

# **Articulation beyond the Bumper Sticker**

## **Revamping an Incomplete and Confusing Master Tenet**

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The US Air Force should adjust its time-honored master tenet for the employment of airpower: centralized control and decentralized execution (CC&DE). This Mosaic Law equivalent remains as valid today as when the airpower forefathers divined it amidst their operational context. It is, nonetheless, incomplete.

The United States conducts air operations over a wide spectrum of conflicts producing many varied conditions. Correspondingly, the military has adapted. From counterinsurgency operations to thermo-nuclear deterrence, America's strength has been the ability to create flexibility to effectively respond to the types of wars it may face. Why then should the Air Force assume its master tenet is the right approach to all operational contexts? Many Airmen view the master tenet as the only way to employ air and space power; however, restrictive doctrine and thinking have contributed to the master tenet's unenviable status as a "bumper sticker."

This paper considers why centralized control dominates an Airman's thinking, the doctrinal history of centralized control and current doctrinal concerns, how different operational contexts impact the Air Force's master tenet, key doctrinal strengths and weaknesses, and how the master tenet can be improved upon.

### **Why Centralized Control Dominates Airmen's Thinking**

What is the basis for an Airman's total commitment to this age-old edict? Some may argue that the Airman's allegiance stems from fear—fear of losing the status of an independent service. Centralized control holds a special place in airpower history, underpinning the argument that led to an independent US Air Force in 1947. Therefore, if an Airman compromises—even one iota—on the master tenet, it would be tantamount to undermining the value of an independent US

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Air Force. Most would agree that airpower has come of age in the last 63 years, based on the experiences in World War II, Korea, Vietnam, and Iraq, with the chances of returning the Air Force back to the Army slim to none.<sup>1</sup> Nevertheless, dogged defense of centralized control may, in part, be explained by the fear of losing independence.

Paranoia is not the only explanation for an Airman's loyalty to the master tenet. The origins for such loyalty can be traced back to lessons learned by early airpower practitioners. As a result of the British experience prior to and during World War II and the US experience during that war, Airmen would rightly conclude that centralization (command and control) was the foundation to effective airpower operations.

### **British Experience**

Following the Battle of France in 1940, numerous events shaped Britain's approach to the employment of airpower. The Battle of Britain, lessons learned in North Africa, numerous exercises, and technological advances all contributed to Britain's approach to joint operations. During the fall of 1940, exercises in Northern Ireland resulted in air support controls which embodied the technical and organizational means to enhance support of ground forces. Another development emphasized colocated army-air headquarters and a signals network that linked forward and rear airfields with the joint army-air headquarters and deployed army divisions and brigades. Sorting out the best of the emerging systems led to delays. Even more daunting was introducing these concepts in the crucible of battle against the Germans in North Africa during WWII. However, they proved effective once fully developed. A hybrid of the two systems, developed by Air Marshals Arthur William Tedder and Arthur "Mary" Coningham, gained acceptance in the summer of 1942.<sup>2</sup>

During Operations Compass's and Crusader's (autumn of 1940 through the winter of 1941-42) offensive operations against Italian forces in Libya, British airmen learned that colocating with army headquarters and leveraging technological advances in communications allowed airpower's flexibility to gain air superiority. This enabled airpower to be effective in the ground-support role by massing airpower at a decisive point. The new doctrine proved far superior to German blitzkrieg.<sup>3</sup>

"The success achieved is correctly attributed to the system devised by Air Chief Marshal Arthur Tedder and Air Vice Marshal Arthur Coningham, but the system alone was not antecedent to successful operations. . . . Continuous and intimate collaboration between Coningham and [Bernard] Montgomery [Eighth Army commander]

accounts for the triumphant application of airpower” in North Africa’s Western Desert in 1942.<sup>4</sup> The British learned that properly employing airpower in its different roles at the right place and time and in the right amount was far more advantageous than dividing airpower between the land commanders. Airpower’s ability to morph during operations would not materialize if shackled by a ground commander who is (1) unable to think outside the ground force limitations; and (2) unable to consider the theater-wide picture—concerned only with one “fight”—and thus does not take advantage of opportunities to influence the fight outside the geographic “box.”

