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Command and Control of Joint Air Operations through Mission Command

by

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Abstract

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In order to effectively command and control (C2) joint air operations in a contested and degraded environment, the concept and principles of mission command must be instilled into the U.S. Air Force and joint C2 culture. To do this, the operational and tactical level commanders must build a vital foundation of trust. Operational level commanders must create a shared understanding of campaign objectives and accordingly provide well-defined, clear intent which guides tactical level commanders in exercising disciplined and educated initiative. Furthermore, the use of mission type orders will facilitate decentralized execution and initiative in conjunction with assumption and acceptance of prudent risk. It is also critical to develop and employ an effective C2 architecture to lead joint air operations through mission command. However, it is even more critical for commanders to develop and employ a philosophy that enables a vital culture of trust, without which, mission command and effective joint air operations cannot succeed.

Command and Control of Joint Air Operations through Mission Command

> As battle becomes more complex and unpredictable, responsibilities must be more and more decentralized…This will require all commanders to exercise initiative, resourcefulness, and imagination-operating with relative freedom of action.
>
> —General Bruce C. Clarke
> Commander in Chief, U.S. Army Europe

For centuries, the U.S. Armed Forces have endeavored to find the perfect balance between higher headquarters (HHQ) control and delegation of authority to subordinate units and commanders. Whether framed as the U.S. Air Force's tenet of Centralized Control-Decentralized Execution, or the U.S. Army's Mission Command, the underlying concept of entrusting Soldiers, Sailors, Marines, and Airmen with increased responsibility and promoting initiative is the foundation of this much needed effort. In order to effectively command and control (C2) joint air operations in a contested and degraded environment today, while preparing for the volatile threats of tomorrow, the concept and principles of mission command must be instilled into the U.S. Air Force and joint C2 culture. In support of that, this paper will first discuss the origins and concepts of mission command. Next, this paper will address and apply the principles of mission command to the U.S. Air Force and joint C2 decentralized operating environment. Lastly, this paper will outline the C2 architecture systems, processes, and the philosophy of command required to effectively enable mission command.

Mission Command Concepts

The concepts of mission command date back to the 1890s when Prussian-German tacticians, unhappy with overly directive types of command, developed a more flexible construct of command called *Auftragstaktik* which empowered subordinate

commanders to exercise initiative.[1] According to U.S. Army Training and Doctrine Pamphlet 525-3-3, *Auftragstaktik* "translates roughly to mission-type tactics", and essentially "held each German commissioned and noncommissioned officer duty bound to do whatever the situation required, as he personally saw it."[2] This concept was vital in allowing subordinates to exercise judgment and initiative in an operational environment characterized by slow communications, and where a "decentralized approach to C2, or *Auftragstaktik*, proved more effective than a highly centralized command."[3] Approximately 90 years later, the U.S. Army had adopted those concepts officially into Army doctrine as "mission orders" or mission command and paved the way for injecting those terms into joint doctrine.[4]

According to Joint Publication 3-0, *Joint Operations,* mission command is defined as the "conduct of military operations through decentralized execution based on mission type orders. Successful mission command demands that subordinate leaders at all echelons exercise disciplined initiative and act aggressively and independently to accomplish the mission."[5] Furthermore, as Lt Col James W. Harvard points out in his article, *Airmen and Mission Command*, Army Doctrine Publication (ADP) 6-0, *Mission Command*, encompasses not only the reference to decentralized execution but also the strategic linkage of the art of command and science of control.[6] Lastly, although the term mission command does not exist in Air Force doctrine, the basic principles are inherently illustrated in Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine, Organization, and Command* that states, "Execution should be decentralized within a command and control architecture that exploits the ability of front-line decision makers…to make on-scene decisions during complex, rapidly unfolding operations.[7]

Even though these principles of mission command have dwelled within the individual services for years, a trigger was needed to align the Department of Defense as a whole and to enable a critical synchronized and integrated approach to leading the joint force.

Accordingly, in his 2012 *Mission Command White Paper*, Chairman of the Joint Chiefs of Staff, General Martin Dempsey outlined the vital need to instill and foster the concepts of mission command and that such a pursuit is "critical to our future success in defending the nation in an increasingly complex and uncertain operating environment."[8] He further points out, "the basic principles of mission command—commander's intent, mission type orders and decentralized execution are not new concepts and in fact part of current joint and service doctrine", as illustrated in the previous paragraph.[9] This point is critical in that a renewed emphasis on the concepts of mission command is vital to effectively executing operations as "Joint Force 2020" in a future dynamic security and threat environment that is vastly different from what we operate in today.[10] Furthermore, as these smaller and lighter forces operate in geographically dispersed joint operations areas (JOAs), the ability to conduct effective decentralized and distributed operations will be essential.

Additionally, General Dempsey points out that these "smaller, lighter forces operating in an environment of increased uncertainty, complexity and competitiveness will require freedom of action to develop the situation and rapidly exploit opportunities."[11] Furthermore, due to its unique capabilities, the effective C2 of airpower relies heavily on the centralized control-decentralized execution concepts grounded in the principles of mission command.[12] It is through an effective application of these principles of mission

command that the U.S. Air Force and joint C2 community can adeptly conduct distributed air operations in a contested environment.

