

AIR WAR COLLEGE

AIR UNIVERSITY

AMERICAN AEROSPACE POWER:
REINVIGORATING OUR ADVENTUROUS SPIRIT

by

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Biography

Lieutenant Colonel Scott Hoffman is assigned to the Air War College, Air University, Maxwell AFB, AL. Prior to his school assignment, he served as the Commander, 455th Expeditionary Operations Support Squadron, Bagram Airfield, Afghanistan. Lt Col Scott “Barney” Hoffman graduated from Colorado State University with a Bachelor’s Degree in Engineering Science, with an emphasis in Aerospace Engineering. After earning his commission through Officers Training School in 1995, he attended undergraduate navigator training and served his first tour as a Weapons System Officer in the B-1b at Dyess AFB, TX. Receiving a pilot training slot to Laughlin AFB, he completed undergraduate pilot training flying A-10s at various assignments to include Eielson AFB, AK, Osan AB, ROK, and as a Formal Training Unit instructor at Davis-Monthan AFB, AZ. In addition, he has served as the Lead Strategic Planner, CJ5, Headquarters ISAF in Kabul, Afghanistan. He has a Master’s Degree in Aerospace Engineering from Virginia Tech, a Master’s Degree in National Security Studies from the Naval Command and Staff College, and a Master’s Degree in Airpower Art and Science from the USAF School of Advanced Air and Space Studies. A Command Pilot with more than 2900 flying hours, including over 2300 in the A-10, he has flown sorties in support of OPERATION SOUTHERN WATCH and OPERATION ENDURING FREEDOM.

Abstract

The thrill of flight, the boundless wonder of space exploration, and the intellectual satisfaction of creating an innovative engineering masterpiece—these are just some of the many reasons young men and women join the United States Air Force. However, military aerial heroics and civilian commercial travel are so commonplace that the luster and enthusiasm for aerospace activities has worn. This familiarity presents a stumbling block for the Air Force when it attempts to communicate its ability to apply innovative technologies and concepts to address specific geopolitical and national problems. It is not necessarily that the American public is unimpressed by the Air Force's technological prowess; rather, technological superiority is expected and therefore it does not generate the excitement or enthusiasm it once garnered.

With the dawn of aviation in the early twentieth century, it soon became clear that aviation changed the course of the world, and of warfighting, forever. As an aerospace nation, the US has an asymmetric geopolitical advantage as our expansive aerospace capabilities and capacity enable flexibility and adaptability to every strategic dilemma. As well, the combination of advanced technology and professional airmen ensures aerospace power will continue to provide a definitive advantage to the US for the foreseeable future. To keep this advantage, the Air Force must remind the American public of our past, our current domination of the aerospace environment, and the need to remain dominant in the future. Although a comprehensive advertising campaign certainly can reach a great number of people, the USAF must break free of its self-induced technological and personal isolation from the American public and engage in inter-personal contact to reignite the flame of adventurism and instill an excitement for aerospace development and activities.

Introduction

“I just think it's helpful sometimes to start with a reminder of where we came from, of whose shoulders we stand on and to realize that no problems are new, no challenge or new, no missions are new for us, it's just a new time. ...

One of the things we can't ever afford to do... [is] to lose what this picture captures. ... I want him to dream about flying in space or flying an airplane, or building an airplane, or building a rocket ship or being an aviation engineer. Whatever it is he's dreaming about, I want him to be able to follow this dream. We need to keep this picture, this thought in front of America. Whether it's TV commercials, speeches, whatever it is... Most of you thought the same thing. Because what we can't afford to lose, is that heartbeat. It always has been and always will be the secret to our success and some day that young guy may be a firefighter or a JAG or a dentist or a comptroller. But I want him serving in our Air Force.”¹

- General Mark Welsh, 16 Sept 2014

The thrill of flight, the boundless wonder of space exploration, and the intellectual satisfaction of creating an innovative engineering masterpiece—these are just some of the many reasons young men and women join the United States Air Force. Many aviation and space enthusiasts were created early in life and had a story not much unlike the following description of the recipient of 3 Distinguished Flying Crosses and 23 Air Medals, Major Fred E. “Ed” Rider.

Ed was born in 1937 in a farmhouse somewhere in the rural Alabama countryside. There were mules and cotton and not much else for him to remember, except for the airplanes he occasionally saw flying overhead. “I was fascinated every time one came over my house,” Ed said, his eyes shining brightly. “I used to draw airplanes when I was a kid. I thought at times, ‘Maybe someday I can fly an airplane.’... I remember reading stories of about zeppelins dropping bombs on England in World War I. I dreamed about them at night. In 1953 I read about dogfights between F-86 Sabre Jets and Chinese MiGs in Korea.”²

However, military aerial heroics and civilian commercial travel are so commonplace that the luster and enthusiasm for aerospace has worn. As the airpower theorist Colin Gray asserts, “the world today has become so familiar with flight that airpower has lost some of the glamor and excitement that it possessed in the early decades of the twentieth century. Familiarity breeds

lack of appreciation.”³ This familiarity presents a stumbling block for the Air Force when it attempts to communicate its ability to apply innovative technologies and concepts to address specific geopolitical and national problems. It is not necessarily that the American public is unimpressed by the Air Force’s technological prowess; rather, technological superiority is expected and therefore it does not generate the excitement or enthusiasm it once garnered. However, it does not need to remain as such.

