

| REPORT DOCUMENTATION PAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                              |                            | Form Approved<br>OMB No. 0704-0188       |                                                             |
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| Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. <b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b>                                                                                                                                                                                                                                                             |                             |                              |                            |                                          |                                                             |
| 1. REPORT DATE (DD-MM-YYYY)<br>03-05-2010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             | 2. REPORT TYPE<br>FINAL      |                            | 3. DATES COVERED (From - To)             |                                                             |
| 4. TITLE AND SUBTITLE<br><br>Joint Doctrine for Unmanned Aircraft Systems: The Air Force and the Army Hold the Key to Success                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                              |                            | 5a. CONTRACT NUMBER                      |                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                              |                            | 5b. GRANT NUMBER                         |                                                             |
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| 6. AUTHOR(S)<br><br>David R. Buchanan, Major, USAF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                              |                            | 5d. PROJECT NUMBER                       |                                                             |
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| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br><br>Joint Military Operations Department<br>Naval War College<br>686 Cushing Road<br>Newport, RI 02841-1207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                             |                              |                            | 8. PERFORMING ORGANIZATION REPORT NUMBER |                                                             |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                              |                            | 10. SPONSOR/MONITOR'S ACRONYM(S)         |                                                             |
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| 12. DISTRIBUTION / AVAILABILITY STATEMENT<br>DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                              |                            |                                          |                                                             |
| 13. SUPPLEMENTARY NOTES A paper submitted to the Naval War College faculty in partial satisfaction of the requirements of the Joint Military Operations Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                              |                            |                                          |                                                             |
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| 15. SUBJECT TERMS<br>Air Force, Army, ISR, joint doctrine, unmanned aircraft system (UAS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                              |                            |                                          |                                                             |
| 16. SECURITY CLASSIFICATION OF:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                              | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES<br><br>27            | 19a. NAME OF RESPONSIBLE PERSON<br>Chairman, JMO Department |
| a. REPORT<br>UNCLASSIFIED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | b. ABSTRACT<br>UNCLASSIFIED | c. THIS PAGE<br>UNCLASSIFIED |                            |                                          | 19b. TELEPHONE NUMBER (include area code)<br>401-841-3414   |

**NAVAL WAR COLLEGE  
Newport, R.I.**

**Joint Doctrine for Unmanned Aircraft Systems:  
The Air Force *and* the Army Hold the Key to Success**

**by**

**David R. Buchanan**

**Major, USAF**

**A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.**

**The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.**

**Signature: \_\_\_\_\_**

**3 May 2010**

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## **Abstract**

Unmanned aircraft systems (UAS) have experienced explosive demand in Iraq and Afghanistan in the past few years due to their ability to provide intelligence, surveillance, and reconnaissance (ISR) over vast theaters of operations. This paper examines the differences between the Air Force's and Army's approach at meeting the demand for effective and efficient UAS operations. The first difference between the services is command and control (C2), with the analysis focusing on centralized versus decentralized C2. The second difference concerns operations locations and examines the benefits of remote operations over in-theater operations. The final difference is in UAS operators; the Air Force has historically insisted on pilots and officers, while the Army leaves UAS operations in the hands of its very capable non-commissioned officers. Each of these differences will be examined with respect to the current focus on counterinsurgency (COIN) operations. This paper concludes with recommendations for incorporating aspects of each service's practices and doctrine into joint doctrine that will remain flexible across the range of military operations.

## INTRODUCTION

On 15 June 2007, an Air Force F-16 providing close air support crashed at midnight near Balad Air Base in Iraq. Joint Publications, and common sense, dictate that “preserving the lives of those participating in a US-sponsored . . . mission is one of the highest priorities of the DOD.”<sup>1</sup> Accordingly, the Joint Force Air Component Commander (JFACC) immediately redirected an MQ-1 Predator unmanned aircraft collecting intelligence, surveillance, and reconnaissance (ISR) data for an Army unit to the crash site to assist the personnel recovery team. The Joint Operations Center’s Army liaison officer responsible for the area around the crash site objected, citing the criticality of the Predator’s original mission, and explained that air support for the rescue operation was being provided by an Army unmanned aircraft, the MQ-5B Hunter. The Hunter, controlled by a non-commissioned officer in the field and lacking interoperability with the combined air operations center (CAOC), was not adequate for the search and rescue lead. The mission was not about tracking individual enemy combatants, 24/7 persistence, striking high-value targets, or even theater-wide intelligence: it was about rescuing a fellow warfighter.<sup>2</sup>

This vignette conveys powerful images for the value of unmanned aircraft systems (UAS) in today’s fight, but it also highlights three notable differences between Air Force and Army UAS doctrine. First, command and control constructs reflect the services’ differing views of the role of airpower, with the Air Force having a centralized, theater-wide perspective, and the Army taking a more decentralized approach to support ground forces. Second, Army UAS operators conduct operations from in-theater, while the Air Force flies its UASs from stateside locations, linking to the aircraft via satellite. Finally, the Army uses

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1. Chairman, U.S. Joint Chiefs of Staff, *Personnel Recovery*, Joint Publication (JP) 3-50 (Washington, DC: CJCS, 5 January 2007), I-1.