Principles of Mission Command

Building Teams through Trust

The first and most important principle of mission command to focus on is the ability to build cohesive teams through mutual trust.[13] ADP 6-0, *Mission Command*, details this concept by noting, “mutual trust is a shared confidence among commanders, subordinates, and partners,” and that “effective commanders build cohesive teams in an environment of mutual trust.”[14] This requirement is mandatory for leading and executing in the complex global and geographically dispersed environments of today. Trust, to the joint force, must also become as natural as breathing or walking, and as Vandergriff states, “mission command will require an institutional culture that fosters trust among commanders, encourages initiative and expects leaders to take prudent risk and make decisions based on incomplete information.”[15] Although in many instances, an abundance of information available drives the need for trust even more.

As the joint force operates in the networked and distributed battlespace, commanders at all levels have more information available to them than ever before. The sheer volume of information both facilitates effective joint C2 decision making, as well as contributes to the temptation of micro-management at operational and strategic levels.[16] Not only are the concepts of mission command needed now to meet the “broad range of potential missions, complex operations environment, and ill-structured situations,” but it also “corrects the 1990s defense transformation view that emerging technologies would lift the fog of war…and permit and all-knowing headquarters.”[17]

The cure to overreliance on technology and a virtual flashlight to illuminate a path through the fog of war is building and instilling trust. Simply put, it is not possible to effectively execute any joint operation without the central pillar of trust between commanders and subordinates. Even though the subordinates must understand the commander's intent, it is in fact trust that "informs the execution of that intent."[18] Furthermore, General Dempsey goes on to highlight, "trust is the moral sinew that binds the distributed Joint Force 2020 together," and that "unless these attributes are made central to the basic character of the force, Joint Force 2020 will struggle to reach optimal performance levels."[19] Further, the commanders of the joint force must leverage this mutual trust and their own interpersonal relationships to build effective teams within their own organizations, as well as outside their organizations with sister services and multinational partners.[20]

However, trust is not something that just happens overnight, and since trust is the cornerstone of mission command, a failure to garner trust poses a significant hindrance to effective mission command. Specifically, high level commanders at the Combined Air and Space Operations Center (CAOC) have a multitude of information available which allows unprecedented access to operational and tactical level data. Such robust access to battlespace information is critical in providing a common operational picture to commanders, but it also enables those commanders to see incredibly high detailed data, evaluate real time tactical level maneuvers, and virtually get inside the radar scope, cockpit, or boots of the Airmen and Soldiers executing the mission. The potential then exists for tactical commanders, air battle managers (ABMs), and other elements of the joint C2 leading the air campaign to feel usurped as their

actions are pre-maturely questioned or micromanaged from above. Accordingly, the higher level commanders feel the need to intervene real time as they observe their subordinate commanders executing the mission differently than they would.

One of the main pathways to establishing trust with respect to air operations is to let those tactical level commanders in the Control and Reporting Center (CRC), Airborne Warning and Control System (AWACS), Marine Air Command and Control System (MACCS), Air Defense Sectors (ADS), and other elements of the joint theater air control system (TACS) truly execute their missions based on well defined guidance and directives. Such guidance and directives are spelled out in various levels of detail in documents as the joint air estimate, joint air operations plan (JAOP), air operations directive (AOD), theater and campaign special instructions (SPINs), rules of engagement (ROE), and daily updates to the air tasking order (ATO) and daily SPINs.

Additionally, these subordinate commanders and their units must be allowed to show initiative and drive in managing the air campaign in a decentralized manner, while still maintaining the appropriate level of centralized control. The very nature of these documents is a formal, well-defined way to specifically authorize decentralized execution of the TACS elements. In addition, these documents facilitate and promote execution of the ATO through the use of sound judgment and “airmanship”. However, as Harvard points out, there needs to be a proper balance of centralized control and decentralized execution based on the situation or nature of the operation.[21] For example, the level of decentralized execution could extend all the way down the chain of command to the tactical level for a conventional air defense or close air support (CAS) mission. On the other hand, there would be significantly less decentralized

execution for a strategic nuclear attack mission or space operations involving low density-high demand assets.[22] Lastly, these governing documents and directives serve not only as a key to understanding the commander's guidance and intent toward planning and executing the air campaign but also as a critical enabler to establishing trust. Once this critical value of trust is forged into the joint force DNA, the path to the next step in instilling the concepts of mission command is wide open.