With the dawn of aviation in the early twentieth century, man created a means to slip the bonds of earth and subsequently applied this method of travel to warfighting with the intention of avoiding the horrendous results of attrition warfare of World War I. It soon became clear that aviation changed the course of the world, and of warfighting, forever. No longer was man bounded by the geography of land or sea. As an aerospace nation, the US has an asymmetric geopolitical advantage as our expansive aerospace capabilities and capacity enable flexibility and adaptability to every strategic dilemma. As well, the combination of advanced technology and professional airmen ensures aerospace power will continue to provide a definitive advantage to the US for the foreseeable future. To keep this advantage, the Air Force must remind the American public of our past, our current domination of the aerospace environment, and the need to remain dominant in the future. The resultant interaction with the American public must simultaneously seek to reinvigorate an adventurous spirit and to instill an excitement for aerospace development. Although a comprehensive advertising campaign certainly can reach a great number of people, it is only through inter-personal contact can we create the inquisitiveness and enthusiasm for aerospace activities.

Why We are an Aerospace Nation:

“A modern, autonomous, and thoroughly trained Air Force in being at all times will not alone be sufficient, but without it there can be no national security.”

- General H. H. 'Hap' Arnold, USAAF

“Disruptive technologies and destructive weapons... have proliferated widely, and are being sought or acquired by unsophisticated militaries and terrorist groups. Meanwhile, China and Russia have been trying to close the technology gap by pursuing and funding long-term, comprehensive military modernization programs....

All this suggests that we are entering an era where American dominance on the seas, in the skies, and in space – not to mention cyberspace – can no longer be taken for granted. And while the United States currently has a decisive military and technological edge over any potential adversary, our future superiority is not a given”⁴

- Secretary of Defense Hagel, Sept 3, 2014

On December 17, 1903, Orville and Wilbur Wright courageously authored the first chapter in the book of aviation that continues to be written; and will continue for as long as man can dream. Their achievement created a new method of travel and subsequently unleashed a bevy of adventurous aviation pioneers who guided the early progress of aviation. No longer restrained by Earth's gravity, the aircraft opened doors to new methods of travel and of warfare. The United States has always been an active participant in aviation development; but it was World War II—with mass production and rapid technological improvements to aircraft—that thrust the US into a dominant position regarding aviation capacity and capability. Since then, the US has consistently placed great reliance on our air and space capabilities to help solve various strategic dilemmas. From humanitarian operations to full-scale conflict, the air and space capabilities of the US have provided an asymmetric advantage that is currently unmatched by friend or foe.

Without question, the US is an aerospace nation. Despite advancements in technology, geography still matters. Therefore, the US must retain the requisite air and space capability and

capacity to overcome the tyranny of distance—whether over land or sea. Air and space capabilities enable both freedom of movement and freedom of action that is unparalleled in any other physical domain. The elements of air power provide the first enablers in any crisis, and are ever-present until mission completion. From reconnaissance to rapid mobility, command and control to deep strike, American airpower is typically “first in and last out.” The vast array of commercial, civilian, and military capabilities and expansive capacity enables a high level of strategic agility. However, current preeminence does not guarantee future dominance.

No one can accurately predict future events, but trends provide insights to what may occur and thereby guide how we prepare to meet various strategic challenges. Competition for access to the global commons of air and space will become more difficult as congestion increases. The rapid rate of technological change, combined with increasing proliferation, ensures any current operational or strategic advantage will be short-lived.⁵ Terrorist threats, proliferation of weapons of mass destruction to state and non-state actors alike, and competition for scarce resources present just a portion of the global threats America and her allies must counter. As well, while each region of the world presents unique challenges, threats, and opportunities, the US is currently the only nation with the capacity, capability, and wherewithal to ensure stability is maintained and peace is assured.⁶ While the exact course of the future cannot be foreseen, the path will be strewn with difficulties and obstacles that will become more challenging to overcome.

From the dynamic challenges of the Middle East and Africa, to a rising China and a resurgent Russia, the US will continue to rely on our mastery of the air and space environs to meet our strategic objectives. However, due to the rapid expansion and growth of technology, the US cannot rest on her laurels and expect to maintain a lasting advantage over her adversaries.

Currently, our ability to maneuver essentially at will through air and space is an immense, and unrivaled, strategic advantage—but past and current performance does not guarantee future success. “The US will likely remain the world’s single largest military power, but its relative advantage will shrink. Additionally, increasingly contested areas and reducing access, not only to the global commons, but to forward operating bases. The USAF will likely face states and entities that have lower bars to entry to areas that can challenge existing US strengths.”⁷

The current qualitative and quantitative gap the US enjoys can only be assured via a participatory and reinvigorated public. Through a knowledgeable and active public, young people are enthused and encouraged to become mathematicians and engineers as well as pilots and astronauts, research is funded, interest in aerospace accomplishments increase as well as the resultant national pride in achievement.

While the US is—and has been—an aerospace nation, a concerted and thoughtful effort must ensue to reinvigorate the nation, particularly our youth, regarding air and space activities. In order to revive an adventurous spirit, we must lay the foundation of knowledge through the telling of the great accomplishments of our heroic past and explain why we need to remain dominant in the future. However, stories are not enough and we must create opportunities for the American public to have a “hands on” experience that will create a lasting impression. In other words, we must break free from our self-induced technological and personal isolation from the American public and engage in inter-personal contact to reignite the flame of adventurism and instill an excitement for aerospace development and activities—in other words, bring the enthusiasm of air and space directly to the American public.

Celebrating Our History

“Success four flights thursday morning all against twenty one mile wind started from Level with engine power alone average speed through air thirty one miles longest 57 seconds inform Press home Christmas”

- First Telegraph from Orville Wright, 17 Dec, 1903

“Hey Ridley, that Machometer is acting screwy. It just went off the scale on me.”