2. David M. Edgington, (Joint Forces Command, Norfolk, VA), interview by the author, 9 March 2010.

enlisted operators to control its UASs, whereas the Air Force uses rated pilots to control its UASs. These distinct doctrines for employing unmanned aircraft systems have sparked many debates on the most effective and efficient use of UASs in joint military operations. To maximize the value of unmanned aircraft systems in counterinsurgency (COIN) operations, the joint community must establish joint UAS doctrine that draws on the merits of each service's current doctrine and is adaptable along the range of military operations.

## **BACKGROUND**

Unmanned aircraft systems' characteristics of range, endurance, flexibility, persistence, and stealth effects have contributed to their becoming one of the most sought after capabilities in the Global War on Terror (GWOT).<sup>3</sup> One of the most pressing needs is increasing combat air patrols to satisfy ground forces' demand for intelligence, surveillance, and reconnaissance (ISR). MQ-1 Predator combat air patrols have increased 520 percent since the beginning of the GWOT, as shown in Figure 1, but still cannot satisfy geographic combatant commanders' demands.<sup>4</sup> Dramatic increases in flight hours, as shown in Figure 2, also indicate the demand. The Air Force UAS fleet flew 386,000 combat hours from October 2008 to March 2010, and, by mid-2008, all classes of Army UASs had accumulated 375,000 flight hours in support of 130,000 combat operations.<sup>5</sup> Analyzing and understanding doctrinal differences will become increasingly important as UASs become more prevalent among joint forces.

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3. Robert Spalding, "America's Two Air Forces," *Air & Space Power Journal* 23, no. 2 (Summer 2009): 53.

4. U.S. Air Force, *United States Air Force Unmanned Aircraft Systems Flight Plan 2009-2047* (Washington, DC: USAF, 18 May 2009), 28, 64.

5. U.S Air Force, "Air Force Key Talking Points," March 2010 Vol. 5, ed. 3, <http://aimpoints.hq.af.mil/uploads/March%202010%20AF%20Key%20Talking%20Points.pdf> (accessed 14 March 2010).

Jeffrey Kappenman, "Army Unmanned Aircraft Systems: Decisive in Battle," *Joint Forces Quarterly* 49 (2nd Quarter 2008): 20.

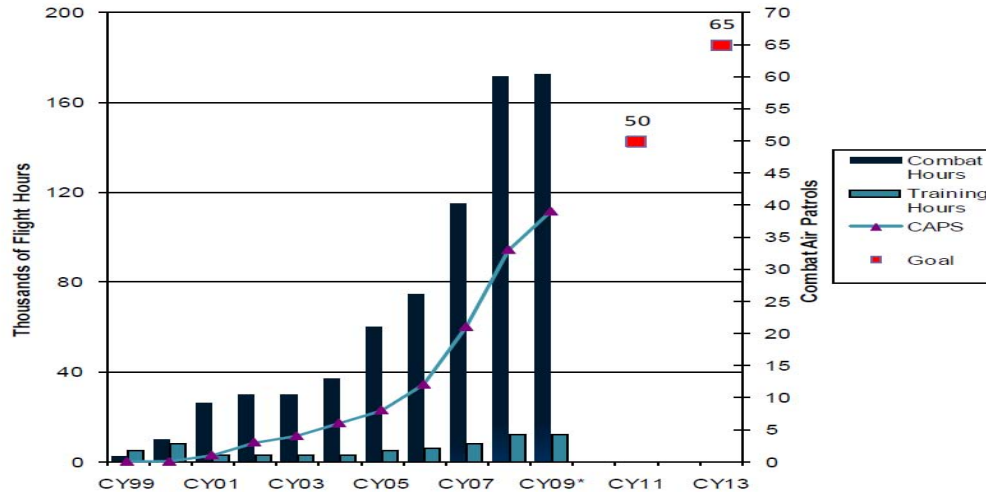


Figure 1. Historic MQ-1B/MQ-9A Operational Growth (reprinted from: U.S. Air Force, *United States Air Force FY 2011 Budget Overview*, [Washington, DC: USAF], 40.)

