RE-NORMING THE ASYMMETRIC ADVANTAGE IN AIR DOMINANCE: "GOING TO WAR WITH THE AIR FORCE YOU HAVE

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THE FUTURE OF POWER PROJECTION

REPORT 3

"RE-NORMING" THE ASYMMETRIC ADVANTAGE IN AIR DOMINANCE; "GOING TO WAR WITH THE AIR FORCE YOU HAVE."

"The best sensor on the battlefield may be the last in line to actually strike targets".

Secretary Rumsfeld, in one of his philosophic comments said, "You go to war with the Army you have; not the Army you want." I would suggest a similar approach to understanding our capabilities for future concepts of air operations and making modifications to accommodate them.

A realistic look at the future of Air Operations must take into account the size of the force, the capabilities of the force and the evolving construct of the future weapons available; and then we can place against this template of available forces against what technologies would or could maximize their utility to a Combatant Commander. There has been steady erosion in the quantity of aircraft being made available to allied Air Forces around the world. For the past several generations of development, we have substituted Combat Qualities for enhanced quantities within each platform.

To deal with declining numbers ("quantity has a quality all of its own") calls for imagination and innovation in thinking about future investments and concepts of joint operations. We need to leverage technology trends; and picking strategies that our ground combat commanders have used historically, to restore the unfair fight, and ensure that we have superiority at the point of the spear.

At the same time, we must focus on ways to minimize the probability for failure; while we maximize our probability of success. We may paean for the days of large numbers of combat platforms, but now must consider where we are and what is the real, not desired trends affecting deployable capability.

And we cannot rely on the ability to quickly accelerate our industrial capacity as we have done in the past. We must consider the speed of war has increased, and the time necessary to field new technology marvels has increased. We must take to heart Rumsfeld's comment and begin to design a future plan that allows for erosion in our "asymmetric" advantage.

Building such a CONOPs is rooted in more data sharing and more integrated tactics. We need to reach into the ground commander's kit; and consider shaping air versions of forward observers, weapons teams and spotters to assist with targeting; and to provide for layered offenses to match layered defenses.

In other words, as we shift from older notions of or capabilities for air superiority, how do we shape dominance on the battlefield? But what must be understood, as General Corley has force-

fully underlined in his interview ((http://www.sldinfo.com/?p=11608), that without air superiority it is impossible for the joint warfighter to operate at all or effectively in projecting global power.

Realist's point out that if you want to know the Armed Forces Capability ten years hence, you must look around today. Even Germany's Blitzkrieg Capability was minimal in 1940; in many ways it was an aspirational template relative to the bulk of their deployed forces; some of which was still horse drawn and supplied. Indeed, if one looks carefully at Leni Riefenstahl's masterpiece the Triumph of the Will, one sees as many horses as tanks in the propaganda film.

The Challenge

Unless actions are quickly taken, the structure of America's capability to provide the kind of Air Dominance in a future fight will decline, even dramatically. And with this decline will come reduced freedom of action for our allies as well.

The size of the air arms of the U.S. forces is clearly going down. Current Air Force Plans call for standing down 250 fourth generation Tactical Fighters as the transition to the complement of 185 F-22. This represents a total inventory and not an operational inventory that is closer to 150. Added to this are an emerging but undetermined and as yet undeployed total of F-35 fighters.

The F-117 was key strike asset, which has been retired. http://www.usafnukes.com/picture_page.html

