

THINKING AIRPOWER LEADERS AND PREPARING THE WAY FOR THE F-35

2014-09-05 By Robbin Laird and Ed Timperlake

Second Line of Defense was launched at the beginning of the period for deployments of the MV-22.

We have been able [to track](#) the evolution of the concepts of operations, and of the changes in the USMC associated with the new platform.

As we have argued, “no platform fights alone,” and we have tracked all of the adjacent changes associated with the MV-22 as well and will continue to do so.

A case in point is the voyage of the USS America to the West Coast of the United States and upcoming interviews with VMX-22 with regard to deploying and maintaining the MV-22 aboard the new large deck amphibious ship.



USS American in transit to San Diego. Credit: USS America

Clearly, a number of the world’s airpower leaders are preparing the ground for the introduction of the F-35 into their forces.

Notably, while there is a vast critical literature on the F-35, the real leaders who will reshape their forces with the integration of the F-35 are in a different universe from the constant critics.

For thinking leaders, who work on the premise that “no platform fights alone,” are working through how to prepare for the F-35 and how to rework air and combat assets, as the new platform becomes a fact of life.

There is a dramatic gap between the continuing analytical discussion of the F-35 and the reality of airpowers working the F-35 into their operational planning.

A case in point is the recent article in *The National Interest* entitled “The F-35: Savior of US Airpower or Albatross of the Asia-Pacific?” which provides a “middle ground” in the debate between advocates and critics of the program. The only folks who do not appear in this “debate” are the actual practitioners of airpower, the pilots and commanders building out the F-35 fleet in practice.

In fact the lead to the article is reflective of the problem; “Is the F-35 the future of American airpower or a trillion-dollar tragedy? You make the call.”

The reality is that unless you are an air warrior who will operate the plane, you are not making the call.

The Centrality of the Air Warriors to Shaping the Future of Airpower

The gap between the “debate” and the air warriors is a deep and growing one.

Reflective of a thinking airpower leader’s approach to the future is the work generated by the Royal Australian Air Force under Air Marshal Brown.

What is his take on the F-35 and its role within the modernization of the RAAF?

He has set in motion what he calls “Project Jericho.”

Lest anyone miss the point, it is called “Project Jericho” because the F-35 is that fundamental a force for change that the “walls come tumbling down” and you build out a new approach to airpower or as we have referred to with regard to fifth generation aircraft, the re-norming of airpower.

This is how the [Air Marshall Brown COS of the RAAF](#) put it in a

presentation on May 29, 2014:



Air Marshal Brown speaking at the Fort Worth based event July 24, 2014.
Credit Photo; Lockheed Martin

“I intend to release Plan Jericho, the RAAF transformation plan, in early 2015. It will guide our force transformation, enabled by our new 5th Gen capabilities, over the next decade.”

The Air Marshal is exactly right and he picked a perfect name, “Plan Jericho.”

It is now time for the Pilots of the F-35 to lead into the future.

Innovative tactical, and technology development vectors forged by Squadron fighter pilots, their thinking leaders and industry innovators all intellectually percolating up on a global scale will create an exciting caldron of revolutionary actions that will change the entire conceptual foundation of airpower.

As squadron after squadron of F-35s stand up, US airpower, Marines, AF and Navy in that order and eventually concurrently 16 (at a minimum) alliance Air Forces all build out their capability, the era of non-aviator cubical commandoes, cost mavens and asserted facts journalism will have demonstrated its real value: job creation for the practioners.

The role of the “ready room” in reshaping the future of airpower is very clear as well as the role of the air warrior.

As [Major Summa](#), the executive officer of VMF-121 put it to us:

In effect, an F-35 enterprise is emerging built around a group of individuals in the profession of arms who want to make this airplane as lethal as possible.

People come in from different backgrounds – Raptor, Eagle, Viper, Hornet or Harrier – and are focusing on the common airplane and ways to make it work more effectively in a tactical setting.

And talking to the experience of a common plane is a crucial piece of the effort.

When an F-35 pilot sits down regardless of what service he is in, he's talking with an individual from another service on the same data point.

Put simply, why is the judgment of an airpower like Major Summa not important enough to be part of the debate?



