THE C2 PUZZLE

Space Authority and the Operational Level of War

By MAJ Robert J. Reiss Jr, USAF

Who commands Space? Who controls Space? Who provides Space support? Who is the lucky warfighter that gains so much support from Space? These pointed questions lie at the heart of the issue of Space power advocates and operational commanders, as they try to decipher the conundrum known as "Space." Commanders will ask, "What can Space do for me?" and ideally, the advocates can answer, "Space can do this for you, and this and this …" However, as with most heavily debated topics, the answers clearly depend upon whom you ask. The national agency advocate (i.e. National Reconnaissance Office or National Security Agency) might say, "I can provide you this, but only at certain times and under certain conditions." The joint force advocate might say, "I can provide you anything, unless they were previously requested by someone else." The military service advocate might say, "I can give you anything my satellites provide, but I need the request to come from my boss, not directly from you."

In place command and control (C2) constructs and force development clearly shows U.S. Space control and capabilities were originally intended and operated for strategic purposes. Space supported strategic nuclear forces, reconnaissance, National Command Authority (Presidential/Secretary of Defense) communications and other high-level national needs.

Satellites were not anticipated for operational/tactical applications, hence the creation of the programs such as Tactical Exploitation of National Capabilities (TENCAP).

Although TENCAP was highly successful in accomplishing the spreading of Space power benefits to all military forces, it has also diluted the knowledge base of Space power appreciation of how these capabilities came to be. The blowback from this has inadvertently caused arrogance among all non-Space recipients of TENCAP and similar programs since end-users (the warfighters) remain unaware of the true origin of the provided information. Uninformed users therefore hold firm beliefs that a few select U.S. Air Force Space units regulate Space hardware in orbit and they can otherwise perform their mission unimpeded without "Space."

In a brief moment of clarity, this Nation's Space leaders task organized their Space assets with a combatant command, U.S. Strategic Command, after dismantling U.S. Space Command in 2002. However, with just as much rapidity, the vision lost focus with the creation and dubious implementation of the Joint Space Operations Center and the Director of Space Forces in 2005. With this major action, terms such as Space control authority and command and control became muddled, and the clear and concise flow of information and control from the combatant commander to the warfighter changed from a straight, clear road to a curvy path with roadblocks.

To maintain, or even increase, the force multiplying effect Space has on the battlefield, ideas such as the Joint Space Operation Center need correct implementation. By correctly using these constructs, ideas on how Space can, should and will be used to maximum effect will affect institutionalized Space thought, also known as doctrine, for the better. At a minimum, corresponding joint and service Space doctrine should reflect changes in technology and capabilities for Space assets, not just merely mirror another medium's doctrine (i.e. air, naval or Marine). When this mirror imaging occurs, ideas such as the Director of Space Forces are confused in scope and responsibility with their better-defined counterparts such as the Joint Force Air Component Commander or the Commander, Air Force Forces.

Space C2: A Historical Quandary

"American leadership will make no mistakes, the enemy offer no surprises and the situation proffer no unexpected opportunities."
— Frederick Kagan

The United States' current C2 structure for Space systems can be traced back to the budget and planning decisions made in the early 1980s. Decisions originating in the Carter Administration were later sustained and expanded during the Reagan Administration. These systems were designed and purchased

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Selected U.S. Agencies		
U.S. Air Force	National Security Agency	Department of State
U.S. Navy	National Reconnaissance Office	Department of Commerce
U.S. Army	Central Intelligence Agency	National Aeronautics and Space Administration
U.S. Marine Corps	Defense Information Systems Agency	National Oceanographic and Atmospheric Administration

Table 1

to render a sufficient network for nuclear warfare command and control at the strategic/presidential level. Some of the systems for this complex nuclear command and control network include the Defense Support Program missile warning satellites, the Nuclear Detection System aboard Global Positioning System satellites, the Defense Satellite Communication System, the Military Strategic Tactical and Relay Satellite Communications System and Fleet Satellite Communication System communication satellites. These programs and many others were central to the global command and control structure that was required by the National Command Authority during nuclear conflict. During the late 1980s and throughout the 1990s, military planners believed the influence of command and control dominance on the planned nuclear and conventional battlefields spilled over to shape Space forces at the operational level; the reality today is command and control dominance is integral upon being dominant in Space first. This view was not always the case …

During the dawn of the Space Age, inherent divisions were created, separating and duplicating efforts without a common goal in mind. From the outset, there were multiple duplicative efforts by the Navy, Army and Army Air Corps involving captured German V-2 rockets. To a lesser extent, the civilian National Advisory Committee for Aeronautics (NACA) and its successor, the National Aeronautics and Space Administration (NASA) performed additional efforts in research. The rivalry and splitting of focus within the U.S. government is evident in many early Space projects:

- RAND Corp's 1946 study on a "world circling spaceship"
- U.S. Army's Redstone medium-lift boosters
- U.S. Navy's Aerobee and Viking research rockets
- U.S. Air Force intercontinental ballistic missile (ICBM) research

Even America's first foray into Space showed signs of rivalry, pitting the U.S. Navy's Project Vanguard against a more experienced U.S. Army rocket team. Project Vanguard was chosen for its use of "civilian" research rockets (Aerobee and Viking), instead of modified military missiles as the booster. The failure of Project Vanguard's first two attempts pushed the Army's plan into action, successfully orbiting the Explorer I satellite in 1958. Until the late 1950s, no service had taken great interest in Space: the Army viewed missiles as an extension of artillery, the Air Force focused its attention on its manned bomber fleet and the Navy supported freedom of all services to develop missiles in response to their own internal needs.