Create a Shared Understanding & Provide Clear Commanders Intent

According to ADP 6-0, *Mission Command*, "a defining challenge for commanders and staffs is creating a shared understanding of their operational environment, their operation's purpose, its problems, and approaches to solving them."[23] Furthermore, as General Dempsey states, "[It is] understanding that equips decision makers at all levels with the insight and foresight required to make effective decisions, to manage associated risks, and to consider second and subsequent order effects."[24] In order to effectively create a shared understanding, the commander must "blend the art of command with the science of control" to not only effectively integrate the joint functions,[25] but also to expertly "understand the problem, envision the end state, and visualize the nature of the operation."[26] This understanding is then translated into guidance and direction in the form of assigned missions. However, these assigned missions must be within their capabilities; "the commander must understand what his subordinates can do, and trust-but not blindly-them do it."[27]

Again, the basic concept of mission command, as well as the concept of a clear understanding relies heavily upon a solid comprehension of the commander's overall

intent as the air campaign progresses. According to Joint Publication 3-0, *Joint Operations*,

> Commander's intent is the commander's clear and concise expression of what the force must do and the conditions the force must establish to accomplish the mission. It is a succinct description of the commander's visualization of the entire operation and what the commander wants to accomplish. Commander's intent supports mission command and allows subordinates the greatest possible freedom of action.[28]

In terms of the joint force, the Joint Force Commander (JFC) sets this intent as described above, and it encompasses all unified operations conducted in the various domains under the JFC's direction. The JFC will also appoint a Joint Force Air Component Commander (JFACC) to plan, coordinated, task, execute, and assess joint air operations based on the JFC's intent and guidance, as well as the theater, campaign, or operations plans.[29] It is then the responsibility of the JFACC to synchronize the efforts and overall understanding with the intent and guidance laid out by the JFC. To do this, the JFACC will issue a subsequent, supporting mission statement and intent outlining the purpose and desired military end state as illustrated in the example commander's intent extracted from Joint Publication 3-30, Command and Control for Joint Air Operations below.

> The purpose of the joint air operation is to deter aggression. Should deterrence fail, I will gain and maintain air superiority, conduct joint offensive air operations, and support the Joint Force Land Component Commander (JFLCC) counteroffensive in order to restore the territorial integrity and ensure the establishment of a legitimate government in a stable Pacifica region.[30]

In addition to the commander's intent, the desired military end states are also included in the JAOP, along with other documents such as the AOD. The military end states outlined by the JFACC are well-defined and support the overall end states directed by the JFC, but also possess some airpower centric goals. Examples include;

(1) “adversary military forces will be capable of limited defensive operations, have ceased offensive combat operations, and complied with coalition war termination conditions”, (2) “adversary will retain no weapons of mass destruction capability”, (3) “allied territorial integrity will be restored”, and (4) “JFACC-West will have passed air traffic control to local authorities.”[31]

Although this guidance starts at the top of the strategic and operational level, it flows down to the experts executing the air campaign at the tactical level. It is vital that such messaging and intent are clearly evident in the daily products that the joint force uses to execute the air campaign. These products, such as the AOD, SPINs, ATO, airspace control order (ACO) are the primary focus of the tactical level force and therefore the primary vehicle for signaling intent.

However, it may seem redundant and overly repetitive to develop, present, and repeat the JFC’s and JFACC’s mission statement, commander’s intent, and end states throughout numerous documents (campaign plan, JFC estimate, JFACC staff estimate, JAOP, AOD, Area Air Defense Plan, Airspace Control Plan, JFACC’s daily guidance), but these documents are required for effective execution and serves two purposes (see Figure 1). The first is to ensure all efforts are clearly understood and synchronized across the entire joint force and associated components and domains. The second purpose is to ensure that all players at both the operational and tactical level of execution completely understand their roles. These roles are not only to plan and execute “ATO lines” as tasked, but also to understand the overall intent of the campaign, operation, and mission as it evolves on a daily basis. It is through such understanding that these Airmen can, under the concepts of mission command, be

prepared to execute as ordered, or more importantly exercise appropriate disciplined initiative while operating in a degraded and contested joint operational environment.

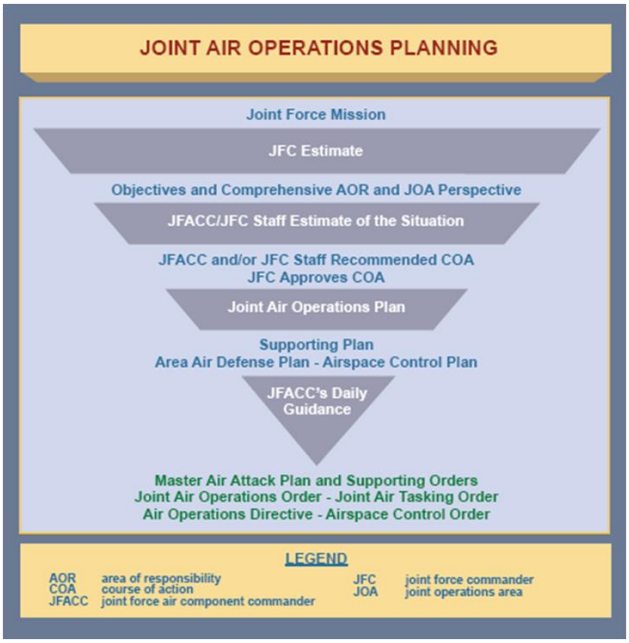

Figure 1. Joint Air Operations Planning[32]