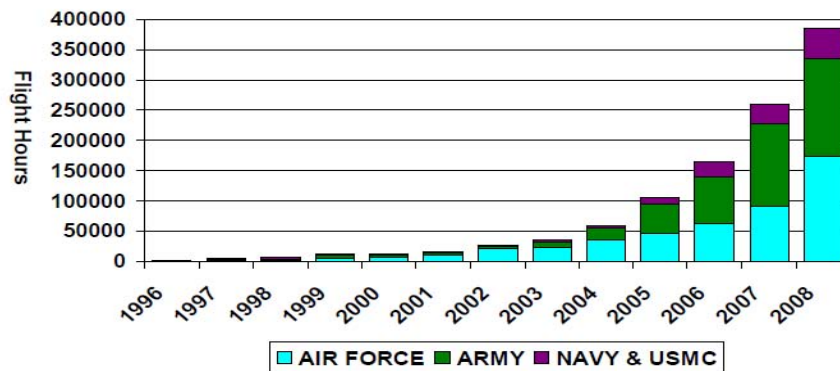


Figure 2. DOD UAS Flight Hours (reprinted from: Ed Wolski, “Unmanned Aircraft Systems” Powerpoint, 9 January 2009, Office of the Undersecretary of Defense, [http://www.wired.com/images\\_blogs/dangerroom/files/Wolski.pdf](http://www.wired.com/images_blogs/dangerroom/files/Wolski.pdf) [accessed 14 March 2010].)

## COMMAND AND CONTROL: CENTRALIZED OR DECENTRALIZED?

A foundation of Air Force command and control (C2) doctrine is centralization and unity of command under an airman.<sup>6</sup> This approach reflects the airman’s perspective that airpower, including UASs, encompasses the entire theater and must remain flexible in order

6. U.S Air Force, *Command and Control*, Air Force Doctrine Document (AFDD) 2-8 (Washington, DC: Department of the Air Force, 1 June 2007), 7.

to mass its effects “whenever and wherever the joint strategy requires.”<sup>7</sup> The focus on centralized control is founded on conventional threats, with targets such as fixed C2 facilities, fixed and mobile surface-to-air missile sites, tanks, troop formations, and opposing aircraft.<sup>8</sup> This method of planning, controlling, and executing air operations has been developed and proven over decades, and ultimately results in the combined air operations center (CAOC) developing an air tasking order (ATO) to both command and control air operations.

Unity of command is accomplished through the joint force air component commander (JFACC), whose role is to plan, coordinate, and allocate resources for conducting joint air operations in support of the joint force commander (JFC).<sup>9</sup> Establishing unity of command at the operational level through the JFACC has proven to be quite effective in a conventional scenario, where the ground forces’ scheme of maneuver is broad and usually known in advance. This process is also efficient since the JFACC is typically selected from the service with the preponderance of aircraft and the ability to both command and control them.<sup>10</sup>

Centralized C2 and unity of command also allow the most efficient and effective means of gaining air superiority. Having unity of command under the JFACC and centralized C2 across the theater of operations mitigates the risk of an air threat in conventional operations. The CAOC builds the ATO on a 96-hour timeline with a focus on gaining and maintaining air superiority. This theater-wide view ensures freedom of maneuver, freedom from attack and freedom to attack—all prerequisites for operational

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7. U.S Air Force, *Operations and Organization*, AFDD 2 (Washington, DC: Department of the Air Force, 3 April 2007), 3.

8. Michael L. Downs, “Rethinking the Combined Force Air Component Commander's Intelligence, Surveillance, and Reconnaissance Approach to Counterinsurgency,” *Air & Space Power Journal* 22, no. 3 (Fall 2008): 68.

9. Chairman, U.S. Joint Chiefs of Staff, *Command and Control for Joint Air Operations*, JP 3-30 (Washington, DC: CJCS, 12 January 2010), xi.

10. JP 3-30, *Command and Control for Joint Air Operations*, xi.

success. However, further down the range of military operations, such as an insurgency, there is less need to gain and maintain air superiority or to confront conventional threats.<sup>11</sup>

Army doctrine takes a more decentralized approach to commanding and controlling unmanned aircraft systems by dedicating UAS assets at the division-level rather than the theater-level. The Army Field Manual for Counterinsurgency views decentralized C2 as the most effective means of employing unmanned aircraft systems in COIN operations, and characterizes UASs as “force multipliers” meant to provide ground commanders “immediate access to . . . combat air assets and . . . information.”<sup>12</sup>

The Army typically establishes restricted operating zones (ROZ) to command, control, and deconflict its UASs with the JFACC’s theater-wide air coverage. These restricted zones are essentially columns of air above the unit’s maneuver space that allow division-controlled UASs to operate freely, but restrict access for other (JFACC-controlled) assets.<sup>13</sup> The ROZ allows effective and continuous sensor coverage over the Army unit’s maneuver space, but impinges on the joint concept of unity of command for air assets. The Army views the loss of unity of command as necessary in counterinsurgency operations and seeks to continue operating a discrete portion of UASs for dedicated requirements.<sup>14</sup> Joint doctrine supports the Army’s viewpoint by recognizing the importance of operational integrity within service organizations, and indicating “operational groupings [be allowed] to . . . function as . . . designed.”<sup>15</sup>

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11. Spalding, “America’s Two Air Forces,” 54.