To realize these advantages, airmen needed a mechanism to wield airpower to leverage its flexibility. The mechanism was central control, in the form of an airman who commanded air assets and was coequal and preferably colocated with the ground commander. Sadly, the Americans and British did not incorporate the lessons learned and executed by the British during Operation Torch, the massive operation in November 1942 that intended to remove the Axis forces from Northern Africa.

### **American Experience**

An untested American airpower doctrine—Field Manual (FM) 31-35, *Aviation in Support of Ground Operations*—bounded the initial foray into joint and combined operations by the Americans and British. On paper it looked sound, with “a comprehensive tactical air control system: a central air command, a sophisticated network of ASC [air support control] centres and various levels of communications between the ground and air forces.”<sup>5</sup> However, the theory had not been exercised.

The doctrine’s emphasis on corps-level support and the ground commander’s decision authority for target priority and selection led to dispersion and subordination of air assets to the “narrow close-support interests of the ground commanders.”<sup>6</sup> Despite Britain’s successful air operations in the Western Desert, Operation Torch planners did not consult with Tedder and Coningham, the chief architects, for advice. As a result, air assets were spread throughout the close battle, putting up an “air umbrella” (flying artillery) to protect ground units and thus preventing airpower from massing decisively. Strategic targets such as enemy aerodromes and ports, which could have had a more significant long-term effect on overall operations, were not considered high priority and thus were not engaged. Brig Gen Elwood “Pete” Quesada, 12th Fighter Command commander at the time, said that “there was an abundance of ignorance” from US Army Air Corps Airmen during Operation Torch.<sup>7</sup>

In contrast, Erwin Rommel massed Axis air assets and gained air superiority by outnumbering Allied forces at decisive points. With air superiority, Rommel eroded Allied defense in depth of key airfields and supply depots on the Algerian coast. Allied forces used two mountain ranges and their key passes to form defense in depth. By mid-February 1943, Rommel had driven Allied forces from the first mountain range, the Eastern Dorsal, and was advancing toward the Western Dorsal, the second mountain range, and one of its key passes, Kasserine. It was during the Kasserine crisis that a number of things changed.<sup>8</sup>

Allied forces reorganized, based on changes proposed at the Casablanca conference in January 1943. In essence, the British implemented lessons learned. Airpower was controlled centrally by an airman who was coequal with the ground commander. Gen Carl Spaatz established and commanded the Northwest African Air Force and was supported by Marshal Coningham, who commanded a subelement called the Northwest African Tactical Air Force (NATAF). With control of airpower, Coningham halted umbrella missions and concentrated forces against targets, achieving air superiority. With air superiority, the NATAF gained the upper hand as it punished Rommel while he retreated to the Eastern Dorsal after 20 February 1943. Operation Torch tactics changed to fit the British model and eventually resulted in the United States' wholesale embracement of the UK doctrine in the form of FM 100-20, *Command and Employment of Airpower*.<sup>9</sup> "In short, the Americans adopted the British doctrine in toto," and Axis powers surrendered to US and British commanders two months after Operation Torch adopted these new command relationships.<sup>10</sup>

### **North Africa 1943—A Major Combat Operation**

FM 100-20 is a product of its environment, which was unlimited in nature where overwhelming force was required to destroy the enemy to achieve military and strategic objectives.<sup>11</sup> Achieving air superiority, establishing airpower as a coequal to land power, and exploiting airpower's inherent flexibility to be concentrated at a decisive point were key advantages enabled by centralized control.<sup>12</sup>

Air superiority was necessary, as in most conflicts involving airpower. However, it is important to point out the context in which air superiority was gained. Air superiority for the Allied forces was not a given; it had to be wrestled from an enemy who possessed a legitimate air threat—one fully capable of gaining and maintaining air superiority for itself. Next, the operational environment allowed combatants to identify decisive points where concentrated combat power meant the

difference between success and failure. The environment favored an approach which leveraged the flexibility of airpower. Air commanders exploited decisive points because the nature of the fight was homogeneous, or consistent across the area of operations. Thus, the air commander was more likely to understand the operational pros and cons of flexibly applying airpower to meet the changing needs across operational areas.

The doctrine of centralized control was essentially formed in a conventional operational environment—force-on-force on a linear battlefield, a type of fight the United States has become very adept in prosecuting. Therefore, centralized control, through a single Airman commander, is rooted in validity. It is understandable why Airmen have created and clung to the master tenet. Given the conditions and operational context, centralized control was a logical and pragmatic approach to fully exploit airpower. The tendency of Airmen to default to centralized control is warranted. Centralized control is still relevant today; however, its relevancy does not necessarily mean it is without shortcomings.

