Beyond the Horizon

Developing Future Airpower Strategy

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The strategic imperatives of military airpower have been widely debated since the beginnings of airpower itself. At the heart of these debates has been the idea of an airpower theory: a description, explanation, and even prediction for how and why airpower can provide advantage in military operations. This debate centers on the recognition that one must first create desirable parameters of an airpower theory before developing a feasible airpower strategy. The key to success in this endeavor lies in correctly recognizing and promptly incorporating contextual realities into both concepts. This article offers a critique of current airpower strategy, presenting a foundational account of how airpower theory and strategy emerged and painfully adapted to changing contexts through the years, and concludes with a predictive assessment of why and how airpower strategy must embrace contextual realities in the years ahead.

Foundations of Airpower Theory and Strategy

In its early years, airpower was just another tool for advancing the long-standing land power theory that required both taking and holding real estate to limit or remove enemy options. The US Army saw the airplane as an ancillary capability to existing land power, while the advent of flight afforded ground commanders the first real look "beyond the horizon." They quickly realized airpower could spot and track enemy positions and movement, rapidly provide communication between ground forces often separated by impassable terrain, and eventually provide some level of air-to-ground attack against selected targets. However, during World War I, it became clear airpower had the potential to be much more than ancillary to Army ground operations. Many of the

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earliest airpower pioneers, having flown during World War I, recognized and understood that airpower provided extensive advantage to a wider spectrum of warfare beyond land power. Perhaps the most outspoken of those new "airmen" was Brig Gen Billy Mitchell. Mitchell is often misquoted and taken out of context in regards to what he so powerfully argued in the years between the world wars. Although much acclaim has been given to his advocacy for an independent air force, Mitchell's argument was actually much more refined. His position rested on the clear understanding that airpower provided an opportunity to bypass and overfly the traditional strengths of an enemy's ground forces and target those areas the belligerent held dear (usually targets well beyond enemy frontlines). This capability, as Mitchell recognized it, afforded a new theory of warfare—airpower theory.[1] The theory rested on the axioms that taking and controlling the high ground, bypassing enemy strong points, and operating at a speed unmatched in traditional ground force-on-force warfare provided extensive, game-changing capabilities. Early attributes of airpower theory rested on the empirical evidence airpower provided: access and speed to areas inside enemy territory that had previously not been accessible without considerable ground combat and the associated cost in blood and treasure. This access and speed enabled an additional element to the new and emerging airpower theory—strategic strike.

Early airpower theory described the airplane as the means to the grander ends of military advantage. This new theory, according to Mitchell, held such significant implications for the nature and outcome of war that he believed airpower must be considered a national security imperative.[2] Given his forceful belief that the future security of the United States would require significant and deliberate attention to the development of airpower, he rationally concluded that to fulfill such an important requirement, airpower must be organized, resourced, and led by air-minded thinkers (airmen). Furthermore, Mitchell's experience working under the shadow of the US Army led him to believe airpower was neither appreciated nor given its rightful place as an instrument of national security. He concluded airpower should not only be led by airmen, but it should also be independent from the US Army. The vital historical narrative is that Mitchell effectively connected the means of airpower (the airplane) with the ends of national security. The importance of this recognition further suggested airpower should be led

by air-minded thinkers within the organizational construct of an independent air force. As long as the fundamental axioms of this new airpower theory (access, speed, and strategic strike) remained an empirical reality, then airpower could be built on its own independent military foundation.

Along the same lines of reasoning, the Air Corps Tactical School (ACTS) developed and refined these early airpower attributes. Over thousands of hours of study, debate, and speculation prior to World War II, airmen at the ACTS concluded that given the right type of bomber airplane with the appropriate self-defending capabilities, airpower could target the industrial base of enemy vital centers.[3] This was one of the first airpower strategies created from the emerging new airpower theory. Drawing upon the airpower theory axioms of access, speed, and strategic strike, airmen at the ACTS developed a bombing strategy they believed would quickly and most certainly end the possibility of an enemy being able to continue hostilities. Their confidence in airpower capabilities led them to add "decisive" to existing airpower theory, suggesting airpower had the potential to produce war-ending strategic effects.[4] The expanded decisive airpower theory informed and encouraged the development of an airpower strategy for World War II that suggested airpower's fundamental ability to overfly traditional ground positions and target vital centers of production, transportation, and military-specific commerce would so cripple a belligerent's capability to wage war that capitulation would most surely follow. It is important to understand the evolutionary process in the development of an airpower strategy. Airpower theory rested on the axioms of access, speed, strategic strike, and now, the yet-to-be-proven attribute of decisiveness. This airpower theory led to development of a strategy that further reified how and why airpower would be used to meet the strategic ends of military advantage and ultimately victory. As long as the fundamental axioms of the theory could be supported by empirical evidence, then the strategy that developed from that theory would be equally supportable. The observable capabilities of the airplane at the time easily supported access and speed; however, the elements of strategic strike and decisiveness remained unproven. This reality, however, did not keep the officers in the ACTS from developing an airpower strategy based on all four of the airpower theory axioms.

