

ABSTRACT

Title of Thesis: **BIGGER, BETTER, FASTER, MORE: JET FIGHTER
DEVELOPMENT AND GRAND STRATEGY IN THE UNITED
STATES AIR FORCE, 1947-1953**

 Jeremy Ryan Linden, Master of Arts, 2003

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United States Air Force jet fighter development and strategy in the post-World War II period is illustrative of the beginning stages of the strategy of annihilation that the United States has adopted in the late-20th and 21st centuries. Development and procurement of fighters is a complex process that must take into account the potential mission and purpose of the aircraft in overall strategy, the impact of that technology upon existing forces and missions, and the continuum of costs versus performance. The Air Force chose a developmental path for jet fighters which concentrated on the assurance that qualitatively superior aircraft could outperform greater numbers of technologically comparable enemy aircraft.

The first section of this thesis provides documentary and secondary evidence concerning the transformation of air warfare due to jet technology. Section two argues

the strategic significance of jet fighter development as a precursor of a strategy of annihilation.

BIGGER, BETTER, FASTER, MORE:
JET FIGHTER DEVELOPMENT AND GRAND STRATEGY
IN THE UNITED STATES AIR FORCE,
1947-1953

by

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PART ONE

“In the broad fields of the strategic air, air defense, and tactical air, it would be a dangerous policy, I believe, to rely on numbers as opposed to quality.”¹

- Hon. Thomas K. Finletter,
Secretary of the Air Force

INTRODUCTION

On 30 January 1952, Thomas Finletter, the Secretary of the Air Force, spoke to the House of Representatives Committee on Appropriations about aircraft procurement for the end of the Korean War and the years directly following. Little could he know that his statement would be representative not only of appropriations for the United States Air Force in 1953 but also of the decades to come. The early 1950s saw the beginning of production and cost trends in the Air Force that have continued to the present day; it is no coincidence that this was the same period that saw the Air Force complete its independence from the United States Army, that saw the evolution of the jet-aircraft into a common weapon, and that saw the role of the strategic bomber begin to be challenged by jet fighter-bombers and interceptors that could not only perform its job but could also prevent it from performing its job. Jet air warfare was still a developing field; the first jet-powered aircraft had only flown in 1939, the first jet-aircraft put into production, the Messerschmidt Me262, came off production lines in limited numbers in late 1943. The first jet-on-jet combat did not come until November 1950. The advent of the Korean War served as the stage for a fundamental change in the nature of air warfare.

¹ Congress, House of Representatives, Committee on Appropriations, *Department of the Air Force Appropriations for 1953*, 82nd Cong., 30 January 1952, 4.

What United States military leaders of the period could not realize, and what can be seen only in retrospect, was that the Korean War and the years surrounding it amounted to nothing less than an aeronautic revolution in the development of the United States Air Force. Finletter's statement epitomized this change – the United States Air Force caught itself in a contest of “bigger, better, faster, more” mentality in the midst of a Cold War arms race with the Soviet Union. The aircraft had to be bigger, to be able to serve a dual role as fighter and bomber in a period where short range strategic missions were to be increasingly given to the smaller, faster jets. They had to be better – specifically, better than the new generation of jet fighters being produced by the Soviet Union and, as the 1950s progressed, better than themselves as new aircraft were produced not because of a need to match the Soviets, but from a need to perform the same functions as earlier aircraft, only better. Faster was somewhat more difficult; Soviet models were often lighter and capable of faster speeds at similar elevations, but each new aircraft was expected to reach new highs in speed, while at the same time maintaining the “better” aspect – to be better in construction, maneuverability, and dependability than anything the Soviet Union could put up against it. All of these factors led to the “more” – the key debate of the period concerning fighter aircraft. The question was, as Finletter stated, one of quality or quantity. The United States could produce a smaller number of higher quality aircraft, and hope to defeat the Soviet Union with better aircraft and better trained pilots, or they could produce a large number of lesser-quality aircraft, and hope to win through force of numbers, all the while standing to suffer greater losses in aircraft and pilots. The decisions that were made during the Korean War foreshadowed the next 50 years of jet fighter use and development.

Alexander P. DeSeversky reminded the American public in 1942 that “the challenge of air power cannot be met by merely ‘admitting’ our failures and undertaking to ‘catch up’ with more advanced countries.”² The actions of the United States Air Force concerning jet air power after World War II are in direct continuance with this plea – the goal was not to “catch up” or even to maintain their position relative to military competitors. The American government, and only to a slightly lesser extent, the American public saw it as their world responsibility to contain the “threat” of communism coming from the Soviet Union. As such, the question after World War II became one of means – asking how air power was to be maintained after the war, and what form it would take. With this understanding, American success in aerial combat in the Korean War was by no means a foregone conclusion; it was the changes and decisions made during the late 1940s and early 1950s that not only provided the means necessary to achieve a 55:1 kill/loss ratio for the North American F-86 Sabre in the final three months of the Korean War, but which also resulted in a 14:1 kill/loss ratio for F-86 for the entire war.³ The story of air superiority in Korea is the story of those changes and developments, the story of the construction of jet aircraft in the United States, the story of the aircraft and the pilots who flew them, the story of the institutions that made the

² Alexander P. DeSeversky, *Victory Through Air Power* (New York: Simon and Schuster, 1942), 4.

³ See Ivan Rendall, *Rolling Thunder: Jet Combat from World War II to the Gulf War* (New York: The Free Press, 1997), 95, and Air Force Historical Research Agency, “Korea, Summer 1953: May 1-July 27, 1953” (accessed 11/08/2002), available at: http://www.maxwell.af.mil/au/afhra/wwwroot/korean_war/korean_war_campaigns/korea_summer_050153_072753.html.

decisions. The story of air superiority in Korea is the beginning of the story of American jet air power in the 20th century.

PRE-WAR CONDITIONS: THE UNITED STATES AIR FORCE AND THE AIRCRAFT INDUSTRY

American fighter superiority was not assured in Korea. Prior to 1950, the basic composition of the United States Air Force, particularly in terms of types and numbers of aircraft and personnel, was in a drastic state of fluctuation. The United States did not simply transfer the same powerful air arm from the control of one group to another in 1947. With the demobilization of 1945 and 1946 that reduced the armed forces to a more affordable level for post-war funding, it became the work of the new Air Force to rebuild the fractured body it inherited and ensure that organized forces would be prepared to meet the demands placed upon them.

The Declaration of Policy of the National Security Act of 1947 changed the face of American air power. On 18 September 1947, with the swearing in of W. Stuart Symington as the first Secretary of the Air Force, the United States Air Force came into being as a separate but theoretically equal military branch with the United States Army and Navy. Air Force power, however, was still extremely limited – demobilization after World War II had dropped the number of servicemen in the former Army Air Forces from 2,253,000 military and 318,514 civilian personnel on V-J Day to 303,600 military and 110,000 civilian personnel in May 1947.⁴ With the departure of more than ninety percent of the aircraft mechanics from World War II, the upkeep and maintenance of

⁴ Walter J. Boyne, *Beyond the Wild Blue: A History of the United States Air Force, 1947-1997* (New York: St. Martin's Press, 1997), 28.

aircraft slowly deteriorated until only 4,750 of the 25,000 aircraft were operational.⁵ By the end of 1947, Strategic Air Command (SAC), the key to American defensive and offensive capability, had only 120 operational Lockheed F-80 Shooting Stars and a weakened force of conventional propeller-driven bombers and fighters.⁶

The budget estimates for fiscal year 1947, formulated in 1946, before the Air Force was separate from the Army, put the air arm of the military at its lowest spending levels since before World War II. Total budget expenditure in 1946 dollars was only slightly more than 2.8 billion, nearly a sixty-seven percent drop from the 7.5 billion dollar budget in FY 1946. Procurement funds were particularly hard-hit from the budget cuts, dropping from 2.3 billion dollars in FY 46 to a total of 518 million in FY 47 – a seventy-seven percent loss.⁷ The impact on the capability and composition of the Air Force in 1947 is clear – not only were fewer and fewer aircraft operational due to insufficient maintenance work, but with the procurement figures dropping each year, there were fewer new aircraft being delivered to replace those which were either aging or unusable due to inadequate maintenance. To make matters worse, the vast majority of the aircraft that were operable were World War II models that were slowly becoming obsolescent – in addition to the 120 operational F-80s that SAC had in 1947, they also had 230 North American F-51 Mustangs,⁸ aircraft that while still useful for some

⁵ Ibid., 29.

⁶ Ibid., 40.

⁷ United States Department of Defense, Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2002* (Washington D.C: 2001), 146.

⁸ Boyne, *Beyond the Wild Blue*, 40.

interdiction and close-air support, were inferior to modern jet powered aircraft in a dogfight.

The Air Force's budget for FY 47 did not compare favorably with those for the Navy and the Army. Though all three services saw cutbacks, the Army's total budget allotment still neared 6 billion,⁹ while the Navy's was at 5.4 billion¹⁰ – both at least double that of the Air Force. Though the argument that the possibility of reorganization may have kept some funds from the Air Force in FY 47 may be put forth, it does not hold up under scrutiny – even in FY 46, the Army and the Navy were at 14.4 billion¹¹ and 14.6 billion, respectively.¹² At a time when the strategic bomber and the atomic bomb that it could deliver were the primary weapon of the United States and its position in the Cold War, the underlying support of that weapon was being slowly gutted.

Funding slightly improved over the next several years. Air Force procurement funds increased to 1.6 billion for FY 1948, a three-fold increase, only decreased slightly in FY 1949, and were increased again in FY 1950 to 2.6 billion,¹³ reflecting increased aircraft procurement. The discussion of the FY 1950 budget saw debate over the plan to increase the size of the Air Force; as of March 1949, the Air Force was at roughly 48 groups. The budget increase would allow for an increase to about 59 groups, halfway

⁹ Department of Defense, *National Defense Budget Estimates for FY 2002*, 134.

¹⁰ *Ibid.*, 140.

¹¹ *Ibid.*, 134.

¹² *Ibid.*, 140.

¹³ *Ibid.*, 146.

towards the requested increase to 70 groups. The reasoning for the halfway increase was, as stated by Rep. George Mahon of Texas, to encourage the “House [to] look favorably toward such a program. . . . a program with a flow, not a start and stop program.”¹⁴ By 1952, with the onset of the Korean War, Mahon’s desire for a “flowing” program would far exceed even the original 70-group the Air Force asked for – in January 1952, current strength was at 80 groups with proposals in the budget for an increase to 126 combat wings, not including troop carrier and other non-combat groups.

The increasing Air Force budget after 1948 meant relief for the floundering American aircraft industry. Ever since President Franklin D. Roosevelt’s famous call before Congress on 16 May 1940 for 50,000 aircraft with which to fight World War II, the American aircraft industry had known only growth – his call set into motion, as U.S. Army historian Irving B. Holley summarized it, “a hodgepodge of piecemeal appropriations, overlapping procurements, compromises in timing and uncertainties in composition.”¹⁵ By the end of World War II, American manufacturers had produced an amazing 324,750 aircraft between 1939 and 1945¹⁶ – an average of better than 50,000 a year. Of these, over 231,000 were acquired by the Army Air Forces, of which more than 68,000 were fighter aircraft. From 1942 on the United States was outproducing every

¹⁴ Congress, House of Representatives, Committee on Appropriations, *National Military Establishment Appropriations Bill for 1950*, 81st Cong., 31 March 1949, 227.

¹⁵ Irving Brinton Holley, Jr., *Buying Aircraft: Materiel Procurement for the Army Air Forces*, United States Army in World War II, Special Studies (Washington D.C.: Office of the Chief of Military History, Department of the Army, 1964), 235.

