Professionalizing Air Intelligence, Part VI

A functional concept for air intelligence

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Air intelligence is underconceptualized, leading to an underresourced, ad hoc, and disintegrated approach to improvement and modernization. Against peer competitors, this underconceptualization and consequent underinvestment create immense risk for the Service. Put bluntly: one maneuvers in the Pacific by boat and plane—and the Marine Corps does not own many boats.

An explicit conceptual foundation allows practitioners to describe how air intelligence activities support both Marine aviation and the Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise (MCISRE). Such a foundation also allows for identifying capability gaps to drive doctrine, organization, training & education, materiel, leadership and communications synchronization, personnel, facilities, and cost (DOTMLPF&C) solutions.

The Problem

Despite advances in intelligence during the Iraq and Afghanistan campaigns, these conflicts failed to stimulate meaningful advancement in air intelligence. Deprioritization was a rational decision. Despite the individual tragedies of Marine aircraft lost to enemy fire, the air defense threat has been operationally insignificant—air *supremacy* was assured. In comparison, the risk from ground threats rightly stimulated immense investment, resulting in ballooning ground intelligence tables of organization (T/O) and considerable expansion of ground intelligence equipment and training. Since DESERT STORM, an infantry battalion T/O has grown from four to sixteen intelligence Marines; the typical squadron T/O remains at two.

A ground-centric approach to intelligence amplified this rational neglect by failing to consider the differences in ACE and GCE organization, operation, and intelligence support requirements. Against peer competitors, this neglect jeopardizes the Service's ability to execute its operational concepts, which rely on Marine aviation to provide critical capabilities to the Naval Expeditionary Force and Joint Force Commander (JFC).

The inadequacy of ACE intelligence readiness in contested operating environments is regularly acknowledged. However, the lack of defined requirements has frustrated the application and prioritization of resources to improve this readiness. Meanwhile, novel capabilities, such as cyberspace and information operations, explicitly demand increased intelligence investments—continuing to starve ACE intelligence as the MCISRE attempts to rebalance.

Without a concept, the community cannot derive validated requirements across DOTMLFP&C, which has, in turn, led to an intelligence enterprise that provides incomplete and inadequate support to Marine aviation. Without comprehensive air intelligence support, the Marine Corps cannot support mission accomplishment within airspace contested by a peer.

The Central Idea Supporting a Concept for Air Intelligence

ACE and GCE operations differ in a few fundamental ways that drive how intelligence supports Marine aviation. While intelligence principles (e.g., processes and cycles) are the same, the ways ACE intelligence formations organize, train, and equip to execute those fundamentals differ considerably from the GCE. In Clausewitzian terms, the *nature* of intelligence remains the same while the *character* differs. Marine aviation has three distinct operational areas that define the character of supporting intelligence.

Air intelligence aligns with airspace, mission planning, and the geographic location of aircraft and sensors. Intelligence satisfies these requirements through flexible and dynamic configurations that support the FMF and MCISRE. The first alignment is the airspace in which the Marine Air Command and Control System (MACCS) facilitates the ACE commander's command and control (C2) of Marine aviation. The second alignment is mission planning elements, providing commanders with support for planning aviation and aviation ground operations at squadrons, groups, and wings. The third alignment is the geographic locations from which aircraft launch and recover, or where aircraft sensor data is first available for processing, exploitation, and dissemination (PED).

The confluence or divergence of these three alignments is *the principal driver* of how the ACE employs, organizes, trains, and equips its intelligence elements across the ACE.

This framework describes the task organization of ACE intelligence elements in past wars. It also allows ACE commanders to optimize task organization of intelligence elements for future operations across the competition continuum, including the dynamic and distributed operations required by operating concepts.

Before discussing these intelligence alignments, we must first understand the nature of the operational differences driving them.

