Minnesota Press, 2016)
<http://www.jstor.org.ezproxy.csusm.edu/stable/10.5749/j.ctt1c2crhk>.

One of the main distinctive factors of futurism during the Cold War involves the strides made in communication. Public radio and the home television facilitated in the *average* citizen's ability to receive news and other information. For a significant amount of time the television was lauded as a tool that would promote education and democracy. Yet, like most new technologies, the consumer base embraced it for alternate uses. By the 1950s and 1960s television technology was marketed as the technology of the future (see figure 41). Additionally, new marketing trends contributed to consumer habits and the idea of leisure time. Streamline design incorporated itself in the aesthetics of public and consumer communications technologies (see figure 37). Futurist imagery embraced the idea that communications technologies would expand and envisioned ideas such as video calling (see "Century 21 Calling" promotional video from the Seattle World's Fair, figure 39, and figure 40 depicting these technologies) and instant messaging long before it became a reality. Video calling technology was popularized through the 1964 World's fair presentations, advertisements and popular media like the *Jetsons* (1962) and *2001: A Space Odyssey* (1968).

Transportation

Communication and transportation are intrinsically linked when discussing futurism in the mid-twentieth century. New highway systems, middle class migration to suburban centers, affordable automobiles, and passenger aircraft assisted in transportation. Future studies historians often equate the increase in transportation methods to the concept that space is minimized on a relative scale (see figure 44 for example of how space travel advances would allow humans to take control of time and physical spaces). That idea heavily played into the marketing which would later assist in the promotion of realistic and accessible space travel, despite the science explaining otherwise. Consumer culture aided in businesses embracing futurism in marketing by

pushing contemporary technologies with messages that promoted the next great products around the corner (see figure 45 for example of how energy industries utilized futurism to gain support for their business). Advertised vehicle designs were often depicted with futurist themes that reflected rocket technology more than the actual products on the market (see “Wonderful New World of Fords,” clip for example of how car manufacturers juxtaposed their new products with space and futurist themes).

Weather Control

In popular media and news promoting scientific efforts, weather control and design was lauded as an answer to humanitarian crises. In the Cold War, the idea of weather control was both a literal goal but also a broader signifier of technology overcoming the earth’s obstacles (as seen in figure 47). Early 1950s futurists promoted the significance of progress on weather control because it signified the opportunity to end world hunger and even provide renewable and safe energy (see figure 46, for example of businesses implying investment in technology is the only way forward). On other fronts, the positives of conquering nature were promoted as a victory of national security (see figures 48 and 49. Weapons technology was intended to be used both on international threats and the natural world as a show of national strength). Government funding went to make this a reality during the Vietnam War, through attempts at manufacturing and manipulating clouds in an attempt to extend the monsoon season and influence flooding and local access to transportation. The chemical weapon Agent Orange ultimately was used, influenced as part of these efforts to control the environment. Additionally, weather technology was seen as an outcome of advancing atomic power (see figure 50).

Push-Button Technology

In the 1950s and 1960s, futurism aimed to promote the idea that technology meant people would have to work less in all aspects of their life. Suburban aimed popular media, such as the *Jetsons* and *Star Trek*, were particularly responsible for the *historical memory* promises of futurist visions, such as push-button technology. This theme cropped up in advertisements and illustrative imaginings of future technologies (see figures 51 and 52) but reached wider audiences in film and television media with science fiction elements. The idea that computers and robots could take care of most necessary jobs and tasks was heavily promoted to women and blue color workers. Button-technology was both promoted as an aesthetic and practical improvement to previous iterations of technology and manual labor.