¹⁶ *Ibid.*, 548.

major power on either side in terms of sheer numbers produced.¹⁷ For the last three years of the war, no other power could produce even half of what was accomplished by American industry and, as Holley points out, by 1944 production trends were such that the majority of aircraft produced by Japan and Germany were smaller, defensive fighters, which required fewer engines, propellers and all-around material than the heavy bombers which were receiving a corresponding emphasis in the United States.¹⁸

Predictably, the production increase led to the exponential growth of the aircraft industry; unpredictably, the growth was concentrated in the expansion of capabilities of old-line aircraft companies, rather than producing new companies and industry as a result of the influx of orders. Of the top fifteen producers of aircraft (by total weight) for World War II, all but one, Ford, were companies with a history of continuous aircraft production before the war.¹⁹ These companies' owners and chairpersons, men such as Donald Douglas of Douglas and Robert Gross of Lockheed, enjoyed lives of wealth brought on by the production boom.

The relationship between the private aircraft industry and the military was generally congenial, though at times distrust between the two or apparent greed in the case of the industries would develop. After hearing of President Roosevelt's call for 50,000 aircraft in 1940, Robert Gross, who had bought Lockheed out of bankruptcy court in 1931, had by July an outline of four possibilities for Lockheed in the future: they would sell all the aircraft they could while the war went on; if England won it would lead

¹⁷ Ibid., 555.

¹⁸ Ibid.

¹⁹ Ibid., 561.

them to “buy more than ever”; if Hitler won, “the United States will be so scared that they will buy their heads off for the next twenty years”; or again if England should win, the United States would buy more aircraft than the industry could handle, thus making “legitimate companies permanently prosperous.”²⁰ Given Gross’ optimistic ponderings, and clear intentions to make a profit no matter the situation, perhaps Rep. Charles A. Plumley of Vermont was being reasonable when he asked Secretary Stuart Symington “to what extent are manufacturers of planes playing [the military] for ‘suckers’?”²¹ Plumley’s question, based on the concern that the aircraft industry may have withheld certain improvements that were ready for the current aircraft in order to force the military to buy a new model which would include the withheld feature, was calmly dismissed by Symington as unrealistic and incorrect. Regardless of Symington’s answer, Plumley’s question draws attention to the differences between the military and private industry when it came to final goals and objectives. The Air Force was interested in the best product and on-time delivery; industry sought to make the largest possible profit. Symington noted to Plumley that any manufacturer who withheld features would likely stand to lose all profit – in several cases in the past, the Air Force had cancelled the contract for those aircraft and given the contract for a new plane to a different company.²² According to Symington, it was in both the military’s and company’s best interests to produce the best possible product for each contract.

²⁰ Wayne Biddle, *Barons of the Sky: From Early Flight to Strategic Warfare, the Story of the American Aerospace Industry* (New York: Simon and Schuster, 1991) 278.

²¹ Congress, House of Representatives, *Appropriations Bill for 1950*, 1 February 1949, 20.

²² *Ibid.*, 21.

The Korean War consolidated the aircraft industry. With the cancellation of orders after World War II, some companies faltered while others continued with major aircraft contracts into the increased spending of the Korean War. Though it has been argued that “jet-fighter technologies were so new and evolving so rapidly that nearly all credible aircraft contractors had a reasonable shot at new fighter R&D work,”²³ by 1948 eighty-five percent of procured aircraft and aircraft on order were under contract to four companies, with only fourteen percent going to eight other companies.²⁴ Though no major companies had gone bankrupt, the top heavy industry, led by Boeing, Consolidated, Douglas, and Lockheed in 1949, was becoming more competitive, making it harder for a new company to succeed. Older aircraft companies such as Curtiss, which had been the sixth-largest producer of aircraft (by weight) in World War II, were reduced to becoming subcontractors under larger, heavily-contracted companies such as Boeing.²⁵ The case of McDonnell was an exception to the rule; during World War II it had been a manufacturer of spare parts – by 1949 it was one of the most financially stable companies in the nation and was working on progressive models for the Air Force.²⁶

World War II aircraft production was highlighted by the vast numbers of aircraft requested by the government and produced by the burgeoning industry. Sheer numbers of fighter aircraft produced for the Army Air Forces – over 68,000 total, roughly equal to

²³ Mark A. Lorell and Hugh P. Levaux, *The Cutting Edge: A Half-Century of U.S. Fighter Aircraft R&D* (RAND, 1998, accessed 12/01/2002), 33. Available at: <http://www.rand.org/publications/MR/MR939/>.

²⁴ *Ibid.*, 3 February 1949, 149.

²⁵ *Ibid.*, 149.

²⁶ *Ibid.*, 150.

the number of bombers, and greater than any other class of aircraft²⁷ – point towards a military policy and strategy that relied far more on the power of American industry and its ability to produce beyond the capability of any other nation in the world than on anything similar to Finletter’s statement, signified by smaller numbers of high-quality aircraft. Production for the Korean War created a clear break in aircraft procurement from World War II to Korea. The increasing move to jet aircraft over the course of the Korean War would result in fewer companies producing aircraft, while following the basic tenets of Finletter’s argument. The type of warfare for which aircraft were being produced largely determined procurement levels; it was widely assumed that nuclear weapons would characterize the next “world war” – given such, the chances of aircraft production ever again reaching the levels of World War II was highly unlikely. High production numbers and reliance on the sheer volume of national industry were a trait of the conventional mass warfare of World War I and World War II. In the Cold War limited conflicts to come, conflicts where both sides sought to avoid using the full potential of their arsenals, namely nuclear weapons, any escalation to “world war” on the level of the past would likely preclude nuclear attacks. In the future, where conflicts were typically limited to smaller, more easily definable theaters of war, aircraft production should, and would, drop accordingly, as fewer total numbers were needed in combat that did not encompass the entire globe. The onset of “limited war” would mark

²⁷ See Holley, *Buying Aircraft*, 550-551. Total fighter aircraft produced outnumbered any individual class of bomber, including “very heavy,” “heavy,” “medium,” and “light” designations. The total of all fighter aircraft versus all bombers is roughly equal, with 68,712 total “pursuit” designated aircraft produced and 69,082 bombers of all designations produced. These numbers only refer to the aircraft procured by the Army Air Forces, and do not include those produced for the Navy.

not only the theoretical and conceptual change in warfare, but also the transformation from procurement patterns of World War II to those of the jet age.

THE KOREAN WAR AND THE JET FIGHTER

“Limited war” as an identifiable idea was basically non-existent until the traditionally-defined outbreak of the Korean War with the North Korean crossing of the 38th parallel on 25 June, 1950.²⁸ Defined by Morton Halperin as a “military encounter in which the Soviet Union and the United States see each other on opposing sides and in which the effort of each falls short of the attempt to use all of its power to destroy the other,”²⁹ limited war is partially explained by the American perspective on warfare at the end of World War II. “Limited” not only refers to nuclear capability but, beyond Halperin’s definition, arguably the restriction, or at least limitation, of action between the two countries. Korea, for this definition, provides the prime example – the United States and the Soviet Union were on separate sides, although not in direct conflict, and neither sought to use the fullest extent of its power, be it nuclear or otherwise, on the other. The Korean War, described by Joseph Goulden as a war “most Americans, once it ended, were eager to permit to slip through the crevices of memory,”³⁰ provided the first test of American “limited” power. For the first time Americans and Soviets were pitted against one another in battle – not on the ground, not at sea, but in the air.

²⁸ Morton H. Halperin, *Limited War: An Essay on the Development of the Theory and An Annotated Bibliography*, Occasional Papers in International Affairs, no. 3 (Cambridge, MA: Center for International Affairs, Harvard University, 1962), 1.

²⁹ Morton H. Halperin, *Limited War in the Nuclear Age* (New York: John Wiley & Sons, Inc, 1963), 2.

³⁰ Joseph C. Goulden, *Korea, the Untold Story of the War* (New York: Times Books, 1982), xv.

Air power as it is now known, described by United States Air Force Historian Richard P. Hallion as the “dominant form of military power projection in the modern world,”³¹ showed the full potential of jet aircraft for the first time in the Korean War. On 7 November, 1950, a flight of seventy Air Force B-29 heavy bombers were sent on an attack mission to destroy two bridges on the Yalu River, the border between North Vietnam and China. Four Lockheed F-80 Shooting Stars were flying high-altitude cover between Chinese airspace on the other side of the Yalu and the attacking B-29s when six Soviet built MiG-15s took off from a Chinese airfield. The six aircraft climbed to an altitude above the capability of the F-80, and slowly began their attack descent. As the MiGs and F-80s met in air, one of the six MiGs continued his descent through the American formation rather than going back to the higher altitude; Lt. Russell J. Brown left his wingman and followed the Chinese pilot down at full throttle, slowly closing the distance. After two short bursts of fire from his machine gun, the MiG spun into flames and crashed into a riverbank. The event marked the first all-jet aerial combat in history, and the first aerial victory of one jet over another.

The development of a jet fighter in the United States was a long and not overly illustrious process. The first American jet engine, the General Electric I-A, was a copy of the British W.IX “Whittle” engine.³² Inserted into the Bell XP-59 Airacomet, the I-A powered the first American jet flight on 1 October 1942 at Muroc Dry Lake, California.

³¹ Richard P. Hallion, foreword to *10 Propositions Regarding Air Power* by Phillip S. Meilinger (Washington, DC: Air Force History and Museums Program, 1995), i.

³² Wright-Patterson Air Force Base, United States Air Force Museum, “General Electric J-31 Turbojet Engine” (accessed 11/07/2002), available at: <http://www.wpafb.af.mil/museum/engines/eng48.htm>.

On its first test flight, test pilot Robert M. Stanley flew the Airacomet at 25 feet off the ground, followed by test flights the next day at altitudes as high as 10,000 feet.³³ Though the initial test flights were successful, the maximum speed reached by the I-A powered Airacomet was a disappointing 390 mph, slower than a number of pre-existing propeller-driven aircraft, including the North American P-51D Mustang.³⁴ Later models of the Airacomet could still reach maximum speeds of only 450 mph.³⁵ A total of 90 Airacomet of various models were produced, most being used as jet-trainers, with none seeing combat service.

The Airacomet was only of nominal importance in world-wide development of jet aircraft; the German Heinkel He 280, the world's first jet aircraft to fly, had already broken the 500 mph mark in 1941,³⁶ and its successor, the Messerschmidt Me 262, was in production in 1943 while the Airacomet was still in test stages. The British F.9/40 Meteor flew for the first time in March 1943, after the Airacomet, and was powered by the de Havilland H.I, a more advanced engine than the W.IX. One year later, in July 1944, the Gloster Meteor became the first jet aircraft used by an operational fighter

³³ National Air and Space Museum, "Bell XP-59A Airacomet" (accessed 11/07/2002), available at: <http://www.nasm.si.edu/nasm/aero/aircraft/bellxp.htm>.

³⁴ Ibid. and Wright-Patterson Air Force Base, United States Air Force Museum, "North American P-51D 'Mustang'" (accessed 12/10/2002), available at: http://www.wpafb.af.mil/museum/air_power/ap9.htm.

³⁵ Wright-Patterson Air Force Base, United States Air Force Museum, "Bell P-59 'Airacomet'" (accessed 12/10/2002), available at: <http://www.wpafb.af.mil/museum/research/p59.htm>.

³⁶ Rendall, *Rolling Thunder*, 24.

squadron, with the German Me 262 following close behind. The United States would not deploy a jet fighter in combat until Korea.