Exercise Disciplined Initiative

Promoting and instilling the concept of "exercise disciplined initiative" is a key component of mission command and relies greatly on not only the shared understanding developed through the commander's guidance and intent, but also on the critical foundation of trust that is necessary. ADP 6-0, *Mission Command* defines disciplined initiative as "action in the absence of order, when existing orders no longer fit the situation, or when unforeseen opportunities or threats arise."[33] Additionally, Joint Publication 3-30, *Command and Control for Joint Air Operations,* cites, "joint air operations are normally conducted using centralized control and decentralized execution to achieve effective control and foster initiative, responsiveness, and flexibility."[34]

Both of the above definitions outline the main goal of mission command and centralized control-decentralized execution. The goal of building a culture with a solid foundation of trust that encourages leaders to make sound decisions based on the information available to them. Although ADP 6-0 specifically states “disciplined” initiative, an additional requirement must be “educated” initiative. This education comes from a clear understand of the mission objectives, desired effect, and overall commander’s guidance. Specifically, for the Airmen, Soldiers, Sailors, and Marines executing the air campaign, this means having a solid knowledge of the appropriate governing documents, regulations, and guidance provided by the JFACC.

Education also applies to the top level commanders that develop and disseminate their intent, objectives, and overall guidance. In order for the operational and tactical level commanders to exercise disciplined and educated initiative, they must have well-defined and clear intent from which to guide their initiative. General Dempsey supported this concept by citing that “officers must be taught how to receive and give mission-type orders, and critically, how to clearly express intent.”[35]

Furthermore, trust is built through that education and is critical requirement for effective mission command both up and down the chain. According to General Dempsey,

> Trust too is a learned behavior to be developed during education…As responsible exercise of mission command does not entail blind trust, education must give officers the ability to recognize the capability for mission command in subordinates and the skills to know when and how to adjust their supervision.[36]

The trust General Dempsey emphasizes, along with the ability and will to exercise disciplined initiative is key in executing the air campaign in a geographically dispersed

and contested environment. It is one thing to effectively run decentralized and distributed operations in an environment in which the U.S. or coalition forces have full, uncontested use of all the needed communications and data mediums. However, even in such permissive and low threat environments, leaders at operational levels have a difficult time permitting the tactical level units and commanders to execute according to guidance and intent. This type of full or partial centralized execution inhibits tactical level initiative as the lower units become de-sensitized to making decentralized decisions. On the other hand, if you take that same environment and inject a significant amount of communication degradation, geographically dispersed units, and a robust air threat, the problem becomes more complex. In this contested environment, with communications and datalinks degraded or completely lost, it is imperative that the tactical level joint C2 units and aircrews execute disciplined and educated initiative based on their understanding of the intent and guidance provided throughout the campaign. Such decentralization, or mission command, allows the joint force to maintain the proper tempo and according to General Dempsey, “operate at the speed of the problem.”[37]

Lastly, in addition to understanding the intent and guidance based on all the mission planning and execution documents previously mentioned, the joint C2 units must also receive more defined guidance based on the desired mission results. This time tested, well-defined tool that should be used to guide tactical level execution is known as mission type orders.[38]

Use Mission Type Orders to Empower Subordinates

According to ADP 6-0, *Mission Command*, mission orders are “directives that emphasize to subordinates the results to be attained, not how they are to achieve them.”[39] Additionally, ADP 6-0 further outlines that such mission orders are used by commanders to “provide direction and guidance that focuses the force’s activities on the achievement of the main objective, set priorities, allocate resources, and influence the situation.”[40] In essence, these mission type orders are designed to have well-defined guidance on what type of results are desired while providing the subordinates the maximum amount of freedom of action and promote disciplined initiative.[41] Additionally, the use of mission type orders affords commanders the ability to still supervise their subordinates, but rather than over-control the situation, they instead only intervene when necessary to direct big picture changes to the overall concept of operations.[42] Such restraint, especially in the vastly networked battlespace of today, is critical and relies on the commanders’ ability to provide appropriate guidance and supervision while executing a “continual cognitive effort to understand, adapt, and to direct effectively the achievement of intent.”[43]

Although this concept grew primarily out of efforts to effectively C2 land forces, it applies to the joint C2 of air operations. In an air defense scenario, for example, mission type orders could include simple desired results such as “defend the critical assets listed in defended assets list (DAL) from air and missile attack”, or “defend and protect strike package alpha and bravo throughout all phases of the mission to include marshal, ingress, target, and egress phases” in accordance with the AOD priorities. This type of direction allows the tactical level joint C2 commanders and ABMs to manage the assets available to them according to the priorities and mission intent laid out by the JFACC.

The commanders and mission crews of a CRC or E-3G AWACS for example, are then responsible for the management and employment of the air assets under their control. Specifically, these ABMs, or joint counterparts, are authorized to position combat air patrols (CAPs), retain “commit authority”, scramble additional assets when deemed necessary, manage airborne tanker fuel offload/positioning, direct intercepts, decide on prioritization, and direct hostile engagements, compile strike packages and appropriate supporting assets, and a whole host of other air battle management tasks based on guidance and priorities. Furthermore, the tactical level joint C2 executing the air campaign makes these decisions and executes disciplined, educated initiative based on the guidance provided in the JFC and JFACC documents developed for the campaign.