Everything changed on Oct. 4, 1957, with the launch of the Soviet's Sputnik; with underlying tones of worldwide reach by Communism, Space became a national priority for the United States. Creation of coordinating agencies for Space programs came fast and furious. The Department of Defense created the Advanced Research Projects Agency, controlling both military and civilian programs until NASA took the civilian portion in 1958. The creation of NASA took resources from the now-defunct NACA and also raided the Navy and Army programs nearly completely. This left the Air Force as the dominant military player in Space. However, even operations with Discoverer/CORONA left the lines of command and control blurred during the joint Central Intelligence Agency/U.S. Air Force effort.

More fragmentation occurred in 1961, with the creation of the National Reconnaissance Office (NRO), causing the opposite effect from an agency's creation that was to control all overhead intelligence gathering. The office took control of all reconnaissance satellites as directed by Undersecretary of the Air Force (a.k.a. the NRO Director), but excluded any control or participation directed from headquarters U.S. Air Force. From these brief examples, it is evident that this multipolar slicing of national Space power early in the Space Race and the vacuum of joint cooperation has brought U.S. Space forces to the point where we are today. This jumble might have been bearable for U.S. forces to operate this way in conflict and peacetime, if not for one missing component: Doctrine.

Doctrine: The Glue that Holds it Together?

Fifty years and many agencies later, Space doctrine has not kept pace with technological developments or political constraints pertaining to Space and the battlefield. New developments are taking place faster than the traditional five-year doctrinal writing cycle structure (submissions, write/rewrite, approve, publish/distribute, submission). Doctrinal terms that were relevant in the past (operational vs. support) have now become blurred or outright obsolete depending on the situation and platform used. What term adequately describes a situation where one unit's "support" came from someone else's "operation?" For the vast majority of Space assets, and for the sake of simplicity,

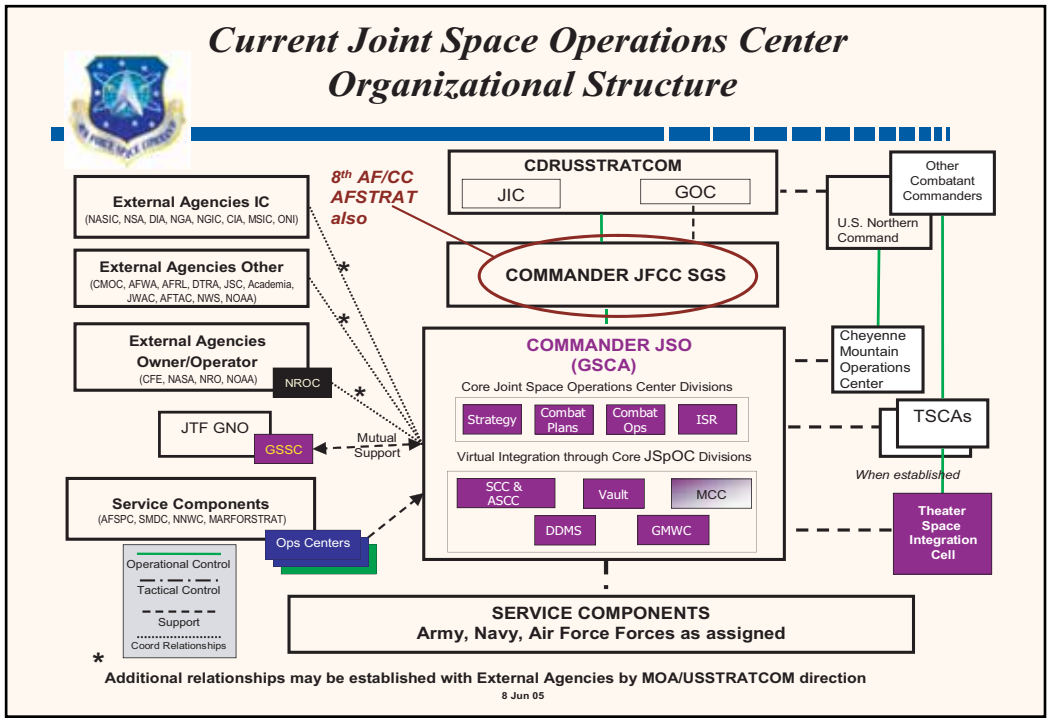

Figure 1

their assistance is rendered in the form of "support" to "operational" warfighters.