The Operational Differences between the ACE and the GCE

In the last two years of developing and communicating this concept, the few who oppose it universally start with the assumption that ACE and GCE operations are functionally similar. This assumption constructs a mental barrier to understanding how or why ACE intelligence should be different. We must first dispel this obstacle and recognize what is evident in ACE doctrine.

The primary way the ACE and GCE differ is their C2 of attached forces within their assigned airspace or battlespace. In the GCE, for maneuver forces capable of achieving FMF objectives, battlespace usually is partitioned in a "fractal" manner, with similar *character* at each echelon. For example, a division may partition its assigned battlespace to its regiments and those regiments to their battalions (see Figure 1). Because each echelon's operations are essentially "fractal," differing primarily in scale (geographic or temporal) rather than character, their intelligence support requirements are similarly fractal. Consequently, the concept of intelligence support for a battalion is not significantly different from that of a regiment.

However, in the ACE, airspace is typically managed in a centralized and unified manner (see Figure 1). Because of the vast distances the ACE can cover in very short periods and the high demand/low density of ACE capabilities, unified airspace provides the FMF commander an efficient allocation of scarce resources while enhancing their responsiveness. This responsiveness is achieved through the centralized command of tactical air operations while decentralizing control authority to subordinate agencies, all without the necessity of dividing an operational area into small zones of action through multiple echelons of command (as it is more typical in the GCE). This responsive management is accomplished by the MACCS.

Through the MACCS, the ACE establishes a single Tactical Air Command Center (TACC) to command Marine aviation and surface-to-air assets across the area of operations (AO) and balance aviation assets in support of the FMF. Control is decentralized to the Direct Air Support Center and Tactical Air Operations Center. This limited decentralization obviates the need to partition airspace below the senior ACE echelon and integrates all ACE assets across the AO dynamically, responsive to FMF requirements. Squadrons are not assigned to a unit or battlespace but to discrete and short-lived operations that change daily, even hourly. Where one squadron operates today, another operates tomorrow.

C2 lines are extended from the TACC directly to individual sorties in flight, bypassing intermediate echelons of command, resulting in unified planning through the Air Tasking Order (ATO) and realtime C2 of sorties in-flight. This unified C2 also creates a secondary "site command" C2 construct for sortie-generating activities where subordinate commands may be tasked only with launching and recovering aircraft, providing sustainment and mobility at the site as well as site force protection. Site command responsibilities may bear no relation to normal organizational charts. A MAG commander can act as the site commander for a site with adjacent MAGs or even the MAW.

Another consequence is that the ACE has both fixed and variable "costs" to support operations. Some support varies with the size of the ACE, such as refueling capacity. Other support, such as producing and ATO, targeting, or airfield operations, are fixed whether there are 20 or 200 aircraft in the ACE. ACE intelligence has similar fixed and variable costs.

Furthermore, certain aviation missions are inherently and always joint, such as the integrated control of air defense, long-range reconnaissance, and long-range interdiction. Consequently, the ACE makes assets available to the JFC for these missions and all sorties in excess of FMF direct support requirements, establishing a unique relationship between the ACE and the JFC (or Joint Force Air Component Commander) for theater fires, apportionment, and ATO development. Thus, even the smallest components of the ACE routinely and *directly* support the joint force. By extension, ACE intelligence elements routinely support