However, to promote such initiative through tools like mission type orders, it is necessary, as Harvard and AFDD 6-0, *Command and Control,* keenly point out, to strike an appropriate balance of centralized control: “Overcontrolling air and space power robs it of flexibility, taking away initiative from operators. Under controlling air and space power fails to capitalize on joint force integration and orchestration, thus reducing its effectiveness.[44] As the old adage goes “it depends”, and there is no black or white answer or Jominian formula for when, and to what extent, to decentralize the level of execution. Various factors such as mission type, threat levels, availability of communications, and the overall operational environment greatly influence the degree of decentralization. However, the level of decentralization and associated initiative taken by subordinate commanders via the execution of mission type orders also relies on the willingness to accept prudent risk at both the operational and tactical levels.

Accept Prudent Risk

The final principle of mission command involves accepting prudent risk. However, commanders and subordinates must also understand how analyzing and accepting risk is linked with the concepts of other previously discussed mission command principles. The effective execution of mission command is not necessarily a step by step process but rather a synergistic integration and application of all the principles of mission command.

In order to allow the joint force to accept prudent risk, commanders must first understand the various levels and definitions of risk, as it varies from service to service and tactical level to strategic level. According to ADP 6-0, it is necessary for commanders to accept risk due the volatile, uncertain, complex, and ambiguous elements that exist in all military operations.[45] Furthermore, ADP 6-0 defines prudent risk as "a deliberate exposure to potential injury or loss when the commander judges the outcome in terms of mission accomplishment as worth the cost."[46] AFDD 6-0, *Command and Control* also references mission accomplishment as it cites "Commanders should assess and accept risks necessary to accomplish the mission. Accepting risks also acknowledges the possibility of failure."[47]

This mission focus is paralleled in the risk assessment definition in JP 5-0, *Joint Operation Planning*, but it also breaks the risk down into four categories. These categories include (1) "extremely high: loss of ability to accomplish the mission", (2) "high: significantly degrades the mission capabilities in terms of required mission standards", (3) "moderate: degrades mission capabilities", and (4) "low: little or no impact on accomplishment of the mission."[48] In any case, it is imperative for both the

commanders issuing mission type orders and the subordinates receiving them to analyze and assess the appropriate level of risk. This in turn builds upon the understanding and intent provided and facilitates the aforementioned disciplined and educated initiative. Ultimately, it is the culmination of making a mission focused decision at the tactical level based on the guidance and information available and how that information and “picture” relates to the current situation.

Accordingly, the CRC, AWACS, or other tactical level joint C2 commander must assess the risk based on his responsibilities, tasks, and objectives as they relate to his particular “lane” or battle management area (BMA). Careful consideration of the various risks involved with each and every situation must be made quickly and on a continuous basis. Situations may occur in which judgment calls must be made to defend a protected area or ensure a strike package gets to the target. For example, the decision to engage a high speed air threat instead of waiting on a delayed clearance to engage from HHQ. In any case, quick and accurate risk analysis is required at all levels of execution.

Situations such as the examples above highlight the significance of expeditious risk analysis and acceptance of that risk. Furthermore, these are the types of issues that the operational and tactical level commanders must continually address while executing joint air operations. The simple, underlying fact is that these tactical level commanders must know that their superiors trust them to make these decisions based on the information available to them at the time of decision. Furthermore, it is the responsibility of the tactical level commanders and units to put extreme effort into knowing their operational environment and adequately preparing, studying, and applying the

guidance, intent, and mission priorities to the situation. In short, it is not “blind trust” as General Dempsey states, but rather a credible trust, earned through effort, education, experience, and training.[49] It is this vital trust that serves as the “green light” for tactical level commanders to make decisions and judgments during the fog of war while knowing they have the well-earned support and confidence of their superiors. Accordingly, that well-earned trust serves as the same “green light” for operational commanders to feel confident about how their subordinates will make decisions and adapt to the dynamic battlespace environment.

Processes, Systems, and Philosophy of Command

The final concept of mission command to discuss is the processes, systems, and philosophy of command required to effectively execute joint air operations in a contested environment via mission command. The primary Air Force system used to C2 joint air operations is the C2 architecture itself, referred to as the theater air control system (TACS). This system, and the processes and weapons systems (such as CAOC, CRC, ADS, AWACS, Air Support Operations Center) that make up the TACS, along with the sister service joint C2 systems (MACCS, Aegis, E-2D, etc.) is the critical vehicle for executing centralized control and decentralized execution of the air campaign. According to Air Force doctrine, “centralized control and decentralized execution are key tenets of C2; they provide commanders the ability to exploit the speed, flexibility, and versatility of global air and space power.”[50] Furthermore, Air Force Doctrine, Volume 4, *Operations*, cites “because of airpower’s unique potential to directly affect the strategic and operational levels of war, it should be controlled by a single

Airman who maintains the broad, strategic perspective necessary to balance and prioritize…a limited force."[51]