If the concept of support is to remain a common thread throughout the Space forces, another underlying concern is "who's in charge?" or "who's in control?" A clear example of the muddled chain-of-command intertwining multiple agencies and missions can be found in the Defense Meteorological Support Program (DMSP), the Department of Defense's primary weather satellite:

"DMSP weather satellites, provided specifically by and for Department of Defense and limited national-level operations, (currently fall under the combatant command of U.S. Strategic Command), but are controlled on a daily basis by the National Oceanographic and Atmospheric Administration under the Department of Commerce. Yet, requirements for onboard sensor tasking are provided by the Air Force Weather Agency, a direct reporting unit to the Chief of Staff, U.S. Air Force."

As stated above, Air Force Doctrine Document (AFDD) 2-2 uses DMSP as a positive example of how multiple agencies, missions and functions can be rolled up into one satellite program while still performing its duties at a high level of confidence. While great for a textbook level analysis, this example is not a true representation of the Space arena and all of its "power" players and their competing interests. Table 1 on page 15 shows just a small number of the U.S. government agencies that have a vested interest in Space.

While Space provides a significant percentage of the global command and control infrastructure, Table 1 shows the U.S. Air Force is not the sole provider in this domain. Can existing military doctrine bridge gaps between military and civil systems (i.e. DMSP and Global Positioning System) or military and 'national' systems such as the National Reconnaissance Officer and the National Security Agency, when each agency has its own way of doing things? The answer is no. Governmental Space doctrine (joint, service and multiservice) must catch up to the near-term, encompassing civil, military, commercial and national systems and its command and control aspects before a "stressed" environment (war, conflict, crisis, natural disaster, etc.) exposes its flaws at the cost of human lives. Fixing the doctrine problem is a step in the right direction, however, without wholehearted agency support from all involved players, fragmentation of Space asset control will continue to exist.

The Conundrum: U.S. Strategic Command, JSOC and Director Space Forces

With the demise of U.S. Space Command in 2002, it seemed that hand-off of Space responsibilities to U.S. Strategic Command would be seamless and a huge force-multiplier for combat forces. In the years immediately following the transition, no major changes to Space force command and control were announced, until Air Force-wide changes forced units to "operationalize" Space. In mid-2005, military leaders unveiled a new plan to unify Space as a weapon system with "centralized" command and control in order to increase (presumably deployed) joint force operational effectiveness and efficiency. This Space command and control structure plan draws from the agency currently responsible for Space (U.S. Strategic Command), a proposed "focal point" of Space activity (Joint Space Operations Center), and administratively controlling entities (U.S. Air Force's 8th and 14th Air Forces), and introduces a new construct, the Director of Space Forces. This plan seems simple when summarized as above, but becomes a bit murky when laid out graphically and with some narrative dialog as seen in Figure 1.

Joint Confusion Center?

Part of this new Space command and control plan, outlined in a memorandum from the commander, Joint Forces Component Command Space & Global Strike (JFCC SGS), to the commander, Joint Space Operations, established the Joint Space Operations Center. Its official purpose is to "ensure unity of command and unity of effort" for Space forces.

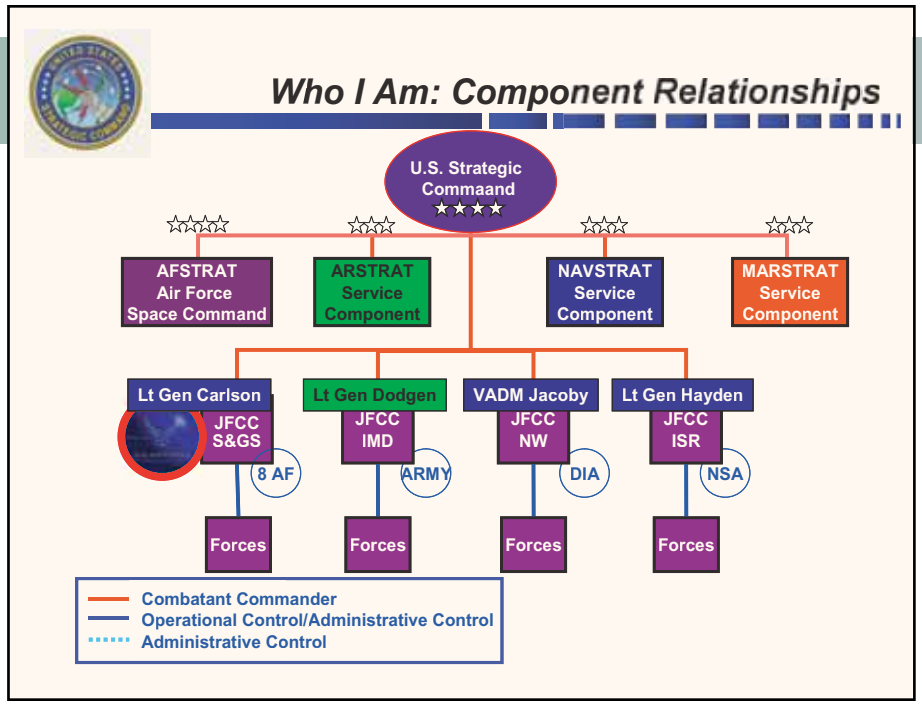

Figure 2

It should be noted, the commander, Joint Space Operations is also the 14th Air Force commander, Vandenberg Air Force Base is his stomping ground, and the commander, Space & Global Strike is the 8th Air Force commander and Barksdale Air Force Base is his home — neither location directly controls Space assets, aside from occasional launch vehicles at Vandenberg.