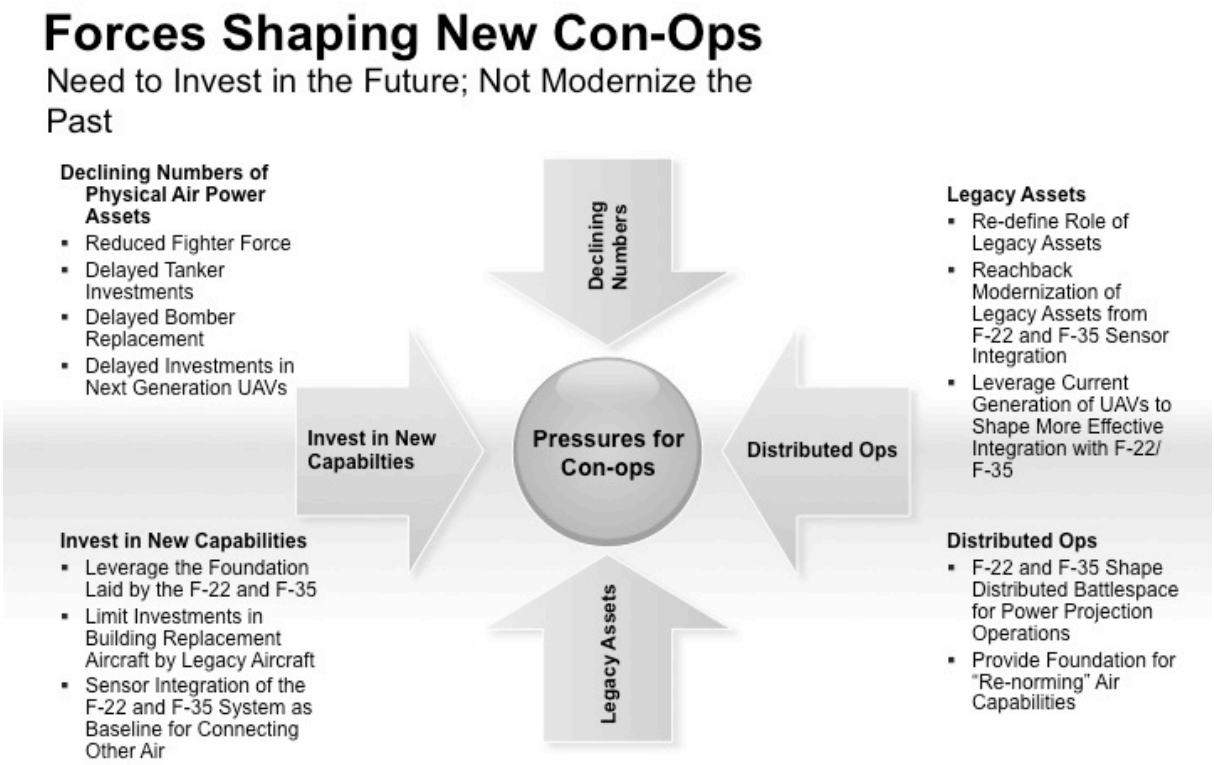
Fifth generation air will slowly grow with deliveries; and the Marines will push the AV8 out of their inventory as the STOVL F-35 sparks their imagination regarding CONOPS. Navy has asked to invest further into fourth generation fighters; as their F-35 CV version goes through the testing phase and they worry for the viability of their aging carrier Air Fleet and see the need to populate the carrier decks

Clearly, the resultant structure of U.S. airpower will be a mixed fleet of fifth generation and fourth generation fighter aircraft for an indefinite period. And several specialized capabilities central to past successes are eliminated or rapidly aging. Of the aircraft that the American Military used to penetrate the air defenses in Iraq in 2003, the F-117 has been grounded and the B-2 continues to age with reduced capability to penetrate air defenses that are increasingly sophisticated. Adversary defenses have not remained static; integrated Air Defenses are now becoming much more effective and much more mobile. The strategic trajectory is to update defenses with regard both to range and maneuverability. Competitors have complemented these defenses with upgrades of their own Air Fleet using a mixture of calibrated 4.5 generation technologies.

Front view of the Russian Fifth Generation test aircraft

http://www.defenceforum.in/forum/showthread.php/8276-PAK-FA-Post-First-Flight-Developments!-Putin-visits-PAK-FA?p=121035&viewfull=1

And competitors are introducing near fifth generation capabilities, such as the new Russian fighters and others are shaping new generation missiles for their own use and export (see



http://www.sldinfo.com/?p=10798). The Chinese will be able to project power simply by exporting missiles to various developing states and can certainly up the ante in any Middle East confrontation.

The mission concerning air dominance is unyielding and will continue to call on our brave pilots to hold hostage targets anywhere in the world; to do so requires an ability to penetrate Integrated Air Defenses, and along the way to deter or defeat enemy Air.

This puts CONOPS pressure on the other elements of the combat air force. The Refueler or Tankers become essential to power projection and makes one wonder if the concept of drop tanks can work for Fifth Generation Aircraft as the sortie to the Battle Zone; thus allowing Tankers added discretion.

We need to take a hardheaded look at what we have to execute the Air Dominance mission; and therefore complement the ability of the Combatant Commander to succeed by extending well into the 21st century America's control of the skies. We can not continue to assume a dominance which has been built by past investments, absent a robust engagement to shape capabilities for the future.