12. U.S. Army, *Counterinsurgency*, Field Manual (FM) 3-24 (Washington, DC: Headquarters Department of the Army, December 2006), 1-26, E-2.

13. Travis A. Burdine, “The Army’s ‘Organic’ Unmanned Aircraft Systems: An Unhealthy Choice for the Joint Operational Environment,” *Air & Space Power Journal* 23, no. 2 (Summer 2009): 95.

14. U.S. Naval War College, Joint Military Operations Department, *Reference Guide: Forces Capabilities Handbook* (Newport, RI: Naval War College, July 2009), 70.

15. JP 3-30, *Command and Control for Joint Air Operations*, I-2.

The services' differences over command and control of unmanned aircraft systems are largely centered on maximizing either effectiveness or efficiency. In counterinsurgency operations, the Air Force model for maximizing efficiency through centralized C2 has not met ground commanders' expectations for effectiveness. In this case, doctrinal concerns must yield to operational experience. As Dr. Milan Vego notes, "centralized C2 maximizes efficiency" and allows the commander to "shift the sector of main effort quickly," whereas decentralized C2 is much more flexible and allows forces at a lower level to take the initiative based on changing conditions.<sup>16</sup> Both approaches have merits, but the highly-adaptive and multi-faceted nature of an insurgency requires C2 doctrine that is equally adaptive and multi-faceted. In COIN operations, and especially in the diverse and tribal nature of Afghanistan, there is no "main effort" for centrally controlled air operations to support. Instead, effectiveness depends on ground forces taking the initiative: separating the insurgents from the people, and engaging with the population to establish trust, confidence, and credibility requires time and a personal touch.

With the population as the focus, and an enemy that is flexible, adaptable, and not readily identifiable, counterinsurgency operations are not necessarily efficient. At the lower end of the range of military operations, effectiveness is measured locally and the ISR collected from unmanned aircraft systems is only part of the equation; it must be fused real-time with human intelligence from ground forces. The fact that battalion- and brigade-level forces submitted over 80 percent of UAS collection requests in Operation Iraqi Freedom and almost 100 percent in Operation Enduring Freedom shows that UASs are mainly supporting

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16. Milan N. Vego, *Joint Operational Warfare: Theory and Practice* (Newport, RI: U.S. Naval War College, 2009), 19, 21.

ground commanders.<sup>17</sup> This is a different perspective from a conventional conflict where centralization and theater-wide unity of command would be essential to effective and efficient air operations.

The Air Force's proposal to assume executive agency for all medium- and high-altitude UASs in March 2007 was an attempt to establish unity of command and increase UAS efficiencies. Then Air Force Chief of Staff General Michael Moseley's rationale to streamline acquisition, employment, and overall mission effectiveness did not resonate with the other service chiefs, who agreed that effective COIN operations require a more decentralized approach.<sup>18</sup> The Army's position, as relayed to the House Armed Services Committee, was that a single-service approach to UAS employment would infringe on the effectiveness of UASs in combat.<sup>19</sup>

The Air Force's centralized approach may result in a more efficient allocation of limited UAS assets, but that efficiency comes at the cost of combat effectiveness. The Army's answer to regain effectiveness has been to decentralize command and control for its unmanned aircraft systems. Ground commanders rely on UASs to provide timely, relevant, and useful intelligence without the lengthy processing and dissemination associated with the Air Force's centrally controlled, theater-wide assets. The Army's Training and Doctrine Command noted that the joint (CAOC) solution to meeting the high demand of these low-density assets has been ineffective, arguing against relying on the JFACC for UAS coverage because "when divisions and BCTs [brigade combat teams] do receive joint UAS coverage

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17. Downs, "Rethinking the Approach to Counterinsurgency," 70.

18. AF News, "Officials Discuss Executive Agency for UAVs," *AF News*, 15 April 2007, [www.af.mil/news/story.asp?id=123048908](http://www.af.mil/news/story.asp?id=123048908) (accessed 24 March 2010).

19. Michael Sirak, "Army, Marine Corps and Navy Voice Opposition to Air Force UAV Proposal," *Defense Daily*, 20 April 2007, <http://www.proquest.com/> (accessed 24 February 2010).

based on an allocation model, the support is frequently cut short.”<sup>20</sup> This complaint is the result of UAS missions that are prioritized and scheduled days in advance under a centrally managed air tasking order, and are at the mercy of shifting priorities within the theater.