Major Summa and Green Knights Insignia, Credit: SLD

Because the cubical commandos assume their views are the reality, rather than understanding that they are not part of the ready room where

airpower revolutions are made.

<http://www.sldinfo.com/the-ready-room-as-the-learning-center-for-air-combat/>

<http://www.sldinfo.com/shaping-a-new-approach-to-combat-learning-the-role-of-the-f-35/>

There is also another challenge in the making for non-aviators and industry, which was highlighted by [Air Marshal Brown](#) in the same presentation quoted above:

I will also be engaging closely with industry in the development of the plan.

It is the technology that is being developed by industry that affords us the opportunity to transform our force. It is essential that we partner with industry to explore how we can maximize the opportunity offered by 5th Gen systems. I ask you to consider how you can work with us, not just at the platform level ... but in helping us think through and design our overall future force using the 5th Gen capabilities you develop and will help us sustain in the future."

In other words, industry working with the Australian MOD is expected to shift its approach from selling the next platform to shaping capability enhancers.

This will be a challenge both for the government and industry.

The Air Marshal was focusing upon the impact of the F-35 and its co-evolution with the entire combat enterprise to deliver new capabilities over time. And clearly this is an aspect which is new.

As [Lt. General \(Retired\) Robling](#), then Deputy Commandant of Aviation, who then went on to be the senior Marine Commander in the Pacific noted:

General Robling, the recent Deputy Commandant of USMC Aviation and now senior US Marine in the Pacific, was asked by a journalist at the Paris Air Show in 2011: "What is the next great airplane after the F-35 and the Osprey?"

Robling's answer was something like this: "Every few years the F-35B will be more capable and a different aircraft. The F-35B flying in 2030 will be

significantly more capable than the initial F-35Bs. The problem is that will look the same at the airshows; but will be completely different inside. So you guys are going to have a tough time to describe the differences. It is no longer about adding new core platforms; it is about enabling our core multi-mission platforms. It is a very different approach.”



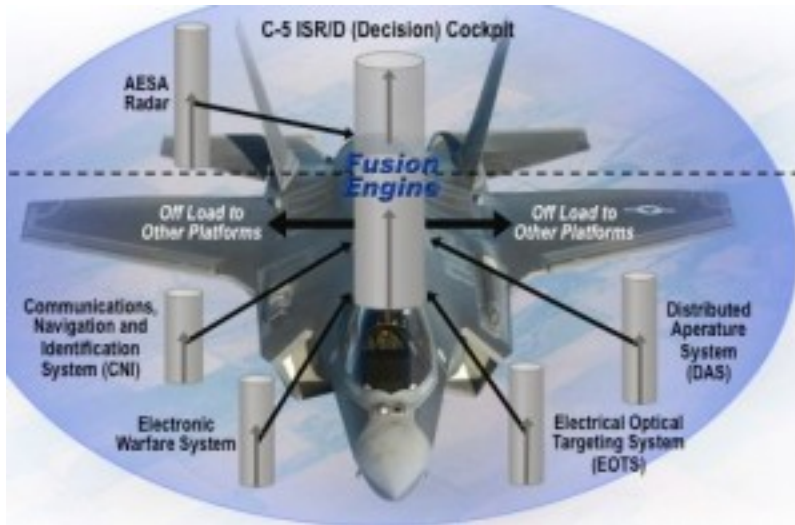
Commander, U.S. Marine Corps Forces, Pacific, Lt. Gen. Terry Robling speaks with a U.S. Marine Corps honor guard following a commemoration ceremony in Hawaii. Credit; US Pacific Command, 4/25/13

The key difference with the legacy aircraft is the legacy system is an additive structure, more like a cell phone than a smart phone with many applications available to the pilot.

With the F-35, one is building a flexible architecture that allows one to operate like a smart phone.

With the F-35, you're defining a synergy space within which to draw upon your menu of applications. And the F-35 combat systems are built to permit an open-ended growing capability. In mathematical analogies, one is describing something that can create battlespace fractals, notably with a joint force able to execute distributed operations.

The aircraft is itself just a facilitator of a much more robust combat environment that was available with legacy aircraft and command and control. This change requires the pilots themselves to rethink how to operate. Performance of this aircraft and its pilot allows a revolution along the information axis of combat or what might be identified as the "Z Axis."