For the Home

Department stores, energy companies, and appliance manufacturers embraced futurist themes in order to encourage spending on consumer products for the home. This was part of the larger government effort to stimulate the economy during the Cold War. This push in consumption marks a significant shift from previous decades when Americans were more frugal due to war scarcity and the depression. Futurist advertisements for the home were particularly gendered. Advertising aimed at men was focused on gadgets and industrial or space design. While advertisements aimed at women centered on keeping up with the rest of the community by having the newest appliances with a focus on plastics (see figures 55 and 57 for space influenced kitchen advertisements. Also see home advertisement video on futuristic homes and kitchens aimed at women).¹⁰⁶

In addition to the direct futurist advertisements marketed to homeowners, were the larger projects that influenced how people viewed living in *tomorrow's* communities. This ties into

¹⁰⁶ <https://www.youtube.com/watch?v=sZgDhktjWPs&feature=youtu.be>

transportation and the boom in suburbia. Many private and government-sponsored housing developments emerged attempting to attract demographics into designed future communities.

Futurism by Theme: “The Atomic Age” and Rocket Design

While there are examples of the other themes of futurism in other eras, none is more unique to the Cold War than the marketed emphasis on Atomic Culture. Nuclear energy was promoted in magazines to maintain support and deflect from the negative affects emerging through scientific research. Automotive design and architecture adopted the imagery that was presented in space concept imagery (see figures 60 and 62). Gas stations, restaurants, shopping malls, and other entertainment venues all embraced the concept of nuclear power and rocketry in design (see figure 61). Astro pops and other consumable goods normalized the idea of living in the nuclear age, particularly to the younger generation. Fashion utilized the bomb craze for a time which saw atomic themed beauty pageants, mushroom cloud apparel, and the introduction of the bikini.¹⁰⁷ Most significant in the normalization of atomic culture was the promotion of nuclear research as an energy source (see figures 58 and 63). While nuclear energy was promoted as the potential environmental solution it was also given positive weight through that technology being a necessary component to rockets.

Space Travel, Tourism, and Colonization

Space as a theme was marketed to the American public in the 1950s to promote interest in, science, nuclear energy, and missile research and development. The Cold War and tense situation with the USSR shifted the focus of nuclear technology from a promotion of general scientific research to a necessity in making advancements faster than other nations. These goals were met with a further sense of urgency given the earlier Soviet victories. The promotion of the

¹⁰⁷ Designer Louis Réard named his new swimsuit design days after the nuclear testing over Bikini Atoll in 1946.

rivalry of the space race encouraged interest in a dream and vision of the future which was becoming increasingly apparent to be merely a myth as the science moved further away from the marketed concept (see figures 66 and 68). Science fiction enthusiasts embraced space themes but beneath the surface scientists couldn't agree on what should actually be achieved with the funding provided, even when it was at its peak. Debates occurred over the necessity of manned space flight versus robotic. However, in the wider public view, promises were made of future space exploration and this vision was normalized with everyday space themed products, entertainment and activities.

Conclusion

Futurism during the Cold War cannot be attributed to a single motive. Cold War visions of the future can be considered as warning, hopeful, fear-mongering, and wondrous, but these appear in futurism of previous eras. The material that was marketed and the technologies which emerged in the middle of the century, differentiate Cold War visions of the future from other decades.

Cold war visions of the future differentiate heavily from the interwar era visions firstly due to the research and advancements in technology during the Second World War. Communications technologies, improved methods of transportation, and weapon research all made heavy strides during the war. Ultimately communications and transportation technologies trickled down to the everyday consumer as additional resources of forms of comfort and leisure activities. Advanced communications also allowed for strides in advertising which resulted in more products pushed on the consumer. Nuclear research and the use of atomic power resulted in a pop culture phenomenon in celebration of the bomb. This, combined with science fiction writers' doomsday warnings, inspired a heavier push to advertise science as an avenue of

progress and a necessity to defeat external threats, such as the Soviet Union, no matter the consequences. The scientific goal of reaching and traveling through space created a unique tool for futurist inclined advertising to emphasize. This heavily promoted interest in space affected many aspects of daily life, from the news, to daily entertainment as well as in architectural and product design.

The push from NASA, a government agency, to revitalize the public's trust and interest in science was an unprecedented phenomenon. This government effort marks a significant shift from past decades when individual endeavors were the primary factor in new technology and science, and when those individuals had to spend time convincing people that their technology had significance.