The Joint Space Operations Center lies directly between the service components and U.S. Strategic Command. Its divisions are similar to an Air Operations Center (AOC) layout, with plans, operations and strategy divisions. One main difference with the Joint Space Operation Center is, it is part of a "virtual AOC" planned to be one of many distributed facilities (Barksdale's Air Force Global Strike, and "other" Air Force AOCs to be determined). A huge failing in the "mirroring" of its air counterpart is the reality that the Joint Space Operation Center cannot directly control any Space assets (i.e. sensor tasking and orbital maneuvers).

With the inclusion of Joint Space Operation Center, the command (Aerospace Defense Command, Combatant Command, Tactical Command) chain gets very complex. This new Space command and control design, seen through the Joint Space Operation Center organizational chart in Figure 1, involves two U.S. Air Force major commands and two U.S. Air Force numbered air forces, all under the mantle of U.S. Strategic Command, a unified combatant command. At first glance, it seems there are new positions to clarify the chain of command from the "satellite driver" to the combatant commander, however, when delving a little deeper, it is evident that the positions listed just become additional job titles for existing commanders.

Who Am I Today? Command Responsibility in Space Command and Control

In adding to the pre-existing command and control structure, the powers-that-be compounded the responsibility hierarchy. Here is a summary of the people and titles involved in these new changes:

The Air Force Space Command commander is the Air Force liaison to Strategic Command (Air Forces Strategic Command) and the commander, Air Force Forces for U.S. Strategic Command unless the Air Force Space Combatant Commander delegates Air Force Strategic Command as the Air Force Warfighting Headquarters; in which case responsibility would fall to 8th Air Force Combatant Commander (under the Air Combat Command). In addition to the above relationships, 14th Air Force Combatant Commander (belonging to Air Force Space Command) also holds the position of Deputy Commander for Air Force Strategic Command.

This position-shifting and wearing multiple "hats" is quite surprising, especially within Air Force Space Command, since one recommendation of the Space Commission of 2000 was separating very large job responsibilities to individual positions. Taking the multiple positions of supreme importance (for example the Joint Space Operation Center commander) and stacking them with one person (i.e. 14th Air Force Combatant Commander) seems to be going against the Space Commission recommendations and against common sense. Even outside of the Space arena, multiple job titles for commanders seem to be the norm. For example, the commander, JFCC SGS is quadruple-hatted: they are also the 8th Air Force combatant commander, Air Force Strategic Command and Air Force Network Operations combatant command.

With the multiple job titles, the flow of command authority is just as unclear. In the Air Force Strategic Command/8th Air Force combatant commander reports to Air Force Space Command's combatant commander (as the commander, Air Force Forces) for U.S. Strategic Command. The operational chain (combatant command, operational command, tactical command, support) runs from the commander U.S. Strategic Command (Offutt Air Force Base), to Air Force Strategic Command commander JFCC SGS (Barksdale) then commander Joint Service Office (Vandenberg), to the warfighter. Even the proposed center of operations, the Air Force Strategic Command Air and Space Operations Center is the "virtual" AOC broken into three pieces at distanced locations: Barksdale for Air Force Global Strike, Vandenberg for Air Force Space Operations (Joint Space Operation Center) and "other" Air Force AOCs yet to be determined.

Somehow, the Air Force Strategic Command AOC will have the capability to provide command and control for U.S. Air Force Forces assigned or attached to U.S. Strategic Command and be able to serve as the "one stop shop" for all military Space power, provided "vir-