### **Doctrinal History of Centralized Control and Decentralized Execution, 1954–2010**

It is important to establish a background of post-WWII doctrine with regard to CC&DE because it serves as a foundation to evaluate and determine possible improvements. Historically, what does USAF and joint doctrine reveal about CC&DE?

In 1954 the USAF's doctrinal approach to managing air operations was "centralized overall direction and decentralized control of operations."<sup>13</sup> In 1955 USAF doctrine described control in the context of command: when determining command relationships, "control should always be placed at a level which is fully able to employ the capabilities of the forces."<sup>14</sup> In 1971 it changed to "aerospace forces must be centrally allocated and directed," and "mission control and execution of specific tasks must be decentralized."<sup>15</sup> In 1975 the doctrine first used the terms *centralized control* and *decentralized execution* but added *coordinated effort*, a third pillar deemed fundamental to aerospace operations.<sup>16</sup> In 1984 coordinated effort was not explicitly linked to CC&DE, and the dual-pronged master tenet became gospel for directing and executing aerospace forces.<sup>17</sup> The 2003 version of doctrine continues to state the value of CC&DE. The language describing what has become CC&DE has been far from consistent over the years and has contributed to a culture of confusion concern-

ing the master tenet and its relationship to command. The confusion continues today.

## **Current Doctrine and Concerns**

There is confusion over the relationship between command and control. The terms are mistakenly used interchangeably.<sup>18</sup>

### **Command**

An overriding aspect to the debate over CC&DE is command. Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines *command* as “the authority that a commander in the Armed Forces lawfully exercises over subordinates by virtue of rank or assignment. Command includes the authority and responsibility for effectively using available resources and for planning the employment . . . , organizing, directing, coordinating, and controlling [of] military forces for the accomplishment of assigned missions. It also includes responsibility for health, welfare, morale, and discipline of assigned personnel.”<sup>19</sup>

While control is inherent to command, these terms are not synonymous. Command has to do with organizational issues. For example, should command of air assets be given to a single Airman, or should it be divided among commanders? Control has to do with operational issues, such as whether a single commander should centrally control air assets or “allow decentralized control so that lower echelon commanders can develop and implement plans in accordance with JFACC [joint force air component commander] intent.”<sup>20</sup> Command and control are distinct: it is clear from doctrine that control can be delegated, whereas command cannot. Just as the commander can delegate authority but not responsibility, so can a commander delegate control but not command. Command is the ability to give orders. Control is implementing those orders. Even though military terminology has tended to put them together, they are two distinct things. Since control is inherent to command, why does the USAF master tenet focus on centralized control instead of centralized command?

The following excerpt from a proposed revision in USAF doctrine continues the Air Force’s long-standing focus on and fascination with control: “Centralized control empowers the JFACC to respond to changes in the operational environment.”<sup>21</sup> Surely, the JFACC is the commander and does not need control to be empowered. It is the element of command that should be emphasized. This muddled interpretation of the relationship between command and control may be a

major source of confusion and may be why Airmen and the other services struggle to correctly understand the USAF's master tenet. USAF doctrine seems to have placed the emphasis on a part (control) rather than the whole (command).

### **Control**

JP 1-02 defines control in two ways—at the operational and tactical levels. *Operational control* is defined as “organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission.”<sup>22</sup> *Tactical control* is defined as “detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned.”<sup>23</sup>

Both Air Force and joint air and space operations doctrine define control from a centralized perspective, espousing centralized control as the best way to conduct air operations. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, defines *centralized control* as “the planning, direction, prioritization, synchronization, integration, and deconfliction of air and space capabilities to achieve the objectives of the joint force commander.”<sup>24</sup> JP 3-30, *Command and Control for Joint Air Operations*, also offers the virtues of centralized control. For example, it states that centralized control adds “coherence, guidance and organization to the air effort and the ability to focus the tremendous impact of air capabilities wherever needed across the theater of operations.”<sup>25</sup>

Although doctrine portrays centralized control as beneficial, JP 3-30 implies other ways to control joint air operations: “Joint air operations are normally conducted using centralized control.”<sup>26</sup> However, there is no explanation of what “other than normal” might look like in practice. Effectively, doctrine views centralized control as not merely the best way, but the only way, to control air and space forces. Since current doctrine does not go into detail about how to control air operations other than centrally, it can be assumed that the conditions warranting something other than centralized control have never occurred (since doctrine is based on best practices during operations) or have not occurred enough to warrant inclusion into the USAF's codified system of best practices.