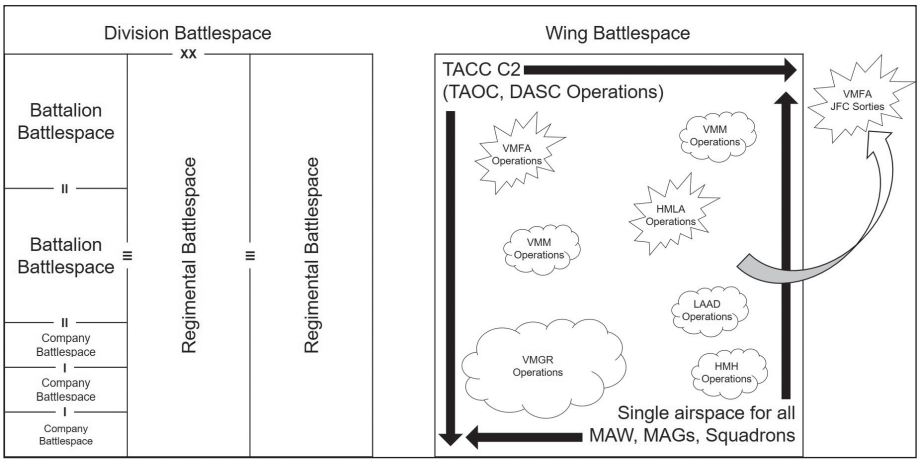

Figure 1. A simplified depiction of how GCE battlespace is fractal and ACE battlespace is not.
(Figure provided by author.)

sorties outside the FMF's AO and assigned mission—a rarity for GCE intelligence. An analogy would be if infantry companies had to make patrols available for direct Joint Force Land Component Commander (JFLCC) tasking outside the battalion's AO.

ACE operations' unique characteristics are on display nowhere more clearly than an honest appraisal of the command authority and decision points available to a squadron commanding officer (CO). Does the squadron CO have the authority to launch an aircraft not on the ATO? Only in the most extenuating circumstances (e.g., base attack). Can a squadron CO order a sortie to return to base (RTB)? No. A squadron CO often even lacks direct communications with aircraft in flight. Can a squadron CO direct delivery of fires (even in airspace owed by the MAW)? Hardly. It is only marginally better for a MAG CO when the MAG is not the senior ACE echelon. These examples make it evident that C2 in the ACE differs significantly from the GCE. It follows that intelligence differs as well.

Why the Difference?

Why is this? The explanation is relatively straightforward. The significant speed that aircraft traverse the battlespace provides inherent flexibility to mass force quickly at a critical point and time. Speed and its consequent flexibility increase the force multiplication of airpower (raising demand) and expand its range of influence (lowering density). Thus "high-demand/low-density" is not a trite cliché but a real operational challenge solved by the unitary C2 of the MACCS.

The logic and rationale behind this unified C2 can be challenging for ground commanders to understand as it goes against their operating paradigm. In contrast, aviation commanders since World War II have acknowledged the value of centralized control of airspace. During that conflict, small packages ("penny packets") of direct support aircraft were assigned to ground commanders to ensure they always had at least some degree of air support. This *penny packing* constrained available airpower, reducing its effect on the battlespace, leading to centralized control doctrine. While the MACCS adopts decentralized control, this is branding more than truth. Control is decentralized only to subordinate agencies (Tactical Air Operations Center and Direct Air Support Center) but retained within the TACC, commanded by the senior ACE commander.

This centralization, far from being an assault on Mission Command, makes good warfighting sense. When it is possible to sustain a 24-hour combat air patrol from a single squadron hundreds of miles and multiple countries away, there is little logic in dividing up airspace by geographic region or subordinate element—even less so if that mission (and airspace) is divided across two squadrons from separate bases and commands. Instead, even single missions are divided up sortie-by-sortie and hour-by-hour or day-by-day. This is the essence of the ATO.

Intelligence Implications

The ACE's unique time/distance relationship with the battlespace has consequences for intelligence support requirements and intelligence collection potential.

First, time is compressed in air and air defense operations, increasing distances considered and decreasing reaction time. These time factors place greater emphasis on combat information of more immediate value as compared to finished intelligence.

Second, this time/distance relationship simultaneously gives the ACE a collection *capability* not easily achieved by other Major Subordinate Elements while also generating collection *requirements* that outstrip the FMF's organic capabilities. Because the ACE allows FMF commanders to observe the battlespace in greater depth, it can be an optimal collection tool in the deep battlespace or for indications and warnings. These same traits also mean that targets for many ACE missions, especially interdiction and antiair warfare, may be beyond the reach of organic collection means, necessitating increased reliance on theater or national intelligence capabilities.