The “engagement process of content in battle context” which empowers dynamic situational decision making at all levels has the best chance of prevailing. It is the foundation of war winning in the 21st century.

And the capabilities of the [fusion engine and the evolving Z axis](#) are key capabilities built into the plane and the fleet which are simply ignored in the “debate” and actually make the F-35 different from the F-22.

Just one simple example will show the power of the F-35 “Z-Axis” software programmable capability.

Imagine if in the not to distant future on a simple training mission in the Pacific just one F-35 gets a signature on the latest PLAAF “stealth fighter,” every F-35 in every country will have the same immediate tactical and strategic capability.

Understanding ones capabilities against an ever-reactive enemy and having the appropriate technology mix so “no platform fights alone” is critically important.

It makes no difference on the ground, in the air and at sea getting the appropriate weapons into the hands of warriors at all ranks is a prescription for eventually combat success and victory.

The F-35 fleet will be shaped and forged in combat and in exercises.

And the [Pacific ranges](#) (remember the asserted albatross of the Pacific?) will be the bedrock where this is done.

And this will be done by the warriors; not the cubical commandos.

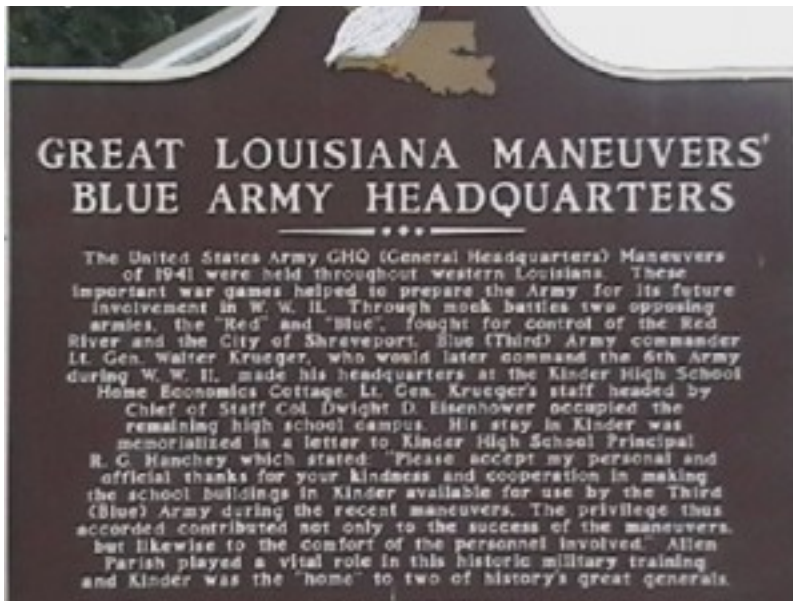
The Central Significance of Exercises in the Reshaping of Combat Power

The USAF showing a firm appreciation of large scale exercises preparing aviators for combat came up with their Red Flag. The Navy/Marine team has had a lot of success with exercise such as Bold Alligator. Globally the US and Allies train very well together.

But perhaps the most famous and important US pre-war exercise in history was the US Army's Louisiana Exercises. A perfect example of thinking American combat leaders is captured in a very important pre-World War II "Big Army" exercise. The fact it was ground combat with tanks makes no difference the process of learning is what is critical.

The Louisiana Maneuvers were held after the defeat of the Poles by the Germans. The US Army essentially was very similar to the Polish forces, which were defeated by the Wehrmacht.

Rather than pursuing the course of buying more equipment along the lines of what the Poles possessed, the Army recognized that they needed a new approach and different equipment to have a chance to prevail. The Maneuvers were part of this process, one not done with briefing charts, or cubical commandos, but the men who would lead the US and its allies to victory in Europe.



It was these maneuvers, that the fundamental re-set of the Army to maneuver warfare really began. And what would be evident later is that the Army Air Corps would be part of this as the war progressed. Indeed,

General Patton used air as a key flank strike force in operations in France going forward. And, of course, Patton was one of the rising stars in innovation (despite his advanced age) recognized as key by General Marshall.

The always fiery [George Patton](#) said, “If you could take these tanks through Louisiana, you could take them through Hell.”

And it was clear that [disruptive change](#) was needed to reshape the US combat approach.