History highlights the accomplishments of airpower during World War II as both extensive and necessary for victory. However, postwar

analysis of the European campaigns specifically showed that the ACTS airpower bombing strategy failed to meet its prewar objectives and predictions. The original airpower strategy failed to fully appreciate and recognize the inability of bomber aircraft to effectively defend themselves. Both enemy fighters as well as extensive ground-to-air defenses proved nearly overwhelming. Not only were tens of thousands of aircrew killed during these missions, but the ability of the bombers to actually strike and/or cripple vital industrial centers was nowhere near that predicted. The majority of bombs fell outside the required radius of intended targets, and until US fighter escort became part of the bombing strategy, survival rates were horrific.[5] As noted, the airpower strategy of World War II was perhaps the first major airpower strategy; unfortunately, developers failed to recognize or realize the unintended consequences, second and third order effects, and the adaptive nature of enemy creativity. The prewar airpower thinkers (specifically Mitchell and those at the ACTS) failed to recognize two central requirements in developing effective strategy—*translating theoretical axioms into strategy requires extensive consideration of contextual realities; when the axioms of the theory are challenged by new context, the resulting strategy will likely need to modify.* The prewar airpower strategists assumed the survivability of the self-defended bomber, assumed the accuracy of the bombing, and failed to recognize the complexities associated with connecting the theoretical axioms of access, speed, and strategic strike with the realities of a thinking and capable enemy. In the process, they became wedded to the emerging idea of decisiveness, which compounded an unhealthy perspective and overconfidence. When the theoretical axiom of access was threatened by enemy air defenses, the strategy built upon that axiom had to be modified. When bombers were confronted with faster, more maneuverable German fighters, the axiom of speed became less advantageous. Furthermore, when the realization came that bombing accuracy was significantly less capable than envisioned, the axiom of strategic strike was empirically muddled, or worse—dogmatic. In terms of decisiveness, airpower strategy over Europe simply did not obtain that level of success. Although early airpower theory was generally sound, translating the theory into a feasible strategy became flawed because it failed to consider, understand, or incorporate the full context in which it would be applied.

If the narrative presented to this point were simply the end of World War II, then airpower would have had a difficult time convincing national decision makers that it deserved an independent service separate from the US Army. Based on bombing data from the European campaigns, the airpower axioms of access and speed were supported; the axiom of strategic strike was partially supported; the axiom of decisiveness was not supported. However, in the final operations of the Pacific campaign, airpower accomplished with two flights the most devastating, game-changing events the world has ever witnessed: the dropping of atomic bombs on Japan—ending the war. Those involved in planning the missions clearly linked the theory with the strategy. Airpower theory, combined with the new and devastating atomic capability, provided the access, speed, and ability to strike strategically. The bomber had uncontested access and speed over Japan, carried a payload whose accuracy was of lesser importance (just get anywhere close), and provided for the first time overwhelming strategic-level firepower that all but ensured capitulation of the enemy (decisiveness). From these final events against Japan, an independent Air Force was born. Based on the now empirically proven airpower theory (access, speed, strategic strike, decisiveness), a formal airpower strategy was both adopted and codified in the minds of airmen.

From 1947 well into the early 1980s, Strategic Air Command (SAC) dominated the strategic perspective of the newly formed USAF and airpower in general. SAC built a strategy cast in cement—nuclear operations, delivered by aircraft, independent of other services, with near fail-safe routine, rigor, and predictability. However, an airpower strategy is only sound if it appropriately considers changing contextual realities. The limited, often politically restrained wars such as Korea, Vietnam, and Gulf War I hampered and restricted SAC's airpower strategy. While SAC was prohibited from conducting its unlimited nuclear bombardment strategy, it was content with defending the bipolar standoff with the Soviet Union. So the bomber strategy of SAC continued to be a vital mission. The USAF continued developing additional capabilities to fulfill the axioms of airpower theory, and the real-time requirements of limited war demanded a more flexible response—a response the emerging fighter-centric airpower strategy effectively provided. Within the Tactical Air Command (TAC), significant advances occurred in Korea, Vietnam, and eventually Gulf War I—particularly the ability of a fighter-centric strategy to provide limited war capabilities within

a highly political context. This contextual change propelled strategy to the forefront. Although the emergence of fighter aircraft as a central and even primary capability fell short of providing decisiveness, the axioms of access, speed, and strategic strike—eventually with precision guided munitions (PGM)—provided a vital complement to the airpower mission and subsequent airpower strategy. In fact, given the changing world dynamic following the fall of the Soviet Union, the fighter-centric perspective became dominant as the USAF not only dismantled SAC, but codified airpower strategy within the new organizational construct of Air Combat Command (ACC).[6]

When ACC activated in 1992, the strategy developed from airpower theory, in relation to the context at the time, became doctrine. Three strategy-enabled requirements emerged from the attributes of the fighter-centric perspective:

- The ability to gain and maintain air superiority

- The ability to accurately strike coveted enemy infrastructure

- The ability to target fielded combatants

These three capabilities became the hallmark of airpower strategy. Although missing the axiom of decisiveness as presented, they met the enduring axioms of airpower theory (access, speed, strategic strike) and effectively translated those axioms into operational airpower strategy. Perhaps the most significant empirical evidence for this newly codified and organized airpower strategy was provided just prior to the 1992 USAF organizational change—the first Iraq war in 1991. Airpower, under the banner of a fighter-centric strategy, overwhelmed the enemy, shaped the battlefield to US advantage, and dominated both the nature and climax of the war. Given this context and empirical experience, the newly minted fighter-centric airpower strategy formally and firmly held the USAF mantle of power.[7]

The evolution of this strategy can be traced from the initial development of airpower theory, through the years of early USAF independence, filtered through the challenges of limited war in the twentieth century, and culminating in what was thought to be modern war in the 1990s. However, just as the initial bombing strategy in World War II failed to appropriately carry airpower theory to its anticipated heights; and just as the strategic bombing strategy of SAC failed to effectively translate airpower theory in a limited, politically constrained context;

so, too, has the current fighter-centric airpower strategy failed to effectively connect airpower theory with the emerging context of asymmetric and unconventional war. In a context where the enemy does not seek or have the capability to challenge the United States for air superiority, the need for advanced air superiority systems is minimized. Furthermore, if targeting coveted enemy infrastructure alienates the noncombatants and pro-US population, strategic strike becomes counterproductive and limited. Finally, if enemy combatants are indistinguishable from the noncombatant population, targeting fielded forces becomes limited to discriminate tactical opportunities. Consequentially, if the three central elements of the fighter-centric airpower strategy fail to appropriately offer how airpower theory can be translated into action within emerging new context, then as has previously occurred, the airpower strategy must be modified.

As airpower strategists, we must ask ourselves a vital question: *What must our airpower strategy be to effectively connect airpower theory to the emerging and growing spectrum of current and future war?*

Current Airpower Strategy

The importance of understanding the relationship between airpower theory and the development of airpower strategy cannot be overstated. If the theory remains relevant, it then requires a strategy for translating that theory into actionable reality. However, how that process is accomplished depends on a number of important considerations regarding strategy development in general.

Students of airpower strategy often ask, "What is the difference between a strategy and a plan?" Although the details are much more refined, the most obvious answer is, a strategy not only offers elements of "how" operations will be conducted, but further considers "why" an operation will be conducted. For example, in developing the airpower strategy of bombardment in World War II, strategists outlined the objective of targeting enemy infrastructure, vital centers, and coveted production capabilities. This strategy was underwritten by the idea that an enemy would only be able to effectively compete in warfare if it had the means to continue supporting the war effort. If one could effectively take away the enemy's ability to resupply its war effort, then the logistical realities of resource shortfalls would force capitulation. This dynamic

answered "why" targeting of infrastructure, supply chains, and production was part of the bombing strategy. In fact, the recognition of wartime logistical requirements was the driving force behind development of targeting industrial capabilities. Furthermore, knowing that targeting an enemy deep within its traditionally protected vital centers would be confronted by some degree of enemy defenses, the bombing planners prior to World War II developed a strategy for a self-defending aircraft, the B-17. They determined that if the industrial base was in fact a logistical requirement to continue waging war, then the enemy would likely have created some level of protection for those centers. From that consideration, prewar airpower strategists understood that access to those areas (an axiom of airpower theory) was instrumental and therefore their strategy must consider and develop an access capability—self-defended bombers. The strategy was more than a plan in that it addressed realities of why specific elements needed to be considered. Although a plan may offer important insight as to exactly what will be accomplished, a strategy must first be developed that offers important consideration for why an operation will be developed. Airpower theory outlined the military advantage of access; airpower strategy provided the translated need for a self-defendable bomber to provide that access, and then a plan that included specific vital targets could be developed in line with both the theory and the strategy. However, perhaps of greatest importance is the recognition that if the strategy is flawed, then the plan will likely be flawed; if the plan is flawed, the operation will likely not result in the intended effects. This is exactly what occurred in the European bombing campaign in World War II.

Consider again the pre–World War II bombing strategy. The theory appears to have been fairly sound in terms of the advantage airpower can provide in war (access, speed, strategic strike, decisiveness). However, the subsequent strategy failed to consider all of the contextual realities of enemy capabilities. Knowing that access was centrally required to target strategic vital centers, strategists envisioned and procured the self-defended airplane. However, as discovered, the B-17 was unable to adequately defend itself against German fighters and ground defenses. Therefore, because the initial strategy was flawed (i.e., the self-defending bomber could not appropriately self-defend), the subsequent plan of targeting specific locations well inside Germany's vital center did not achieve the anticipated outcome. This was simply a case of appropriate

theory married to a flawed strategy, resulting in a less than optimum plan. Again, the important consideration in this discussion is that *one must be confident that the theory is in fact appropriately explanatory of a particular phenomenon, and then the subsequent strategy must not only translate that theory into effective operations, but it must do so within the complex context of the environment for which that theory will be applied.*

Changing Context, Unchanging Strategy

> *The first, the supreme, the most far reaching act of judgment that a statesman and general officer must make is to try and determine the type of war upon which one is embarking; neither mistaking it for, nor turning it into something alien to its nature.*
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> —Carl von Clausewitz

As suggested by this insight, failing to appropriately consider all the complexities of the given context will nearly always result in a less than optimum strategy.