We need to look into the benefits of the current investment; and the technologies, which are or can be brought to bear seriously to level the fight. I have a philosophy that if America is ever in a fair fight; we have suffered from bad planning.

Though this stemmed from the clear asymmetric advantage that has been whittled away, coupled with the Clausewitzian advantage always granted to defenders.

Shaping a Way Ahead

What then are the available platforms and technologies that we have invested in to date? And how can we shape effective Concepts of Operations for a Joint and Combined Air Strike Force, which leverage these capabilities?

I define Joint as involving all available American Air Forces; which would have an intrinsic advantage of interoperability; though our first recommendation to expand the limited tactical cross training that currently occurs, as with the limited set of Advanced Fighters; this could be a singular mission.

I define Combined as a coalition of the willing; for which for many of our allies might well mean their version of the Joint Strike Fighter; or a very compatible fourth generation fighter aircraft.

In defining tactics, one might recall how even in the Battle of Britain, true integration was far more likely in a tattered set of infantry units than air units. Assuming such integrative capability is a major leap of faith, but may be mandatory as the current Chairmen of the Joint Chiefs admission that future Navy's may need to operate together as he witnessed the decline of the U.S. Blue Water navy and called for a global 1000 ship Navy.

Combined forces must train together for maximum result. This puts pressure on Diplomats to assemble such a Combined Force; as it puts pressure on the Joint Staff and the Combatant Commander to allow the Air Component Commander to execute this part of the mission with full Joint assets and to have an interoperable force

Though the Design Engineers and the Human Factor professionals combine their talents to make fifth generation or advanced fighters 'easy' to operate; the book Outliers underscored the need for concentrated operator time to truly exploit the enormous capacity we are in the process of fielding with new systems and technologies (http://en.wikipedia.org/wiki/Outliers_(book))

The capacity we are fielding can allow the force application designers to devolve more authority to the pilots; the F-35 becomes then the first generation Air Battle Management System. The information age has granted to the computational system all the benefits that the intelligence agencies once husbanded for fusing sensor received information; and the sensor capabilities have

offered to the pilot an unprecedented view of the three dimensional battle space.

On top of what the individual fighter asset will be able to do, the ability to interchange information among platforms is a significant bedrock for change in CONOPS. Such a capability will allow the pilot to be a node on the net with an internal router able to receive and transmit information to Air Operation Centers, Air Operation Commanders and Combatant Commanders.

Such interactive, distributed capability was once planned for later generations of the F-22; which can play a similar role. Indeed, the interaction between the F-35 and the F-22 in terms of onboard systems is a key dynamic for reshaping air capability, and as the next generation of remotely piloted aircraft gets added to the mix, we will have a strong baseline for "renorming" air operations. The technology for this is widely known; and available for incorporation.

But several key questions need to be resolved and challenges met to leverage the new capabilities inherent in the new technologies.

- Now that the Nation has minimized the quantity requirement, will it maximize the opportunity for interconnectivity and thus the quality of the force?

- What will be the training opportunity for the interconnected air fleet, with the Navy model of three months to interconnect a Battle Group?