It is clear that within US doctrine there are differences in how control is viewed. JP 1-02 makes allowances for effective control of forces at the operational as well as the tactical level. Though not explicitly mentioned, this would include air and space forces. On the other hand, air and space operations doctrine, JP 3-30 and AFDD 1, re-

ports effective control only in the context of the operational (centralized) level.

### **Decentralized Execution**

At first glance, doctrine regarding decentralized execution seems more unified and less confusing than either command or control. AFDD 1, JP 1-02, and JP 3-30 define execution in terms of decentralization. The doctrine explicitly defines decentralized execution but not execution. AFDD 1, JP 1-02, and JP 3-30 characterize decentralized execution as “delegation of execution authority.” However, AFDD 1 and JP 3-30 say that “decentralized execution helps achieve effective span of control and flexibility to deal with changes and uncertainty.”<sup>27</sup> Although execution seems straightforward, it is not.

As Daniel Baltrusaitis states in *Centralized Control with Decentralized Execution*, “Current AF doctrine fails to adequately and consistently define the central terms of command, control and execution. This causes major weaknesses in the debate over command, control and execution concepts because there is no agreed upon definition of the terms.”<sup>28</sup> This has led to varying interpretations.

In *Command in Air War*, Lt Col Michael Kometer observes that “what control is to one may be execution to another.”<sup>29</sup> Likewise, what may be centralized at one echelon of the organization could be viewed as decentralization to another. For example, I asked career–Air Force senior space officers about the nature of space operations with respect to control and execution. One concluded that space operated under decentralized command and centralized execution (notice the word *control* was not used), while another believed that space conformed to centralized control, decentralized execution.<sup>30</sup> In another example, the letter “C” in AWACS (Airborne Warning and Control System, a common reference to the E-3 Sentry), stands for *control*. To battle-manager crew members, this is an accurate, functional description of what they do at the tactical level. However, the combined air and space operations center (CAOC) may view those same activities, from the operational level, as decentralized execution.

This doctrinal analysis offers insight into the arguments over CC&DE, but it doesn’t answer all the questions. In fact it raises an important one: can something other than CC&DE be a better option for air and space operations? When we consider this question through the lens of differing operational environments, it adds clarity.

## **One Size Does Not Fit All**

There are weaknesses with the master tenet. It is not the optimal approach for every situation—it is necessary but not sufficient to overcome the vast diversity of challenges posed by airpower employment across the spectrum of operations.

FM 100-20 represented the best way to use airpower—one might say an optimization—based on the operational environment of WWII. However, the conditions which shaped and led to centralized control were not universal. One could reason, then, given different operational circumstances and conditions, that centralized control may not be the optimal approach in conducting air operations. Control is a subset of command; therefore, it is reasonable to conclude that ideas on command could also apply to control. Martin van Creveld writes about varied contexts and the impact these variations have on so-called immutable laws of command. He suggests that since “command [is] so intimately bound up with numerous other factors that shape war, the pronouncement of one or more ‘master principles’ that should govern its structure and the way it operates is impossible.”<sup>31</sup>

What about other operational environments? What are the differences, and how might they affect the conduct of air and space operations? Is CC&DE right for every situation—a counterinsurgency, for instance? Van Creveld also explains that “the fundamentals of command in conventional war may require modification, even inversion, in a counterinsurgency environment where purely military factors are less important than psychological and political ones.”<sup>32</sup> Gen James N. Mattis, commander, US Joint Forces Command, said of the current counterinsurgency in Afghanistan, “Times are changing. We are having to decentralize, in terms of decision making, decentralize in terms of assets. . . . It’s wasteful but highly effective.”<sup>33</sup> He characterized the type of war America is in as “not the American way of war. . . . It’s outside our comfort zone. We have to overcome this as our reality meets the reality on the ground—not the reality as we want it to be but the reality as it exists.”<sup>34</sup> So what is the reality of this war? What are the conditions that make it different from the conditions under which centralized control was forged?