The nature of today’s fight, and the flexibility UASs provide directly to ground forces, make it necessary to rethink command and control doctrine for UASs. Current practices seem to make unity of command synonymous with centralized C2, which does not have to be the case. Air Force guidance suggests combined air operations centers be manned primarily by airmen, but encourages liaison officers from other services during exercises and contingency operations. This guidance also indicates that ATO coordinators should have “extensive bomber or fighter experience.”<sup>21</sup> This is not to say the CAOC is manned exclusively by Air Force personnel, however, the CAOC’s primary decision-making elements have an Air Force perspective that may not adequately reflect the needs of forces on the ground. Incorporating more recent ideas for effective COIN operations would drive changes to this guidance, such as giving Army division-level commanders a greater voice in the CAOC decision-making process.

Joint UAS doctrine should include both services’ perspectives. The Army understands that success in counterinsurgency operations depends on operational activity at the division-level or below. Similarly, the Air Force has the ability and expertise to command and control UASs theater-wide. Integrating both perspectives at the theater-level would require a greater degree of jointness within the CAOC, a better understanding of ground forces’ needs and priorities, and a significant decrease in service parochialism. The Army would have to give up local autonomy and embrace joint interdependence, which,

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20. Kappenman, “Army Unmanned Aircraft Systems,” 20.

21. U.S. Air Force, *Operational Procedures – Air and Space Operations Center*, AFI 13-1AOC Volume 3 (Washington, DC: Department of the Air Force, 1 August 2005), 9, 11.

according to Army Field Manual 1, “allows each Service to divest itself of redundant functions . . . achieves greater efficiency in all areas of expertise . . . [and] allows the other Services to achieve greater efficiencies in their respective domains.”<sup>22</sup> The Air Force would also have to seek greater interdependence and embrace its role as a supporting function for the Army’s division-level ISR requirements.

Service doctrine is founded on historic examples and lessons. Advocates of the centralized command and control approach to airpower, which includes UASs, use the Battle at Kasserine Pass during World War II as an example of why decentralized command and control does not work. In this battle, decentralized command and control of air assets meant ground commanders could not summon more air support than they had been assigned. As a result, some Allied aircraft were unable to join the fight when and where they were needed most—against German aircraft—which dealt a major blow to Allied forces. In the end, British Air Marshall Arthur Coningham noted “control must be centralized . . . and . . . exercised through Air Force channels . . . and not dispersed in penny packets.”<sup>23</sup> This doctrinal concept was reflected in a 1943 War Department Field Manual which stated, “The inherent flexibility of airpower is its greatest asset . . . [and] control must be exercised through the air force commander . . . to deliver a decisive blow.”<sup>24</sup>

This historic example builds a powerful case by analogy for centralized C2 for UASs, but misses one important distinction: the context of the objective. In the Battle at Kasserine Pass, the objective was to gain air superiority and destroy large, massed armies. This objective was perfectly suited to centralized C2 and unity of command over air forces.

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22. U.S. Army, *The Army*, FM 1 (Washington, DC: Headquarters Department of the Army, June 2005), 3-11.

23. Rebecca Grant, “Up from Kasserine Pass,” *Air Force Magazine*, September 2007, 76.

24. U.S. War Department, *Command and Employment of Air Power*, War Department Field Manual 100-20 (Washington, DC: U.S. Government Printing Office, 21 July 1943), 4.

However, in Iraq and Afghanistan, the analogy is less valid because coalition forces enjoy air superiority and the nature of the mission and targets are completely different. General McChrystal's emphasis on securing the population has highlighted the critical role of UASs and ISR, and has placed a greater burden on ground forces to have a "clear, nuanced, empathetic appreciation of the . . . nature of the conflict."<sup>25</sup> In a COIN environment, ground forces also have the best perspective and understanding of ISR requirements. Unfortunately, highly centralized UAS command and control processes do not meet the ground forces' needs.

### **OPERATIONS: REMOTE OR IN-THEATER?**

Unmanned aircraft have driven few changes to the Air Force's centralized command and control doctrine, but have revolutionized employment considerations for high-demand, low-density assets. In 2003 the Air Force introduced the concept of remote split operations (RSO), which allows pilots to fly UASs from stateside locations while smaller in-theater teams control takeoffs and landings. Remote split operations allows over 85 percent of Air Force UAS operators to provide daily, direct support to the war, rather than focusing on training, maintaining currency, or preparing for deployments.<sup>26</sup> Likewise, approximately 85 percent of Air Force UASs remain in theater supporting the GWOT, with the remainder stateside for training.<sup>27</sup> This concept, coupled with sensor technologies that provide multiple video streams to multiple ground units, delivers increased capability and capacity to troops on the ground.

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25. Eliot Cohen et al., "Principles, Imperatives, and Paradoxes of Counterinsurgency," *Military Review* 86, no. 2 (March-April 2006): 50.