Finally, this time/distance relationship uniquely impacts the ACE's geographic disposition, placing unique constraints on intelligence elements. The geographic constraints on sortie generation activities (e.g., planning, basing, maintenance, fueling, and arming) starkly contrast the operational flexibility in and decentralized nature of sortie execution. Even the most routine sortie-generating activities require centralization and mass. Therefore, while the ACE is less affected by restrictive terrain in maneuver, it has less flexibility in where and how long it can operate before returning to reconstitute combat power (e.g., refuel and rearm, maintenance).

These differences have significant consequences for the operational employment and deployment of the ACE. These consequences are no less impactful for ACE intelligence elements, evident in the fact that a JFLCC intelligence directorate (J-2) will rarely read or analyze a company's patrol report, but a Joint Force Air Component Commander's J-2 regularly analyzes every sortie's mission report throughout the theater.

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The Three Alignments

Understanding these differences allows us to return to the three alignments of air intelligence support. These alignments (Figure 2) describe every signifi-

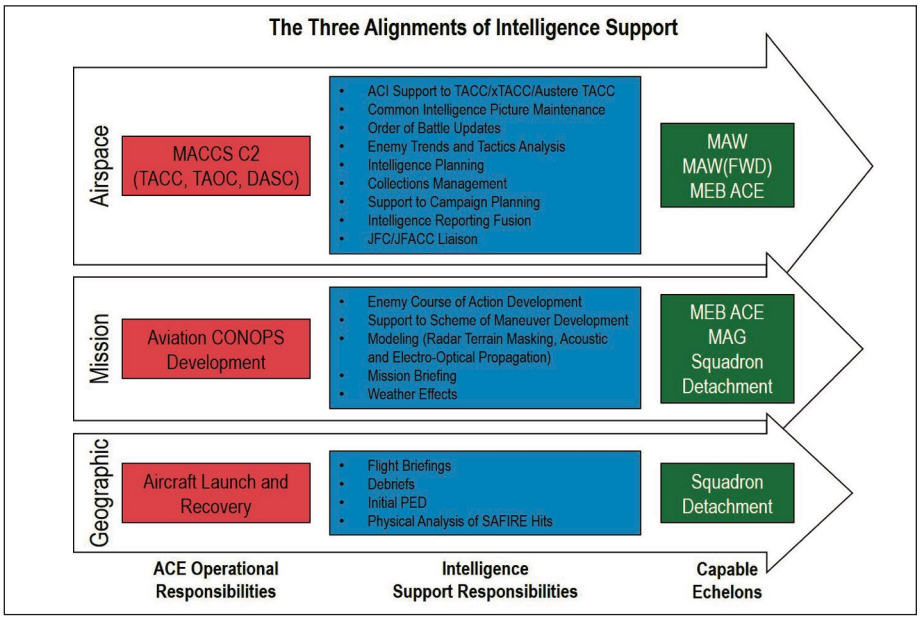

Figure 2. Three alignments of intelligence support. *(Figure provided by author.)*

cant historical employment of an ACE, going back as far as DESERT STORM, as much as they describe possible future employments across existing operations plans (OPLAN).

Airspace-Aligned Requirements

Airspace-aligned intelligence support requirements of the ACE support sensing and making sense of the complete air and air defense intelligence picture and intelligence support to campaigning or plans beyond the ATO cycle.

Airspace-aligned support, in simple terms, meets the intelligence requirements of MACCS agencies. Therefore, these requirements are not dependent on the FMF element's size but must be carried out by the senior ACE echelon as long as it executes some form of the TACC (including the Expeditionary TACC or Austere TACC).

Subordinate ACE elements are not generally assigned primary responsibility for portions of the ACE AO and will operate across the entire airspace, integrated alongside other ACE subordinate commands. Thus, subordinate intelligence elements inherently rely on the senior ACE intelligence element to collect, fuse, and analyze intelligence data from throughout the AO and make AO-wide decisions such as targeting priorities. These functions are not possible in subordinate ACE intelligence sections, even for small areas within the AO, but are standard across GCE echelons.