The development of the Lockheed F-80 Shooting Star was more celebrated than that of the Airacomet. Conceived in 1943 by Kelly Johnson, the chief aircraft designer at Lockheed, it was built in 145 days and saw its first test flight on 8 January 1944, becoming the first American aircraft to break 500 mph. The F-80 was a one-seat fighter, initially conceived of as a high-altitude interceptor, essentially a defense aircraft meant to destroy enemy bombers and their escorts. At 34 feet, 6 inches long, it was only about two feet longer than the North American P-51 Mustang,³⁷ the only World War II era fighter to serve in Vietnam. Similarly, the F-80's empty weight was only slightly higher than that of the F-51, at 8,240 pounds to 7,125 pounds, respectively.³⁸ Powered by an Allison J-33 turbojet engine, a direct descendant of the first British "Whittle" engine that the United States imported for the P-59 Airacomet, the F-80 had a maximum speed of 580 mph and was armed with .50-caliber machine guns and eight five-inch rockets. In its use as a fighter-bomber during the Korean War, the F-80 could be fitted with 2,000 lbs. of bombs.³⁹

³⁷ All fighter aircraft were redesignated in 1948 when the "P" for pursuit was changed to an "F" for fighter. How the aircraft are referred to in this paper will depend on the date which is being discussed.

³⁸ National Air and Space Museum, "North American P-51D Mustang 'Willit Run'" (accessed 11/07/2002), available at: <http://www.nasm.si.edu/nasm/aero/aircraft/NAP-51D.htm> and Lorell and Levoux, *The Cutting Edge*, 52.

³⁹ Wright-Patterson Air Force Base, United States Air Force Museum, "Lockheed F-80 'Shooting Star'" (accessed 11/07/2002), available at: <http://www.wpafb.af.mil/museum/research/fighter/f80.htm>.

The F-80 Shooting Star was the first American jet fighter to receive the attention and adoration of the American public. In a nation where aircraft had developed what can be fairly called a religious following, the F-80 was seen as the latest in an excellent tradition of American ingenuity, regardless of whether its engine was based on a British model or that the Germans had flown an effective jet-fighter long before the United States even began experimenting with the idea. Flight and aircraft were an American trait, an American tradition. It was the United States that had mobilized its industry to build over 300,000 aircraft and come to the rescue of the rest of the world. It was the American built Boeing B-29 Superfortress *Enola Gay* that dropped the first atomic bomb on Hiroshima and helped end the war. The F-80 was only the latest in a long-line of American aircraft excellence. It appeared on the cover of *Life* magazine on 13 August 1945, and received extensive attention in both *Air Trails* and *Aviation Week* magazines, only a few of the numerous articles written. The end of World War II and the demobilization of the armed forces did not lessen American enthusiasm for aeronautics.

Regardless of the successful development of the F-80 and the enthusiasm of the American public at the end of and in the years following World War II, and illustrative of the increasing funding after 1947, there was a broad concern about the condition of the United States Air Force in comparison with other military powers, particularly in the area of jet aircraft development. During the House of Representatives hearing for the 1950 Air Force budget appropriations, Rep. Robert Sikes of Florida called attention to the question of obsolescence in the Air Force – the answer he received was not promising for current Air Force capability. Told in straightforward terms that, at the very least, “someone else has planes as good as ours and is probably keeping pace with us in

development,”⁴⁰ the total discussion represented what was essentially a confirmation that the United States did not have a monopoly on air power. The gain of German scientific advances and technology after World War II had finally allowed American industry to advance to where German thinking was in 1945, and a bit beyond. When the question of Soviet development was raised, the answer from Lt. General Howard Craig was that “they are probably in the same position we are in. I do not think that they know any more or any less.”⁴¹ The key issue at stake was the modernization of World War II vintage aircraft. The Air Force was not demanding aircraft that were advanced beyond even the imagination of other nations; rather, the level expected was at the same time realistic and surprisingly modest. Colonel J. A. Brooks reminded the House Committee on Appropriations that “a modern aircraft is one which can effectively perform the primary mission for which it was designed.”⁴² The Air Force did not have to be composed entirely of aircraft that were, in all situations, superior to any aircraft any other nation could put up against them; “if our airplanes are just a little better than those of anybody else, they are sufficiently good to win an aerial combat.”⁴³

Research and development on jet fighters during World War II and in the post-war years had been strong, even in light of post-war cutbacks. The F-80 suffered from the same procurement cancellations that had gutted the rest of the Air Force, but the short experience against German jet fighters at the end of World War II helped the Air Force to

⁴⁰ Congress, House of Representatives, *Appropriations Bill for 1950*, 69.

⁴¹ *Ibid.*, 71.

⁴² *Ibid.*, 135.

⁴³ *Ibid.*

concentrate what research and development funding was available on jet fighters.⁴⁴ The North American F-86 Sabre was largely a product of that decision.

Set with the challenge of producing a jet fighter that could exceed 600 mph, North American Aviation revealed its plans for the swept-wing XP-86 in November 1945; by 1 October 1947 it was ready for its first test flight. The following year, on 26 April 1948, test pilot George Welch took the aircraft, powered by an Allison J-35 engine, into a shallow dive and became only the second person in history to break Mach 1, the first with a production aircraft. The production F-86A variant made its first flight on 20 May 1948, powered by a new General Electric J-47 turbojet engine; by 15 September 1948, the F-86A had set a new official world speed record at 670.981 mph.⁴⁵ The newest star of the Air Force was born.

The F-86A improved on the size and capability of the F-80 with a length of 37 feet, 6 inches and an empty weight, without armament and fuel, of 10,495 lbs.⁴⁶ Arguably the best gun-platform developed by the Air Force through the early 1950s, the F-86A carried six .50-caliber machine guns and eight 5-inch rockets, or could handle up to 2,000 lbs of bombs. Maximum operational speed was placed at 685 mph, with a

⁴⁴ Lorell and Levaux, *The Cutting Edge*, 30.

⁴⁵ Larry Davis, *F-86 Sabre in Action* (Carrollton, TX: Squadron/Signal Publications, Inc, 1978), 6.

⁴⁶ Wright-Patterson Air Force Base, United States Air Force Museum, “North American F-86A ‘Sabre’” (accessed 11/07/2002), available at: http://www.wpafb.af.mil/museum/air_power/ap40.htm, and National Air and Space Museum, “North American F-86A Sabre” (accessed 11/07/2002), available at: <http://www.nasm.si.edu/nasm/aero/aircraft/NAF-86.htm>.

cruising speed of 540 mph, both considerably greater than the F-80.⁴⁷ Indeed, the F-86A fulfilled every part of the “bigger, better, faster” mentality – it was bigger in size than both the F-80, and its chief competition in the Korean War, the MiG-15, and in terms of “better” and “faster” could out-fly the F-80 without a problem, relegating that aircraft to a ground-attack role as a fighter/bomber for the rest of the Korean War after the F-86s arrived.

The MiG-15 jet interceptor, the Soviet answer to high-altitude American bombers, made its first test flight on 30 December 1947, powered by a British Rolls-Royce Nene engine – one of the engines that Britain had sold to the Soviet Union following World War II. At a maximum weight of 11,270 lbs., it was considerably lighter than the F-86 and was four feet shorter as well. Though its maximum speed and cruising speed were comparable, at 670 mph and 525 mph, respectively, to the F-86, its distinguishing features were its service ceiling of 51,000 feet, 2,000 feet greater than the F-86, its faster rate of climb, and the fact that, at above 36,000 feet, it was faster than the F-86.⁴⁸ Its primary weakness in a dogfighting capacity was its limited weapons system; armed only with two 23mm and one 37mm slow-firing cannon, plus rockets or bombs,⁴⁹ it was far more suited to the original interceptor role for which it was meant. Solely in terms of performance, the MiG-15 was the better aircraft, primarily due to its interceptor characteristics – high service ceiling and rate of climb – that allowed it to be a

⁴⁷ United States Air Force Museum, “North American F-86A ‘Sabre.’”

⁴⁸ Rendall, *Rolling Thunder*, 61.

⁴⁹ Wright-Patterson Air Force Base, United States Air Force Museum, “Mikoyan-Gurevich MiG-15 ‘Fagot’” (accessed 11/07/2002), available at: http://www.wpafb.af.mil/museum/air_power/ap42.htm.

competitive dogfighter. In addition, as a “very basic aircraft in its on-board equipment and pilot comforts,” it was easily constructed and able to be produced in mass numbers.⁵⁰

Though the F-86 could not claim complete superiority on paper over the MiG-15, Colonel Brooks’ reminder to the Committee on Appropriations – that if American aircraft were just a little better than their competition, they should be good enough to win – defines the experience of the F-86 and the MiG-15 in Korea. In a direct confrontation between differing ideologies, one based on quality, the other based on quantity, the United States and the F-86 would, in confirmation of Finletter’s 1952 statement, succeed. The result was a war in the sky which not only affirmed the United States’ approach to fighter aircraft production, but which would define it for years to come.

⁵⁰ Rendall, *Rolling Thunder*, 61.

THE AIR WAR IN KOREA: NUMBERS AND EFFECTS

On 17 December 1950, a flight of four F-86 Sabres, only recently assigned to Korea from Wilmington, Delaware, made their first flight north into what was known as “MiG Alley” – the airspace over the Yalu River. Led by Commanding Officer Colonel Bruce Hinton, the four purposefully tried to mimic the flight speed and patterns of the F-80s, trying to lure the MiG-15s into a fight; the Americans spotted the MiGs first, and, in an order unheard by his flight due to radio malfunction, Hinton ordered the F-86s to drop their auxiliary fuel tanks to lighten the aircraft for battle. Hinton engaged two MiG-15s with no wingman, quickly becoming sandwiched between the two. He stayed with the MiG in front; as the pilot applied his brakes in what was probably an attempt to get Hinton to overfly him, Hinton was able to close to a safe distance. After several bursts of machine-gun fire, the MiG slowly rolled and fell out of the sky. The second MiG was nowhere to be seen. Hinton had scored the first F-86 victory against a MiG-15 in Korea.

The new flights of F-86s were given the job of high-altitude patrol over the Yalu; by the end of December 1950 they had scored 8 MiG-15s destroyed plus 2 probable kills and 7 damaged, to only one Sabre lost. The F-86’s initial trial in combat was a resounding success. The following month, January 1951, a North Korean offensive retook Seoul, forcing the Sabres to move south from Kimpo airfield near Seoul to Suwon, nearly out of range of the Yalu for the jet fighters. Unlike earlier jet aircraft, the F-86’s options as to airfields in Korea were extremely limited – they required a longer and more stable runway than any previous aircraft – Kimpo, with its proximity to Seoul and within range for patrols over the Yalu, was ideal.

The UN forces had established initial air superiority in Korea quickly, using mostly World War II vintage aircraft led by the F-80 and F-82 Twin Mustang. Raids on North Korean airfields by Navy Corsairs and Skyraiders rendered the existing North Korean Air Forces useless; by July 1950 the allies had achieved air superiority. It was not until the MiG-15s began flying south from Chinese airfields in November that air superiority was threatened by a superior enemy aircraft. Russell Brown's initial victory against the MiG-15 with the F-80 was recognized by the Pentagon as a situation that, regardless of the outcome, had not favored the F-80. Severely outclassed by the newer MiG-15, the F-80 simply could not hope to succeed in aerial combat; on the day of Brown's victory, the Pentagon ordered the flights of F-86s to Korea.

It would be easy, and dangerous, to reduce the aerial warfare over Korea from 1951 on to a simple shooting battle between the American F-86 and the Soviet-built MiG-15. Numerous aircraft, jet and non-jet, were employed by each side, from observation craft to light bombers and strategic bombers, to the new breed of fighter/bombers which the F-80s had been relegated to and of which the F-84 Thunderjet was the newest incarnation. It is the examination of the battle between the Sabres and MiG-15s, however, which provides the greatest significance for the understanding of the development of jet fighter aircraft.