SAC developed its codified airpower strategy of predictable, systematic bombing operations in a global context of bipolar strategic competition with the Soviet Union. Given the initial context of what the United States deemed most important in the 1960s and 1970s, the airpower strategy of SAC was both appropriate and an effective translation of airpower theory. However, as the political and limited nature of war continued to emerge throughout the latter part of the twentieth century, SAC's airpower strategy no longer appropriately addressed the complex context of the global environment. The forcing function of external requirements became a driving factor behind the need to modify the USAF airpower strategy so it could better translate airpower theory into a strategy that reflected current context (limited, politically constrained warfare). Although the airpower strategy that emerged and effectively proved itself in the first Gulf War was appropriate given the context, as the context changed throughout the 1990s, airpower strategy failed to expand or adapt to the emerging exigencies. The fighter-centric airpower strategy was both appropriate and effective given a specific context, but in terms of strategy, it should be viewed as necessary but far from sufficient. It met and even exceeded the context of the first Gulf War, but when the context changed to an asymmetric, unconventional engagement

(as it did throughout the 1990s), the strategy needed to adapt. History suggests that as a service the Air Force did not make appropriate changes (adaptation) to its airpower strategy that were required for the emerging new context.

A number of examples can illustrate the changing context throughout the 1990s. Somalia was perhaps the first indication of a context where traditional airpower strategy was not appropriate within the context of the given hostilities. In Somalia there was no requirement to gain and maintain air superiority, little to no coveted infrastructure to target, and combatants blended into the population such that there were no apparent or easily identifiable fielded military forces. In this context, the fighter-centric airpower strategy failed to appropriately translate airpower theory into the complex context of Somalia. Rather than deliberate how it might modify or expand its airpower strategy to address the emerging asymmetric and urban war context, the USAF ignored the reality, categorized it as a type of war it did not prefer or care to fight, and left Somalia following the Mogadishu catastrophe.[8]

Following the events in Somalia, Air Force strategists should have begun developing a strategy appropriate for the emerging reality of asymmetric, unconventional war. Instead, they continued to perceive these types of conflicts as "military operations other than war" (MOOTW). Although formally outlined in Air Force doctrine, the very title alone suggests a secondary or cursory perspective of these types of responsibilities. The remainder of the 1990s continued to offer significant evidence on the limits of the current fighter-centric airpower strategy. It failed to appropriately reveal and address the wider spectrum of operations required by emerging asymmetric realities (context) until the post–9/11 conflicts in Afghanistan and Iraq.

In the months following the 9/11 attacks, the United States was ready and willing to use military force to counter emerging terrorist threats. The obvious attention on Afghanistan and the later decisions regarding Iraq all depended on various military strategies to meet specific US national security objectives. In Afghanistan, the early targeting and bombing of training camps, known enemy locations, and vital logistical centers all fell squarely inside the existing airpower strategy. As long as the context of the conflict fell within the parameters of air superiority, targeting coveted infrastructure, and attrition of fielded forces, existing airpower strategy was appropriate and successful. The same could be said in

observing the opening "shock and awe" campaign in Iraq. The context in both countries supported the existing airpower strategy. However, as the next 10 years revealed, once both conflicts transitioned into asymmetric, nontraditional, counterinsurgency operations (a context very similar to Somalia), the existing airpower strategy developed from a fighter-centric perspective failed to appropriately translate airpower theory into advantageous operations. Instead, the USAF began the arduous process of modifying airpower strategy to meet the emerging (real-time) context. What was previously considered secondary operations, less than central, and often underappreciated within the hierarchy of the USAF, quickly became of primary importance. What previously had been considered MOOTW became characteristics of significant war. Daily operations now required tactical airlift, special operations, ISR, close air support, and tightly integrated action with ground forces. Therefore, an ad hoc airpower strategy was developed that understood and coordinated efforts with ground commanders. Survivable intratheater airlift operations were instituted and tested in real time. The increase in demand for ISR from remotely piloted aircraft (RPA) was "insatiable." However, prior to these emerging demands, the USAF failed to adequately organize, train, and equip for such operations. It lacked a coherent method of translating airpower theory into an effective airpower strategy during the emerging asymmetric context.

Fortunately, over the years of operations in both Afghanistan and Iraq, USAF airpower strategy systematically modified. Evidence suggests Air Force leadership tried to avoid modifying the fighter-centric airpower strategy, but the realities and demands of the ongoing conflicts became organizational forcing functions that ensured airpower strategy would adapt to an "all-in" posture.[9] The requirement for RPA pilots—once a dreaded and often considered career-ending path—became phenomenally important. Demand for space-based ISR, special operations, and secure command and control gained increased importance. Tight interaction between Air Force operations and ground operations became a paramount requirement—something the Air Force historically (both overtly and covertly) minimized in support of what had been perceived as a constant requirement to prove the importance of its independent status. Fortunately, it was able to effectively adapt its airpower strategy to better meet the required asymmetric context—but not to the level required.