- General Charles ‘Chuck’ Yeager, first radio transmission after going supersonic for the first time, a coded message indicating success, 14 Oct 1947.

“That’s one small step for man; one giant leap for mankind.”

- Neil Armstrong, first words uttered with first step on the surface of the moon, 21 July 1969.

The initial American conquerors of the air, Orville and Wilbur Wright, did not have their paths paved with gold. Despite their success in 1903, the government was not as keen toward heavier-than-air aircraft as one may expect. It was not until 1908 that the Wrights and their aircraft finally gained traction. Despite a crash during a demonstration flight that nearly killed Orville Wright, but which was fatal to Lieutenant Thomas Selfridge, the Army started to see the advantages an aircraft could bring to a battle. A year later, the Army accepted delivery of its first aircraft and military aviation within the US was born. Endurance and speed records were rapidly broken, and on July 30, 1909, the Wright Flyer undertook an official speed trial and covered a 10-mile course in just under 15 minutes obtaining an average speed of 45.8 miles per hour—a break-neck speed for the time.⁸ Orville and Wilbur continued to perform various demonstrations throughout the country to introduce flying to the public and were showered with numerous accolades and awards; thus spreading the news of aviation and stirring the imagination and adventurous spirit of inventors, pilots, and enthusiasts across the country.

The pace of growth of aviation during peacetime was overtaken rapidly by the needs of war. World War I was truly a brutal war of attrition that imparted a great toll on the populations

of Europe. However, there was one exception to the impersonal slaughter—one that returned some semblance of chivalry and honor to the battlefield. High above the barbarous battlefields, new knights of the air engaged in mortal combat. This brand of aerial jousting reinvigorated an element of introspective combat that was thought to be irretrievably lost. Aviation in World War I was nascent in its application and its capabilities were limited, but missions developed and soon expanded from observation, to pursuit, to close air support, and attempts at strategic bombing.

With the horrors of World War I, “the public at home, desperate for some of the glamour and glory they had been taught to expect—the heroic exploits that would keep them interested in, and supportive of, the war effort—soon fastened on the names of pilots that began to appear in reports of the fighting.”⁹ Initially conceived by newspapers vice the military, the idea of the “ace” soon took hold. First used by the French, an ace was any pilot who had shot down a certain number of the adversary—the number 5 was selected at random. Governments realized the psychological value these aerial heroes and their associated exploits garnered. Aces became household names and were bestowed with assorted medals, special aircraft, and even entire squadrons.¹⁰ Within the US, names such as Captain Edward Rickenbacker endeared pride and created a sense of enthusiasm and excitement to aviation enthusiasts young and old.

In the interwar years, aviation continued to make headlines for various reasons. The need to prove the efficacy of aviation was problematic as convincing the public to spend precious tax dollars on aircraft and aviation related industry in times of peace was a difficult task. However, aviation advances continued to make the news. “The public had an almost insatiable appetite for deeds of aerial daring ... There were races and trophies to be won, long-distance and altitude records to be set, and, in however a tangential way, all of these advanced the cause of the airmen. They not only gained popular support but also encouraged research and development.”¹¹ For

example, in 1927 Charles Lindbergh became the first person to complete a solo flight across the Atlantic between North America and mainland Europe. For his tremendous feat of aerial prowess, Charles Lindbergh received instantaneous fame and notoriety, as well as numerous awards, and the accomplishment was well publicized and documented for a worldwide audience.

Other methods to bring the adventuresome spirit of aviation to the American public occurred between the wars. Barnstorming pilots crisscrossed the nation performing exciting displays of aerial feats and offering plane rides for a fee. Some pilots combined efforts to create a “flying circus” with several planes and stunt people—essentially an early version of an airshow. Many of the towns where these acts were performed had never seen an aircraft up-close before and numerous towns came to a standstill when the barnstormers came through. These aerial performers brought aviation directly to the public and generated an enthusiasm through interpersonal interaction and enabling the public to experience the thrill of flight.¹²

As well, in 1934 the Air Corps took over delivery of the US Mail when President Franklin D. Roosevelt cancelled the airmail contracts. Until such time new contracts were awarded, the Air Corps carried the burden. The generated headlines were not all positive as poor weather, lack of both bad weather and night flying experience of aircrew, as well as insufficient instrumentation led to sixty-six crashes and the death of twelve airman. However, despite the struggles, support for the Air Corps did not diminish and the experience taught important lessons that were highly beneficial in the near future. The Air Corps initiated courses in instrument flying, as well as improvements in aircraft avionics, radios, and navigation equipment.¹³ Despite the difficulties, General Hap Arnold would later state the experience was “the greatest peacetime training in Air Corps History.”¹⁴ Although this period in aviation history may not have created great enthusiasm for aviation, it certainly generated a great deal of learning and publicity.

Throughout the course of World War II, aviation made giant technological strides. Creation of aircraft that could fly higher, farther, faster, and out-maneuver an adversary proceeded at an awe-inspiring rate. Industry had mobilized, production was streamlined, and at its peak, over 96,300 aircraft were produced in the US during 1944. As well, the aviation industry consisted of over 2 million workers.¹⁵ From the bombing raids of the Eighth Air Force, the daring attack of Doolittle's Raiders, the exploits of the American Volunteer Group in China, Naval Aviation's successes at Midway and the Great Marianas Turkey Shoot, to the dropping of the atomic bomb "Little Boy" from the belly of the Enola Gay, the American public was well aware of air power's impact to the war. The role of aviation increased from its nascent missions in World War I to its expansive application during World War II, and the American public was constantly made aware of its impact and success.