The feeling of being misled and lied to perpetuated strongly into the first decade of the 2000s and can largely be attributed to the bombardment of images from all angles. Marketed promises of clean energy, a leisurely future due to automation (without the consequences of job displacement), space travel, and futurist envisioned transportation technologies fell short on delivery. Ultimately, this push affected the historical memory of the era and explains why Americans appear to be so much more disappointed with the promised future that did not come. First, consider the differentiation of historical memory from the space race to other eras. As an example consider the rivalries in technologies such as Tesla's or Edison's currents and Betamax or VHS. Individuals invested in a particular technology or enthusiasts who made their own predictions may wax poetical about the *lost* technologies. Others laugh when encountering nostalgia about outdated gadgets. However, it's common enough in language centered on the space race and Cold War, to hear that people were *promised* flying cars and jet packs during this era. "*What happened to that vision?*" – remains the common question repeated about the time.

The answer rests in the fact that those visions were promoted with a different intensity in terms of projection and consequence to the public. Moreover, there was open deception in the marketing and futurist vision.

What's interesting about the viewpoint of a mere decade ago in looking at the space race versus the early twenty-first century is the sense of disappointment and that the *why we didn't go anywhere with space exploration* question no longer holds true. As of 2019, the first manned missions to the Moon in decades have been announced, as well as plans on travel and settlement on Mars. One significant difference involves the youth who believed in those future visions of the early space era decades, who grew up and took action to further pursue the reality of that vision. Private capital ventures, such as SpaceX and Virgin Galactic, have allowed a form of competition to take place which not only provides an economic benefit but increases the fervor of conquering something new that hasn't been felt since the space race. The fiftieth anniversary of the Moon landing has just passed, and like fifty years ago, Americans have been bombarded with space news and merchandise, from clothes, to space themed snacks, and films. Not to mention special announcements and attention from NASA themselves. NASA's current director James Frederick Bridenstine, the first one in NASA's history to not have been alive during the Apollo missions, recently said, "we need to make sure that we don't let another 50 years go by."¹⁰⁸ On reminiscing about his space age influences and the possibility of going back to the Moon, Mark S Geyer, NASA's Johnson Space Center director declared that "it will ramp up the attention and the interest of kids... If we can show them that they have a place in this future."¹⁰⁹

¹⁰⁸ James Bridenstine, NASA Johnson Space Center, "Apollo 11 to Now" *Houston We Have a Podcast*, 7/12/2019, 2:58.

¹⁰⁹ Mark Geyer, NASA Johnson Space Center, "" *Houston We Have a Podcast*, 7/26/2019 44:30.

Bibliography

Secondary Sources

- Adas, Michael, and American Council of Learned Societies. *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance*. Ithaca: Cornell University Press, 1989.
- Andersson, Jenny. *The Future of the World: Futurology, Futurists, and the Struggle for the Post-Cold War Imagination*. Oxford: Oxford University Press, 2018.
- Barnhisel, Greg, and Catherine Turner. *Pressing the Fight: Print, Propaganda, and the Cold War*. Amherst: University of Massachusetts Press, 2010.
- Benjamin, Marina. *Rocket Dreams: How the Space Age Shaped Our Vision of a World Beyond*. New York: Free Press, 2003.
- Boyer, Paul S. *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*. Chapel Hill: University of North Carolina Press, 1994.
- Brown, Andrew. *Keeper of the Nuclear Conscience: The Life and Work of Joseph Rotblat*. New York: Oxford University Press, 2012.
- Brzezinski, Matthew. *Red Moon Rising: Sputnik and the Hidden Rivalries that Ignited the Space Age*. New York: Henry Holt and Company, 2007.
- Chertok, Boris. *Rockets and People: Creating a Rocket Industry*. Vol. 2. Washington, DC: National Aeronautics and Space Administration, 2006.
- Cohen-Cole, Jamie. "The Creative American: Cold War Salons, Social Science, and the Cure for Modern Society." *Isis* 100, no. 2 (2009): 219-62.
- Corn, Joseph J., and Horrigan, Brian. *Yesterday's Tomorrows: Past Visions of the American Future*. Baltimore: The Johns Hopkins University Press, 1996.