Airspace-aligned requirements are usually those associated with the MAW G-2. Still, they may fall to the Group S-2 in a MEB ACE or even the squadron S-2 in a MEU ACE when operating independently ashore. When Marine forces are not assigned a battlespace for any substantial period, as in traditional MEU theater reserve operations, the senior ACE echelon may not have any intelligence support requirements associated with airspace alignment.

Mission-Aligned Requirements

The mission-aligned intelligence support requirements of the ACE are those that directly support commanders' planning, decision, execution, and assessment cycle.

Commanders at every level have intelligence requirements that necessitate some intelligence capacity directly aligned to that command echelon. Broadly, these include intelligence that informs the direction and execution of assigned missions and the unit's force protection. These requirements involve planning specific missions and sorties within the ATO cycle, whether as single-type/model/series (TMS) missions or large integrated aviation packages with multiple squadrons. At the sortie-execution level, mission-aligned requirements include specific and essential capabilities such as estimating the threat in the objective area or modeling radar, acoustic, and electro-optical propagation effects.

In recent decades, mission-aligned intelligence support requirements have customarily been associated with squadron S-2s, facilitated by mature and low-air-threat AOs where TMS "business rules" allow for integrated objective area planning without dedicated headquarters intelligence support. In peer conflicts, this capability will be necessary at headquarters echelons when and where sizeable integrated planning occurs. True integrated planning is regularly seen at Weapons and Tactics Instructor Course during larger evolutions. In these evolutions, intelligence capability is concentrated for overall scheme of maneuver development; only intelligence liaisons are provided to TMS ready rooms to support the last steps of detailed planning.

Geographic-Aligned Requirements

The geographic-aligned intelligence support requirements of the ACE are those inherently tied to the geographic location where aircraft launch from and recover to or where aircraft sensor data is first available for PED. Requirements include: the final intelligence updates as aircrew walk to their aircraft (sometimes a day after the full mission brief for a major operation), timely end-of-mission debriefing (or at intermediate stages where they may RTB), and the PED of intelligence collected during the sortie (e.g., recorded/transmitted data from onboard sensors, assessment of damage from enemy fire sustained by aircraft).

For site command activities, geographic-aligned requirements support local site C2, launching and recovering aircraft, providing mobility and maneuver at the site, sustaining and supporting the site, and site force protection.

In recent decades, geographic-aligned support requirements are typically associated with squadrons but may be concentrated at higher echelons in the form of a Flight Line Intelligence Center.

Intelligence Task-Organization in Various ACE Configurations

These alignments can be used to task-organize ACE intelligence elements in various ways.

The confluence and divergence of these alignments across multiple ACE configurations drive both the intelligence capacity (i.e., number of intelligence personnel and equipment) as well as the intelligence capability (type of intelligence personnel, training, and equipment) necessary to support each ACE echelon (Figure 3).

Suppose the airspace is partitioned with more than one TACC, such as in a major theater conflict where Marine forces may have multiple, non-contiguous AOs. In that case, the ACE requires multiple intelligence elements capable of providing airspace-aligned intelligence support tailored to the size of the respective TACCs.

When operations are such that one echelon has few mission-aligned intelligence support requirements, its intelligence capacity may be reduced. For example, where all three echelons are present but sortie requirements are exclusively met by mission planning at the squadron, the group would have limited mission-aligned intelligence capacity and capability. Most of the Iraq and Afghanistan campaigns exemplify this mode of operations. In a major theater conflict, where aviation operations may be highly-integrated operations with multiple squadrons and primary mission planning occurs at the MAG, a squadron's intelligence capacity and capability may be limited. Open conflict in the Pacific would likely use this mode of operations.