Intratheater airlift, especially by C-130 aircraft, became the backbone of logistics. The C-130 assumed paramount importance, second only to the helicopter, in nearly every daily mission throughout both Iraq and Afghanistan. Major mobility moves by C-17s, C-5s, and the additional air refueling systems required for long, global logistics (both personnel and equipment) operated at near maximum capacity. The requirement for the AC-130 gunship was overwhelming; the need for direct, near-real-time, ground support capabilities dominated ground commanders' requests. A perpetual lack of requested ISR capability plagued most of both conflicts—especially unmanned platforms. As the years rolled on, the USAF improved in all these areas, adapted operations, and developed to the best of its ability a more qualified airpower strategy.

However, strategists must effectively translate airpower theory into appropriate airpower strategy relative to the existing and emerging contextual complexities—a process that must, in large part, be accomplished prior to hostilities. Although the USAF demonstrated great flexibility adapting over time in Afghanistan and Iraq, the requirement to organize, train, and equip should not be fundamentally a "just-in-time" or ad hoc process.

In hindsight, the understanding of asymmetric and unconventional war that emerged throughout the 1990s should have caused the USAF to develop a tactical intratheater airlift capability with an increased survivability rate in contested locations—perhaps a smaller, more-efficient airlift platform able to access more potential environments and hardened against small-arms fire. Furthermore, the USAF should have more seriously considered the need for increased air-to-ground systems that could be seamlessly and continually available for close air support, as well as the need for helicopter systems. The lack of substantial USAF helicopters, with their unique and vital airpower capabilities, suggests a possible shortfall in effective planning, or worse, a myopic perspective that only embraces strategic-level airpower technologies or independent systems.[10] In terms of RPAs, no other service is more qualified to procure, organize, train, and equip this vital new capability; if another service (Army, Navy, CIA, etc.) is or becomes more capable, then it is further evidence the USAF failed to proactively usher in these emerging and vital airpower capabilities. Unfortunately, evidence from the early years of both the Iraq and Afghanistan conflicts suggests the service was less than enthusiastic about the increased emphasis and importance being

given to RPAs as an arm of traditional airpower strategy. The USAF should also have been better prepared to coordinate within the joint arena, especially in a context where ground forces have primacy in the fight. It should have recognized, planned, resourced, and trained for these and several other areas when asymmetric and unconventional context began emerging (at least since Vietnam) and well before hostilities erupted.

This discussion is not intended to accuse or denigrate the USAF—just the opposite. As a service we have effectively adapted our airpower strategy in the past to better translate airpower theory into effective, contextually relevant operations. The dynamics that "force" these changes have always been problematic, ambiguous, and difficult. Today, given the expanded contextual realities of asymmetric war, as well as considerations of emerging technologies, a similar requirement exists to modify the fundamental attributes of our fighter-centric airpower strategy.

Future Airpower Theory

To begin this "predictive analysis," one must first consider how the understanding and implications of enduring airpower theory may have changed over the years. As noted, strategy stems from foundational theory, and theory must be continually filtered through emerging new paradigms and context.

Theory is often an adaptive process where tests, empirical data, and experience help shape and clarify the original theory. As more information is garnered, theory can be updated and refined. There are perhaps three areas of airpower theory where minor clarifications to the original theory will serve to provide better explanatory and predictive power and one consideration where a major change is warranted. The first: *access* can no longer be assumed to only mean "over a specific geographical point." Given the advent of space and now cyber operations, *access* may also mean access to enemy digital networks, access to enemy privacy, or access to enemy secure communications. Although a geophysical phenomenon remains where access is advantageous to military operations, the full spectrum of what is meant by *access* must now be a wider, more complex perspective. Second, *speed*, although still vital in terms of the traditional advantage airpower provides, must also be understood to include electrical transmissions with both offensive and defensive capabilities. And third, *strategic strike* must

now include a more robust human element where civilian causalities are no longer socially acceptable, humanitarian operations are directly related to US security interests, and global economies now include multinational infrastructure with a multinational workforce. Finally, the axiom that airpower is decisive should be eliminated from the theory or significantly qualified. Although there may be cases where airpower could be decisive, as was the case in Japan or maybe the 1991 Gulf War, planning for future military engagements would be better served under a banner of synergistic operations across the full range of military capabilities.

In an expanded consideration for what *access* means to airpower theory, the technologies, processes, and physical connections have increased in both number and scope. This requires consideration of both offensive and defensive operations. For example, the ability to cut off enemy communications has long been an important consideration in warfare; however, today the complexities of global cell networks, space-based communication, and even underground hardened communication lines makes access to these nodes much more difficult. Furthermore, the requirement to equally develop the same and even more-robust communication lines as a defensive measure against attack requires increased vigilance on what an enemy might be able to access in the United States. Within airpower theory, one must consider a much wider reality and context of what constitutes access as well as the subsequent strategy that develops from that theory.