The contextual divergence is staggering. First, counterinsurgencies are limited in nature, and the use of overwhelming force can possibly cause negative political fallout that can be detrimental to achieving military and strategic objectives. The United States and its allies had air superiority by default—the enemy posed no significant air capability. Next, the notion of a decisive point or points where massing combat capability decides the outcome is simply not applicable in a

counterinsurgency. If massing airpower is less advantageous, then the mechanism (centralized control) that enables the massing of airpower is also less advantageous.

The current insurgency in Afghanistan is comprised of many varied mini-insurgencies—each with different challenges and requiring tailored approaches. Afghanistan is a nation of ethnic tribes. It becomes difficult for a single commander to understand interrelationships between the mini-insurgencies as capability is moved between local insurgencies, as opposed to the homogeneity of the North Africa operation in WWII. It is reasonable to conclude that this type of operational environment may benefit from an increased level of decentralization. In fact, the land forces have done just that by “pushing” the planning down to the division and, in some cases, to the brigade.

The shift toward decentralization in response to the diverse nature of counterinsurgencies is understandable for land forces but does not apply to air and space power. This view is shortsighted and does not take into account many instances where the Air Force has departed from its master tenet, based on the conditions. For example, “Air Force participation in Operations Northern Watch, Southern Watch, Allied Force, and Deliberate Force emphasize [*sic*] the use of centralized execution to manage the application of air power [because of political influence and force protection requirements for coalition aircraft]. In each instance, the operation’s small scale [and] limited objectives . . . allowed the C/JFACC to pay individual attention to the execution of the air effort and thereby to achieve the desired political and military objectives.”<sup>35</sup>

The context and environment influence choices on how to employ airpower. The experiences of Lt Col Clint Hinote, while serving as chief of strategy for the Central Command combined force air component commander responsible for surge operations in Iraq, convinced him that asking five questions can help determine how airpower is best controlled and executed: (1) What is the nature of the operation? (2) Where should flexibility be preserved? (3) How many assets are available? (4) What is the geographical range of effects? and (5) Who has the best situational awareness?<sup>36</sup> Properly answering and appropriately responding to the questions are necessary but not sufficient for improved command and control. Trust and cooperation between components are also critical.

### **Lack of Trust and Cooperation**

The AF doctrinal approach to centralized control, coupled with Army trends in further decentralizing planning, has made it more difficult for air and ground planners to cooperate. A key characteristic of

centralized control is the Airman's approach to planning. Significant planning occurs centrally at the CAOC, although detailed planning also occurs at lower levels upon receipt of the air tasking order.<sup>37</sup> Historically, the Army's approach has been more decentralized through mission-type orders. This different approach has led to USAF deficiencies in planning entities for the Army at every echelon.<sup>38</sup>

When critical Army planning occurs at the corps level, the USAF's doctrinal approach is appropriate and works relatively well, heavily impacting and shaping subordinate echelons such as in Operation Desert Storm.<sup>39</sup> The counterinsurgencies in Iraq and Afghanistan, however, have caused the Army to change. These insurgencies can be described as made up of differing insurgencies—each with its own specifics requiring its own approach. A senior leader at the Air Command and Control workshop describes the wars in Afghanistan and Iraq as not two conflicts but 12, the implication being that they are so different they should be considered as separate fights.<sup>40</sup>

The components no longer operate in a coordinated fashion as they did during the first phase of Operation Iraqi Freedom. Instead of operating in support of the joint force commander's grand scheme of maneuver, they now operate in "a highly decentralized fight, driven largely by independent actions of lower level tactical commanders."<sup>41</sup> What does all of this mean to the air component?

The absence of robust air planning capability at lower Army echelons results in Airmen not providing air expertise where it matters. Often, ground commanders do not realize all the benefits airpower could provide because air isn't an integral part of the planning. Sometimes this can cause ill-conceived and poorly executed operations. Lt Col William Pinter believes that "the air component needs to commit to developing the necessary resources to allow for the full degree of air-ground integration to occur at the lowest planning levels required for effective combat operations."<sup>42</sup> Operation Anaconda highlighted operational weaknesses that can occur due to, among other things, a lack of integrated planning between air and ground forces.<sup>43</sup>

Another negative is missed opportunities for the joint planning that fosters trust between air and ground components. The more the Army decentralizes, the more profound the issue becomes. With planning by land forces occurring at lower levels, it has become even more difficult for the air and land forces to plan together to best leverage what airpower can contribute. This has resulted in a perceived wider divide between air and ground planners.