Finally, when geographic-aligned requirements diverge significantly from mission-aligned requirements or squadron headquarters, intelligence capacity may need to be detached from normal echelons and placed in general support of multiple units, as in a Flight Line Intelligence Center. Such a configuration mirrors the logic behind the "site command" concept. This condition can occur during a significant movement, as in the 2003 Invasion of Iraq, when some aircrews did not RTB for many days, overnighting at forward arming and refueling points. In such an example, squadrons might have to detach (and pool) geographic-aligned intelligence capacity/capability to the units establishing such forward arming and refueling points, or they may simply be the temporary deployment in hub-and-spoke operations. In some cases, this may require the attachment of intelligence Marines and equipment to aviation ground elements or specific aircraft packages to self-deploy their intelligence capacity independent of the unit's headquarters.

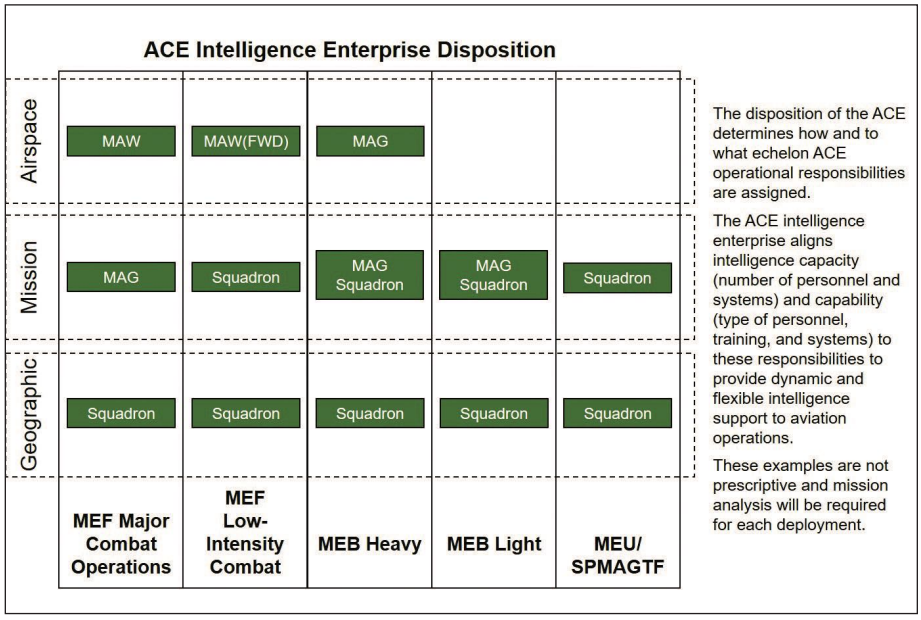

Figure 3. ACE intelligence enterprise disposition. *(Figure provided by author.)*

The significant impact of these alignments and how they describe intelligence planning is best seen at the Group echelon. The MAG T/O of thirteen intelligence Marines may be adequate in garrison or combat operations under a MAW. However, operating as a MEB ACE requires an intelligence section of at least 40–50 Marines. The HQMC MEB ACE Primer calls for an S-2 of 92 Marines. This variability (between 13 and 92) cannot be explained by a concept of echelon-based responsibilities, especially when the number of subordinate units and mission types may not vary at all. However, the *variability in alignments* between a garrison MAG S-2 and MEB ACE S-2 readily explains the order of magnitude differences in requirements between these two scenarios.

Importance of Air Intelligence across the Competition Continuum

Evidence from the permissive operating environments during the Global War on Terror show that the Service accepted risk in air intelligence with few consequences due to a relatively low threat to air operations. There are two primary sources of risk: risk from enemy action (the "red threat") and risk from a mishap (the "blue threat"). The red threat is generally mitigated through intelligence, whereas the blue threat is mitigated through operational measures (e.g., safety of flight decisions or control measures). When these mitigation measures are in tension, they require deliberate balance (i.e., an approach into the wind may decrease risk in landing or weapons delivery but place the aircraft over a higher-threat area during ingress or egress).