- Daston, Lorraine. "Fear and Loathing of the Imagination in Science." *Daedalus* 127, no. 1 (1998): 73-95.
- Delo, Jason. "Techno-porn" *Dreams and Medieval Machinations: Science Fiction in Postmodern Mythology*, 2003, ProQuest Dissertations and Theses.
- Doel, Ronald E., Dieter Hoffmann, and Nikolai Kremmentsov. "National States and International Science: A Comparative History of International Science Congresses in Hitler's Germany, Stalin's Russia, and Cold War United States." *Osiris* 20 (2005): 49-76.
- Dickson, Paul. *Sputnik: The Shock of the Century*. New York: Walker & Company, 2001.
- Fedders, Kristin, and Poggi, Christine. *Pop Art at the 1964/1965 New York World's Fair*, 2005, ProQuest Dissertations and Theses.
- Gaddis, John Lewis. *The Cold War: A New History*. New York: Penguin, 2005.
- Galison, Peter. "The Americanization of Unity." *Daedalus* 127, no. 1 (1998): 45-71.
- Halliwell, Martin. *American Culture in the 1950s*. Edinburgh: Edinburgh University Press, 2007.
- Hardesty, Von, and Eisman, Gene. *Epic Rivalry: The Inside Story of the Soviet and American Space Race*. Washington, DC: National Geographic, 2007.
- Hendershot, Cyndy. *Anti-Communism and Popular Culture in Mid-Century America*. Jefferson: McFarland & Company, 2002.
- Heilbroner, R. (1995). *Visions of the Future: The Distant Past, Yesterday, Today, Tomorrow*. New York: New York Public Library: Oxford University Press.
- Hine, Thomas. *Populuxe: The Look and Life of America in the '50s and '60s, from Tailfins and TV Dinner to Barbie Dolls and Fallout Shelters*. Westminster: Knopf, 1986.
- Hobbs-Penn, Priscilla. *Towards a Happily Ever After: Disneyland and Imagineering the American Dream*, 2012, ProQuest Dissertations and Theses.

- Hollinger, David A. "Free Enterprise and Free Inquiry: The Emergence of Laissez-faire Communitarianism in the Ideology of Science in the United States. (Papers from the Commonwealth Center for Literacy and Cultural Change)." *New Literary History* 21, no. 4 (1990): 897-919.
- Hookway, Branden; Brennan, Annmarie, and Kim, Jeannie. *Cold War Hothouses: Inventing Postwar Culture, from Cockpit to Playboy*. New York: Princeton Architectural Press, 2004.
- Jewett, Andrew. *Science, Democracy, and the American University: From the Civil War to the Cold War*. New York: Cambridge University Press, 2012.
- Jewett, Andrew. "The Politics of Knowledge in 1960s America." *Social Science History* 36, no. 4 (2012): 551-81.
- Kuhn, Thomas S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1996.
- Kuznick, Peter J. "Losing the World of Tomorrow: The Battle over the Presentation of Science at the 1939 New York World's Fair." *American Quarterly* 46, no. 3 (1994): 341-373.
- Lipschutz, Ronnie D. *Cold War Fantasies: Film, Fiction, and Foreign Policy*. Lanham: Rowan & Littlefield, 2001.
- Lupro, Michael, and McQuarie, Donald. *Space Oddities for the Age of Space Tourism*, 2009, ProQuest Dissertations and Theses.
- Mahaffey, James. *Atomic Awakening: A New Look at the History and Future of Nuclear Power*. New York: Pegasus Books, 2009.
- Marez, Cutis. *Farm Worker Futurism: Speculative Technologies of Resistance*. Minneapolis: University of Minnesota Press, 2016.