Colonel Hinote comments that "not being in the mud" with the ground planners limits opportunities to build trust. "There are not many shared experiences between the air and ground. . . . There is no

sense of trust between air planners at the CAOC and ground planners at the many decentralized fights which are going on.”<sup>44</sup> This general sentiment is shared by Colonel Kometer, who also served as chief of strategy in the Al Udeid CAOC.<sup>45</sup>

## **Conclusions and Recommendations**

From the analysis above flow three broad conclusions. The first is that the master tenet is incomplete; it does not address the variety of ways air and space power has been managed. Differing operational contexts have led to different, but valid, ways to conduct air and space power operations. For the most part they are not addressed in USAF doctrine. The second main conclusion is that USAF doctrine, although incomplete, is still relevant. As long as there remains the possibility of the United States engaging in major combat operations, CC&DE is an option. Third, confusion abounds over centralization, decentralization, command, control, and execution. The varied interpretations of these terms and how they relate reflect the profound complexities associated with conducting air and space operations.

Centralized command, flexible control, and flexible execution seem to be a sound basis from which to articulate airpower philosophy. The new and improved master tenet unequivocally places the emphasis on command. It recognizes centralized command as the most likely constant across the spectrum of air and space operations. Control is inherent to command; by emphasizing command, the confusion over how they relate can be lessened if not totally eliminated.

Control and execution, however, need to be flexible. Sometimes it may be best to centrally control and execute (e.g., nuclear deterrence mission); at other times, controlling and executing in a decentralized fashion (e.g., counterinsurgency operations) may be best. And there are times when they may fall somewhere in between this continuum. The issue of centralization and decentralization is a matter of degree when applied to control and execution. In *Command in Air War*, Colonel Kometer states that “control of airpower has varied among different types of wars and even among different missions within the same war.”<sup>46</sup> Lt Gen Michael Short, USAF, retired, said as he recounted operations during Allied Force, “In the same ATO [air tasking order] some missions were centrally controlled and executed, and others were centrally controlled with decentralized execution.”<sup>47</sup> Although useful, this simple tweak to the tenet is not enough.

Doctrine has to address, in detail, what is meant by *flexible*. This could be accomplished in a supplement that presents a contextual analysis by explaining the differing operational circumstances and their

impact in determining the best approach to conducting air operations. Airmen would then be better equipped to understand the centralization issue that dominates control and execution arguments. It would allow Airmen to discern the complex interplay between the pluses and minuses of centralization or decentralization, based on those who have experience. In short, it would add much-needed muscle, bone, and academic rigor to the current straw man of CC&DE.

Airmen have a hard time articulating beyond the bumper sticker, partly because the Air Force has failed to systematically document these complexities and their all-important implications. The Airman's understanding is stifled, lacking in-depth comprehension of command and control of air and space operations. USAF doctrine penetrates only surface deep and leaves much to be learned through trial and error or word of mouth. It is time the Air Force adjusted its master tenet to reflect those complexities. If it continues to allow the doctrine to be what amounts to a caricature of reality, its Airmen's ability to explain the doctrine will also be a caricature. Sadly, that amounts to nothing more than dogma.

#### Notes

1. Many lessons were learned in North Africa, Europe, and the Pacific theaters.
2. David Ian Hall, *Learning How to Fight Together*, AFRI Paper 2009-2 (Maxwell AFB, AL: Air University Press, 2009), 1-13.
3. *Ibid.*, 14-15.
4. *Ibid.*
5. *Ibid.*, 21.
6. *Ibid.*
7. Lt Gen Elwood R. Quesada, USAF, retired, interview by Col William R. Carter; Lt Col Price Bingham; J. A. Mowbray, PhD; Lt Col David McIsaac, USAF, retired; and Charles Westenhoff, Fall 1990, Maxwell AFB, AL. (Personal collection of J. A. Mowbray).
8. Shawn P. Rife, "Kasserine Pass and the Proper Application of Power," *Joint Force Quarterly*, no. 20 (Fall/Winter 1998-1999): 71-77.
9. *Ibid.*
10. Hall, *Learning How to Fight Together*, 25.
11. Lt Col Daniel F. Baltrusaitis, *Centralized Control with Decentralized Execution: Never Divide the Fleet?* Occasional Paper no. 36 (Maxwell AFB, AL: Center for Strategy and Technology, Air War College, 2004), 16, <http://www.au.af.mil/au/awc/awcgate/cst/csat36.pdf>.
12. Field Manual (FM) 100-20, *Command and Employment of Air Power*, 21 July 1943, 1.
13. Air Force Manual (AFMAN) 1-2, *United States Air Force Basic Doctrine*, 1 April 1954, 4.
14. *Ibid.*, 1 April 1955, 2.
15. AFMAN 1-1, *Basic Aerospace Doctrine of the United States Air Force*, September 1971, 2-2.
16. *Ibid.*, January 1975, 2-2.
17. *Ibid.*, March 1984, 2-20 and 2-21.