In terms of executing the air campaign, this concept translates into a single air component commander (i.e. C/JFACC) that maintains the operational and strategic perspective to guide the "planning, direction, synchronization, integration, and deconfliction of air and space capabilities to achieve the objectives of the JFC."[52] However, the span of control, and associated balance of control, is an important factor to consider. As Harvard points out, "we could characterize airpower operations in Iraq and Afghanistan as having a favorable span of control at the operational level—one enabled by a robust and uncontested C2 infrastructure."[53] However, in a contested, less permissive operational environment characterized by communications degradation, jamming, and a robust air threat, the need for effective decentralized execution will outweigh the ability for such a large span of control.[54]

Accordingly, to effectively execute a robust, contested air campaign, the JFACC must ensure decentralized execution "within a C2 architecture that exploits the ability of front-line decision makers (such as air battle managers, strike package leaders, forward air controllers) to make on-scene decisions during complex, rapidly unfolding operations."[55] This concept is the essence of mission command and an absolute requirement for successful mission operations, particularly in this type of joint operational environment. In addition to instilling and adhering to the principles and concepts of mission command, various planning considerations such as coverage, connectivity, functionality, and placement are vital to ensuring an effective C2 system and process are put in place.

Considerations for C2 of Joint Air Operations (AFDD 6-0, pg 25)

One of the first things to consider in building a viable joint C2 architecture to effectively execute the air campaign through mission command is sensor and communications coverage.[56] In most cases, a truly joint effort of Air Force, Marine, and Navy joint C2 assets is required to effectively cover the joint operations area (JOA). Developing the right mix of joint ground based, seaborne, and airborne C2 elements is particularly critical in a geographically dispersed environment with varying types of terrain and open seas from which to operate. Furthermore, according to AFDD 6-0, this system of sensors and nodes for intelligence, surveillance, reconnaissance, and C2 "must support contingencies and peacetime operations and the theater commander's as well as supported and supporting commander's plans and objectives."[57]

Connectivity is yet another important factor when developing an effective joint C2 architecture. Effective connectivity relies not only on the geographic placement and proximity of the sensors and nodes mentioned above, but also on the types of sensors and the medium used to connect.[58] Additionally, these various communication mediums and types (voice, data, "chat" protocols, cloud computing) are what the CAOC uses to transmit the planning guidance, intent, and subsequent mission type orders. These mediums are also the primary method for real time communications during execution of the air campaign, depending upon the mission and/or level or permissiveness. For instance, cloud computing could be used as the primary means of communication to transmit mission type orders for non-kinetic, less than time sensitive missions[59]. Whereas multiple means such as Ultra High Frequency (UHF) and other line of sight (LOS) and beyond (LOS) tactical communications would be used to transmit time

sensitive, kinetic attack missions orders. Lastly, should communications become degraded or denied by the enemy, redundant planning and execution capabilities, such as cloud computing, are critical to ensuring the continuity of operations based on commander's intent and desired end states (i.e. mission type orders), especially in a distributed operations environment.[60]

The last areas to consider in building a viable joint C2 architecture to effectively execute the air campaign through mission command are functionality and placement.[61] AFDD 6-0 outlines the requirements for functionality as "sufficient, redundant decentralized execution nodes for the specific area of strategic attack, counterair, counterland, air refueling, airspace control, as well as other air and space function mission requirements."[62] Employing these types of redundant nodes is critical to ensure not only the force protection aspect of the joint force, but also to facilitate continuity of operations should a senior level C2 node, such as the CAOC become damaged, disabled, or "cut off" from communications.[63]

Such continuity of operations is critical, and according to Col. Matthew Smith, Commander, 505th Test and Evaluation Group, "the concept of mission command is critical to effective execution of the air campaign in a contested environment, and tools such as mission type orders and cloud computing will leverage great benefits to ensuring continuity of operations in such an environment."[64] Furthermore, the techniques and procedures developed to ensure continuity of operations of the air campaign in a contested environment will translate over to facilitate maritime, land, space, and cyberspace operations.[65] If a joint force, whether air, sea, land, or space

based, is operating with dispersed elements in a contested environment, the concepts of mission command and tools used to execute those concepts apply.

Along with functionality, geographic placement is just as critical to consider and drives the effectiveness of the C2 architecture functionality, connectivity, and coverage. Although geographic constraints and sensor capabilities (i.e. terrain, distances) are usually the primary consideration for a JFACC planner's placement of various elements of the joint C2 architecture, host nation political constraints also factor into JFACC planning.[66] Both these constraints also drive the capacity for the Joint force to execute distributed operations.

Distributed operations, as cited by The LeMay Doctrine Center, "involve conducting operations from independent or interdependent nodes in a teaming manner…some operational planning or decision making may occur from outside the joint area of operations."[67] In the case of split operations, which is a type of distributed operation, a single C2 entity such as the CAOC can be split up between multiple locations, "but a single commander must have oversight of all aspects of a split C2 operation."[68] This construct allows the CAOC to conduct manpower intensive tasks, such as developing the majority of the ATO, at a rear or back up location, while reducing the forward deployed footprint.[69] Even if the CAOC is comprised of two or more forward locations, instead of a rear and forward setup, the inherent redundancy allows for continuity of operations and a more difficult problem for the enemy to disrupt and degrade operations.[70]

Additionally, as identified in the key consideration areas of coverage and connectivity, the LeMay Center highlights that "communications and information

systems should provide a seamless information flow of prioritized data to and from forward and rear locations."[71] However, even though it is a critical requirement to maintain the appropriate level of centralized control, it is necessary for the commanders to resist the urge to "take direct control of distant events and override the decisions of forward leaders," especially given the degree and amount of information provided by modern communications and sensors.[72] In any case, the degree and effectiveness of C2 through mission command will hinge greatly on the commander's leadership style and philosophy.