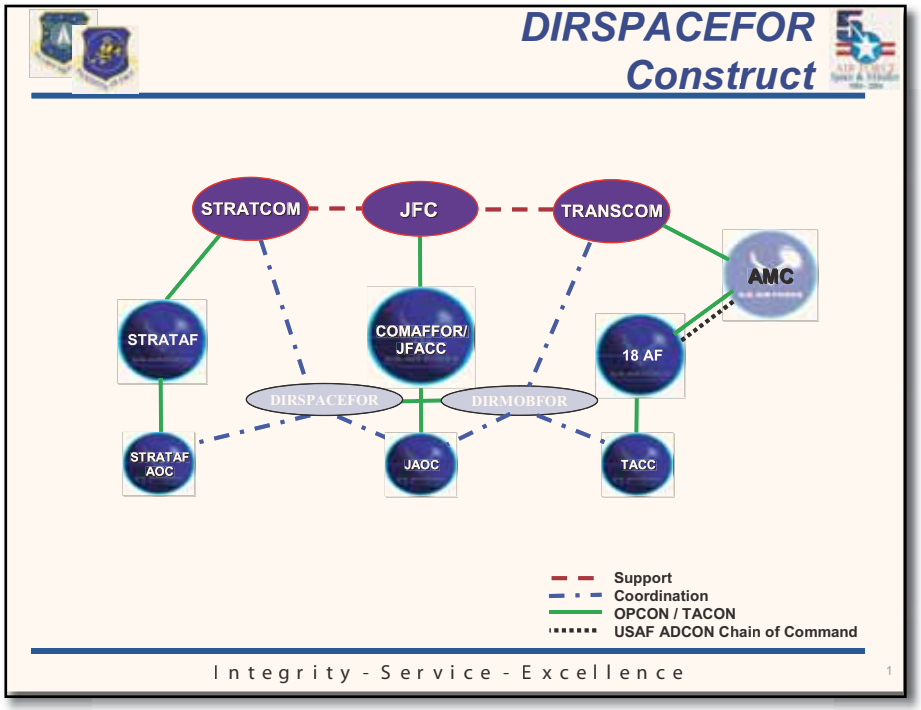

Figure 3

tual link" communications do not break down between these distanced facilities. If this does not sound dubious enough, imagine the hands-on command and control required for the number of military and National satellites on orbit. The Air Force Association's Space Almanac states as of May 31, 2004 there were 2,884 satellites in orbit, in varying states of operation (fully and partially operational, dead and in check-out). In the Dec. 7, 2005 issue of the Washington Post, journalist Katherine Shrader states:

"Currently, 43 countries own satellites and there are 413 United States and 382 other operational satellites in orbit."

Discounting the civil and commercial satellites, even the sanest individual could not convincingly believe that the Joint Space Operation Center could command, control and disseminate the products from most, if not all, military and National Space systems.

Blast from the Past? SAC Lives!

"Senior commanders making decisions about operations, combined with subordinates free to exercise initiative in executing those decisions, make up the heart of C2 — centralized control and decentralized execution."

— Air Force Doctrine Document 2-8, Command and Control

These command and control changes are a bit different than another plan described in a memo by GEN John P. Jumper as Chief of Staff, U.S. Air Force to ADM James O. Ellis Jr., then U.S. Strategic Command combatant commander dated Feb. 23, 2004. That memorandum stated that three separate numbered air force headquarters, 8th Air Force (Bombers), 14th Air Force (Space) and 20th Air Force (ICBMs) would combine to form Air Force Strategic Command. The combination of these three numbered air forces into Air Force Strategic Command, on the surface, appears to reconstitute a large portion of Strategic Air Command from the days of the Cold War. Under the Strategic Air Command, the headquarters at Offutt Air Force Base controlled these numbered air forces, just as U.S. Strategic Command does today. While Strategic Air Command did a wonderful job against its programmed threat, resurrecting it in similar forms may not constitute the best command and control example for Space assets in the 21st century.

A Conductor with No Orchestra: Director of Space Forces

Another area of focus has been in the designation of Space "coordinating" authority and creation of a position on the Combined/Joint Forces Air Component Commander staff called the Director of Space Forces. As shown in Figure 3, the name and position is similar to the Director of Mobility Forces, another function within the AOC, with a key difference. This staff position is supposed to bridge the gap between strategic, operational and tactical application of Space power. The Director of Space Forces' role seems to exist at the operational level, but reality shows that misconception is due to their position's location at the Combined AOC. All support provided is actually tactical. In a similar vein, the Joint Space Operation Center is also tactically orientated because it cannot actually "control" the strategic assets it monitors on ownership rights alone. Table 2

The Director of Space Forces is a relatively new concept, assigned to support the Combined Forces Air Component Command (CFACC) at the operational level of war. The Director's central role is the senior Space expert on the CFACC staff, and accordingly has a complement of eight to 12 per-

Positions and their Level of War

Agency	Level of War	Level of Command	Space Forces
USSTRATCOM	Strategic/Operational	COCOM	All military
AFSPC	N/A	OPCON/ADCON	Air Force
JFCC SGS	Operational	TACON (?)	Air Force
JSpOC	Operational (?)	*	Air Force (Navy?)
DirSpaceFor/DS4	Operational/Tactical	*	(?)