The axiom that airpower provides *speed* for military advantage, must now conclude that speed is no longer limited to how fast an airplane can fly. Although the importance of aircraft speed will likely remain relevant into the future, the wider concept of speed will in many ways be measured in terms of electronic, digital, and most importantly, decision-making speed. This suggests that although in the traditional sense, aircraft speed afforded the ability to "get in and get out" (either undetected or at such a speed a belligerent could not appropriately react), speed in this sense may no longer provide an advantage. Given new detection capabilities, advanced radar and targeting systems, and global communications networks that work in nanoseconds, traditional aircraft speed may provide little in terms of advantage. *Again, this does not suggest aircraft speed is no longer important; rather, it suggests that widening the possible understanding of what speed means in the future will expand our perspective of speed as an axiom to airpower theory.* This wider recognition

and definition of speed within the context of airpower theory will have direct consequences on how and why specific airpower strategy is developed in the future.

Third, the traditional dynamic of strategic strike, where a nation consists of internal vital centers wholly owned and operated by citizens of that state, is continuing to decline. Global commerce, multinational companies, and borderless commerce (electronic transfer of wealth) will continue to degrade what has traditionally been central to state sovereignty. Targeting an electrical grid in Country A may take out the operating capacity of an industry in that country owned by one of our allies in Country B. Furthermore, as the future global commons become denser, US economic interests will likely have a footprint in nearly all states across the globe. Traditional strategic strikes may actually result in significant logistical problems at home. Our current bilateral economic dependence on China will only increase in the coming years. It is hard to imagine strategic strikes against China if doing so would risk the potential of significant economic consequences at home. One might consider the future global commons a context in which "mutually assured economic destruction" creates an environment where traditional strategic (kinetic) strikes no longer seem advantageous.

Furthermore, as the world becomes more interconnected; as media and technology provide the vehicle to share massive amounts of live or near-live streaming video; and as social media capabilities continue to connect more people, the future scrutiny of "collateral damage" during strategic strikes will measurably increase. The public backlash over unintended consequences and civilian collateral damage will require more precise strategic strikes than current PGM technology can produce. Moreover, capabilities that produce desired effects without kinetic strike will increase and become the next "insatiable" requirement of commanders. This emerging context will affect the parameters and scope of what we mean by the airpower axiom of strategic strike.

Finally, in terms of the airpower axiom of decisiveness, the USAF must consider the importance of a synergistic perspective. In terms of strategic communication alone, the term *decisive* applied to a single service or capability is by its fundamental understanding an *exclusive* statement. Although early airpower advocates used the term *decisive* as a forcing function for a separate Air Force, empirical support through the years has been limited. Furthermore, the twin sister of decisive

operations is independent operations (clearly connected in Mitchell's early work). This original argument encouraged the term *independent* for obvious organizational reasons and objectives at the time but could just as well have argued that because US national security "depends" on airpower capabilities, it should be organized under a unique service. Airpower may well remain and even increase its ability to conduct independent operations, but the message this description sends is divisive. Instead, the message regarding both airpower theory and its subsequent airpower strategy should be one whose narrative is best described as *dependent.* This point is easy to make. In most cases, ground maneuver is dependent on airpower control just as sea maneuver is dependent on airpower control. Likewise, near-immediate humanitarian relief and/ or immediate retribution against emerging belligerents are dependent on airpower capabilities (access, speed, strategic strike). Consider that as Mitchell's foundational argument: airpower is so important to the national security of the United States, it required a unique people to lead it (airmen) and a unique organization to control it (USAF). Today, the original argument for independence is not only anachronistic; it is hurting the USAF message. The message today, and likely well into the future, should be about dependence—the security of the United States is *dependent* on substantial, enduring airpower capabilities. Thus, airpower theory would improve in terms of developing appropriate airpower strategy if the term *decisive* were eliminated.[11]

Despite this emerging future context, airpower strategists are still responsible for answering the original question: *"What must our airpower strategy be to effectively connect airpower theory (access, speed, strategic strike) to the emerging and growing spectrum of current and future war?"* Strategists must consider a much wider spectrum of what these elements mean if one is to effectively translate theory into appropriate airpower strategy.

Future Airpower Strategy

Airpower strategists should begin by developing a strategy that translates the important axiom of *access* into an operational reality relevant within the future context. Consider that nearly any significant object on the surface, subsurface, or in the air will be tracked, identified, and potentially targeted. By *significant*, this prediction suggests one of size, sound, or energy footprint. Only those systems at the micro, near-silent,

and ultra-low-energy level will have any chance of operating undetected (i.e., untargetable). In the technological imperatives of required small size alone, none of these systems will be able to provide the physiological requirements of manned flight. Moreover, the increase in detection capabilities, especially ground-to-air weapon systems, is advancing exponentially in terms of both competency and low-cost production. Today the development of "stealthy" aircraft is a multi-decade commitment whose cost/benefit ratio has reached the upper limit. Given this inversely proportional relationship between detection technology and antidetection technology, any strategy that relies on current and traditional physical access using significant systems (traditional aircraft) in the future will likely be disappointing. The USAF must develop systems (both sensors and weapons) today for tomorrow that are small, undetectable, modular (so they can be quickly configured for specific missions), and standardized so they can be delivered from a variety of air and space platforms.[12]

Airpower strategy must accommodate and conceptualize not only unmanned systems that can be much smaller, but also pure drone capabilities. Today's RPA pilots continually emphasize their aircraft are not unmanned but rather manned at a distance. However, from a strategist's perspective looking at the trends of technology, these current RPA systems are merely transitional. In the very near future, technology will provide the opportunity for pure drone aircraft that are small, extremely difficult to track and target, yet highly capable of both ISR and attack (ISRA). Furthermore, these systems will be "preprogrammed" to both launch and progress autonomously. This autonomous capability will become a requirement due to the extensive numbers of systems, the vast degree of mission assignments, the near-global demand, and perhaps most importantly, the need to counter threats in seconds rather than the traditional time required for human-based decisions.[13]

Airpower theory suggests that *access* provides a military advantage. Therefore the USAF must develop systems today for tomorrow that do not rely on manned control (other than initial programming), are small sized, "on-watch" 24/7, and can be produced in large numbers for very low cost.