26. Megan Orton, "General Underscores Commitment to Fielding Unmanned Aerial Systems," *American Forces Press Service*, 14 January 2009, <http://www.defense.gov/news/newsarticle.aspx?id=52673> (accessed 24 March 2010).

27. Air Force Association, "Air Force vs. Army Concepts for UAV Employment," Air Force Association, [http://www.afa.org/grl/UAV\\_CONOPS.pdf](http://www.afa.org/grl/UAV_CONOPS.pdf) (accessed 4 April 2010).

The Army's concept for employing its UASs follows the decentralized C2 approach. Deployed units have "organic" UASs that they command, control, and operate locally, which supports the Army's perspective of UASs as force multipliers. Assigning UASs organically results in approximately one-third of the Army's unmanned aircraft systems deployed at a time, with the remaining two-thirds of available assets out of the fight as they train, return from, or prepare for deployment.<sup>28</sup> The justification for this organic concept is that irregular warfare requires a degree of unit cohesion and situational awareness not possible with remote support. However, there are significant tradeoffs for this concept, and in light of the current demand for UAS capability, allocating UASs to units in this way is becoming an increasingly unsustainable practice.

Remote split operations are more effective than organic operations. The concept offers flexibility and adaptability not possible with either in-theater, organic UAS operations or manned aircraft. Flying UASs from beyond line-of-sight provides the flexibility to adjust operations as the enemy or environment changes. For example, cancelling UAS missions in Iraq because of sandstorms, weather, or other local concerns would not leave UAS crews idle if they were operating with remote split operations. Instead, those crews could surge to support missions in Afghanistan or other parts of Iraq.<sup>29</sup> Another benefit of RSO is the potential for synergy within an area of operations. The Army's restricted operating zones are effective at cordoning off maneuver space, but result in decreased coverage for the unit's organic UASs. Because the JFACC lacks positive control within the restricted operating

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28. Institute of Land Warfare, *U.S. Army Aviation: Balancing Current and Future Demands*, Torchbearer National Security Report (Arlington, VA: Association of the United States Army, January 2008), 5.

29. Sandra Erwin, "Air Force to Army: There Are Better Ways to Deploy Surveillance Aircraft," *National Defense Magazine*, January 2010, <http://www.nationaldefensemagazine.org/archive/> (accessed 4 April 2010).

zones, other UASs are restricted from entering the airspace, and assigned UASs are restricted from leaving to assist elsewhere.<sup>30</sup>

New sensor technologies also improve unmanned aircraft systems' effectiveness, especially when combined with remote operations. The latest advances in "wide area airborne surveillance" allow one UAS to collect up to ten video transmissions, sending them to ten different users on the ground. Future iterations of this technology, dubbed Gorgon Stare, will increase to as many as 65 video streams per UAS by 2014.<sup>31</sup> Being able to send multiple views of an area to multiple ground units could negate the need for each unit to have its own ISR source. These advanced technologies on theater-level UASs will provide more coverage to more users than individual units with organic UAS assets. These technologies also have the benefit of sharing sensor feeds with units and intelligence cells outside the theater or area of operations, thus creating a more comprehensive intelligence picture.

Remote split operations are also more efficient than organic operations. The Air Force is able to put over 85 percent of its operators and aircraft to work for ground commanders. Even with 85 percent utilization rates, the Air Force's remote split operations minimizes the in-theater footprint relative to the Army model. The Air Force's launch and recovery element and routine maintenance are in-theater, while primary operations are conducted stateside. The Army, on the other hand, uses only one-third of its operators and aircraft at a time in direct support of the GWOT and must deploy that units' entire UAS control and support function each time. Inefficiencies in employing UASs and operators exacerbate the theater-wide shortages associated with high-demand, low-density UASs.

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30. Burdine, "The Army's 'Organic' Unmanned Aircraft Systems," 95.

31. Lolita C. Baldor, "US to Expand Eyes in the Sky Over Afghanistan," *Associated Press Worldstream*, 17 December 2009, <http://www.lexisnexis.com/> (accessed 2 April 2010).

Opponents of imposing the remote split operations model on the Army point to unit cohesion and mission awareness as primary reasons for retaining the in-theater operations construct. Ground commanders' fears that remote operations will not provide the same degree of dedicated support are based on experiences of support being cut short by Air Force UASs. In fact, officials at an Army Aviation Association of America conference stated that, "Air Force surveillance aircraft cannot be counted on in the heat of battle."<sup>32</sup> Much of this debate is based on the Air Force's centralized C2 model and how the air tasking order prioritizes missions among competing interests.