* Space Control Authority, not direct command

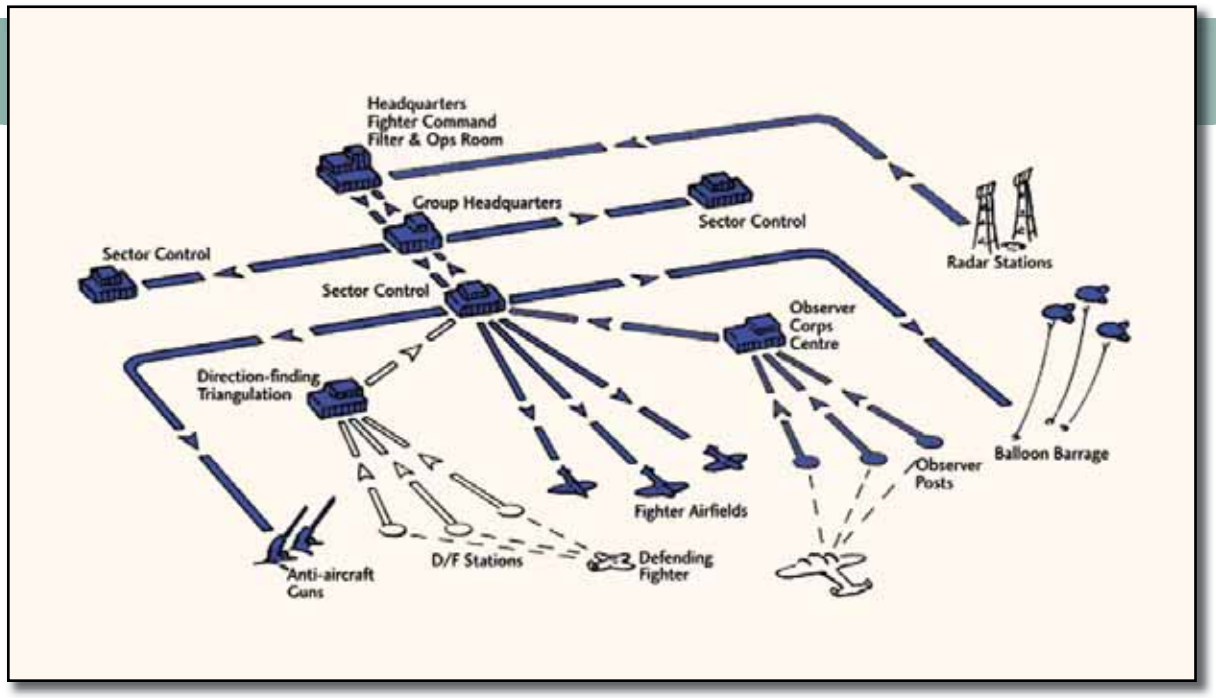

Figure 4

sonnel including Space weapons officers (W13S). The Director's job description requires delegated Space coordinating authority obtained by the CFACC, who in turn received it from the Combined Forces Commander. Before the creation of the Director of Space Forces, a Space support team performed advisory and support functions; there was no existing concept of Space Control Authority. One important fact to note is Director of Space Forces offers only coordination, via the Space Control Authority, not command and control of any forces. This is the key difference between the Director of Mobility Forces and the Director of Space Forces — the Director of Mobility Forces can actually control taskings for inter- and intra-theater assets (in this case, mobility assets like cargo, tanker and personnel transport aircraft).

Adherence to joint military doctrine gives clear messages about the transferability of command authority. Joint Pub 3-14, Joint Doctrine for Space Operations, dated Aug. 9, 2002, discusses "Space authority" to the Joint Force Commander for coordinating Space operations, integrating Space capabilities, and responsibility for in-theater joint Space operations planning. What does joint doctrine discuss about coordinating authority? Nothing, as it exists in the minds of Air Force doctrine writers alone. Stated by AFDD 1-1, coordinating authority is:

(1) The authority delegated to a commander or individual for coordinating specific functions and activities involving forces of two or more military departments or two or more forces of the same Service.
(2) The commander can require consultation between the agencies involved but does not have the authority to compel agreement.
(3) More applicable to planning and similar activities than to operations.
(4) May be exercised by commanders or individuals at any echelon at or below the level of combatant command.
(5) A consultation relationship between commanders, not an authority by which command may be exercised.
(6) Not a command authority.

On the surface, Director of Space Forces appears to be a good centralizing solution on bringing Space power and capabilities to the warfighter. However, with the Director being located in the AOC as part of the commander, Joint Force Air Component Command's staff, their view of Space is limited to the tactical level as part of air operations. What about support for the combined forces land and maritime component commanders of the joint fight? Where is the coordination and command and control for them in the Space picture? The Director does not have much visibility outside the theater (except through reachback to the Joint Space Operation Center), and has very little visibility within theater outside the AOC.

Providing the Director with his information flow, the Joint Space Operation Center offers the same problem but on a larger scale: it is supposed to operate at all levels of war (strategic, operational and tactical). But in its current form as a non-joint entity, Joint Space Operation Center does not carry enough weight to authoritatively deal with all agencies required. The head of the Joint Space Operation Center has Global Space Coordinating Authority, which amounts to little for the joint fighting force and has no influence beyond Air Force Space assets, equaling the uselessness provided by the Director of Space Forces but on a global scale. Coordination authority has no teeth; it is only a short-term solution.