Jet-fighter warfare over Korea was an entirely new experience – World War II dogfighting was hardly comparable. The onset of jet technology and the increasing speeds of aircraft widened the sky; while pilots still had to get in close to one another to make the kill with machine guns or cannon, the speed at which combat was carried out could easily lead to the separation of a pilot and his wingman, a violation of what is

arguably one of the cardinal rules of aerial combat. The result was for pilots like Bud Mahurin to instruct their wingmen to “forget about attempting a rendezvous if he lost visual contact with him during combat.”⁵¹ The use of the “finger four” four plane formation, where the aircraft were lined up like the fingertips of the hand, with the index finger plane being the primary shooter, led to a disproportionate number of kills for a relatively small number of pilots; 98 of the 757 MiGs downed in Korea were destroyed by the top eight pilots – less than one percent of the pilots achieved thirteen percent of the aerial victories.⁵²

Arguably, American jet fighter success against the MiG-15 in Korea was due to two key factors – the first was the F-86’s status as the more generally capable of the two aircraft, while the second was the undeniable quality of American fighter pilots. The combination of well-trained, experienced individuals – many had combat experience from World War II, including a large number of previous aces – flying a state-of-the-art aircraft against, initially, less well-trained Chinese pilots in the slightly inferior MiG-15 followed by Soviet instructors in the MiGs, led to undoubted superiority in aerial combat. The ability of the American pilot proved the deciding factor in what became a resounding aerial success; though the numbers vary, the lowest kill to loss ratio given for F-86s in Korea is 10 to 1 – the highest is 14 to 1.⁵³

⁵¹ John Darrell Sherwood, *Officers in Flight Suits: The Story of American Air Force Fighter Pilots in the Korean War* (New York: New York University Press, 1996), 71.

⁵² *Ibid.*, 77.

⁵³ See United States Air Force Museum, “North American F-86A ‘Sabre’” and Rendall, *Rolling Thunder*, 95.

The pilot was the most valuable portion of the jet fighter equation, both in human terms and in terms of time and money invested into his training. Korea aces were awarded hero status; losing such pilots not only amounted to an operational loss for the Air Force, but also to a public relations loss. The pilots, however, were not the only part of the aircraft that the Air Force was concerned about losing; each F-86 over Korea was a veritable flying technological wonder, not only in terms of the aircraft itself, but particularly in terms of the special equipment that would be added for a given mission.

United States Air Force compromise reports from April to October 1951 provide a more detailed view of the importance placed on equipment in Korea. Published each month, the compromise report was meant to provide Headquarters staff with information concerning “losses [that] conceivably could compromise USAF technological advances.”⁵⁴ By detailing the circumstances under which each aircraft was lost, the Statistical Division could not only keep track of consumption due to aircraft loss but could also track the whereabouts and potential information and technology leak that lost aircraft could provide. In addition, the reports provide an excellent picture of exactly what equipment may have been used on different aircraft, and with the full run of compromise reports, it is possible to track the development and use of various models of items throughout the course of the war.

⁵⁴ “Aircraft and Equipment Lost to the Enemy Report As of 30 April 1951,” 24 May, 1951, pg. 1; Statistical Reports, 1950-1955; Records of the Director of Statistical Services, Material Statistics Division, Production and Equipment Statistics Branch; Records of the Deputy Chief of Staff, Comptroller; Records of the Headquarters, United States Air Force, Record Group 341; National Archives at College Park, College Park, MD.

The proportion of losses for each aircraft stands out in the monthly reports; the vast majority of losses each month were to ground attack aircraft, primarily F-80s and F-51s, brought down by ground fire and flak while on their bombing runs. One F-86 was lost during the month of April after running out of fuel while in flight; it landed in enemy territory, taking with it an M-18 gunsight.⁵⁵ No mention is made of the pilot and, unlike other cases, nothing is mentioned of whether the aircraft was destroyed by the pilot or left intact. Equipment tracked in the reports included radios, radars, bomb or gunsights, guns and gun cameras. The reports include a column of remarks, typically explaining the loss, whether or not a pilot was killed, and detailing any other notable items with which the pilot may have been equipped. Another F-86 does not appear in the reports until September 1951; the Sabres had gone four months without a loss. In this case, the aircraft was destroyed by an enemy fighter, probably a MiG-15, on 2 September, burning and crashing into the water; the pilot appears to have been killed in the crash. This particular F-86's equipment included two radios, an M-18 gunsight, M-2 .50-caliber machine guns and an AN-N6 gun camera.⁵⁶ The final three F-86s lost in this six-month

⁵⁵ "Aircraft and Equipment Lost to the Enemy Report As of 31 May 1951," 27 June 1951, pg. 7; Statistical Reports, 1950-1955; Records of the Director of Statistical Services, Material Statistics Division, Production and Equipment Statistics Branch; Records of the Deputy Chief of Staff, Comptroller; Records of the Headquarters, United States Air Force, Record Group 341; National Archives at College Park, College Park, MD.

⁵⁶ "Aircraft and Equipment Lost to the Enemy Report As of 30 September 1951," 5 November 1951, pg. 7; Statistical Reports, 1950-1955; Records of the Director of Statistical Services, Material Statistics Division, Production and Equipment Statistics Branch; Records of the Deputy Chief of Staff, Comptroller; Records of the Headquarters, United States Air Force, Record Group 341; National Archives at College Park, College Park, MD.

span were all lost to enemy fire in October; all three were carrying A1CM sights and the new M-3 .50-caliber machine guns.⁵⁷

Several factors stand out in the compromise reports – losses of jet fighters were far outnumbered by losses of ground-attack aircraft. Of the ground-attack aircraft losses, far more were to non-jet and or older F-80s than were to the new generation of jet fighter/bombers, the F-84 Thunderjet. Of 523 active F-86s in June 1951, only 89 were stationed with the Far East Air Force (FEAF)⁵⁸ of which, in July 1951, only 41 were operational in Korea, the rest were undergoing maintenance in Japan.⁵⁹ Those roughly 40-50 operational F-86s still were able to destroy a total of 14 MiGs in September of 1951, though they suffered the unusually high number of three losses as noted above.

The result is a resounding success report for the F-86, and, more importantly, for the general pattern of United States Air Force procurement. When asked in 1952 about the possibility of building a slower, less-expensive aircraft to replace the F-84 Thunderjet in its ground support role, General Hoyt S. Vandenberg replied that a cheaper aircraft was only an option if the Air Force were “willing to sacrifice the personnel, after the training

⁵⁷ “Aircraft and Equipment Lost to the Enemy Report As of 31 October 1951,” 4 December 1951, pg. 6; Statistical Reports, 1950-1955; Records of the Director of Statistical Services, Material Statistics Division, Production and Equipment Statistics Branch; Records of the Deputy Chief of Staff, Comptroller; Records of the Headquarters, United States Air Force, Record Group 341; National Archives at College Park, College Park, MD.

⁵⁸ “Monthly Aircraft Digest, June 1951,” pg. 61; Statistical Reports, 1950-1955; Records of the Director of Statistical Services, Material Statistics Division, Production and Equipment Statistics Branch; Records of the Deputy Chief of Staff, Comptroller; Records of the Headquarters, United States Air Force, Record Group 341; National Archives at College Park, College Park, MD.

⁵⁹ Rendall, *Rolling Thunder*, 83.

money has gone into the personnel,” and deal with the subsequent pilot supply problems.⁶⁰ The alternative for the F-86 was no different; the United States could have produced a less-expensive aircraft along the lines of the MiG-15, negating all technical advantages that existed, and would likely have seen the same loss of pilots. The pattern for Air Force production had been set – the premium value would be set on the lives and training of American pilots and would be supported by building the best aircraft suited for the job. Losses would be taken, and accepted, but only to the extent that they were necessary and could not be overcome by improvements.

⁶⁰ Congress, House of Representatives, *Department of the Air Force Appropriations for 1953*, 76.

CONCLUSION

In his testimony on 30 January 1952, Thomas Finletter told the House Committee on Appropriations that “we are in the midst of the greatest revolution in applied science in history.” Though he based the crux of his argument on the development of nuclear technology, he was quick to add that “the jet engine is developing by leaps and bounds,” and “when you add these all together you have a situation in which the changes in military destructiveness are taking place faster than at any previous time.”⁶¹ The military institution, particularly the Air Force, knew that the 1950s, as signified by the events of the Korean War, were shaping the future. The only question was in which direction they would take their decisions.

The advent of the jet fighter changed aerial combat as the world knew it; not only were aircraft becoming bigger, better, and faster, there was a related component that would eventually create a ceiling to the seemingly unlimited possibilities. Cost, more so than any physical trait of the aircraft, though those traits directly affected the price, would increase constantly from the first production of the F-80 to the building of the state-of-the-art F-22 Raptor in the 21st century. The most successful Air Force aircraft of World War II, and also the only one to be used in the Korean War, the P-51 Mustang, cost roughly \$54,000 to produce. The F-80C, the model used extensively as a fighter/bomber in Korea, doubled that cost. The F-86A Sabre tripled the cost of the F-80C, to \$299,000. The F-100 Super Sabre was \$741,000, the General Dynamics F-111A Aardvark was a lofty \$8.2 million, the McDonnell-Douglas F-15A \$10.9 million. The F-22 Raptor,

⁶¹ Ibid., 4.

which should begin service in 2004, costs a minimum of \$92.4 million per aircraft⁶² – the equivalent of spending \$12.3 million, or almost 230 times the cost of the P-51, on an aircraft in 1950.⁶³ Inflation alone cannot account for rising aircraft costs over the last fifty years. Cost, perhaps more than any technological factor, becomes the limitation in aircraft production.

The United States Air Force set itself on a course in the late-1940s and early-1950s to produce arguably the highest quality air fleet in the world. The resulting revolution in United States fighter usage and development, going from the propeller-driven aircraft of World War II to the jet aircraft that signified the Korean War, would come to define the power projection of the world's strongest air arm. The fighter battles over Korea, rather than being grouped into the “forgotten war,” need to be recognized for the change they embodied and further catalyzed. The second part of this paper inspects the intricacies of that change, most specifically in terms of whether American jet-fighters are, as history has portrayed them, simply tactical weapons, or whether the aspects of a

⁶² See United States Air Force Museum, “North American P-51D ‘Mustang’”; Wright-Patterson Air Force Base, United States Air Force Museum, “Lockheed F-80C ‘Shooting Star’” (accessed 11/07/2002), available at: http://www.wpafb.af.mil/museum/air_power/ap37.htm; William D. White, *U.S. Tactical Air Power: Missions, Forces, and Costs* (Washington D.C.: The Brookings Institution, 1974), 47; Wright-Patterson Air Force Base, United States Air Force Museum, “General Dynamics F-111A” (accessed 11/07/2002), available at: http://www.wpafb.af.mil/museum/modern_flight/mf51.htm; Wright-Patterson Air Force Base, United States Air Force Museum, “McDonnell-Douglas F-15A ‘Eagle’” (accessed 11/07/2002), available at: http://www.wpafb.af.mil/museum/modern_flight/mf21b.htm; and GlobalSecurity.org, “F-22 Raptor Cost” (accessed 12/14/02), available at: <http://www.globalsecurity.org/military/systems/aircraft/f-22-cost.htm>.

⁶³ See Economic History Services, “How Much is That Worth Today?” (accessed 10/09/2003) for queries, available at: <http://www.eh.net/hmit/ppowerus/>.

“bigger, better, faster, more” mentality, as discussed above, may indicate a more integral, strategic role for the United States Air Force jet-fighter as it was unveiled in Korea.