Distressingly for American planners, the Polish army that had crumbled before the Wehrmacht was similar to the U.S. Army in terms of size, reliance on cavalry, and incomplete mechanization.

Brigadier General Adna Chaffee, who was in command of the 7th Cavalry Brigade (Mechanized) the day Hitler invaded Poland, led other mechanization advocates in calling for the establishment of “cavalry divisions, mechanized” built roughly along the lines of the German panzer divisions.

During Third Army maneuvers in May 1940, the 7th Cavalry Brigade formed part of a provisional armored division, along with the 6th Infantry Regiment (Motorized) and the infantry’s Provisional Tank Brigade, which included the two tank regiments from Fort Benning.

The provisional division dominated the exercise.⁷ At the conclusion of the exercises, Brig. Gen. Frank Andrews, the War Department assistant chief of staff, G-3 (operations), met on 25 May in a high school basement in Alexandria, Louisiana, with now Maj. Gen. Adna Chaffee and other officers from cavalry and mechanized units, including George Patton.

Their conversation would ultimately lead to the creation of the American armored divisions.

As the men talked, the German armed forces were just beginning the third week of their dazzling campaign to destroy the French army, as they had the Polish



George S. Patton – Tennessee [Louisiana] Maneuvers with Gen. Patton's 2nd Armored. Tennessee [Louisiana] Maneuvers with Gen. Patton's 2nd Armored

Like Marshall, Embick had closely followed the German conquest of Poland.

While he believed the maneuvers would be a good opportunity to test the Army's new halftrack-mounted 75mm antitank gun, he and his planners also hoped to answer other questions:

Could mobile units adequately replace horse cavalry?

Could the Army's newly formed paratrooper units actually be dropped en masse?

Would armored units be able to maneuver effectively in difficult terrain and uncertain weather conditions?

Would the Army's new three-regiment "triangle divisions" maneuver more efficiently than the old four-regiment "square divisions"?

Furthermore, Marshall was keen to see whether a professional officer corps of rising colonels and brigadier generals could command large units operating over vast tracts of territory, as they would be called on to do in the brewing war.

Lt. Gen. Krueger later described what Marshall and America's other senior commanders were looking for in their officers—men who possessed “broad vision, progressive ideas, a thorough grasp of the magnitude of the problems involved in handling an army, and lots of initiative and resourcefulness.”

Many tactics were [learned in Louisiana](#).

General Patton had used an old cavalry tactic of circling and coming in behind the enemy to win the battle at Shreveport.

Let's go forth 3 years to December 1944.

The German Army had attacked in what was known as the Battle of the Bulge.

The 101st Airborne Division was surrounded at Bastogne.

General Eisenhower asked all his commanders if they could relieve Bastogne. George Patton said he could.

Told he could not, he persisted.

General Patton used the exact same maneuver to relieve the battered garrison at Bastogne. H remembered his success in Louisiana!

We argue that the same is happening now with the F-35 in the hands of the pilots and airpower leaders renorming airpower.

Yet these folks get barely a mention in the broader “debate” about the F-35.

We certainly have worked hard to put in motion another dynamic: talk with those pilots and leaders to learn how airpower is being reshaped.

Shaping the Future of Airpower With the F-35 as a Foundational Element

Over the past few years, we have interviewed many of these thinking leaders as they prepare for the future, and to think about adjacent impacts of the new platform. A key challenge has simply been the nature of the platform and the coming impact of the integrated software upgradeable combat systems. Even though the market thinks in terms of C4ISR and then fighters, the F-35 simply does not recognize this distinction.

And underlying the F-35 has been a revolutionary man-machine relationship in which the digital revolution, computer power and the emergence of combat systems as apps is changing the entire way to think about the next steps in airpower.

The man-machine relationship around which the F-35 is built is one of the least recognized aspects of the aircraft and the program.

Thinking airpower leaders in various interviews or assessments, which we have published over the past few years, have identified a number of key pillars of shaping the F-35 approach. In this article, we are organizing in one place some of these elements, which have been identified by airpower leaders.

First, the F-35 is not a replacement aircraft.

The Marines having gone through the gut wrenching experience of shifting from the CH-46 to the MV-22 and not going to make the mistake of suggesting that the F-35 is a replacement for Harriers or F-18s. It is not. The airplane is a “flying combat system” which enables operations such as close air support to be conducted in very different ways from the past.