There is merit to the notion that trust, kinship, and continuity afforded by Army UAS operators in-theater are beneficial. However, it can be argued that the perceived benefits are outweighed by the advantages of having significantly more platforms and coverage, as provided by the Air Force model. Also, in some cases, other operational considerations will prevent UAS operators and ground forces from working closely on a daily basis. For instance, runway requirements for the Army's newest UAS, the MQ-1C ER/MP Sky Warrior, will be a determining factor for where UAS operators live and work, and may remove them from the vicinity of supported ground forces.<sup>33</sup> Much of the Army's position on organic UAS control is based on trusting the operators and understanding the tactical situation. These issues could be mitigated with the right combination of leadership, decentralized C2, ground commanders' perspective in the CAOC, and remote split operations. In the case of organic UAS operators, the overwhelming advantages of providing UAS capabilities to a larger pool of users should trump the desire to remain in the field with the unit.

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32. Stew Magnuson, "Army to Air Force: We Won't Give Up Our Surveillance Aircraft," *National Defense Magazine*, February 2010, <http://www.nationaldefensemagazine.org/archive/> (accessed 4 April 2010).

33. Burdine, "The Army's 'Organic' Unmanned Aircraft Systems," 97.

## OPERATORS: PILOTS OR ENLISTED?

Differences between the services over C2 doctrine, operations locations, and the role airpower should play also lead to differences over who should operate UASs. Until recently, the Air Force has insisted on using rated pilots to operate its unmanned aircraft systems. This policy initially stemmed from the safety records of early UASs. Since beginning the Predator program in 1994, the Air Force's cumulative mishap rate has been half that of the Army's Hunter UASs, and less than one-tenth of the Army's Shadow UASs.<sup>34</sup> As former Air Force Chief of Staff General John Jumper explained, "The original notion of using pilots was because of the Army experience [with UASs]. . . . If you treat it like an airplane, it will act like an airplane. . . . That's why we insisted on pilots."<sup>35</sup>

Air Force culture also plays a large role in the belief that pilots are best suited to control UASs. This notion is based on the idea of "airmindedness," described in Air Force doctrine as a "perspective . . . [that] reflects the range, speed, and capabilities of aerospace forces, as well as threats and survival imperatives unique to Airmen."<sup>36</sup> In early 2009 the Air Force began to show signs of breaking this cultural barrier by experimenting with non-rated officers controlling UASs. This "beta" program has graduated its first operators and put them to work using remote split operations, signaling a positive change to UAS operations while striving to meet the demand for operators.

Army unmanned aircraft systems, on the other hand, are operated by soldiers in the field. This approach mirrors the Army's perspective that aviation's primary mission is to support ground operations. Army Aviation Doctrine states, "Aviation is comprised of

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34. U.S. Department of Defense, *Unmanned Systems Roadmap 2009-2034* (Washington, DC: Office of the Secretary of Defense, 6 April 2009), 93.

35. Houston R. Cantwell, "Operators of Air Force Unmanned Aircraft Systems: Breaking Paradigms," *Air & Space Power Journal* 23, no. 2 (Summer 2009): 68.

36. AFDD 2, *Operations and Organization*, 2.

soldiers, not airmen, and its battlefield leverage is achieved through a combination of reconnaissance, mobility, and firepower that is unprecedented in land warfare.”<sup>37</sup> The Army’s UAS strategy supports this view through the Soldier/Operator, a distinct UAS career path that includes Federal Aviation Administration ground school, intelligence operations, and simulation and flight training.<sup>38</sup> To aid safe and effective UAS control, the Army has incorporated point-and-click interfaces, and automated takeoff and landing technologies in its UASs.<sup>39</sup> These advanced technologies greatly reduce the need for the stick-and-rudder skills of rated pilots.

The different views on UAS operators—officer or enlisted, rated or non-rated—falls under the services’ role to organize, train, and equip, but also has implications for joint doctrine. The missions and tasks of UAS operators will change across the range of military operations, but the demand for ISR will remain. Likewise, joint UAS doctrine needs to be adaptable along the range of military operations. For instance, in a conventional fight against an adversary that poses an air threat, it may be preferable to have more rated pilots controlling UASs against other aircraft, enemy UASs, or ground targets. However, in Iraq and Afghanistan, insurgents pose little air threat and, with General McChrystal’s limit on airstrikes, the primary mission for UASs has become ISR. These UAS missions require level flight, persistence, and an awareness of intelligence operations that do not necessarily require experienced airmen or piloting skills.

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37. U.S. Army, *Army Aviation Doctrine*, FM 1-100 (Washington, DC: Headquarters Department of the Army, 21 February 1997), 1-3.

38. Stephen Mundt, “Statement,” House Armed Services Committee, US Army Unmanned Aerial Vehicle Program, 109th Cong., 2nd sess., 2006, [http://www.globalsecurity.org/intell/library/congress/2006\\_hr/060406-mundt.pdf](http://www.globalsecurity.org/intell/library/congress/2006_hr/060406-mundt.pdf) (accessed 15 March 2010).