Concerning Air Force Space Forces, Space Control Authority is the wrong focus. Coordination and cooperation between varying entities is not leadership. The Director of Space Forces position provides neither command nor control; during a fast paced campaign, the coordinating process could waste valuable time and effort. Seen from an operational sense, Space Control Authority and Global Space Coordinating Authority provide unnecessary bureaucratic layers. This current setup fits outdated and outmoded doctrine, which is outpaced by new events constantly. The Director of Space Forces responsibility does not solve any fundamental issues (i.e. "Who controls Space?") or pave the way for future flexibility. This current structure of Space Control Authority may suffice in the short term provided the system is not stressed due to intense adversary action. How long will this situation continue?

Concerns

One mantra is always preached throughout U.S. Air Force doctrine and power point briefings: centralized decision-making, decentralized execution. Yet, the current structure of Space is a thinly spread

polyglot of Space power using products and services that are in high demand by everyone (military and civilian). At best, what we currently have is fragmented, compartmentalized decision-making and very little decentralized execution, if any. That only covers the U.S. military. The situation becomes much worse when we introduce the headaches involving information sharing with other U.S. government agencies.

Raising the complexity of the problem is sharing information with coalition partners. In a combined operations center (i.e. the Combined AOC), the information dissemination problem poses many questions: Who decides what information needs to be shared and how much? Who else has indigenous Space capabilities? What do primary allies and/or host nations need to know and what is their usage or level of understanding? Do we include end user products like Global Positioning System, weather data and imagery?

Regardless of the answers, history has shown that allies usually equate to short-term fair weather friends, in most cases. Usually, their strategic concerns are usually not on par with the United States'. Even in rare cases when they are, sometimes governments are one election or revolution away from change. Historical evidence of recent events in Spain and Pakistan, and the 1979 overthrow of the Shah in Iran show the likelihood of this. What happens when the U.S. embraces those countries, sharing knowledge of our full capabilities in Space and then they go bad?

Historical Case Study: The Royal Air Force and the Battle of Britain

In 1940, Britain's Royal Air Force had the most modern air defense system, while the Germans had the most modern air force. The Royal Air Force had a command and control system with outstanding fighters, ground controllers and new overlapping radar with centralized control. In comparison, the Luftwaffe was the only air force in the world technologically and operationally prepared for a strategic bombing campaign. They possessed capable bombers, long-range fighters and had "blind" bombing and navigation systems for guiding planes to targets. Intelligence, however, was not their forte. Estimates issued just prior to the Battle of Britain inflated German superiority and underplayed British strengths, including a lack of mention on the Royal Air Force radar system plus a condescending opinion on Fighter Command's command and control:

"inflexible, formations are rigidly attached to their home bases . . . command at low level is generally energetic but lacks tactical skill."

A single German Luftflotte (unity of command) controlled both fighters and bombers in combined operations, contrasting the Royal Air Force with separate command chains for the two tasks. In July 1940, the Royal Air Force had a total strength of 640 fighters, against more than 2600 Luftwaffe bombers and fighters. To employ effective economy of force and mass the limited fighter strength, Britain had a simplistic command and control defense system that maximized all the weapons available. Each group was split into sectors with Royal Air Force stations in each, one of which was the Sector Control Station, the lowest level of command and control in the system yet it seemed to perform the operational level of war. All the Sector Control Stations reported to the Group Headquarters, and they in turn reported to Fighter Command Headquarters. This headquarters acted as a filter and communications center. See Figure 4 on page 19.

Central to situational awareness were coastal radar stations, which had sufficient range to detect formations while still over France. Contacts were reported to Fighter Command Headquarters where it was plotted on a large map (the 'big board') while simultaneously passed to the Group Headquarters, who passed it down to the Sector Control affected by the plot. Observer posts reported the formation once they had crossed the coast and were behind the radar. They reported to Observer Corps Centers, who passed the information on to their Sector Control, then to Group Headquarters, who in turn sent it to Fighter Command Headquarters and the plot of the raid was kept up to date.

All information was passed up or down to the Sector Control, giving them accurate situational awareness and they directly controlled the defenses: balloons, anti-aircraft guns and fighters. Without this vital system, resources (time and fuel) would have been wasted in constant airborne patrolling of the coast; the full effect of limited resources would not have been brought to bear and air raids could have made it to their targets with little to no warning at all. All information was transmitted to every sector to keep situational awareness spread throughout the command system. By doing this, the loss of a single Sector Control room did not limit the elastic, effective defense.

How many U.S. intelligence estimates reflect the exact same words and attitude toward our potential opponents? Cumbersome and technologically superior based command and control does not necessarily equate to victory over a simplistic, streamlined command and control organization fighting for survival.

An In-Place Solution: U.S. Strategic Command

What is the best solution? One need not look further than the foundation U.S. Strategic Command provides, and then expand on the basics: firm command and control by U.S. Strategic Command of all military Space and direct linkage to other government agencies with Space assets with tasking authority and setting priorities, with appropriate levels of assumable authority in time of war for other assets. The in-place structure of U.S. Strategic Command offers an excellent framework in which to build. Since U.S. Strategic Command already has a combatant command for strategic forces and should not have anything below it concerning Space forces, any lesser level of command (Operation Control or Tactical Control) hampers their ability to provide true unity of joint Space power. Only U.S. Strategic Command has, with com-

batant command, the authority for relations with Department of Defense agencies and weight to deal with other agencies.