18. Baltrusaitis, *Centralized Control with Decentralized Execution*, 6.
19. Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 as amended through 19 August 2009, [http://www.dtic.mil/dod\\_dictionary/data/c/01087.html](http://www.dtic.mil/dod_dictionary/data/c/01087.html) (accessed 5 December 2009).
20. Ibid.
21. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, draft revision, 1 April 2010.
22. JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*.
23. Ibid.
24. AFDD 1, *Air Force Basic Doctrine*, November 2003, 28.
25. JP 3-30, *Command and Control of Joint Operations*, 5 June 2003, vii–viii.
26. Ibid., vii.
27. Ibid., 1–3; and AFDD 1, *Air Force Basic Doctrine*, November 2003, 28.
28. Baltrusaitis, *Centralized Control with Decentralized Execution*, 5.
29. Lt Col Michael Kometer, *Command in Air War: Centralized versus Decentralized Control of Combat Airpower* (Maxwell AFB, AL: Air University Press, 2007), 23.
30. Comments by Air Force senior space officers.
31. Martin van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1995), 261.
32. Ibid., 262.
33. Gen James N. Mattis, commander, US Joint Forces Command (speech, Air War College, 15 September 2009).
34. Ibid.
35. Baltrusaitis, *Centralized Control with Decentralized Execution*, 28–29.
36. Lt Col Clint Hinote, *Centralized Control and Decentralized Execution: A Catchphrase in Crisis?* (Maxwell AFB, AL: Air University Press, March 2009), 59–62.
37. The five deployable CAOCs are a direct result of centralized doctrine.
38. The Army's planning echelons include the corps, division, brigade, and company levels.
39. Lt Gen Eugene D Santarelli, USAF, retired (comments, Command and Control of Air and Space Power Forces course, Maxwell AFB, AL, 13 October 2009).
40. Maj Gen Maurice H. Forsyth, commander, Curtis E. LeMay Center for Doctrine Development and Education, and vice-commander, Air University (comments, Air Command and Control workshop, Maxwell AFB, AL, 13 October 2009).
41. Air Force/Marine Corps Tiger Team, Air Force/Marine Corps Tiger Team Trip Report, March 2008, 4.
42. Lt Col William E. Pinter, "Air-Ground Integration in the 21st Century: Improving Air Force Combat Capabilities and Theater Command and Control for Major Combat Operations and Irregular Warfare," Research report (Maxwell AFB, AL: Air War College, 2009).
43. HQ USAF/XOL, Office of Air Force Lessons Learned, *Operation Anaconda: An Airpower Perspective* (Washington, DC: DOD, 7 February 2005), 3–10.
44. Lt Col Clint Hinote (comments, Air Command and Control workshop, Maxwell AFB, AL, 13 October 2009).
45. Lt Col Michael Kometer (comments, Air Command and Control workshop, Maxwell AFB, AL, 13 October 2009).
46. Kometer, *Command in Air War*, 17.
47. Lt Gen Michael Short, USAF, retired (comments, Command and Control of Air and Space Power course, Maxwell AFB, AL, 9 December 2009).

## ***Abbreviations***

AFDD	Air Force doctrine document
ASC	air support control
ATO	air tasking order
AWCS	Airborne Warning and Control System
CAOC	combined air and space operations center
CC&DE	centralized control and decentralized execution
FM	field manual
JFACC	joint force air component commander
JP	joint publication
NATAF	Northwest African Tactical Air Force