- Matthews, Melvin E. *Duck and Cover: Civil Defense Images in Film and Television from the Cold War to 9/11*. Jefferson: McFarland & Company, 2011.
- Mathis, John. *Atomic Cinema in America: Historical and Cultural Analysis of a New Film Genre That Reflected the Nuclear Zeitgeist of the Cold War (1945–1989)*. Ann Arbor: Salve Regina University, 2013.
- Monteith, Sharon. *Twentieth-Century American Culture: American Culture in the 1960s*. Edinburgh: Edinburgh University Press, 2008.
- Noble, David, F. *Forces of Production: A Social History of Industrial Automation*. New York: Knopf, 1984.
- O'Donnell, Victoria. "Science Fiction Films and Cold War Anxiety." *History of the American Cinema* from Encyclopedia.com. (Accessed September 3, 2019).
<https://www.encyclopedia.com/arts/culture-magazines/science-fiction-films-and-cold-war-anxiety>.
- Oreskes, Naomi, and Krige, John. *Science and Technology in the Global Cold War*. Cambridge, MIT Press, 2014.
- Perrin, Donald. *A History and Analysis of Simultaneous Projected Images in Educational Communication*, 1969, ProQuest Dissertations and Theses.
- Prelinger, Megan. *Another Science Fiction: Advertising the Space Race 1957-1962*. New York: Blast Books, 2010.
- Reisch, George A. *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic*. Cambridge: Cambridge University Press, 2005.
- Rohdes, Richard. *The Making of the Atomic Bomb*. New York: Simon and Schuster, 1986.

- Rockwell, Trevor, Smith, Robert W., and Marples, David R. *Space Propaganda "For All Mankind": Soviet and American Responses to the Cold War, 1957–1977*, 2012, ProQuest Dissertations and Theses.
- Samuel, Lawrence R. *End of the Innocence: The 1964-1965 New York World's Fair*. Syracuse: Syracuse University Press, 2010.
- Scheibach, Michael. *Atomic Narratives and American Youth: Coming of Age with the Atom, 1945-1955*. Jefferson: McFarland & Co., 2003.
- Scott, David Meerman, and Jurek, Richard. *Marketing the Moon: The Selling of the Apollo Lunar Program*. Cambridge: MIT Press, 2014.
- Scott, James C. *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press, 1998.
- Shapiro, Jerome Franklin. *Atomic Bomb Cinema: The Apocalyptic Imagination on Film*. New York: Routledge, 2002.
- Simington, Maire, and Brack, O. M. *Chasing the American Dream Post World War II: Perspectives from Literature and Advertising*, 2003, ProQuest Dissertations and Theses.
- Spigel, Lynn. "Yesterday's Future, Tomorrow's Home." *Emergences: Journal for the Study of Media & Composite Cultures* 11, no. 1 (2001): 29-49.
- Sturken, Marita; Thomas, Douglas, and Bal-Rokeach, Sandra, Ed. *Technological Visions: The Hopes and Fears that Shape New Technologies*. Philadelphia: Temple University Press, 2004.
- Tolon, Kaya. *The American Futures Studies Movement (1965–1975); Its Roots, Motivations, and Influences*, 2011, ProQuest Dissertations and Theses.

Tolon, Kaya. "Future Studies: A New Social Science Rooted in Cold War Strategic Thinking,"

Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature. New York: Palgrave Macmillan, 2012, 45-62.

Trundle, Sean. *Hope and Anxiety on the Endless Frontier: Scientists, State Policy and the Popular Imagination since 1945*, 2013, ProQuest Dissertations and Theses.

Whitefield, Stephen. *The Culture of the Cold War*. Baltimore: The Johns Hopkins University Press, 1996.

Wright, John L., Ed. *Possible Dreams: Enthusiasm for Technology in America*. Dearborn: Henry Ford Museum, 1992.

Zeman, Scott. "'Taking Hell's Measurements': Popular Science and Popular Mechanics Magazines and the Atomic Bomb from Hiroshima to Bikini." *The Journal of Popular Culture* 41, no. 4 (2008): 695-711.

Zeman, Scott C., and Amundson, Michael A. *Atomic Culture: How We Learned to Stop Worrying and Love the Bomb*. Boulder: University Press of Colorado, 2004.