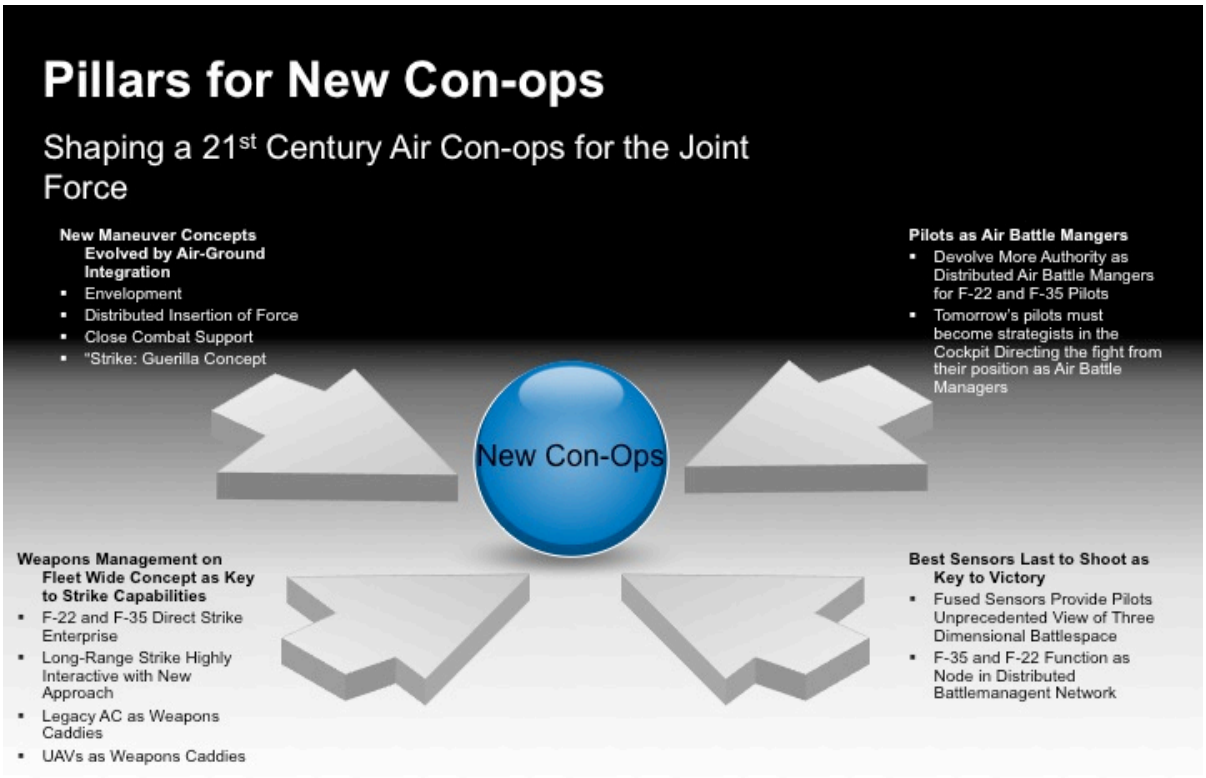
- Will the interconnects include our Allies to get in the Air what the JCS Chairman once quested for on the sea; a thousand ship Navy?

Shaping a New Con-ops

Such shared and congruent capability truly assists in managing sensory overload as the system can establish 'Chats' and the displays automatically integrate inputted targeting information. What is available is target cataloguing such that the Air Operations Center can optimize the available shooters to fulfill target opportunities.

The sensors can be easily extrapolated to 'see' moving targets versus stationary; but the system must off board and discard these such that the principal mission set is executed. Air Operation Commanders can reset the mission set; but this must be accomplished as well in the pilot's seat; as if all the participants are acting together.

In past engagements, there has been a debate as to how to best penetrate enemy airspace; stealth was considered by some a 'silver' bullet strike system sufficient for executing such a mission. But, as historians have told us over the decades, the enemy has a vote in the development of the battle. They are also planning to shape the battle to fit their designed response.



Under current thinking, American Planners called for increases the quantity of penetrators to meet global competitors, and for co-opting the Integrated Air Defenses. Given the current forecasts for platform numbers, this will not be achievable. Different strategies, and different tactics will be required to deal with Integrated Air Defenses, such as capabilities to expose these defenses in ways that allow the penetrators to shape the Battlespace.

During past conflicts and even into more modern era, "reconnaissance by fire" was a method to draw out enemy positions by convincing them they had been discovered and were being killed; therefore they would strike back and reveal themselves. During the Vietnam era, the air battle became precarious for the slower AC-130 Aircraft, which became targets as they performed their nightly missions. Lighting up when they commenced firing, and thus being shot at by enemy Anti-Air batteries. A technique they developed to silence or slow the response was to fly a two-ship circle; where one ship would light up and intentionally draw fire from the ground units; thus allowing the other to target the Battery before it could silence and move. Extending this on-off technique from the AC-130 Gunships to induce elements of the modern Integrated Air Defense Mechanism to reveal itself and its tentacles by offering a ripe target so as to trap a Air Defense System into giving up its location, or sensor; or communications system to sensors, and ultimately to shooters.

An advantage that the AC-130 aircraft brings to the fight is the closed form Kill Cycle, which when operating in a free fire zone allows the OODA loop to be milliseconds in length. Tacti-

cians and strategists need to keep this in mind as they lay traps for integrated Air Defenses; which will smartly be hidden in locations which will give pause to Central Commanders.

AC-130 Gunship http://www.air-attack.com/images/40/AC-130-Gunship.html

From such a perspective, we can see great utility for Unmanned or remotely piloted systems. The carriage of weapons in fifth generation aircraft is both limited and limiting. Pilots who are the first to launch expose themselves in a dramatic way; and one must presume that once exposed the probability of survival diminishes.