The enthusiasm and admiration for aviation continued in the post-World War II era. The Air Force became a separate service and was immediately thrust into the limelight due to the geopolitical challenges of the Cold War. The Berlin Airlift, one of airpower's greatest achievements, highlighted the ability of aviation to deliver massive amounts of needed cargo in a timely fashion. "Every day, newspapers across the United States carried the tonnage figures and number of flights for the previous twenty-four hours—usually on the front pages. Americans charted the course of their ups and downs as if they were following a pennant race."¹⁶ Seeing tangible results presented in an easily understood manner, as well as the widely read articles on the crews and their travails, enabled the enthusiasm and pride of American aviation to remain in the forefront of the American public. Unfortunately, as with many actions, the interest of the American public regarding the airlift waned over time as they became accustomed to its success. Only in Berlin—naturally—did the enthusiasm and appreciation of the airlift remain high.¹⁷

Nowhere was the excitement of air travel more personally experienced than at the dawn of the jet age. Civilian airliners offered the opportunity to travel long distances at great speeds and opened new and exciting destinations that not too long before would have remained only a dream for a majority of citizens. What was once a travel option available only to the wealthy soon became accessible to a vast majority of the American—and world—public. No longer was aviation only something one must read about; rather, one could experience it first-hand. The number of jet commercial civilian airliners increased rapidly which correspondingly increased flying opportunities and dramatically reduced time required for travel. Subsequently, the public's estimate of the size of the world was markedly reduced.¹⁸

With the Cold War competition between the US and the Soviet Union in full swing, the vast frontier of space became the next impromptu arena for the two heavyweights to do battle. The launch of Sputnik sparked an urgency within the US as never before, and the challenge and opportunity to conquer the unknown of space stoked the fires of adventurism for the explorers, engineers, and public alike. The Mercury 7 astronauts were on public display at every opportunity and were held in high-esteem throughout the country. Each launch captivated the nation and received unprecedented press coverage. For Alan Shepard's historic voyage into space, besides the worldwide newsprint, television, and radio coverage, over a half a million people trekked to the perimeters of the Cape to witness history in the making. After John Glenn became the first American to orbit the Earth, he was publically hailed as a hero for enabling the US to catch up to the Russian space program. A trip to Washington D.C. to meet President Kennedy and take part in a parade witnessed by 500,000 people was followed by a ticker-tape parade in New York City where an estimated 4 million people came to celebrate. The public's excitement for conquering space only increased in intensity during the race to land a man on the

moon. The launch of *Apollo 11*, which held the men who would take the first steps on the moon, became the “must-see” event of a lifetime. The live telecast of the first steps on the moon, and Neil Armstrong’s poignant first words, were seared into everyone’s memory and instilled pride in every heart. Upon their return, the Astronauts of *Apollo 11* embarked on a twenty-four country, twenty-seven city publicity tour to capitalize on their historic accomplishment.¹⁹

However, after conquering the moon there was little else to continue the enthusiasm and sense of adventure that dominated the space program. “No longer was there the driving force in the country’s space effort that had carried America to the moon. NASA’s visions were lost on the floors of a disenchanted Congress and a public that rapidly became apathetic.”²⁰ Some momentum was regained with the advent of the Space Shuttle program as 750,000 spectators crowded the beaches to view the first launch. However, each successive launch and recovery created a sense of reliability that made space flight routine and public interest naturally waned. It was not until the *Challenger* disaster, and again years later with the *Columbia* incident, did the public once again grasp the dangers of space travel.²¹ Americans embraced the mission in space, but were no longer enthralled by its conquest as Earth orbit missions were neither new nor exciting and did not offer the exhilaration that comes with unconquered challenges.

Since the end of the Cold War the US has participated in several military operations that have highlighted our dominance in the aerospace realm. Operations Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom displayed the supremacy of US air and space operations to the world and cemented our extensive asymmetric advantage in the aerospace realm. Coverage of rapid mobilization, videos of the employment of precision weapons, and still images from satellites dominated the news cycle and ensconced a sense of awe in the American public. However, as more and more operations occur in which our air and space superiority is not

seriously challenged, what was once a sense of awe has transformed into the public's expectation of dominance and an assumption of a permanent American superiority. Correspondingly, this superiority reduces the sense of intrigue, adventure, and excitement generated by aerospace achievements.

The future of the American effort in air and space is fraught with challenges. The rapid pace of technological change demands tactical and strategic agility to meet any trial. "The pace at which disruptive technologies may appear and proliferate will result in operational advantages that are increasingly short-lived. Dynamic and increasingly frequent shifts in the geopolitical power balance will have significant implications for basing, posture, and partner capabilities that may favor flexibility over footprint. Similarly, more rapid changes that challenge access through – and freedom within – the air, space, and cyberspace commons will demand continual attention and emphasis on identifying multiple domain options rather than robust approaches within a single domain."²² Areas of future advancement for the Air Force to stay on leading edge of air and space development and research include hypersonics, nanotechnology, directed energy weapons, as well as unmanned and automated systems.²³ Civilian air and space efforts will also continue unabated as the nation seeks more energy efficient means of travel as well as private/commercial efforts to pursue manned space travel.

In order to meet these challenges, it is incumbent upon the Air Force to assume a greater role in attracting young men and women to be the technological leaders in the air and space arena. Whether the upcoming generation joins the Air Force should not be the sole end of any recruiting campaign; rather, it must generate enthusiasm about air and space achievements and reignite a sense of adventure in the challenges that are faced and the potential breakthroughs that may occur.