Philosophy of Command

Regardless of the adherence to the principles of mission command and the effectiveness of the C2 architecture, it is the commander who serves as the cornerstone of effective execution of mission command by setting the tone, communicating effectively, and leading by example.[73] Additionally, effective communication of the vision, plan, or intent comes from an absolute understanding of the problem and the tasks at hand. Likewise, effective communication skills are critical, and even if the commander fully understands the mission and guidance he wants to provide, he must possess the ability to provide clear, concise, correct, and effective communication. Without this skill, even the most fail-safe, perfectly analyzed, and expertly crafted plan can fall through the cracks created by poor communication and misunderstanding. Lastly, it is the commander that builds and establishes that vital culture of trust, without which, mission command and effective air operations cannot succeed.

In terms of joint air operations, that trust is developed by the JFACC and his staff empowering the tactical level joint C2 commanders to exercise initiative and make

decisions based on their specific situations within their BMAs. They must be allowed to make mistakes and then learn from those mistakes. The quickest way to stifle trust and effective decentralization is to restrict those units/commanders from making decisions at their appropriate level, only to micromanage them from above based on the sheer abundance of information and communications available as discussed earlier.

However, there may be times, as Harvard pointed out, in which specific direction and less decentralization is required, but that centralized control – centralized execution should be the exception, not the norm, especially in a non-permissive, degraded environment.[74] It is up to the commander to determine when and how to empower the subordinate units, but that decision will certainly drive the willingness or reluctance of the tactical level commanders to genuinely exercise disciplined initiative. Again, it relies on a solid foundation of trust that must be developed and garnered from the very beginning.

In order for the concepts and principles of mission command to fully thrive in the joint air operations arena, the JFACC must (1) possess a command philosophy that parallels and supports the concepts and principles required to execute mission command, (2) effectively communicate guidance and intent via multiple means (documents, mission type orders, etc.), and (3) promote disciplined and educated initiative on the part of subordinate commanders and units. Furthermore, the effective implementation of mission command does not lie solely on the shoulders of the JFACC and operational or strategic level commanders. The brunt of the work and responsibilities lies with the tactical level joint C2 units and commanders. It is their responsibility to train and educate their units to know, inside and out, all of the

governing regulations, planning and execution documents and daily guidance/intent sent from the JFACC. Such effort is imperative and helps to illustrate to the JFACC that these units possess a thorough understanding of their responsibilities as related to the guidance provided. Further, by doing so, these tactical level units will not only generate confidence from the JFACC, but also build the essential foundation of trust necessary for effective execution of mission command.

Conclusion

In order to effectively command and control joint air operations in a non-permissive, contested and degraded environment today, while preparing for the volatile threats of tomorrow, the concept and principles of mission command must be instilled into the U.S. Air Force and joint C2 culture. In order to do this, the operational level commanders at the CAOC, the tactical level joint C2 commanders, and the units executing the joint air campaign must first build and establish a vital foundation of trust. In addition, the operational level commanders must create a shared understanding of the overall campaign objectives and provide well-defined, clear, and concise intent and guidance from which the tactical level commanders and units can leverage in order to exercise disciplined and educated initiative. Furthermore, the use of mission type orders from the JFACC will further facilitate decentralized execution and initiative in conjunction with assumption and acceptance of prudent risk. Lastly, it is critical to developing and employing effective C2 architecture, systems, and processes to lead joint air operations through mission command. However, it is even more critical for the commanders to develop and employ a philosophy that enables a vital culture of trust, without which, mission command and effective joint air operations cannot succeed.

Endnotes

[1] Lt Col (Ret) James W. Harvard, “Airmen and Mission Command,” *Air & Space Power Journal* 27, no. 2 (March-April 2013): 132.

[2] U.S. Department of the Army, *The United States Army Functional Concept for Mission Command*, Training and Doctrine Pamphlet 525-3-3 (Fort Monroe, VA: U.S. Department of the Army, October 13, 2010), 9.

[3] Harvard, “Airmen and Mission Command,” 133.

[4] U.S. Department of the Army, *The United States Army Functional Concept for Mission Command*, 9.

[5] U.S. Joint Chiefs of Staff, *Joint Operations*, Joint Publication 3-0 (Washington, DC: U.S. Joint Chiefs of Staff, August 11, 2011), II-2.

[6] Harvard, “Airmen and Mission Command,” 136.

[7] Ibid., 137-138.

[8] General Martin E. Dempsey, *Mission Command White Paper* (Washington, DC: U.S. Joint Chiefs of Staff, April 3, 2012), 3.

[9] Ibid.

[10] Ibid.

[11] Ibid.

[12] Harvard, “Airmen and Mission Command,” 138.