At the "left-side" of the competition continuum, the red threat is relatively low while the blue threat is comparatively higher. In this environment, operational considerations tend to override competing intelligence considerations.

As the competition continuum intensifies, the blue threat rises as the ACE conducts inherently riskier operations (i.e., more aggressive/complex maneuvers or compressed planning timelines). Self-evidently, the red threat increases as well. Even in low-intensity conflict,

the blue threat may remain higher than the red threat. But at some stage, these threats reach a crossover point, and the red threat becomes the predominant consideration for risk (Figure 4), increasing the relative contribution of intelligence to operations.

Consequently, the relative importance of air intelligence varies across the competition continuum. This variability in importance shapes both the consideration of intelligence factors in mission planning/execution and the capacity and capability requirements of ACE intelligence across this continuum. This variability in relative importance not only explains the rational underinvestment in ACE intelligence in recent decades but also argues for increased investment going forward.

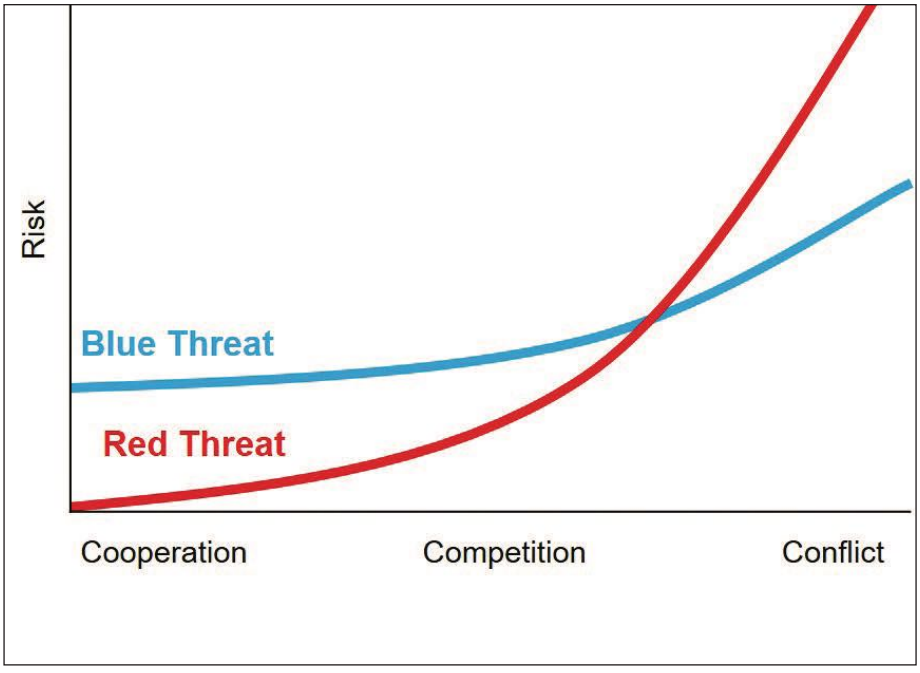

Figure 4. Notional ACE risk across the competition continuum. *(Figure provided by author.)*

Objections and Challenges

There are three logical objections to this concept.

First, no concept is necessary at all. This objection logically requires ACE and GCE intelligence to be identical across DOTMLPF&C pillars. The existence of distinct air and ground intelligence secondary military occupational specialties suggest this is not the case. So, too, does the Air Combat Intelligence section's unique formulation in support of the MACCS. Thus, ACE and GCE intelligence *are not* identical. Those who argue the two *should be* identical must first contend with T/Os that differ substantially and address how intelligence must support the ACE with considerably less capacity. The *means* gap presented by wildly different T/Os requires a different concept (*ways*) for intelligence support. This first objection, therefore, does not stand.