A Product to Sell

*"I was sold on flying as soon as I had a taste for it."*²⁴
- John Glenn

Through the course of American history, the public eagerly wraps its arms around adventurous human enterprises. However, returning to an era in which the American public yearned for great achievements from air and space advances and exploration is not likely to occur at the levels seen in the past. Reasons for this include:

- Exorbitant costs of cutting-edge air and space programs in an era of budget reductions.
- Near elimination of the manned space program and lack of an objective that could rally the country (such as President Kennedy's challenge to place a man on the moon).
- A technological shift to unmanned systems that subsequently reduces the public's emotional attachment to any project. What was once a "human achievement" is now attributed to "technological progress."
- Air travel is routine, safe, and common.

Decades of aerospace dominance has bred both familiarity and indifference towards air and space endeavors. This constitutes an impediment for the Air Force as it seeks to communicate to a dispassionate public the need to create and apply innovative technologies and concepts to address various geopolitical and national problems. To overcome the public's apathy toward air and space development, the Air Force partakes in an extensive advertising campaign through commercial television, internet, and social media. As important as each of these are to raising awareness and interest in aerospace activities, they often fail to generate the passion and interest that comes with inter-personal contact and first-hand experiences.

To generate excitement in aerospace activities, a concerted marketing and merchandising campaign must be accomplished to light the fire of adventurism and curiosity within the younger generation. While advertising via technological means such as television, internet, and social media reaches an overwhelming majority of individuals, it is only able to provide a cursory

introduction to the vast capabilities of air and space power and does not necessarily generate a “contagiousness” and enthusiasm about aerospace activity.

Any marketing campaign must be built around the product that is being sold. In this case, the product is the endless possibilities of air and space power to affect the world around us. Individuals can partake in, and have an impact on, this product through several ways, to include becoming a scientist, an engineer, a member of the Air Force, etc... Therefore, to reignite the enthusiasm of air and space activity, the product must be sold.

While technology constantly changes, the target audience is still human and needs an emotional connection to a product. Selling a product has been analyzed since the days of the traveling salesman. In days past, authors wrote on the five steps of the selling process: 1) attention, 2) interest, 3) conviction, 4) desire, and 5) close.²⁵ The first step only opens the door, while next three solidify the sale. To solidify the sale, the salesman demonstrated the product. “Why are demonstrations so effective in interesting prospects? ... Demonstrations do something more, however, than merely make your talk interesting. They make your talk convincing. What the prospect sees with his own eyes he must believe in his own brain.”²⁶

Though the days of the traveling salesman have all but come to a close, the reasons people are attracted to a product has not drastically changed. Companies still spend a great deal of time and effort into making their product available for demonstration. “Almost all unplanned buying is a result of touching, hearing, smelling or tasting something on the premises of the store—which is why merchandising can be more powerful than marketing, and why the Internet, catalogs, and home shopping on TV will complement but never seriously challenge real live stores.”²⁷ People may initially be attracted to a product, but the emotional experience of using all our senses to appreciate the product helps eliminate any sense of skepticism or doubt.²⁸

According to research, even the millennial generation, which is regarded as extremely tech-savvy and wedded to various technological devices, seeks “offline” activities in order to “discuss experiences and share recommendations with friends.”²⁹ Apple is a technologically based company, yet their Apple store generates tremendous revenue and social excitement in the millennial generation due to their in-store experience.³⁰

Word of mouth generates great social influence. Everyone shares stories—via personal contact or online—of experiences, activities, and encounters numerous times a day. “The things others tell us, e-mail us, and text us have a significant impact on what we think, read, buy, and do.”³¹ What others share is highly influential and has greater impact than traditional advertising for two main reasons. One, it is more persuasive than traditional advertising. An advertisement will tell you how “great” a product is, but your personal contacts and friends will tell the candid truth and provide honest opinions. Second, word of mouth is directed at a targeted audience who is interested in the discussion. Individuals tend to talk to others on topics that interest both of them, thereby generating greater enthusiasm for the topic.³² As well, just like the merchandising of goods in a store, things that are observable are more likely to be discussed. “Public visibility boosts word of mouth. The easier something is to see, the more people talk about it.”³³

The Air Force has a robust and tech-savvy marketing campaign. The updated Air Force commercials have excellent and compelling content and provide the first step in the selling process—obtaining the attention of the consumer. However, that is only the first step. In order to reignite public enthusiasm and the sense of adventurism in the conquest of air and space, the Air Force needs to go beyond marketing and initiate a “merchandising” campaign. This campaign would seek to engage all the senses of the public and generate enthusiasm via word of mouth through more interpersonal contact.

A More Expansive and Thorough Outreach

“As soon as we left the ground I knew myself I had to fly!”

- Amelia Earhart, after her first flight, a ten-minute sight-seeing trip over Los Angeles, 1920.³⁴

“In the press grandstand where I watched Discovery rise against the cloudless sky, the media hit the abort button on cynicism. The Earth shook to the sounds of man, three miles away. The candle lit... only someone stripped of awe can leave a launch untouched.”

- Johnathon Alter, Newsweek magazine, 9 November 1998

To reignite the sense of adventurism and instill a desire to be technological leaders in the air and space realm requires more than updated television advertising and a smooth social media campaign. Although each of these is important, it only accomplishes the marketing of the Air Force and its capabilities, and not the merchandising. Of the five steps of selling a product referenced in the previous chapter, the commercials and the social media campaigns accomplish the first step of getting the *attention* of the prospect. It is through the subsequent steps of grabbing their *interest* and *conviction* and instilling a resultant *desire* for air and space activities will a renewed passion be generated.