PART TWO

*“Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.”*⁶⁴

- Giulio Douhet

The Command of the Air

INTRODUCTION

Douhet, considered the father of air power strategy, argued in 1921 that those nations who were unwilling to accept and consequently exploit the constantly changing weapons of air power would find themselves unprepared for the next war. Those nations who anticipated the changes in warfare would “enjoy the incalculable advantages,”⁶⁵ of technological superiority, earning victory before others could adapt and make up for time lost. Though his prophecy did not prove itself in the next World War, the half-century following has served to illustrate its consequences. *The Command of the Air* proposed a strategy of annihilation for the air, whose hallmark was the destructive potential of the strategic bomber. Since World War II, in the years of the Cold War and even today, the United States Air Force and its air power mission have relied more and more upon the ability to hold a technological advantage over its adversary, hoping to translate that advantage into swift and overpowering victory. The period directly following World War II, from the Air Force’s independence through its experience in the Korean War, saw the birth of this process: a steady transition from a strategy of attrition and its

⁶⁴ Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (New York: Coward-McCann, 1942; imprint, Washington, DC: Air Force History and Museums Program, 1998), 30. Available at: http://www.airforcehistory.hq.af.mil/Publications/fulltext/command_of_the_air.pdf.

⁶⁵ Ibid.

concentration on mass production of weaponry to the high technology and costs of a force meant to fight a war of annihilation. The role of the bomber in this process has been glorified and debated for years by both military planners and historians; the role of the fighter, or “combat unit” in Douhet’s terms, has been virtually ignored.

Fighter aircraft are arguably the most publicly recognizable of all modern weapons. They have a certain mystique, a romantic aura, about them that goes beyond man’s simple fascination with flight. Speed and power attract tourists to fighter galleries in museums, prompt movies like *Top Gun*, and lead to small children holding their arms out and “zooming” around their living rooms saying “I’m going to be a pilot when I grow up” – and they are not talking about flying bombers or commercial jets. Fighter pilots are among the most highly trained and respected – not to mention paid – members of today’s Air Force, achieving hero status in every war in which they have fought. Yet the fighter in military history and strategy, particularly in the period directly following World War II, has been of no great import aside from sheer entertainment value; much of what has been written on the history of fighter aircraft in the Korean era is largely for the sake of enthusiasts, the recounting of stories and memories for the American public. The development and strategic importance of the bomber has been charted from its very beginnings; its usage and costs have rendered it victim to critics, its missions have prompted Congressional hearings. The jet fighter has invoked little, if any, scrutiny; its development has been examined in terms of research and development, but little has been said about its strategic significance. Arguably, if Douhet and the United States Air Force are taken at face value, it has none. Nonetheless, fighters serve a strategic purpose – for Douhet it was to clear the air of enemy interference and then escort the bombers on the

way to their targets – and beyond that, far from simply being flashy daredevils, they serve as an illustration of a transformation in United States grand strategy during the early Cold War period.

As Finletter pointed out, the United States Air Force was entangled in a “revolution,” – the Korean War marked a transition in scale from total war to limited war and a transition in technology from the old propeller-driven aircraft to new, more expensive jets. The Air Force made the decision to follow a procurement strategy of quality over quantity, which would consequently force a change from the old strategy of production and attrition to one geared toward defeating the enemy with advanced technology and superiorly trained men through a strategy of annihilation. The air superiority mission would change to reflect both the new technology and the new style of warfare, becoming more closely intertwined with the strategy Douhet had advocated thirty years before. The Korean War and the advent of jet technology marked a fundamental change in the way the United States Air Force, and the United States military as a whole, waged war.

JET FIGHTERS AND HISTORY

Of all the United States' 20th century wars, the Korean War is typically regarded by acclamation as the least studied and the one on which the least has been written. It seems as though every other study on the Korean War contains at least one anecdote on how shelf after shelf of monographs on World War II and Vietnam fill libraries and bookstores, while scholarship on Korea may fill a shelf at best. Referred to as the "forgotten war," in the past Korea has often seemed to slip into a void between World War II and Vietnam, a roughly twenty-year period highlighted by concerns of nuclear proliferation and ballistic missiles rather than the impact of the Korean War and its effects on a changing American military. This trend, with regards to the war, is slowly reversing itself; the increasing availability of foreign archives after the end of the Cold War has catalyzed the onset of a new series of international histories and allowed historians to reconsider previous views and interpretations of the events of the Korean War.

Specific literature on the development of jet fighter aircraft during the post-World War II period is less common, particularly in monograph form, than literature on the Korean War on the whole, or even than literature on bomber development. The necessity of fighting a war of attrition in World War II and the development of nuclear weapons, along with the traditional definition of air power as a strategic force, directed, both then and now, the majority of attention and study to go toward strategic bombers. This does not mean that the development of jet fighters was disregarded. What it does mean is that, unlike entire monographs devoted to the history of and debate over strategic bombing and

the development of the strategic bomber, monographs on jet fighters are rare. Narrowing the field of study to critical analyses of jet fighters during the Korean War period yields even fewer useful resources.

Instead, scholarship on Air Force jet fighters during the Korean period is largely a mixture of popular history, governmental studies, official history, and sections in academic histories. The result is a disparate and incoherent record which, for all of its usefulness in providing a clear picture of the duties that jet fighters performed and, in some cases, the rough story of their development, still fails to analyze critically the significance of their role in strategic action and grand strategy, and how development and performance related to each. The extent to which Korean Era fighters have been discussed is largely a function of their popularity with the American public. As one scholar has put it, “swift and ruthless predation has a certain charm.”⁶⁶ Broad efforts at promoting further understanding and awareness of the Korean War and examinations of the jet fighter’s role in air superiority have produced additional studies and resources. What needs be addressed regarding the volume of work on jet fighters is not the extent to which they have been studied, but rather the extent to which they have not.

Robert Futrell’s *The United States Air Force in Korea: 1950-1953* is without doubt the authoritative work on the United States Air Force’s involvement in the Korean War. First published in 1961, it has gone through at least two revisions and several reprintings. Though Futrell’s commentary on fighter aircraft specifically is masterful in terms of scope of actions and their contribution to the overall air mission, it must be realized that a critical analysis of those actions was the furthest thing from his goals;

⁶⁶ Jon Tetsuro Sumida, in comments to the first draft of this paper.

rather, he states his purpose as recording the “story of airpower in Korea – not to predict its role in future national emergencies.”⁶⁷ Futrell will only go so far as to admit that “the years of the Korean war marked acceptance of the predominance of airpower among America’s armed-force capabilities,” and allowed the Air Force to “move toward the establishment of a more modern organization and the procurement of new jet equipment.”⁶⁸ Futrell’s concentration on operational details as official history is useful, but jet fighters are neither his strength nor, to be fair, his primary concern.

Conrad C. Crane’s 2000 work *American Airpower Strategy in Korea, 1950-1953* concentrates largely on the Korean War as the first experience of the newly separated Air Force and inspects the “strategic application of airpower to achieve victory in Korea.”⁶⁹ Arguably the first extensive critical analysis of American air power and limited war in Korea since James T. Stewart’s *Airpower: The Decisive Force in Korea*, a series of articles edited from the *Air University Quarterly Review* in 1957, Crane argues that while the Air Force was successful in asserting the air war as a victory, even considering limited resources and effectiveness in certain roles, that same assertion may have further limited the USAF in Vietnam. American leaders and the public, even including some military personnel, entered Korea with “inflated expectations of what airpower could

⁶⁷ Robert F. Futrell, *The United States Air Force in Korea: 1950-1953*, revised edition (Washington, DC: Office of Air Force History, United States Air Force, 1983), viii.

⁶⁸ *Ibid.*, 710.

⁶⁹ Conrad C. Crane, *American Airpower Strategy in Korea, 1950-1953*, *Modern War Studies* (Lawrence, KS: University Press of Kansas, 2000), 7.

accomplish”⁷⁰ in a limited war. Though the Air Force’s efforts fell short of expectations, and fairly so, they were still able to salvage a “victory” from the armistice. Korea, Crane notes, provides an example of the key problem with strategic air power: the “same destructive power that makes airpower an effective deterrent by intimidating potential aggressors, or an effective military tool by punishing them for transgressions, can also make its use unpalatable to nations suspicious of American power.”⁷¹

Crane’s stated goal was to focus on “broader themes dealing with the strategic application of airpower to achieve victory in Korea, or at least to produce a favorable armistice as speedily as possible.”⁷² Unfortunately, though unsurprisingly, his interpretation of the airpower strategy of the Air Force in Korea concentrates almost solely on the actions of Far East Air Forces (FEAF) bombers and fighter-bombers – ultimately ignoring the air superiority mission and the role of jet fighters, dismissing them as part of a singularly tactical, rather than strategic, mission. The point is not to accuse Crane of falling into a trap by ignoring jet fighters and the air superiority mission as part of the overall strategic mission. To do so would be unfair; his analysis of airpower strategy, though limited in terms of the fighter’s role, is invaluable, and without doubt the authority on the subject. Instead, his exclusion of jet fighters offers proof of the willingness of even today’s scholars to pigeonhole the “obviously” tactical weapons.

The late 1990’s and 2000 also saw the publication of several works of jet fighter history which follow a more popular bent, which, far from detracting from their

⁷⁰ Ibid., 6.

⁷¹ Ibid., 184.

⁷² Ibid., 7.

usefulness in understanding the experiences and actions of jet fighters and their pilots, nonetheless falls short of a critical analysis of the fighter's role in the overall airpower mission. Ivan Rendall's 1997 *Rolling Thunder: Jet Combat from World War II to the Gulf War*, provides a lucid overview of the use of jet fighters in Korea, but fails to delve beyond the stories of Sabre aces into the strategic significance of their actions. John Darrell Sherwood's 1996 study *Officers in Flight Suits: The Story of American Air Force Fighter Pilots in the Korean War*, is the most detailed monograph to date on the experience of fighter pilots in Korea, but is essentially a social history of their experiences, rather than a strategic military history. Likewise, Jennie Ethell Chancey and William Forstchen's *Hot Shots: An Oral History of the Air Force Combat Pilots of the Korean War*, is an oral history intent on drawing attention to actions and memories of pilots, not to the framework in which they fought.

Studies on jet fighter development are even rarer; some, such as Mark A. Lorell and Hugh P. Levaux's RAND study *The Cutting Edge: A Half-Century of U.S. Fighter Aircraft R&D*, inspect general fighter development over time for both the Air Force and the Navy. More often, as has been the case since the mid-1970s, studies on fighter development have been folded into larger studies of U.S. defense spending such as Thomas L. McNaugher's 1989 *New Weapons Old Politics: America's Military Procurement Muddle*. Other than the information contained in Marcel Knaack's *Encyclopedia of U.S. Air Force Aircraft and Missile Systems, Volume I: Post-World War II Fighters*, which gives a short developmental history for each fighter without critically analyzing the process, no work to date has specifically examined the characteristics of the first decade of jet fighter development.

The sources described above all tell portions of the jet fighter's development and role in warfare, but do not distinguish it as their main concern. The development and role of any weapon are intricately linked: in today's day and age the United States government is unwilling to simply throw money at any project whose mission cannot be described, including fighter aircraft, which is part of the reason the F-22 Raptor and its ever-increasing cost and ever-threatening potential for being technologically obsolescent before it is even operational have come under attack. There was a strategic reason that jet fighters needed to be developed – there was a mission that could not be fulfilled without their capabilities. Historians have thus far largely neglected the relationship between the development of those fighters, the air superiority mission for which they were developed, and their role, with strategic bombers, in airpower strategy; the aim of the remainder of this paper is to take a step toward drawing attention to that problem.

STRATEGY: ANNIHILATION AND TECHNOLOGY

Douhet and Annihilation

In studying a time of massive transition in terms of technology and strategy, jet fighters often get lost – wrongly so – in the wake of nuclear weapons and strategic bombers. Historical scholarship, to date, does not provide the information necessary to understand the basic strategic significance of the modern jet fighter. The “great” military strategists of the past are considered so because they provided insight about aspects of the nature of warfare that do not change. Whether Sun Tzu or Clausewitz, Mahan, or in this case, Douhet, the strategies or systems that they recommend, intended for their own generation of military leaders, or perhaps the next, continue to map to present situations, illuminating phenomena that may not otherwise seem significant, or perhaps seem significant for other reasons, in light of current opinions and events. The role of the jet fighter must be reexamined in order to escape preconceived notions and stereotypes concerning their mission and use, to get beyond the surface image of military might and heroic combat. The jet fighter’s role in the post-World War II and Korean War era is representative of the relationship between technology, strategy, and the state – it simply has yet to be brought to the surface.