[13] U.S. Department of the Army, *Mission Command*, Army Doctrine Publication 6-0 (Washington, DC: U.S. Department of the Army, May 2012), 2.

[14] Ibid.

[15] Donald E. Vandergriff, *One Step Forward, Two Steps Back: Mission Command versus the Army Personnel System*, The Land Warfare Papers, no. 84. (Arlington, VA: Association of the United States Army, August 2011), 3.

[16] U.S. Department of the Army, *The United States Army Functional Concept for Mission Command*, 7.

[17] Ibid., 6, 9.

[18] Dempsey, *Mission Command White Paper*, 6.

[19] Ibid.

[20] U.S. Department of the Army, *Mission Command*, 3.

[21] Harvard, “Airmen and Mission Command,” 141.

[22] Ibid., 139.

[23] Ibid.

[24] Dempsey, *Mission Command White Paper*, 5.

[25] Ibid., 4.

[26] Ibid.

[27] Ibid.

[28] U.S. Joint Chiefs of Staff, *Joint Operations*, II-8.

[29] U.S. Joint Chiefs of Staff, *Command and Control for Joint Air Operations, Joint Publication 3-30* (Washington, DC: U.S. Joint Chiefs of Staff, January 12, 2010), II-2.

[30] U.S. Joint Chiefs of Staff, *Command and Control for Joint Air Operations*, A-1.

[31] Ibid.

[32] Ibid., III-2.

[33] U.S. Department of the Army, *Mission Command*, 4.

[34] U.S. Joint Chiefs of Staff, *Command and Control for Joint Air Operations*, I-3.

[35] Dempsey, *Mission Command White Paper*, 6.

[36] Ibid.

[37] Ibid., 4.

[38] U.S. Department of the Army, *Mission Command*, 5.

[39] Ibid.

[40] Ibid.

[41] Ibid.

[42] Ibid.

[43] Dempsey, *Mission Command White Paper*, 4.

[44] Harvard, “Airmen and Mission Command,” 139; U.S. Air Force, Air Force Doctrine Document 6-0, *Command and Control* (Maxwell Air Force Base, AL: LeMay Center for Doctrine Development, June 1, 2007, incorporating change 1, July 28, 2011), 13, http://static.e-publishing.af.mil/production/1/af_cv/publication/afdd6-0/afdd6-0.pdf (accessed March 11, 2014).

[45] U.S. Department of the Army, *Mission Command*, 5

[46] Ibid.

[47] U.S. Air Force, Air Force Doctrine Document 6-0*, Command and Control*, 27.

[48] U.S. Joint Chiefs of Staff, *Joint Operations Planning*, Joint Publication 5-0 (Washington, DC: U.S. Joint Chiefs of Staff, August 11, 2011), IV-11.

[49] Dempsey*, Mission Command White Paper*, 4.

[50] U.S. Air Force, Air Force Doctrine Document 6-0*, Command and Control*, 12.

[51] LeMay Center for Doctrine, "Operations," https://www.doctrine.af.mil/download.jsp?filename=V4-D09-CCDE.pdf (accessed March 10, 2014)

[52] U.S. Air Force, Air Force Doctrine Document 6-0*, Command and Control*, 15.

[53] Harvard, "Airmen and Mission Command," 141.

[54] Ibid.

[55] LeMay Center for Doctrine, "Operations".

[56] U.S. Air Force, Air Force Doctrine Document 6-0*, Command and Control*, 25.

[57] Ibid.

[58] Ibid.

[59] Col Matthew T. Smith, U.S. Air Force, Commander, 505th Test and Evaluation Group, Nellis AFB, NV, telephone interview by author February 18, 2014.

[60] Ibid.

[61] U.S. Air Force, Air Force Doctrine Document 6-0*, Command and Control*, 25.

[62] Ibid.

[63] Ibid.

[64] Col Matthew T. Smith, U.S. Air Force, Commander, 505th Test and Evaluation Group, Nellis AFB, NV, telephone interview by author February 18, 2014.

[65] Ibid.

[66] U.S. Air Force, Air Force Doctrine Document 6-0*, Command and Control*, 25.

[67] LeMay Center for Doctrine, “Command,” https://doctrine.af.mil/download.jsp?filename=V3-D21-Distributed-Split-Ops.pdf (accessed March 15, 2014).

[68] Ibid.

[69] LeMay Center for Doctrine, “Annex 3-30, Command and Control,” https://doctrine.af.mil/download.jsp?filename=3-30-D14-C2-C2-Architectures.pdf (accessed March 15, 2014).

[70] Col Matthew T. Smith, U.S. Air Force, Commander, 505th Test and Evaluation Group, Nellis AFB, NV, telephone interview by author February 18, 2014.

[71] LeMay Center for Doctrine, “Annex 3-30, Command and Control,” https://doctrine.af.mil/download.jsp?filename=3-30-D14-C2-C2-Architectures.pdf (accessed March 15, 2014).

[72] LeMay Center for Doctrine, “Operations”.

[73] Dempsey, *Mission Command White Paper*, 4.

[74] Harvard, “Airmen and Mission Command,” 139.