Furthermore, an effective access strategy will require the USAF to continue developing and investing in space and cyber technologies. In this sense, *airpower must be seen not by its original airplane effect; rather, airpower must in the future be seen as controlling the domains of air, space,*

and cyber. Fortunately, the USAF has already made significant organizational strides in this direction. However, in developing relevant future airpower strategy, it must expand this investment and develop capabilities to access digital and electrical nodes across the globe. Perhaps most importantly, the USAF must reorganize how it authorizes, commands, controls, and proportions these capabilities. Under current legal, funding, and "sortie generation" systems, emerging and future cyber capabilities will not be able to effectively function as needed. This will of course require the USAF to incrementally divorce itself from the traditional and primary perspective of manned flight as the central capability for access.

To translate the element of *speed* into an airpower strategy, one must understand that any speed will likely not be capable of escaping future technologies and their targeting capabilities. For peacetime garrison operations or humanitarian efforts, traditional aircraft speed considerations will remain relevant. However, in contested areas, aircraft will likely not survive. In fact, future operations will no longer call for air superiority as it is conceived today; no country will be capable of gaining and maintaining air superiority due to future advance detection and targeting technologies. Our advantage will come from the speed at which we can deny air operations to a belligerent through our own ground-to-air defenses, the speed at which we can process ISR data into information, and the speed at which our organizational processes allow us to outmaneuver and outthink our enemies. Speed in this sense will be less about technology and more about rapid contextual determination and decision making—rapidly putting the pieces of the puzzle together and thwarting enemy plans. Much of what this strategy suggests is unfolding today, as revealed in antiterrorism procedures. NSA data collection is only the beginning of what will be a standard and necessary requirement in the future, where the speed at which one can assimilate data into usable information, synthesize and connect that information to a wider narrative, and act before a belligerent can respond will determine who has advantage. Given this future strategy, the USAF should invest heavily in secure communication capabilities, highly capable intelligence-gathering competencies, extensive cyber expertise and processes (a significant organize, train, and equip requirement), and personnel with the training and education to work in a fast-paced, proactive environment. These are the strategic characteristics that will effectively translate the theoretical axiom of *speed* into future airpower strategy.

Finally, future airpower strategy development regarding *strategic strike* will require significant capabilities in terms of micro, surgical capabilities. Strikes must be capable of engaging single nodes of vulnerability without degrading entire networks. Moreover, strikes must be capable of being "un-done," which means traditional kinetic destruction may no longer be considered the default or single-option capability. Network viruses with available keys that can turn on and off effects, directed-energy capabilities that can temporarily degrade systems without destroying the entire infrastructure, and even information overload capabilities that frustrate and degrade a belligerent's ability to make effective decisions—these are just some of the strategic strikes of the future. Consideration for the wider impact of destroying industrial capabilities within a multinational economic context will restrain traditional "shock and awe" strategies.

A common reaction (especially from aviators) to this kind of discussion is: "What you are describing is no longer the Air Force. If you take the airplane out of the Air Force how can it even be called an air force?" In response to this important question, one must first recognize this discussion does not suggest that future airpower strategy will be void of aircraft. In fact, as previously noted, significant aircraft capabilities will be required during peacetime garrison operations. Humanitarian lift and airdrop, search and rescue, rapid transportation of personnel and cargo, weather reconnaissance, medical evacuation, fire-fighting operations, tactical domestic surveillance, and other operations will remain both relevant and require extensive aircraft capabilities. Moreover, these operations alone will continue to require air-minded personnel committed to full-time strategic and operational planning for implementing traditional air capabilities. However, in contested areas where an enemy of equal capability challenges our use of aircraft, traditional aircraft operations will no longer be possible. As noted, the technology available to identify, track, and target will and has outpaced the ability of traditional aircraft to hide. The kinetic and combat operations required of future airpower strategy will better translate airpower theory by considering and solving the complexities of context this discussion poses. Finally, in direct response to taking *air* out of *airpower*, one can draw an analogy to taking the *horse* out of *horsepower*. Today, when we talk about horsepower, we are still talking about translating the theory of moving further and/or faster into a strategy that is relevant in today's context. Although the "horse" in horsepower is no longer present, the theory

remains consistent. So, too, is the idea of "air" in airpower. Although the means of translating the theory will no longer call for traditional combat aircraft, that does not mean future capabilities will not continue to refer to airpower in relation to the theoretical axioms of *access, speed*, and *strategic strike*.