In 1920, Douhet published the first part of *The Command of the Air*, which argued that the proper deployment of air power would decide the outcome of the next war. This was only two years after the conclusion of the First World War, a hard-fought and protracted conflict that had killed and wounded millions, laid waste wide territories, and strained or even wrecked the financial and economic resources of most of the major

combatants. For realists who believed that war between great states was a fact of human existence, the thought that such an experience would recur was terrifying. Yet for some, the First World War had revealed a promise of an alternative to the indecisive military and naval operations that had made war a contest of social and economic endurance. For Douhet and others, the limited use of airplanes in World War I had been enough to prompt a vision of a very different kind of great war, one that would be deadly and destructive, to be sure, but swift and decisive.

The Command of the Air is largely Douhet's attempt at correcting the problems of and providing a strategy for the use of aircraft in war. Much has already been written about the importance that Douhet placed on the role of the bomber; air power for Douhet was a strategic weapon. The command of the air would be no less than the deciding factor in war; "to have command of the air. . . means to be in a position to *win*. To be defeated in the air. . . is finally to be defeated and to be at the mercy of the enemy."⁷³ To attain command of the air and mount an effective national defense in the face of air power required "*an Independent Air Force of adequate power*,"⁷⁴ consisting of both "bombing units" and "combat units," or fighters. The role of the strategic bomber was to destroy the enemy's war-making capacity, attacking their industrial economy and cutting "an enemy's army and navy off from their bases of operation."⁷⁵ Destruction of actual forces was far less important than the destruction of the ability to produce and operate the weapons of war; modern warfare for Douhet was not a war of attrition. Instead, the

⁷³ Douhet, *The Command of the Air*, 23.

⁷⁴ *Ibid.*, 32.

⁷⁵ *Ibid.*, 23.

strategic goal was the elimination of the enemy's ability to fight a war of attrition. Destruction of the enemy's will and ability to resist was the key to victory. Only then, and through the proper use of each tool, bomber and fighter, could a nation assure itself of victory.

The role of the fighter in Douhet's strategy is understandably limited. It could be argued that Douhet passes over fighters because he is only working at the strategic, rather than operational or tactical level – yet, as historians have discussed, and criticized, Douhet is not afraid to determine the number of bombers with a certain amount of bombs required to destroy a certain amount of territory, thus, in one author's words, attempting “to make an exact science out of the very imprecise task of killing people.”⁷⁶ The simple fact is that, in Douhet's understanding of air power, fighters have a role, but it has little to do with power. The unlimited destructive power belongs to the bomber; the fighter is simply a means to get to the destructive end. It is the bomber that can bring an enemy to his knees, that can halt his industry and terrorize his citizens. The fighter is, at best, a support unit.

In Douhet's assessment, fighters, or in his terms, combat units, have a single “essential function”: “to clear any possible aerial opposition out of the path of bombers while they carry out their mission,”⁷⁷ to be carried out either before the bombers take the air or as bomber escort during attack on the strategic targets. The goal is to gain “command of the air. . .to be in a position to prevent the enemy from flying while

⁷⁶ Lt. Col. Richard H. Estes, USAF, “Giulio Douhet: More on Targets Than He Knew,” *Airpower Journal* (Winter 1990). Available at: <http://www.airpower.maxwell.af.mil/airchronicles/apj/6win90.html>.

⁷⁷ Douhet, *The Command of the Air*, 41.

retaining the ability to fly oneself.”⁷⁸ Douhet even goes so far as to say that, once command of the air is achieved, the combat unit would cease to be of use – with no threat from enemy aircraft, the bombers would be able to attack their targets without escorts,⁷⁹ a view which has led some authors to at least disregard the role of the fighter, and in some cases, even question the need for any usage at all.⁸⁰

The significance in Douhet’s analysis lies not in the fact that the fighter plays only a limited role, but in the importance of the role it does play in the overall strategy, an aspect that may be overlooked. Yes, Douhet does call for bombers to be able to defend themselves, ultimately calling for there to be little difference between the bomber and the fighter, with the exception that the fighter should be able to operate at slightly higher speeds.⁸¹ In theory, the bombers may be able to achieve command of the air without escorts; Douhet acknowledges that there will be losses of bombers and appropriately calls for available replacements. The key is that Douhet’s entire strategy is one of annihilation – he is concerned with speed and efficiency. The goal is to use air power and command of the air to bring about the end of the next war as soon as possible – and in order to do that, fighters are necessary.

The tactical role in a strategy of annihilation is easily overlooked; after all, Douhet is primarily concerned with the destruction of strategic targets, be they the enemy’s airbases, factories, or coastal naval bases in order to strand their ships at sea.

⁷⁸ Ibid., 24.

⁷⁹ Ibid., 35.

⁸⁰ Estes, “Giulio Douhet.”

⁸¹ Douhet, *The Command of the Air*, 45.

The catalyst in this entire process has to be the fighter/unit of combat. Douhet plainly admits that it is the fighter that “will overcome the opposition”⁸² – and if the nations of the world follow his recommendations, the opposition will be following the proverbial idea that the best defense is a strong offense.⁸³ For bombers to take on this opposition without escort would be the defeat of Douhet’s primary concern – the losses inflicted would likely slow the strategic process, meaning that it would be longer before command of the air, and ultimate victory, could be gained.

Douhet’s strategy is not at all unlike the operational tactics proposed by then-Captain B. H. Liddell Hart in the *Journal of the Royal United Service Institute* that same year. Liddell Hart compared maneuver warfare to the idea of an “expanding torrent,” in which, rather than broad attack along an entire front, a highly mobile combined force of tanks and mechanized infantry, with air support, would attack, much like a wedge, through a single, or a series of weak points in the enemy line. That mobile force would then fight its way as deep into enemy territory as possible, the target being the enemy’s command and control structure rather than the army, all the while keeping the breach open for ever-increasing forces to pour through behind the enemy front lines – like an expanding torrent of water through a crack in a dam, widening the breach and then branching out behind the lines to control the enemy’s rear. Once that is accomplished, the enemy has effectively been defeated, and strategy of annihilation has succeeded – remaining forces will crumble on their own.

⁸² Ibid., 37.

⁸³ Ibid., 52-55.

Fighters for Douhet are much like tanks for Liddell Hart, with one distinct advantage – rather than the old necessity of breaking through the enemy’s line, “now *it is possible* to go far behind the fortified lines of defense without first breaking through them.”⁸⁴ Though Douhet is working at the strategic level, targeting the enemy’s industrial logistics, and Liddell Hart is looking at operational maneuvers to interrupt enemy command and control, their similarities in the use of weapons is significant, particularly when trying to understanding the importance of fighters in Douhet’s strategy. Aircraft, and fighters in particular, are air’s equivalent of mobile mechanized forces. “It is obvious,” Douhet notes, “that those nations which have the means to mass their forces rapidly and strike at whatever point they choose of the enemy’s forces and supply lines are the nations with the greatest potential offensive power.”⁸⁵ The advantage of air power is that fighters can mass in any numbers and at any point, without the limitations of terrain. Like the tank, whose job it is to punch through the line at one concentrated point, the fighter is responsible for infiltrating what is presumably enemy airspace, essentially that which is behind the front line – in Douhet’s analysis the static trench line of a stalemated ground war, much like in World War I. Once behind that front line, the role of the fighters is not simply to clear the air for the “expanding torrent” of bombers set on attacking strategic targets in the interest of gaining “command of the air,” halting the enemy’s ability to fly by destroying air bases, grounded aircraft and overall flying capability. They are destroying the enemy’s ability for command and control of their airspace, just as the ground forces have disrupted command and control on the ground.

⁸⁴ Ibid., 9.

⁸⁵ Ibid., 16.

Once that theoretical “breach” in the air has been made, command of the air is achieved, and the strategy of annihilation is essentially complete – victory is simply a matter of time.

Technology and Annihilation

Technology, usually in terms of weapons, is the determining factor in military strategy, military preparation, and war. The constant improvement of old implements of war and the invention of new ones is the determinant in how war as we understand it changes over time, from the earliest warrior-society examples whose weapons’ power was determined by their own strength and skill, to the modern United States, where the successful operation of a weapon such as a jet fighter requires just as much specialization in a technical sense as wielding a sword proficiently requires practice and training. It is the availability of the weapon which determines how man fights; the weapon will decide whether each individual fighter needs extensive drill or training in loading and firing their musket efficiently, or just enough instruction to know how to point and pull the trigger on a machine gun in World War I. As weapons get simpler and easier to operate, armies grow; as weapons become more complex and more is demanded of the men who operate them, the cost of the individual weapon – and man – increases, and armies shrink. In the extreme case, where the cost of the weapon and the size of the army is more than an administrative structure can bear, that structure will either change or be defeated – the reason to change weapons in the first place is to either keep pace with or overtake your

competition. Douhet recognized this when he wrote that victory would come to those who kept pace with the development of technology. Post World War II development of jet technology in the United States and the Soviet Union was not a matter of choice; in order to maintain their power relative to one another, both had to take advantage of the technology available, whether developed internally, bought from another country, or claimed as the spoils of war. The two countries, operating under distinctly different administrative structures, embarked on two separate methods of production with different goals in mind. The Cold War ended, in part, because of the inability of the Soviet administrative structure to continue producing at a level equal to that of the United States; the effort to keep up in technological advances was a significant part of the failure of the authoritarian administration. The Korean War and decisions made concerning jet technology exemplified the pattern of technological competition and production strategy that would continue throughout the Cold War.

Douhet openly admitted that even just shortly after World War I, “one of the gravest problems confronting an air force is [the] question of stabilizing its armament.”⁸⁶ Aircraft then had not even begun to realize their potential and maturity – canvas and wood were still the primary construction materials, armament advancements were made in terms of whether or not an aircraft had multiple multidirectional guns, and an increase of ten miles/hour in terms of speed was a breakthrough. The fear, as Douhet put it, of seeing your aircraft become obsolete every three months,⁸⁷ led to his solution in what he

⁸⁶ Ibid., 46.

⁸⁷ Ibid.

called the “middle road of practicality.”⁸⁸ In thinking seemingly at odds with keeping pace with technology, Douhet called for advancement in aspects of aircraft that were less likely to change over a short period of time, concentrating on armament rather than speed, because a “slower, heavily armed plane, able to clear its way with its own armament, can always get the best of the faster pursuit plane.”⁸⁹ Because the combat unit was not to seek out aerial combat, speed would not be the chief concern; instead, in its role of protector of the bomber, armor and armament would win the day while at the same time keeping the nation from being caught up in the dangerous, and expensive, process of always remaining on the cutting edge of technological advancements. Armament was the key to stabilization, and consequently the technological development most necessary with which to keep pace.

Douhet’s impatience with speed as a determining factor in aerial combat was natural given the maximum speeds of some of the most common aircraft of his day. The British Sopwith F.1 Camel, first flown in 1916, gave a maximum speed of 115 miles per hour (mph),⁹⁰ the following year the Spad S.XIII was capable of 135mph⁹¹ and by 1918 the Nieuport 29 was still only flying at 147mph at its maximum⁹² – a difference of 30mph in three years, and similar improvements in speed up through Douhet’s writing, had the

⁸⁸ Ibid., 47.

⁸⁹ Ibid., 44.

⁹⁰ William Green and Gordon Swanborough, eds., *The Complete Book of Fighters* (London: Salamander Books, Ltd., 1994), 535.

⁹¹ Ibid., 543.