In addition, Joint Space Operation Center should exist as an organic unit to U.S. Strategic Command, not a "for-hire" unit ran by a Service-specific level of command (i.e. U.S. Air Force numbered air force). Since the Air Force firmly believes in the centralization of air power, allowing it to dominate the entire theater operating area (in the form of the CFACC), the Joint Space Operation Center concept goes against that belief on the joint force level. When the Air Force deploys forces, they become part of a geographic combatant command. Can't natural centralization evolve by joint Space power through U.S. Strategic Command?

A model similar to the Royal Air Force Fighter Command in 1940 would have a central command and control node physically located at Offutt Air Force Base in Nebraska or Cheyenne Mountain in Colorado (or have one back up another). The primary location is not important as long as the chain of command is directly from the commander U.S. Strategic Command to the command and control node. The Space command and control system can be further streamlined from the Royal Air Force model, eliminating "multiple sector control centers" and "Group Headquarters," which only served to centralize and consolidate sector controls. Unless the Joint Space Operation Center takes the place of "Group Headquarters" and the sector control centers are the actual units that deal directly with Space assets, the Joint Space Operation Center should have actual control of all military Space assets (Army, Navy & Air Force) with assigned liaisons from all agencies/departments of the government with Space assets. An incredibly critical component to maximizing Space power, those liaisons also must have a level of authority to enact command and control decision making and implementation. To do otherwise, leaves the system with an ineffective, inelastic "message taking board" and not a dynamic, flexible, responsive command and control to fight our future wars.

What is Best for the Future?

Distributed warfare equals a coordination nightmare and that's at the tactical level. Until we develop uninterruptable instantaneous communications, the system currently in place will not be sufficiently responsive to rapidly changing battlefields. Self-imposed vulnerabilities in the form of critical communication nodes (i.e. Director of Space Forces reachback to Joint Space Operation Center, distributed "virtual" AOCs) hamper our ability to utilize our technologically superior assets to either mass or perform economy of force. Modern successful joint maneuver warfare depends upon speed of command. While there are plenty of supporting agencies and partners in existence, their distributed nature will have an inherent flaw that needs to be resolved through an appropriate command and control scheme or we will have severe gaps. Without precision guidance, there can be no precision weapons. Without robust, reliable communication, there can be no reachback. Without a clear, dominant command and control of forces, there can be no assurance of victory.

Once the military side of the house is brought into order with this clear command and control scheme, the other U.S. government agencies with Space assets will naturally follow suit. Evolution of U.S. Space assets into a solid, unified Space power is a natural progression. Taking from the adversary's point of view, we are already unified: they do not care if they send the 14th Air Force Joint Space Operation Center into crisis mode or if their attack is directed towards a 2nd Space Operations Squadron satellite or 1st Space Battalion crew. A U.S. satellite or Space capability is seen as just that: a U.S. asset to be attacked. The more we complicate the command and control process, the slower our response becomes and greater the effect on our warfighters.

Mullen, R. "Dearth of Reserves Threatens U.S., Expert Says", Defense Today, Aug. 19, 2005, pg 1

Joint Publication JP 1-02, DOD Dictionary of Military and Associated Terms: Command and Control (C2): "The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. C2 functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission."

Coakley, T. (1992). Command and Control for War and Peace. NDU Press, pgs 60-63

Spires, D. (2 Beyond Horizons chapter 1

Ibid.

AFDD 2-2 page 23

'Satellite driver' is a generic term for the person or unit who operates a Space system.

United States Strategic Command Command Relationships,

AFSPC Public Affairs, Key Events in AFSPC History, http://www.peterson.af.mil/hqafspc/history/chronology.htm, Accessed on 19 January 2006

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E-mail message traffic between author and Captain Ray Fernandez, HQ AFDC/DR, USAF Doctrine Center, Maxwell, AFB, Nov. 15-16, 2005

Air Force Association, Space Almanac 2004, Air Force Magazine, May 31, 2004, pg 28.

Director of Space Forces Briefing, Apr. 13, 2005

Joint Publication JP 1-02, DOD Dictionary of Military and Associated Terms: Operational Level of War: "the level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or Space than do tactics; they ensure the logistic and administrative support of tactical forces, and provide the means by which tactical successes are exploited to achieve strategic objectives."

"How Did 'The Few' Win"

Battle of Britain homepage, UK Ministry of Defence, http://www.raf.mod.uk/bob1940/bobhome.html

Joint Publication 3-0, page II-6: Combatant Command: "COCOM is the command authority over assigned forces vested only in the commanders of combatant commands by title 10, USC, section 164, or as directed by the President in the UCP, and cannot be delegated or transferred."

Selected agencies include: NASIC/AIA, NSA, DIA, DISA, NGA, CIA, AFWA, DTRA, JSC, AFTAC, NOAA, NASA

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