Conclusion

Predicting the future context of airpower strategies is a risky concern. However, if the ideas presented here begin a conversation about how we might prepare today for an uncertain future, then the risk will have been worth it. The intent of this article is to motivate a discussion that can increase the probability of a more prescient, proactive, and effective airpower strategy for the future. There will no doubt be those who disagree with these considerations—perfectly acceptable and highly encouraged. For those who perceive a different future or believe airpower should consider a different context: join the debate, offer your ideas, and endure critique. Regardless of the differences this debate generates, future airpower strategy continues to be wed to airpower theory and objective analysis of the expanse and scope of that theory must be realized. As with all organizational change, some will find every reason not to take the future context into account if it means changing what they understand and cherish about today's airpower strategy (mainly manned flight). However, as has been the case with changes in the past, the USAF will work through the needed transitions, shape a new culture that understands and accepts the changes, and think strategically about how the fundamental advantages of access, speed, and strategic strike will remain important theoretical aspects in future conflicts. Given the present and immediate future context posed by potential enemies around the world, current airpower strategy supported by today's air, space, and cyber competences will remain critical to US national security. Taking into account the ideas offered here, we must understand that our current airpower systems are merely transitional technologies—technologies that may become anachronistic in the coming years. Just as Mitchell argued many years ago, the importance of airpower to the future security and vital interests of the United States is profound. Considering that the Air Force of 2030 will in large part be determined by the decisions we make today, the debate must take place now—at the highest level of strategic

planning. Together with the essential capabilities of the US Army, Navy, Marine Corps, and Coast Guard, we can develop a future of synergy unmatched across the globe. **SSQ**

Notes

1. William "Billy" Mitchell, *Winged Defense* (New York: Putnam, 1925).

2. Ibid., 214–15.

3. J. F. Shiner, "The Coming of the GHQ Air Force, 1925–1935," in *Winged Shield, Winged Sword: A History of the United States Air Force*, ed. B. C. Nalty (Washington: Air Force History and Museums Program, 1997), 111–12.

4. Mitchell also offered the idea of airpower being "decisive," but it was the officers at the ACTS that formally considered it in their development of airpower strategy.

5. A. Stephens, "The True Believers: Air Power Between the Wars," in *The War in the Air*, ed. A. Stephens (Fairbain, Australia: Air Power Studies Center, 1994), 61–65; and *The United States Strategic Bombing Survey: Summary Report (European War)* (30 September 1945; reprint, Maxwell AFB, AL: Air University Press, October 1987), www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA421958.

6. Mike Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership 1945–1982* (Mawell AFB: Air University Press, 1998). This work outlines and traces the emergence of the fighter perspective and how it eventually dominated the central airpower strategy of the USAF into the 1990s.

7. For a detailed account of the transition from the bomber strategy developed and enforced through SAC to the fighter-centric strategy developed and upheld through ACC, see Jeffrey J. Smith, *Tomorrow's Air Force: Tracing the Past, Shaping the Future* (Bloomington: Indiana University Press, 2014) 58–105.

8. Some might argue that it was not a military decision to "leave" Somalia; rather, the commander in chief ordered us to leave. It might well have been different if the USAF, as just one service example, had offered the president a viable and appropriate alternative strategy that would have proven more advantageous to US national interests. However, given the fighter-centric perspective and dominant airpower strategy of the time, there was limited if any capability for addressing an asymmetric, unconventional context with USAF airpower.

9. USAF chief of staff, Gen Norton Schwartz, 2009, offered in numerous speeches.

10. Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force* (New Brunswick: Transaction Publishers, 1994). In this work, Builder continually points to events where USAF leaders rejected or slow-rolled certain airpower systems that did not align with their vision of what they deemed important. Within that process, Builder contends that the USAF routinely put the means (systems it preferred to fly) ahead of the ends (maximum military advantage).

11. The airpower theory I propose here is taken from a variety of historical and current observations that all attempt to provide a theory, yet fail to reach the explanatory level that stretches across time and space. Many have developed what they think is an airpower theory but is in reality simply an airpower strategy. Although the USAF has always managed to hit around the edges of an airpower theory, few cases exist where a theoretical framework that describes, explains, anticipates, and even predicts how and why airpower provides advantage

has ever been fully articulated. Future serious discussion on the development of an airpower theory seems exceedingly appropriate at this important time in our development.

12. Much of this discussion was developed through interaction with Lt Col John Kepko, USAF, retired, who has spent a lifetime (both in and out of the service) researching, debating, and contemplating future technology-based possibilities. His insight and acumen for recognizing technological trends and synthesizing that recognition into strategic considerations is truly remarkable. This author and many others have garnered a tremendous amount from John's insights and interests in the future of our service.

13. For example, today we are all familiar with antivirus software. These software packages autonomously seek out, quarantine, and even eliminate threats. The future requirement for machine-based digital guardians must exponentially increase to include microsecond decisions to take down entire networks. If a threat to any of our vital cyber systems by an outside digital attack requires a preemtive attack against that network in the few seconds prior to the event, there is no way for humans to make that call in real time—it must be an autonomous action engineered into the cyber system.

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