According to [Major General Hedelund](#), the Commanding General of 2nd Marine Air Wing:

We certainly do not want to repeat one key experience from introducing the MV-22 into the USMC. It was poorly described as a “medium lift replacement” for the CH-46.

The F-35 is not a replacement for anything; it is a whole new capability for the MAGTF, and needs to be approached from the outset as such.

Second, the F-35 is about information dominance in a fluid combat situation.

It is a plane designed for 21st century full spectrum, joint and coalition operations rather than simply being a tool in the combat shed.



Lt. Col. "Chip" Berke discussing his F-22 and F-35 experiences with the Australian audience at the Williams Foundation Conference, March 11, 2014. Credit Photo: SLD

According to the only operational F-22 and F-35 pilot in the world, [Lt. Col. Berke](#):

The old Top Gun fighter pilot mantra that "speed is life, more is better" had been replaced by "information is life, more is better". "Information is far more valuable than speed," he said. "The F-35 has no peer in terms of information dominance and the sharing of that information."

As [Lt. General \(Retired\) Deptula](#) constantly reminded the USAF and others, the F before the F-22 and the F-35 is somewhat of a misnomer. They are really significant generational changes in the way individual combat aircraft and fleets of aircraft handle data and can make decisions.

And for Deptula, the manned versus unmanned distinction is not about a generational shift from one to the other but shaping a whole new approach to information dominance, within which the F-35 is a key element.

We are moving into an era that is much different than the one we just left. Now, that might seem obvious; but moving from the 20th to the 21st century was not just a convenient break point, but it is moving away from the industrial age of conducting warfare into an information age to a

degree that is only going to accelerate.

There are people that have grown up their entire careers used to the employment of weapon systems in a linear fashion to execute warfare. Today we are faced with a different set of security conditions. Accordingly, we have to change our conceptions for how to effectively accomplish our security objectives, to adapt them to the flatness of the way information is collected, analyzed and distributed.

We can either capitalize on the technologies that the F-22s, F-35s and Remotely Piloted Aircraft (RPAs) bring to the table or not. We can move further into the information age or we can apply old concepts of operation to new equipment. Such a failure to adapt will prohibit us from exploiting the potential of the manned-remotely piloted aircraft interface.

Third, the F-35 allows for agile and rapid insertion of force.

Rather than having to fly a gaggle of specialized aircraft to a mission, an F-35 enabled force can carry organic C2, ISR, non-kinetic and kinetic capabilities to the fight.

According to [Major Summa](#), the Executive Officer of VMF-121 and the Propsective Commander of VMFAT-501, the ability to operate a multi-mission aircraft will allow the Commander to use less assets to get greater effect.

In the F-35, the fusion engine does a lot of that in the background, while simultaneously, I can be executing an air-to-air mission or an air-to-ground mission, and have an air-to-air track file up, or multiple air-to-air track files, and determine how to flip missions.

Because the fidelity of the data is there right now, which allows me to determine if I need to go back into an air-to-air mindset because I have to deal with this right now as opposed to continuing the CAS mission.

And I have a much broader set of integrated tool sets to draw upon.

For example, if I need an electronic warfare tool set, with the F-18 I have to call in a separate aircraft to provide for that capability.

With the F-35 I have organic EW capability. The EW capability works well in the aircraft. From the time it is recognized that such a capability is need

to the time that it is used requires a push of a button.

It does not require that a supporting asset be deployed.

Fourth, the challenge of interoperability is a central one for the separate services as well as the coalition partners. The F-35 is designed and being built as an integrated fleet aircraft.

As [Lou Kratz](#), now with Lockheed Martin, but a long term and well recognized logistics expert and official in DOD has put it:

“Starting” common is not going to deliver the major national security capability we are looking for from commonality, namely force integration.

But “staying” common as the program evolves will.

This allows you to “plug and play” with your coalition partners, from the U.S. to our partners, or foreign partners working with non-U.S. coalition partners.

We have unique identification numbers for all the high value parts. We know the exact number, the exact configuration of each aircraft. And that is as designed, as built, as delivered and as maintained.