⁹² Ibid., 437.

dual effect of further encouraging aircraft development in terms of speed, while at the same time convincing Douhet that speed was not the key. By 1947 Douhet's juxtaposition of speed and armament had come to the fore – developing speed alone was the hallmark of the war of attrition, gearing aircraft toward dogfighting alone. Development in armament technology would signify a willingness to make seeming concessions in terms of capability in order to produce a stronger aircraft better suited to a strategy of annihilation. The strategy of attrition used by Allied forces in World War II had convinced military leaders that it was not a process they wished to repeat.

To say that the United States Air Force was consciously pursuing an overall strategy of annihilation after World War II would be incorrect; rather, advances in technology, of which jet aircraft were one example, were largely directed toward military research and development and spending, and in turn changing the way, in this case, the Air Force fought. The question before the Air Force was not whether they would develop jet fighters – the simple existence of the technology, and the knowledge that other nations were pursuing its development, predetermined that answer. Jet aircraft had been a reality of warfare since the Messerschmidt Me262 began flying in late 1943. The question at hand was one of quality versus quantity – what kind of jet aircraft did the Air Force wish to produce, and at what cost.

In his 1989 work *New Weapons Old Politics*, Thomas McNaugher warns that simply thinking of the dilemma as “quantity versus quality” creates a misleading case of extremes of “simple-cheap versus complex-expensive.”⁹³ Instead, he argues, it is far

⁹³ Thomas L. McNaugher, *New Weapons Old Politics: America's Military Procurement Muddle* (Washington, DC: The Brookings Institution, 1989), 6.

more useful to think of the problem in terms of a continuum of cost versus performance, in what Leonard Sullivan referred to as a “B-36 curve,” where a parabola, sharply rising in cost as performance requirements increased, would describe a case where, as Norman R. Augustine describes, the “last 10 percent of performance sought generates one-third of the cost and two-thirds of the problems.”⁹⁴ If a country has a certain amount of cash allotted for jet fighter acquisition, the choices they make in relation to where on the curve they will produce aircraft directly influence the likelihood or necessity of that country leaning toward a strategy of annihilation. The further a country extends along the performance axis, with the rapid increase in cost as the upward limit was approached, the more likely it is that the high cost will result in fewer aircraft purchased. With that theoretical limit placed on the number available, a strategy of attrition becomes less feasible and something approaching a strategy of annihilation literally becomes the default option.

The change in technology drives the change in the scale and cost of warfare. The requirement then placed on the state, to provide the funding for that cost or to relinquish its place in the arms acquisition power race, was what forced administrative change in developing governments. By 1947, the situation pitted the established democratic government of the United States against the authoritarian Soviet state; the contest became one of each state’s ability to fund their acquisitions strategy.

⁹⁴ Quoted in McNaugher, *New Weapons Old Politics*, 6.

Contract versus Garrison State

The post-World War II conflicted alliance of a democratic United States with a communist Soviet Union went beyond the obvious ideological differences between the two systems. The advent of jet technology on a grand scale illustrates the larger institutional differences between the two states; when it came to acquisitions choices in the years preceding the Korean War, the decisions of each power were directly influenced by the available technology and the capabilities of each state to provide funding within their respective administrative structures. Soviet jet technology existed only because of the transfer of British engine technology after World War II; American jet technology was based on the transfer of British technology five years earlier. The traits and limitations of each, of an authoritarian Soviet government and an openly accountable American system, of a system of government directed development versus dispersed private development, largely determined, even beyond the preferences of their armed forces, the cast that their transforming air forces would take.

In his 1977 work *War, Economy and Society, 1939-1945*, Alan Milward put forth his theory that there are two measures of the economic potential of a country at war: an “absolute potential” that the country will always strive to attain, and a second, more operative measure, where “economic priorities must be re-ordered so as to attain the desired strategic objectives.”⁹⁵ The first measure is an ideal, useless in any situation short of the threat of total annihilation; the second is a modulation of economics by social,

⁹⁵ Alan S. Milward, *War, Economy and Society, 1939-1945* (Berkeley, CA: University of California Press, 1979), 19-20.

administrative and political factor, explaining the limitations imposed by civilian society on the ideal economic potential. Milward's central point is that "warfare is not simply an economic event and a strategic plan is a synthesis of all the other factors which it is necessary to take into account," including political, military, social and psychological considerations.⁹⁶ Beyond just the ideal, maximum amount of funding that could be available if all resources were directed to the war effort, the state must take into account the further limitations imposed by the needs and demands of its civilian population – directing all capability toward the war effort does no good if it leads to internal revolt.

It is specifically those societal, political and bureaucratic limitations to which Aaron L. Friedberg attributes the failure of the United States to become a "garrison state" after World War II. The Cold War ended as it did in large part due to, Friedberg argues, the imposition of "very different. . . burdens on their respective societies and economies." The placing of those burdens was not simply a matter of choice or wise decision-making but instead illustrated the "different domestic structures of the two competitors."⁹⁷

The choice facing the two superpowers following World War II was largely one of choosing the type of future war that they would prepare for – whether operational readiness would be defined by "full-scale preparations for surviving, fighting and wining an extended war fought with both conventional and nuclear weapons" or by forces "large and diverse enough to strike back with devastating power in response to an enemy

⁹⁶ Ibid., 19.

⁹⁷ Aaron L. Friedberg, "Why Didn't the United States become a Garrison State?," *International Security*, Volume 16, Issue 4 (Spring, 1992): 109.

nuclear attack, to deal with certain kinds of limited conflicts,”⁹⁸ and “thanks largely to their qualitative superiority,” able to “hold their own” in the initial phases of any larger conventional conflict with communist forces.⁹⁹ The first strategy was that followed by the Soviet Union from post-World War II up into the 1970s;¹⁰⁰ the second largely describes the American strategy of deterrence beginning in the early 1960s.

Though Friedberg argues that American strategy in the late-1940s and early-1950s¹⁰¹ initially followed the same all-out preparation for total war, his own description of the United States as a “contract state” and the case of jet fighter acquisition and development during the period lends some credence to a claim that even as early as 1947 the United States was at least setting the stage for the strategies of deterrence and annihilation largely relied upon today. The contract state, as described by Friedberg, was the state that “extracted money and manpower for military purposes, but it did so at levels. . . far lower than came to be common during the same period in the Soviet Union.”¹⁰² Essentially, the contract state constrained its extractions from society, limited its direction of the national economy, and used contracts as a method to utilize private industry and resources for government military development. Private industry conducted development on a broad front in conjunction with the public state. The resulting system, characterized by a private industry with administrative and directive capabilities similar

⁹⁸ Ibid., 118.

⁹⁹ Ibid., 117.

¹⁰⁰ Ibid., 118.

¹⁰¹ Ibid., 119.

¹⁰² Ibid., 113.

to the public government, was more attuned to discovery and innovation than a public-controlled, channeled development program.

The resulting difference was that Soviet and American fighter development progressed along widely disparate paths, though each had a similar starting point. The garrison state of the Soviet Union, characterized by extensive military production in readiness for total war, was marked by an active aircraft industry which led to a vast numerical advantage throughout the Korean War.¹⁰³ The authoritarian structure in the Soviet state allowed a far greater extraction of funds from society while still being able to maintain control; those funds supported a building program that had vast quantities of reasonably advanced jet aircraft as one of its highlights.

In contrast, the limited funds available to the American military after World War II were largely a function of the recognition that the nation could not remain mobilized and keep the public satisfied. Cutbacks in funding, demobilization and the sharing of resources among three separate branches of the military led to understandable competition and concern as to the proper distribution of funds, both among branches and among projects within the branches. The air mission, strongly affected by both the appearance of jet aircraft and the effects of nuclear capability, required the Air Force to make a choice in the type of aircraft it would build; the availability of money, the structure of the American political system, and the desire to maintain technological superiority set the United States Air Force on a path that would revolutionize air warfare in the midst of transforming strategies and the consequently changing missions.

¹⁰³ See Futrell, *The United States Air Force in Korea*, 401-405.

THE MISSION: AIR SUPERIORITY

The basic concept was encompassed within Douhet's theory of "the command of the air," calling for the total destruction of the enemy's air forces and bases in an effort to clear the way for strategic bombing; yet until World War II, air superiority was an undefined concept and mission, not even in Air Force terminology. General Elwood "Pete" Quesada was frank about the situation between the wars, remembering that "basically. . . the fighter business in those days was a bunch of guys going up and fighting another bunch of guys without a known objective."¹⁰⁴ The idea of air superiority reached maturity in World War II as a slightly less encompassing idea than what Douhet might have required; realizing that total destruction was an unrealistic goal, practice instead called for theater control in order to restrict enemy action, allowing for tactical and strategic missions to proceed as much as possible.¹⁰⁵

The basis of the understanding of air superiority did not occur until the Allied air operations over North Africa were solidified with the creation of the Northwest African Tactical Air Force after the Casablanca conference of 1943. The Tactical Air Force Commander, then Air Vice Marshal Arthur Coningham, was the first to propose the actual attack of Axis air bases and grounded aircraft in order to restrict enemy air operations, putting into practice what is now typically considered the first example of

¹⁰⁴ Richard H. Kohn and Joseph P. Harahan, eds., *Air Superiority in World War II and Korea: An Interview with Gen. James Ferguson, Gen. Robert M. Lee, Gen. William Momyer, and Lt. Gen. Elwood R. Quesada* (Washington, DC: Office of Air Force History, United States Air Force, 1983), 18.

¹⁰⁵ *Ibid.*, 7-8.

accepted tactical air doctrine.¹⁰⁶ Air superiority was not using tactical forces as moving heavy artillery, nor was it simply dogfighting; air superiority was a concentrated effort at reducing enemy capability through the ability to destroy aircraft in the air and the ability to attack and destroy the enemy's airbases on the ground. Once superiority had been gained, the ground operation could commence with the suppression mission against enemy ground forces, all the while operating in a less hostile environment where enemy activity did not limit allied aerial actions.

Allied experience with air superiority in North Africa and the recognition of the lessons learned would later have a major influence on air preparation for the invasion of Normandy. It was General Bernard Montgomery's statement at Tripoli in 1943 – written by Coningham – in which the idea of an equal air force was first put forth: “the airman controls forces that fly, the soldier commands forces on the ground, and the sailor commands forces that operate on the sea.”¹⁰⁷ This division of function not only allowed the air forces greater involvement in the planning procedures for Normandy, but would become the basis of American military doctrine after World War II. Operations over Northern Africa and Western Europe refined the idea of air superiority within a total world war; the ability to infiltrate enemy air space, destroy aircraft and bases on the ground, and restrict enemy air operations while creating freedom for your own led to the allied ability to gain control of the air. By the end of WWII the definition of air

¹⁰⁶ For more on Coningham's influence on tactical air doctrine development in Northern Africa, see Kohn and Harahan, eds., *Air Superiority in World War II and Korea*, 32-35; and Benjamin Franklin Cooling, ed., *Case Studies in the Achievement of Air Superiority* (Washington, DC: Center for Air Force History, 1994), 246 -248.

¹⁰⁷ Kohn and Harahan, eds., *Air Superiority in World War II and Korea*, 35.

superiority had broadened to the idea of maintaining control to the point where air operations could be conducted without “prohibitive interference”¹⁰⁸ – some enemy capability was expected to remain, total destruction was recognized as unnecessary and unrealistic. In the words of Quesada, “in the second World War necessity and experience resulted in an evolution. Our doctrine evolved.”¹⁰⁹

With the creation of the USAF by the 26 July, 1947, National Security Act, and the delineation of military responsibilities in the 21 April, 1948, Key West Agreement, air superiority and tactical operations became official missions of the USAF. Designated broadly as the responsibility to “organize, train and equip Air Force forces for prompt and sustained combat operations in the air,” the first primary function listed aspects of that mission as the responsibilities to “gain and maintain general air supremacy,” “defeat enemy air forces,” and “establish local air superiority except as otherwise assigned.”¹¹⁰ That same document also established official definitions of both air superiority and air supremacy for the first time, describing the former as “that degree of capability (preponderance in morale and material) of one air force over another which permits the conduct of air operations by the former at a given time and place without prohibitive interference by the opposing air force,” and the latter as “that degree of air superiority wherein the opposing air force is incapable of effective interference.”¹¹¹ Basically, the

¹⁰⁸ Cooling, ed., *Case Studies in the Achievement of Air Superiority*, 453.