In an era of reduced budgets and fiscal constraint, the methods by which to merchandise air and space opportunities to the nation's youth requires avid leadership. The nation is neither about to embark on a costly manned space journey to distant planets nor are test pilots hurtling themselves to speeds and heights unknown in order to capture the attention of the citizenry. However, current operations and technological developments in air and space can still seize the imagination and set the course for future learning and active participation in their development. The linchpin to the return of American adventurism in air and space is leadership at all levels, and taking the time to create interpersonal events that go beyond merely introducing air and space activities to fostering an environment where inquisitiveness and passion are generated.

In addition, while the target audience for this campaign is primarily the American youth, it must appeal to, and incorporate, the entire age spectrum. Reminding the older generation of the accomplishments of the past—and celebrating those accomplishments—must play as great a role as that of attracting the youth to air and space activities. The myriad of veterans that have witnessed, experienced, developed, and led this nation in past aerospace development are as important to reigniting the flame of air and space adventurism as ever before. The Joint Advertising Marketing Research and Studies (JAMRS) operated by the Department of Defense performed research regarding the propensity of youth to serve in the armed services. Referencing numerous studies, the latest available report confirmed previous polling results regarding the impact of veterans on the propensity of youth to serve.

“Additionally, the U.S. veteran population has been decreasing in size. For instance, in 1995, 36.8% of youth ages 16 to 21 had fathers who had served in the U.S. Armed Forces. As of December 2010, this estimated proportion had dropped to only 16% of youth ages 16 to 21. This decline in the veteran population is noteworthy because former Service men and women have typically had a strong, positive influence on military recruiting.”³⁵

The report later states,

“Finally, the U.S. veteran population has been steadily declining over the past 10 years. Given the positive impact that veterans have on military recruiting, the projected decline of the U.S. veteran population indicates a more difficult scenario for recruitment.”³⁶

Although the veteran population is declining, the positive impact veterans have on the propensity to serve is well documented. Therefore, the Air Force needs to include her veterans in any campaign to reinvigorate the nation’s youth toward air and space activities. Veterans bring their knowledge, wisdom, and experience that transform a mere passing attentive glance to a sincere interest and desire to learn, hear, and do more.

Advertising and social media only go so far in attracting youth; it is like an impulse that quickly loses its impact as attention is diverted to other topics and interest and desire do not take root. Considering fiscal constraints and restraints, great sums of money will not be available to aid in this effort. However, what is required is dynamic leadership; the type of leadership that can bring the excitement of air and space activities to the public in varying manners.

Recommendations:

Bring the public to us:

- Create a recurring “Open House” program for all bases. This program would enable each base to showcase its operations to local civilian organizations (schools, business, civic leaders, concerned citizens, etc...) to promote how it supports air and space power and subsequently strengthen community ties. Wing Commanders would be responsible for its implementation and content as each base provides varying capabilities and opportunities.
- Air Force engineering and research institutions should create a similar “Open House” program with local high school and college institutions as well as local technology and engineering firms to help garner interest in air and space research professions.
- Expand ties to local veteran groups. Create programs to have current Air Force members come and speak to their organizations. In a reciprocal manner, enlist their efforts to aid in community outreach, participate in base “Open House” programs, monthly luncheons for veterans to share their stories with base personnel, and encourage greater participation in other base programs and recognition (Medal Ceremonies, Change of Command Ceremonies, etc...).
- Invite local schools, civil, and business groups to various space launches, provide information, and entertain questions with various engineers, maintenance, and mission personnel to instill knowledge, a desire to learn, and create a memory for individuals to share with one another.
- Have members of local schools and businesses in attendance at medal ceremonies to promote great achievements and stir a sense of pride and wonder.

Go to the American public:

- Reinvigorate efforts to participate in flyovers at public events to include sporting events, funerals, holiday remembrances, etc... Many of these flyovers can be done in concert with local training sorties and require minimal adjustment to flying schedules.
- Each Wing develop a program for Air Force members to speak at local gatherings (schools, civic events, veteran organizations, Civil Air Patrol, Junior ROTC, etc...) to describe their experiences. Preferably, members would have recent deployed/combat experience and can speak on current Air Force capabilities and direction for the future.

- Air Force Public Affairs should pen articles on Collier and Mackay Trophy* nominees and their particular achievements for publication in national magazines and on-line media. In addition, nominees should attend speaking events in their local area to generate interest in the award and their accomplishment.
- Wing Flight Safety Officers should be required to visit all civilian and municipal airfields within a specified radius (approximately 50 miles) on an annual basis. The intent is to meet with airfield authorities, ensure standard arrival/departure procedures for the base do not interfere with civil operations, seek dialogue on outstanding issues, and provide an opportunity for local flight school students to discuss military flying operations.
- Flying wings should seek opportunities for select officers to speak at local schools that teach aviation related topics (i.e. Embry-Riddle, Junior ROTC classes, private pilot ground school classes, etc...) to discuss current and future aviation and space related technologies in the Air Force.
- Seek additional opportunities for documentaries and public exposure. The recent National Geographic series on Air Force Pararescue personnel entitled “Inside Combat Rescue” is an excellent example.

The recommendation with the potential to reach consistently the greatest number of people is the idea of an “Open House” program. Organized properly, this program can be simple and routine, but could have long-lasting effects in generating excitement for service and for air and space activities. Below is just an example of a proposed Open House itinerary:

- 1) Incoming group meets the Wing Commander and a local veteran at the respective base Heritage Park and discusses the history of the base, its mission, and introduces the local veteran to speak on their experiences.
- 2) Group proceeds to security forces squadron for introduction to technology used, a security dog demonstration, and have a recently deployed member speak of their experience.
- 3) Group proceeds to civil engineering squadron for introduction to vast array of specialties required and technologies used across the base, and have a recently deployed member speak of their deployed experience.
- 4) Group proceeds to aircraft maintenance squadron for introduction into the intricacies of aircraft maintenance to include avionics, engines, and structures.
- 5) Group receives a demonstration of aircraft loading (either munitions or cargo) and observes maintenance troops prepare an aircraft for flight.
- 6) Group proceeds to a flying squadron to sit in on mass brief, an unclassified intel brief (or have a “scenario” created), and flight brief.
- 7) Group proceeds on the flight-line to observe pre-flight and launch.