Again, one must see Stealth as shelter from the enemy, prolonging the exfiltration of intelligence and reducing the probability of mission failure, not as a medium to enhance the probability of success for the individual fight. We need to think in fleet terms operating in a distributed battlespace. Once we make the mental leap, the Air Battle Manager construct can move into the cockpit where the pilots are part of a team that can become the closed form kill chain and turn the weapons to target time within the enemy's cycle.

Planners need to turn their attention to providing support to the Air Battle Manager that has taken up a position of control; and has managed to maintain concealment at the same time. Therefore, we need to consider how to absorb and catalogue appropriate targets to achieve the mission; and then exhaust the missile load of an unmanned vehicle (e.g. Winchester) even fast and stealth managed.

One expects survival rates in that class to mimic the 8th Air Force in the Second World War wherein the losses were so traumatic, they actually exceeded the Marine losses in the Pacific. The thought is here that if they are used in this manner; we will need a lot of them; but the good news is; that the embedded technology can be minimized; and we have a good chance that our industry can produce great quantities. This would be very different if America owned the skies; and thus could exploit the domain at will.

So, although as the recent activity that Israeli pilots and accompanying Heron UAV's indicate; they have intelligence and targeting capability that can frustrate defenders. The Israeli Pilots were not faced with an integrated air defense system, but did take the opportunity to extend the tactical envelope to combined vehicle operations, essentially extending the sensor suite of the fighters.

The concept of having your best sensors be the last to shoot will be a key to victory. The distributed battle space can be populated by nodes in the network able to provide strike or suppression assets and have the capability for forward deployed sensors to identify core fleeting or mobile targets. The ability for the best sensors to then be available over target areas to strike last to eliminate residual targets in the battle space is the then the key to victory.

The on again off again Long Range Recce Strike platform that has Bomber capability for which technology programs should come together with a planned Interim Operating Capability in mid 2020's. Here is a case where DoD can put the concept of "good enough" to the test as requirements continue to arrive to get aboard this last Bomber design for the next fifty years.

But if it does arrive; and can be seen to be unmanned in the recce role; and manned in the Bomber Role; the advantages of having an overwatch platform will be enhanced. Because of the size and by extending the sensor capability technology trend, the long-range strike and loiter asset will become the best sensor on the battlefield; and therefore take the last place in line to actually strike targets.

Such a concept will be a difficult one as it goes against many years of training to be a first strike asset. Such is the concept of Knowledge as an Asset in Warfare must be embedded in our penetration planning.

Space Assets will form a high level sensor and command grid above the battlespace presuming they survive the opening events of any future engagement. Space assets provide invaluable early intelligence; and can continue to be useful.

But clearly once there are alternative data paths available to the battle commander; the less valuable it will be to single out space assets for attack. Exercises like the recent "a day without space" highlight the need for the 'Node on the Net construct for communications. This can only

happen with compatibility among Space, Air, Maritime and Land C4ISR assets. A CONOPs that looks for 'first to fiber' as a risk reducer should be a backbone of the Communications and Cyber Plan.

Re-Norming and the New Con-ops

Given the "re-normed" knowledge-based battle management system shaped by the F-22 and F-35, we need to consider how to best use the legacy assets. Let's consider bringing fourth generation to the forward edge of the battle also to act as functional "throw weight" in the advanced missile sphere. At first blush this would seem unnerving; but might be highly effective as an 'over the shoulder' launch; picked up and retargeted by the lead fifth generation aircraft. This would allow the stealth asset to remain "cloaked" while allowing the 4th gen shooter to exit safely after being exposed. It is expected that shortly, all sides will have developed 'shooter track' capability currently applied to Ground Missiles; but adapted for the Air fight.

We could also use legacy fighters as a protective curtain for the Tanker Operation and allowing the Tanker to double as a router system for exfiltration of battlefield information.

The phrase every shooter a sensor and some sensors a shooter accurately frames the notion of leverage in the interoperability space. This, in turn, leads to a required weapons management plan for any and all available shooters that can reach the battlespace that must be imposed as a target rich environment can easily exhaust and thus waste the see deep capability. Spread the assets across the sky is imperative to employ effectively the weapons, both in terms of legacy aircraft and RPAs or UAVs.