¹⁰⁹ *Ibid.*, 37.

¹¹⁰ “Key West Agreement, 21 April 1948,” in Richard I. Wolf, ed., *The United States Air Force: Basic Documents on Roles and Missions* (Washington, DC: Office of Air Force History, United States Air Force History, 1987), 163.

¹¹¹ *Ibid.*, 164.

Key West Agreement called for the USAF to establish superiority in a local theater through a material and morale advantage; as will be shown, they attempted just that in Korea. The difference between air superiority and air supremacy is telling; in one, enemy action exists, but at such a level that USAF operations would not be limited. Air supremacy hearkened back to Douhet's "command of the air" – enemy actions would be largely non-existent.

Post-World War II doctrinal development was largely based on the expectation that the next war would be a nuclear total war on the scale of World War II; temporary local superiority was sufficient to allow ground forces to move forward with air support. Instead, Korea presented USAF fighters with a limited war of attrition in which an enemy with superior numbers and aircraft of equal quality could find safe harbor in bases beyond the Yalu River and thus beyond the self-imposed border of allied operations. The requirements of the mission did not change; USAF fighters were still expected to clear enemy fighters from the air in order to assure air superiority and operational capability for strategic forces.

Though the mission itself did not change, the manner in which it had to be carried out was massively altered. It would be easy, and tempting, to apply General Quesada's characterization of WWII – the situation and experience demanded it, and so the doctrine changed. The problem is that tactical doctrine did not simply change – it transformed, and as a result of the characteristics of the war itself, lost influence. The first phase of the air war was not unlike what USAF fighter doctrine had prepared for; the North Korean Air Force was flying WWII vintage Soviet Il-10 ground attack aircraft and Yak-3 and

Yak-7B fighters¹¹² – no real challenge against the F-80's and F-82 Twin Mustangs deployed from Japan. UN ground forces were able to advance under the air support, territory was gained, North Korean airfields largely destroyed or captured. Air superiority was quickly established over the majority of the Korean peninsula, and the overall UN campaign, in the span of a month from mid-September to late October, had taken the majority of the peninsula through deep, fast movement into enemy territory with the bulk of forces securing the rear areas.

The introduction of both Soviet and American jet fighters into battle for the first time changed the characteristics of air superiority. Jet fighters required longer runways for takeoff and landing; prior to the Korean War, with only four airfields in Japan suited for jets and the only two in Korea, Kimpo and Suwon, overrun by the North Koreans, early missions flown by F-80 Shooting Stars had to be flown out of Japan – with the result of their being limited to a short period over the target area.¹¹³ It was only with the addition of wingtip auxiliary fuel tanks, bumping their range from a radius of 100 nautical miles (nm) to over 225 nm, that they could extend their flight time and allow for dogfighting over Korea.¹¹⁴ With the introduction of the F-86 to combat the MiG-15, and the F-80's consequent switch to fighter-bomber operations, enlargement of the auxiliary tanks extended the F-80's range to 350 nm and allowed it to operate in bombing missions

¹¹² Cooling, ed., *Case Studies in the Achievement of Air Superiority*, 459.

¹¹³ William R. Dooner, "Thunderjets Over Korea," *Air Classics Quarterly Review* (Winter 1977): 104.

¹¹⁴ Cooling, ed., *Case Studies in the Achievement of Air Superiority*, 455.

over much of the Korean peninsula, even while based out of Japan.¹¹⁵ Later in the war the same problem of suitable airfields further limited each side; American air superiority not only destroyed the majority of suitable air bases in North Korea, but forced the vast majority of MiGs to be based beyond the Yalu, beyond operational boundaries. A lack of suitable airbases likewise limited the range of American F-86s, making fuel a constant concern in their missions over MiG Alley. Even operating out of Kimpo later in the war meant that the F-86's were at the limit of their range when patrolling over the Yalu, giving the MiG a distinct advantage both in timing their attacks and in terms of time spent in combat once aircraft were actually engaged.

Chinese intervention in early November not only challenged UN ground forces but brought a new aspect to the air war. UN air superiority, heretofore unchallenged, was suddenly faced with the Chinese piloted MiG-15 – a jet fighter far and above the capabilities of any fighter aircraft currently in the theater. Restricted range was again an issue, this time for the MiG-15s – based in Manchuria, they could only carry enough fuel to fly as far south as Pyongyang.¹¹⁶ Though they could not threaten the entire range of UN air superiority, the MiG-15 posed a severe threat to the older generation of aircraft currently in use by the UN command; just as Douhet had predicted thirty years earlier, the side with the most technologically advanced weaponry would “enjoy the incalculable advantages of the new means of war over the old.”¹¹⁷ Like the UN advantage during the first months of the war, UN World War II vintage propeller-driven aircraft, even the

¹¹⁵ Ibid.

¹¹⁶ Ibid., 465.

¹¹⁷ Douhet, *The Command of the Air* 30.

venerable B-29, were extremely vulnerable to the speed and heavy guns of the MiG-15, while even the immediately previous generation of jet, the F-80, was no match for the newest technology.

The introduction of the F-86 Sabre to the theater in December 1950 finally gave the UN Command a worthy adversary for the MiG-15 in terms of dogfighting capability. Beyond simple air-to-air combat, the pitting of two jet fighters against one another had a distinct effect on the air superiority mission. The North American F-86 had been brought in for two specific roles – to challenge the MiG-15 for superiority in the air and to provide cover for the strategic bombers which were, by that point, largely attempting to interdict supplies and forces coming across the Yalu from China. The first of those missions, though vastly different from aerial combat in World War II, was quite similar in its goals and effects. The key was to weaken and restrict the enemy – because their base of operations was untouchable, UN fighters had to be satisfied with aerial combat and destruction.

The second role was straight from Douhet's admonition that the unit of combat exists to "clear any possible aerial opposition out of the path of bombers while they carry out their mission"¹¹⁸ – the requirement could not be clearer, yet that was precisely the problem. In the five years since the end of World War II air power, and the structure that it operated in, had changed drastically. The jet-powered F-86, under the command of the Fifth Air Force, was responsible for covering the piston-driven B-29, controlled by the Far East Air Forces (FEAF) based in Japan. Communication between the two commands was the least of the problem – the larger was, simply put, that the Air Force had not

¹¹⁸ Ibid., 41.

learned how to effectively cover a slow bomber with a jet by late 1950 and early 1951. The F-86 could not fly directly with the B-29 and still be able to accelerate fast enough to challenge a MiG-15, and the MiG needed only one pass with a good shot to do serious damage to a bomber.¹¹⁹ Because they could not fly in Chinese airspace, there was no way to monitor the air bases and catch MiGs as they took off; the best the F-86 could do was to fly a high cover and hope to catch the MiGs before they made their attack. With superiority in numbers, MiGs inevitably got through; to add further confusion, bomber defense was entirely visual, while closing speeds greatly exceeded those of World War II – resulting in B-29 gunners firing at any swept-wing aircraft they saw out of self-defense.¹²⁰ The problem of jet fighters covering piston-driven bombers was not solved in Korea; the best solution found was the relegation of all bomber missions to night attacks after late 1951.¹²¹ FEAF preferred to take its chances with search lights and anti-aircraft weapons over squadrons of MiGs in broad daylight.

Despite the problems encountered, the UN air superiority mission was a resounding success – perhaps too successful. The reality was that the Chinese Air Forces, armed primarily with MiG-15s and MiG-17s, for all of their numerical superiority, were held for the most part to operations in the northwest portion of North Korea, in the area around Sinuiju known as MiG Alley. They were never able to deploy far enough south to directly challenge UN ground forces. General William Momyer argued that because “there wasn’t a single attack...against our ground forces,” that he

¹¹⁹ Cooling, ed., *Case Studies in the Achievement of Air Superiority*, 468.

¹²⁰ *Ibid.*

¹²¹ *Ibid.*, 479.

was able to identify, “air superiority has remained almost a philosophical thing.” The army had “never had to fight without air superiority” – so it remained the furthest thing from their thoughts, and they became “more concerned with close air support.”¹²² The USAF had chosen the path towards preparation for a war of annihilation after World War II; the subsequent transformation of the Korean War into a limited conflict of attrition placed restrictions on the air superiority mission and required a change in tactics and strategy for American jet fighters. Support of the interdiction mission required nearly constant fighter sorties over MiG Alley to keep Chinese MiGs at bay – resulting in a mission that at face value came dangerously close to Douhet’s fear of “aerial knight-errantry.”¹²³ The Korean War in many ways was a function of the period of transition and transformation in which it occurred – the first limited war, fought with weapons and armies prepared for a total war. It saw action by at least three generations of fighters, both piston- and jet-driven, and once again necessitated the adjustment of an idea originally couched in strategic theory, only recently turned into tactical doctrine, now rendered obsolete by changing technologies and requirements. Above all else, the change in the air superiority mission illustrated the power of technology and weapons to change the nature of warfare and strategy; jet fighters, while a small part of warfare and strategy, were nonetheless emblematic of the changes occurring in the post-World War II Air Force, and the American military as a whole.

¹²² Kohn and Harahan, eds., *Air Superiority in World War II and Korea*, 74-75.

¹²³ Douhet, *The Command of the Air*, 44.

CONCLUSION

The 2003 war in Iraq, or “Gulf War II” as it has been called, exhibited beyond a doubt the United States’ ability to conduct, and its concurrent dependence upon, a strategy of annihilation marked by the most technologically advanced weapons systems in the world. Since the Korean War the Air Force has consistently placed value on the performance of their aircraft above the number that they have available. Only one American jet fighter in the past fifty years, the Northrop F-5 Freedom Fighter, has been designed with the express purpose of reversing the “upward size-weight-complexity-cost spiral” – with the exception of twelve evaluation aircraft in 1965, it never saw service in the United States Air Force.¹²⁴ Though the air superiority mission has changed beyond the differences between World War II and Korea, the Air Force’s commitment to what are essentially air superiority jet fighters – even in the midst of the past fifteen years of wars where enemy air forces have barely attempted to challenge American control of the air – goes beyond a simply tactical role. As per Douhet’s writings eighty years ago, the combat unit has a small but undeniable role in air power’s strategy of annihilation that still exists today.

As the cost of fighter aircraft continues to increase – history and current costs of the F-22 Raptor give us no reason to suspect that it will do otherwise – William McNaugher’s continuum of cost versus performance, and where the United States Air Force production strategy lies on that continuum, will increasingly determine American air strategy. If the day ever comes when an enemy with a society, economy and

¹²⁴ Green and Swanborough, eds., *The Complete Book of Fighters*, 458.

technology capable of matching or topping the quality and numbers of United States fighters is subsequently able to draw the Air Force into an aerial war of attrition, American strategy may once again need to change. It may not even take the challenge of war; the cost of aircraft alone, and the burden that cost places on the American government, may necessitate a change in production mentality, forcing the country to settle for something less than bigger, better, faster and more. For now, the American strategy of annihilation, and jet fighters' role in that strategy, is alive and well. The fighter battles over Korea, rather than being grouped into the "forgotten war," need to be recognized for the change they embodied and further catalyzed. Bigger, better, faster, more has, in reality, been the unspoken dogma of United States Air Force jet fighter production in an era where faster and higher is simply not good enough.

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