That allows us to ensure that when we deploy aircraft, we as a nation and as an allied coalition know the exact maintenance requirements, spare parts and test equipment required for each particular aircraft that’s deployed as part of that response.

And because of that, we can rely on each other for maintenance and sparing, and thereby reduce both the amount of gear we have to take with us, and the time it takes to respond.

The shaping of an integrated fleet can allow for coalition operations which better fit 21st century realities.

Rather than having to mobilize entire air wings and support capabilities, which is now the case, allies can come together and build a blended capability sustainable in the region to which the force would be deployed.

Fifth, USAF leaders recognize that the fleet, not just the single platform, shapes importance of the F-35.

The ability of various service or coalition F-35s to work together in an integrated manner can deliver a fleet impact of effect of great significance.

As the ACC Commander, [General Mike Hostage](#) has argued:

SLD: How important are numbers for the F-35 from this perspective?

Hostage: Very important. It is not a boutique aircraft.

The full impact of the F-35 aircraft comes with its fleet operational capabilities for the enablement of the air combat cloud.

Another advantage of the F-35 is that is built to evolve over time as the environment evolves. Software and hardware upgradeability will allow changes over time to the fleet, not just individual aircraft.



Gen. Hawk Carlisle (left), Pacific Air Forces commander, and Maj. Gen. Hoo Cher Mou, Republic of Singapore chief of air forces, shake hands after unveiling two newly-painted F-16 tail flashes following the Peace Carvin II Parade Dec. 11, 2013. The painted tail flashes commemorate the 20th anniversary of the RSAF partnering with Luke Air Force Base in training fighter pilots. (U.S. Air Force photo by Staff Sgt. Luther Mitchell Jr.)

The current PACAF Commander and the next ACC Commander, [General “Hawk” Carlisle](#) was very clear with regard to how he saw the impact of Asian allies and the US services able to operate a common aircraft to shape a powerful kinetic and non-kinetic impact in the Pacific: The roll out of the sensor-shooter C2 approach for an integrated air and missile defense system also lays down a capability that a decade from now when

the fleet of allied and American F-35s is operational will be able to leverage as well.

By having shaped an approach towards integrated sensor-shooter relationships within which C2 was being worked, the F-35 as a sensor and shooter laid on top of that grid would be an immediate force multiplier.

General Carlisle was asked what would be the impact of a fleet of F-35s (allied and US) upon a Commander of PACAF a decade out.

It will be significant.

Instead of thinking of an AOC, I can begin to think of an American and allied CAOC (Combined Air Operations Center).

By sharing a common operating picture, we can become more effective tactically and strategically throughout the area of operations.



U.S. Air Force Lt. Gen. Jan-Marc Jouas, United Nations Command Korea, deputy commander, U.S. Forces Korea, deputy commander, Air Component Command, Republic of Korea/U.S. Combined Forces Command, commander, 7th Air Force, commander, addresses the ceremony attendees, during the 67th anniversary of the United Nations,

Nov. 29, 2012, at New Sanno Hotel. (U.S. Air Force photo by Osakabe Yasuo)

[Lt. General Jouas](#), the 7th USAF Commander has underscored both how central airpower is to deterrence and warfighting in the defense of South Korea and the centrality of the F-35 to the future of airpower in the region.

Question: The South Koreans are buying the F-35.

How does that affect the future position of the 7th USAF?

Lt. General Jouas:

It provides a significant boost in capability. When we look at the threats posed by North Korea, a US and South Korean F-35 fleet is a crucial asymmetric advantage. The decision to buy the F-35 was certainly forward-looking because this is the airplane for the future. And not just because it's going to be interoperable with our forces, but with those of our allies as well in enhancing the kill chain to deal with the North Korean threat.

Learning to shape coalition interoperability with the F-35 and share situational awareness across the force will be a major improvement in the period ahead.

As South Korea modernizes its air arm, the ability to defend itself and contribute to defense in the region will go up. For example, like Australia, South Korea has bought an airborne command and control platform, the E-737 Peace Eye. They now have operational experience with a flying C2 platform, and are starting to learn more and more about exploiting its capabilities. As the F-35 comes onboard, that'll be a great marriage between that platform and the F-35.

Sixth, culture change is both facilitated by the F-35 fleet, but also the beneficiary of a new generation of "digital warriors."