Such a concept of operations was first exploited in an Alaskan Exercise; when an undisciplined F-22 pilot expended all of his available ordnance and expected an exit plan; whereas the battle manager effectively advised him to become the Air Battle Manager, and off board his acquired targets to other friendly forces. In a similar vein; an F-15 pilot found himself directing the indirect fire from his vantage point to save a embattled ground commander guiding UAV and higher altitude release (e.g. Bombers).

Such a CONOPs needs to be honed so as to impose ground commander command experience of Battle Management into Aircraft Commanders who are not trained as Air Battle Managers; but are now being afforded the tools of the trade; and as mentioned, they become the best sensor and fusing mechanism on the battlefield.

In time, fighter pilots should act in similar ways to ground commanders organizing the ingressing command, making sure that the Central Air Operations Center is distributing targets to other shooters, but protecting his area of operation; keeping his fire teams progressing to the objec-

tives; while saving the best shooters for the end game mission; then as well organizing the withdrawal; hopefully with covering fire from other now ingressing command cells.

Lt. Col. Berke, USMC pilot of F-22 http://www.sldinfo.com/?p=11395 Photo Credit: USMC

As ground troops are introduced into the fight, the Air Battle Manager now effectively becomes the area battle manager; and this operation can be transitioned to a legacy aircraft and heavied-up (e.g. full external weapons load) F-35s essentially to maintain the air dominant position attained. In such a manner, the Ground Units can be forced into a protected zone, entering the fight to truly secure deep and hardened targets.

The Marine Corps concept of operations comes closest to the shift in operational focus, although they will transition to provide high cover to the F-18 and tactical UAV fleet to maintain area control. Here we see maneuver teams dropped sometimes behind the enemy; sometimes beside them; maximizing survival at entry; and with specific mission links to protect the air assets from buried emplacements; then suppress enemy maneuvers. It is highly likely that coordinated Close Air Support facilitated by the new air operations approach can curtail enemy maneuvers.

America has enjoyed the real benefit of bypassing the tediously heavily defended enemy. It has become almost a planning dictum that within 72 hours, we are into the logistics of resupply. Here we should postulate and relearn the more difficult strategy and tactics of maneuver warfare and

resupply on the move that we have accomplished to some degree in the present engagements. Attacking in Maneuver; and defending in place; essentially maximizing our capability; and as well the Clausewitzian multipliers that have been known throughout the age of warfare.

One can extrapolate such an approach to classic over the beach operations. Once a breach has been accomplished; the game then truly is logistics; and resupply. But as at Normandy, the enemy gets a vote; and there can be progress mixed with problems.

With concepts like sea basing, vertical logistics and GPS on Pallets, the Air Arm is well versed in picking up this mission and able to lead to envelopment and leap frog capabilities which complicate the strategies of an enemy expecting to defeat a hierarchically organized enemy. The new distributed air operations allow U.S. forces to conduct distributed assaults, distributed defenses and to operate almost like a "regular" guerilla force.

As a fighting force; we have picked well where to operate these past 40 years; two generations of warriors have never been exposed to an Air Dominance shortfall; in three generations Ground Commanders have not had to cope with strafing and enemy interdiction from the air of their supply lines.

With the advent of advanced Integrated Air Defense, coupled with deep, hardened and highly mobile targets, we will have to think and train differently. We cannot assume air dominance; indeed we can expect that denial capabilities might well grow faster than traditional air superiority capabilities.

Such an expectation coupled with a hard nosed realistic view of where we are and where the trends are taking us should encourage the complete re-look at the technologies are becoming available with the F-22/F-35 and the fully integrated tactics they involve. Training to be a totally different force will be an imperative.

Tomorrows Pilots must become Strategists in the Cockpit; directing the fight from their position as Air Battle Managers as if they are Civil War Generals; observing; and aggressively acting only when they become the last line for success or failure.

To realize such capability will require both training and discipline. Our Air Force Command and Staff and Air War College needs to better integrate the Air Operations Center together with the deep sensor-strike capability to build the capability America will need to continue to have the Air Dominance Mission fulfilled in the coming days of declining numbers of air assets.

A new CONOPs leveraging the new aircraft and able to incorporate legacy platforms and to shape new investments enhancing the joint effect is crucial to success. Declining numbers, coupled with a refusal to recognize the "re-norming challenge" will lead to a needless loss of capability.

But we need as well to invest in the future, not just modernize the past, and step back and consider what tactics techniques, and procedures have current technology trends been guiding the future fight; and the training needed to perfect our capabilities. We need to retool and to rethink, and it must start in our imagination and not assume that historical success will be replicated in the future without serious effort.