* The Collier Trophy is presented annually by the National Aeronautic Association for “the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, and safety of air or space vehicles. The Mackay Trophy is presented annually by the National Aeronautic Association for “the most meritorious flight of the year” by an Air Force person, persons, or organization. For more information, visit the National Aeronautic Association website at www.naa.aero.

- 8) Group proceeds to the air traffic control tower to observe radio communications, technology, and intricacies of aircraft movement on and around the airfield.
- 9) Group closes the day back at the Heritage Park and meets with designated representative from wing leadership, a second local veteran, and a recent recipient of an aerial flying medal in one of the local squadrons to discuss their experiences and answer any final questions.

Obviously, the content of any “Open House” program would vary from base to base dependent on the assets and mission of the base. However, the example provides a method by which to reach out to the public, gain their attention, attract interest and instill a desire to participate through interpersonal interaction. It is through this program that people who make their way through an “Open House” experience would then talk about their experiences and generate additional enthusiasm and desire for their peers to learn and know more about the opportunities and challenges that are present now and await in the future. No more than 30-45 minutes need be spent at any particular location. The idea is not to have the visiting group learn everything that occurs; rather, obtain a small, but impactful, taste of what occurs and how the men and women who serve enable the nation to achieve its desired goals. As well, the intent is to also spark a desire in youth to learn about emerging technologies, participate in the development of air and space technologies, or serve the nation as a member of the Air Force.

The Air Force needs more than just a catchy slogan, an attractive emblem, slick commercials, and a tech-savvy social media campaign. It must also be in the business of “merchandising” and create an environment where individuals have personal experiences that subsequently are socially transmitted to their friends and neighbors.

Conclusion

“We need bold leadership today because today we are surrounded by uncertainty on the world scene. We have an uncertain and constantly changing landscape, and this is true politically, militarily, technologically as well. ... I do feel quite certain that the next 30 years of our Air Force will not look the same as the previous 67 have looked.”³⁷

*-Secretary of the Air Force, Deborah Lee James
15 September 2014*

The future of aviation and space is as thrilling now as it ever has been to those who have visions of slipping the surly bonds of Earth. However, the excitement and sense of adventure has dimmed amongst the American public. Recapturing a time where the nation is enthralled by air and space activities may be a bridge too far; however, the nation's aerospace dominance must not be allowed to fade despite the lack of public notoriety.

The expectation for the future geopolitical context demands continued advancements in air and space for our nation to be fully secure and achieve its strategic aims. From terrorism to regional threats, humanitarian efforts to countering near-peer competitors, the asymmetric advantage aerospace power provides is indispensable. While it is true that not all geopolitical problems can be singularly solved with aerospace power, it is equally true that none can be solved without it. Geography still matters and there will always be oceans and terrain that must be overcome to provide aid or to address a threat. Air and space capabilities provide a vast array of options and capabilities to the national command authorities that are unmatched by any other service acting in or through any other medium.

Air superiority enables freedom of movement and freedom of action in the other domains and space is the ultimate high ground. While America's ability to project air power is—for all intents and purposes—uncontested; it will not necessarily remain so in the future. Regrettably, the nation's manned space program, once an all-consuming public endeavor, is essentially

stagnant. The need to reignite the flame of excitement and adventurism within the realm of air and space activities is needed as much now as ever before.

As an advanced aerospace nation, the US retains an undeniable asymmetric geopolitical advantage. However, to keep this advantage, the Air Force must remind the American public of our past, our current domination of the aerospace environment, and the need to remain dominant in the future and reinvigorate our adventurous spirit regarding aerospace development in the American public. The current advertising campaign, to include social media and internet venues, certainly reaches a great many people; however, the Air Force must do more than just marketing—we must merchandize.

Personal interaction must play a greater role in merchandizing the excitement, intellectual challenges, and adventure air and space technologies provide. Outreach to the American public, and youth in particular, must be built upon a foundation of past accomplishments in air and space, buttressed with current aviation and space professionals and technologies, and projected towards a future that is both boundless and conquerable. We must remind the public of what we have accomplished, celebrate historic figures, and enlist their help in spreading the excitement that only comes through air and space activities. The Air Force must not be insular regarding its personnel and technologies, but rather must invite members of the community to take part in and understand aerospace issues. While advertisements and social media may reach a wide audience, they cannot touch the imagination nor invigorate a sense of enthusiasm to the extent other methods that incorporate all of the body's senses. Only through personal interaction combined with a physical experience can one truly be enthralled with the sight and sound of a flyover, the chest-pounding rumble of a rocket launch, or have one's intellectual curiosity aroused in an advanced laboratory.

The supremacy of American aerospace power must never be assumed as a given nor allowed to stagnate and wither. A rapidly changing world with ever-present threats requires the US maintains its dominance in air and space in order to ensure world peace and stability. Our past is comprised of events that once seemed impossible only to be made routine through technological advances in air and space. Yet we have only scratched the surface of what can be achieved; and in order to realize even greater accomplishments, the Air Force must not remain technologically and personally isolated from the American public. In order to forge a future of our aerospace nation, we must lead, we must enlist veterans, we must interact, and we must reach out with a personal touch.