The current Deputy Commandant of Aviation, [Lt. General Davis](#), when CG of 2nd MAW underscored how important he saw the F-35 as a tool in the hands of what he called the I-Pad generation pilots.

I think it is going to be a fantastic blending of not only perspectives but also attitudes. And what I really look forward to is not the old guys like me, but

the very young guys who will fly this fantastic new capability. The older generation may have a harder time unleashing the power and potential of the new gear – the new capabilities. We might say “why don’t you do it this way” when that approach might be exactly the wrong thing to do from a capabilities standpoint.

My sense is the young guys will blend. We’ve already picked the first Prowler pilot to go be an F35 guy. He’s going to do great and he’s going to add perspective and attitude to the tribe down at Eglin getting ready to fly the jet that’s going to make a big impact on the F35 community.

I think it’s going to be the new generation, the newbies that are in the training command right now that are getting ready to go fly the F35, who are going to unleash the capabilities of this jet. They will say, “Hey, this is what the system will give me. Don’t cap me; don’t box me. This is what this thing can do, this is how we can best employ the machine, its agility its sensors to support the guy on the ground, our MEU Commanders and our Combatant Commanders and this is what we should do with it to make it effective.”

Seventh, the F-35 becomes part of the “kill chain” against 21st century threats and a key facilitator of shaping the offensive-defensive enterprise.

As we have seen in the recent performance of the Iron Dome, the ability of strike aircraft to work in parallel operations with the Iron Dome was crucial to Israeli success. The F-35 is designed to be able to perform congruent operations of this sort, and will be a significant work in progress in the period ahead.

[Secretary Wynne](#) has invented the concept and has continued to work thinking on how the offense-defense enterprise might be forged, evolved and shaped.

With the fielding of the F-35, we can take full advantage of the ability to interchange information. This because the aircraft 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.



Wynne with the CO of the 33rd Fighter Wing, September 2013. Credit Second Line of Defense

For years, the Airforce and ground force commanders have engaged in Green Flag exercises where both learn the requirements for close air support in this changed battlespace for the three dimensional warrior. This needs to be carried forward as a part of the training syllabus, including conflict resolution in the close and deep fight. Now this can be truly enhanced.

The reset of our forces considers not just the restoration of combat capability but looking forward to a very different battle space.

Training for the reset might require returning to a prior age where primary missions for defense, and primary mission for offense were separate elements in the syllabus.

The rebuilding of our forces considers what occurs in boot camp; tearing down concepts of operation; and training for different concepts such that we leverage not just our unit's forces; but those of our joint and coalition partners.

This might require building to a portfolio of capabilities; as well as enhancing the Defensive and Offensive enterprises.

Rethinking is the hardest; and will require straightforward training, as the employment of forces to optimize kills and one weapon for one kill is not the way American forces currently engage.

For years we have trained to expend ordnance. In the Navy it is an absolute requirement.

But as we introduce the F-35B the threat of an accident is greatly diminished; and weaponry might be better husbanded. First strike will also need to be rethought; as the Army has long discovered in both the Infantry and Artillery, scouts for large unit targets; and Fire placement trumped small unit engagement. Concealment as well trumped exposure.

Developing the training syllabus has never been more complex, but as our capable Pilots and Commanders have re-learned, operating jointly saves lives.

In the future, with diminished apparent force; this will be the key to victory.

Eighth, the F-35 is part of a bow wave of correlated changes, which it both facilitates and will benefit from.

One example is the evolution of command and control, whereby there is an evolution from C4ISR or C5ISR back to working through effective C2 arrangements within which distributed forces can operate effectively. The F-35 fleet will be a central lynchpin to such operations, which themselves are facilitated by correlated developments as well.

As [Col. \(Retired\) Rob Evans](#) has underscored:

If warfighters were to apply the same C2 approach used for traditional airpower to the F-35 they would really be missing the point of what the F-35 fleet can bring to the future fight.



Guest speaker, Lt. Gen. Jon M. Davis, Deputy Commander of United States Cyber Command, and now Deputy Commandant of USMC Aviation (designate) addresses the audience of the Weapons and Tactics Instructor Course 2-14 graduation ceremony. Credit: YUMA MCAS, April 27, 2014

In the future, they might task the F-35 fleet to operate in the battlespace and affect targets that they believe are important to support the commander's strategy, but while those advanced fighters are out there, they can collaborate with other forces in the battlespace to support broader objectives.