Second, this *particular* concept is fundamentally wrong. The concept outlined above describes all major ACE employments and deployments in the last 30 years by abstracting multiple specific ACE employments to a common framework. Thus, while abstract (a requirement of concepts), it is derived from historical reality. This second objection, therefore, requires an extensive historical counterproof. Such refutation seems unlikely.

Third, there is a superior alternative concept. I developed this concept over two years based on dozens of discussions and debates with intelligence Marines of varying backgrounds. It is based on specific and varied ACE employments over the last 30 years and validated against personal accounts and official histories as well as within multiple current OPLANs. Furthermore, the genesis of this concept was the failure of the apparent alternative (a concept with echelon-based responsibilities) to explain the problems of Group S-2 scalability described above. A concept with echelon-based responsibilities must also contend with ACE deployments where intervening echelons (i.e., the MAG) have been absent or where echelons have downsized (i.e., from MAW to MAG) without a corresponding shift in intelligence roles and functions. Therefore, this third objection requires a complete and distinct alternative concept. The only alternative proffered has been the inferior echelon-based concept.

Fortunately, opponents to this concept have not made any of the three logical objections. The objections that opponents have raised have been opinions, not positions, and fall apart quickly.

The first thematic argument against the concept has been that it may confuse junior enlisted or officers. Calculus, too, is confusing—but no less true or useful. It is worth noting that during the adoption of maneuver warfare in the late 1980s, field-grade officers were confused about how the command element could ever be more than a *coordination* element. Confusion and concern over the then-new Functional Component Command concept preceded DESERT STORM. And finally, the confusion over new operating concepts has the Marine Corps codifying and teaching these concepts (see *Tentative Manual for Expeditionary Advanced Base Operations*), not freezing them in draft until divine revelation strikes junior Marines with comprehension. It is also embarrassing to need to explain that doctrine is *not* just for junior Marines. Senior Marines who feel they have nothing to learn from doctrine do not earn their boat space.

The second thematic argument against the concept has that it has no obvious parallel in Joint concepts or other Marine Corps intelligence subdisciplines. The lack of similarities in Joint concepts is immaterial to discussing Marine Corps concepts. It needs no further consideration. Ironically, the lack of parallel in other sub-disciplines is evidence *for* the concept, not

against it. Even a cursory list of unique characteristics in each sub-discipline demonstrates this point: Signals Intelligence Operational Tasking Authority in Signals Intelligence, Embassy and CIA coordination in Human Intelligence, and Reconnaissance and Surveillance mission planning in ground intelligence. In each case, the fact that these characteristics have no parallels is the *strongest argument* for their thorough and rigorous exploration by supporting concepts and doctrine. Similarly, the ATO's centrality and the unitary C2 of the FMF's airspace (to select only two examples) are no less impactful to ACE intelligence operations than these other examples are to their sub-discipline. Therefore, they are no less important to explore within doctrine and codify into any concept of intelligence support.

The remaining challenges (largely unvoiced) are valid but not cause for abandoning the concept. These include the lack of formal concepts for either the MCISRE or Marine aviation under which this functional concept would logically nest. One can argue that if air intelligence requires a formalized concept, the MCISRE or Marine aviation need one, too. The identification of greater challenges should not paralyze us, however. One can also argue that the MCISRE and Marine aviation have sufficient advocacy to obviate a more formal articulation than those that exist. The Van Riper Plan's seven intelligence principles offer an informal concept for the MCISRE. The six (or seven) functions of Marine aviation do the same for aviation.

Conclusion

A functional concept for air intelligence tailored to the ACE's unique modes of C2 and operations and flexible and scalable across all echelons of command and the competition continuum will set the foundation to ensure the Service is prepared to execute its operating concepts. Such a concept helps identify DOTMLPF&C requirements necessary to support Marine aviation in future operating environments. When ACE commanders and MCISRE leaders apply this concept to various ACE employment scenarios (from standard MAGTFs to specific OPLAN force packages), they will be able to develop task-organized intelligence elements with the organization, training, and equipment to meet aviation requirements for survivability and lethality in the future operating environment.

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