Notes:

¹ CSAF Gen Mark Welsh III speech to the Air & Space Conference and Technology Exposition, Sept. 15, 2014 in Washington D.C, found at <http://www.af.mil/Portals/1/documents/af%20events/Speeches/16SEP2014-CSAF-GenMarkWelsh-AFUpdate.pdf?timestamp=1410982866264>.

² Colonel Wolfgang W.E. Samuel, *I Always Wanted to Fly: America's Cold War Airmen* (Jackson, MS: University Press of Mississippi, 2001), 323-324.

³ Colin S. Gray, *Airpower for Strategic Effect* (Maxwell AFB, AL: Air University Press, 2012), 307.

⁴ Secretary of Defense Chuck Hagel speech at "Defense Innovation Days" Opening Keynote (Southeastern New England Defense Industry Alliance) in Newport, Rhode Island, September 03, 2014 found at <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1877>.

⁵ United States Air Force, *US Air Force Strategic Environment Assessment: 2014-2034* (Strategic Plans and Programs, 2014), 6-11.

⁶ James R. Clapper, Director of National Intelligence, Statement for the Record to the Senate Select Committee on Intelligence, *Worldwide Threat Assessment of the US Intelligence Community*, 29 January 2014, 4-7, 9-11, 12-27.

⁷ US Air Force, *US Air Force Strategic Environment Assessment: 2014-2034*, 2014, 30.

⁸ Stephen Budiansky, *Air Power: The Men, Machines, and Ideas that Revolutionized War, From Kitty Hawk to Iraq* (New York, NY: Penguin Books, 2005), 21-31.

⁹ James L. Stokesbury, *A Short History of Air Power* (New York, NY: William Morrow and Company, Inc., 1986), 45.

¹⁰ *Ibid.*, 45-51.

¹¹ *Ibid.*, 122.

¹² David H. Onkst, U.S. Centennial of Flight Commission, "Barnstormers," http://centennialofflight.net/essay/Explorers_Record_Setters_and_Daredevils/barnstormers/EX12.htm.

¹³ DeWitt S. Copp, *A Few Great Captains: The Men and Events That Shaped the Development of U.S. Air Power* (McLean, VA: EPM Publications, INC., The Air Force Historical Foundation, 1980), 150-221, and Stephen Budiansky, *Air Power: The Men, Machines, and Ideas that Revolutionized War, From Kitty Hawk to Iraq*, 168-169.

¹⁴ DeWitt S. Copp, *A Few Great Captains: The Men and Events That Shaped the Development of U.S. Air Power*, 221.

¹⁵ Richard Overy, *The Air War: 1939-1945*, (Washington, D.C., Potomac Books, Inc., 2005), 149-184

¹⁶ Andrei Cherny, *The Candy Bombers: The Untold Story of the Berlin Airlift and America's Finest Hour* (New York, NY: The Berkley Publishing Group, 2008), 321.

¹⁷ *Ibid.*, 509-511.

¹⁸ Sam Howe Verhovek, *Jet Age: The Comet, the 707, and the Race to Shrink the World* (New York, NY; Penguin Group, 2010), xv-xxiv, 196-197.

¹⁹ Jay Barbree, *“Live From Cape Canaveral”: Covering the Space Race, From Sputnik to Today* (New York, NY: HarperCollins Publishers Inc., 2007), 53-64, 75-81, 152-172.

²⁰ *Ibid.*, 200.

²¹ *Ibid.*, 220-225, 226-268.

²² United States Air Force, *America’s Air Force: A Call to the Future*, July 2014, 8.

²³ *Ibid.*, 18-19.

²⁴ As quoted per www.skygod.com/quotes/quotes.html.

²⁵ Percy H. Whiting, *The Five Great Rules of Selling* (New York, NY: McGraw-Hill Book Company, Inc., 1957), 49.

²⁶ *Ibid.*, 122.

²⁷ Paco Underhill, *Why We Buy: The Science of Shopping* (New York, NY: Simon & Schuster, 1999), 158.

²⁸ *Ibid.*, 161-182.

²⁹ Jeff Fromm and Christie Garton, *Marketing to Millennials: Reach the Largest and Most Influential Generation of Consumers Ever* (New York, NY: AMACOM, American Management Association, 2013), 67. Research cited in book is from Christine Barton, Lara Koslow, Jeff Fromm, and Chris Egan, “Millennial Passions: Food, Fashion, and Friends” bcgperspectives.com, November 6, 2010, https://www.bcgperspectives.com/content/articles/consumer_insight_consumer_products_millennial_passions/.

³⁰ *Ibid.*, 64-73.

³¹ Jonah Berger, *Contagious: Why Things Catch On* (New York, NY: Simon and Schuster, 2013), 7.

³² *Ibid.*, 8-16.

³³ *Ibid.*, 136.

³⁴ As quoted at www.skygod.com/quotes/quotes.html.

³⁵ Department of Defense, Youth Wave Poll 20 – December 2010, JAMRS Report No. 2011-05 (Department of Defense, Defense Human Resources Activity, Joint Advertising, Market Research & Studies, Alexandria, VA, 2011), ix. Located at: jamrs.defense.gov/MarketResearchStudies/Reports.aspx.

³⁶ *Ibid.*, 2-2.

³⁷ Secretary of the Air Force Deborah Lee James speech to the Air & Space Conference and Technology Exposition, Sept. 15, 2014 in Washington D.C, found at http://www.af.mil/Portals/1/documents/af%20events/Speeches/15SEP2014-SecAF-Deborah-Lee-James-AFA-State%20of%20the%20AF_v2.pdf

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