The F-35 pilot could be given much broader authorities and wields much greater capabilities, so the tasks could be less specific and more broadly defined by mission type orders, based on the commander's intent. He will have the ability to influence the battlespace not just within his specific package, but working with others in the battlespace against broader objectives.

Collaboration is greatly enhanced, and mutual support is driven to entirely new heights.

The F-35 pilot in the future becomes in some ways, an air battle manager, or a Peyton Manning-style quarterback who is really participating in a much more advanced offense, if you will, than did the aircrews of the legacy generation.

And going back to my comment about the convergence of planning and

execution, and a warfighter's ability to see and sense in the battlespace ... that's only relevant if you take advantage of it, and the F-35 certainly allows warfighters to take advantage of it.

You don't want to have a fifth-generation Air Force, shackled by a third-generation system of command and control.

Clearly, another key aspect of change will be the coming weapons revolution, whereby the ability to operate forward based stealth aircraft can leverage a wide range of weapons operating from a diversity of air, land and naval platforms.

As [Dr. Mark Lewis](#), the longest serving chief scientist of the USAF, has warned: "We currently are flying third and fourth generation weapons off of 5th generation aircraft. This makes no sense whatsoever."



Dr. Mitat A. Birkan, left, space power and propulsion program manager in the Air Force Office of Scientific Research's Aerospace and Material Sciences Directorate, speaks with Dr. Mark Lewis, chief scientist of the Air Force, during a break at the Space Propulsion and Power Contractors Review held in Annapolis, Md. in October 2006. Credit: USAF

SLD: In effect, hypersonic cruise missiles are part of what one might call an S3 or S Cubed dynamic for 21st century expeditionary technologies.

Sensors, combined with Stealth combined with Speed can provide a new paradigm for shaping the Pacific force necessary for the US in working in the Pacific.

Does that make sense to you?

Mark Lewis: Absolutely. I love the concept of S-Cubed.

It makes a great deal of sense in describing the inherent or emergent paradigm. Certainly, we've enjoyed a tremendous advantage with stealth, we know that the stealth advantage is changing, other people are developing the technology, which is why it behooves us to look even further.

I'd say very simply if I can no longer be invisible, what's the next step? And the next step is let them see me and not be able to capture me. Couple that with exquisite sensor technology, and I think you absolutely have a winning combination.

Ninth, the F-35 is associated with rethinking how smaller air forces can lead in the innovation process.

A clear example of the impact of a thinking leader is Air Marshal Brown, the head of the Royal Australian Air Force.

Brown certainly values the F-35 and what it brings; but what he is focused on in what he has termed "Project Jericho" is the redesign of Australian forces LEVERAGING what the F-35 brings to the fight, which we focused on in the beginning of the article.



Lt. General Preziosa, Chief of Staff of the Italian Air Force, seen after the

SLD interview Credit: SLD

Another example is how the COS of the Italian Air Force is thinking through the future role of air power operating with the F-35 as a key foundational element for Italian defense.

Lt General Preziosa highlighted that “Command and control capabilities are built into every cockpit of the F-35; the challenge will be to leverage those capabilities and the distributed decision making capabilities inherent in a fleet of F-35s.”

He underscored that a strategic shift towards pockets of defense and security challenges around the European, African, Mediterranean and Middle East regions meant that Europe, the United States and others needed to shape collaborative approaches to insert airpower when appropriate rapidly.

And the F-35 as a key distributed force asset was the right match for meeting distributed challenges. “The fusion system built into every cockpit will allow shared coalition decision making that is required for the kinds of multi-national operations which are becoming the norm. We are not fighting in mass; we are applying tools rapidly and directly to discrete problems and challenges.”

In short, air power leaders are thinking through the future of airpower inextricably intertwined with the introduction of the F-35 and the coming operation of a global fleet.

They are not just debating the future in the abstract; they are planning for the future based on the introduction of real and new capabilities.

The future is in their hands and not that of the cubical commandos, but you might be forgiven for missing that given the nature of the F-35 “debate.”