39. M.L. Cummings, “Of Shadows and White Scarves,” *C4ISR Journal*, 1 August 2008, <http://www.c4isrjournal.com/> (accessed 26 February 2010).

The real difference between Air Force and Army UAS operators is a matter of service culture. The services naturally want their frontline warriors in the fight. In the Air Force, pilots are at the “pointy end of the spear,” whereas for the Army, it is the combat soldier. The services’ views of airpower also color the argument. The Army sees airpower as a force multiplier for ground forces, while the Air Force sees it as a theater-level asset capable of shaping the battlefield. The proper perspective depends on the nature of the conflict and where it falls on the range of military operations, but, in counterinsurgency operations, the soldier is the key to success.

For some, integrating UASs with other manned and unmanned aircraft dictates a highly trained pilot with an airman’s perspective. Joint doctrine recognizes that airspace deconfliction and integration are crucial considerations that “increase combat effectiveness by promoting the safe, efficient, and flexible use of airspace.”<sup>40</sup> The prevalence of UASs in a joint theater certainly adds complexity to the problem, but the answer does not have to be rated pilots controlling unmanned aircraft systems. Instead, a mix of pilots, non-rated officers with more extensive flying training, and enlisted operators could meet the tasks and adjust control methods according to the situation. The same technology that allows launch and recovery elements to pass control to operators at stateside RSO sites could also allow transition from inexperienced enlisted operators to more experienced rated pilots. Also, new technologies that allow single operators to control multiple UASs could assist in airspace deconfliction strategies.<sup>41</sup> Technologies and joint doctrine should eventually permit pilots to fly UASs through civil airspace, and then pass control to enlisted operators to conduct missions in support of military operations.

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40. Chairman, U.S. Joint Chiefs of Staff, *Joint Doctrine for Airspace Control in the Combat Zone*, JP 3-52 (Washington, DC: CJCS, 30 August 2004), vii.

41. Cummings, “Of Shadows and White Scarves.”

## CONCLUSION

General Henry “Hap” Arnold’s observation over sixty years ago is telling for operations today: “We have just won a war with a lot of heroes flying around in planes. . . . The next war may be fought by airplanes with no men in them at all.”<sup>42</sup> The rapid demand growth for UASs and ISR, plus different perspectives and cultures within the Air Force and Army, has resulted in distinct approaches to providing this crucial capability.

Discussions over whether Army or Air Force doctrine has the “right” answer miss the point. In reality, the right answer depends on many variables and a willingness to reassess particular ways of doing business. As General McChrystal puts it, “We need to think and act very differently to be successful.”<sup>43</sup> In the case of counterinsurgency operations, the Air Force’s centralized C2 processes are too slow and inflexible to meet the ground force’s needs. Likewise, the Army would see a greater level of support by adjusting its control methodology from a limited, organic model to something akin to the Air Force’s remote split operations construct. Finally, both services could benefit from reassessing the role of its operators. Air Force pilots may be necessary in certain circumstances, but in most situations, non-rated officers and enlisted operators would perform admirably and give the ground forces the ISR they need to be effective. The lessons and considerations that inform joint doctrine will take on renewed importance as other services and coalition partners expand their use of unmanned systems. The Chairman of the Joint Chiefs of Staff, Admiral Michael Mullen emphasized this point, and echoed General Arnold’s sentiment, when he told the

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42. Chris R. Chambliss, “MQ-1 Predator and MQ-9 Reaper Unmanned Aircraft Systems: At a Crossroads” *Air & Space Power Journal*, Fall 2009, <http://www.airpower.au.af.mil/apjinternational/apj-c/2009/fal09/chambliss.pdf> (accessed 31 March 2010).

43. Stanley A. McChrystal, “ISAF Commander’s Counterinsurgency Guidance.” (Kabul, Afghanistan, 2009): 3.

Senate Armed Services Committee that he is “inclined to believe. . . those that see JSF [Joint Strike Fighter] as the last manned fighter.”<sup>44</sup>

## RECOMMENDATIONS

To address the services’ doctrinal differences and ensure effective and efficient UAS employment, the DOD should:

- Tailor joint and service doctrine to be functional across the range of military operations. The CAOC should vary its processes and timelines depending on the nature of the enemy and the threat. Major combat operations against a conventional enemy posing an air threat should follow current doctrine. Once joint air forces have established air superiority or transitioned to COIN operations, processes and perspectives should change to reflect a supporting role. In counterinsurgency operations, “ad hoc” support requests from ground units should become the norm rather than the exception.
- Maintain unity of command through the JFACC, but decentralize control as much as possible, especially in COIN operations. This requires institutionalizing the Air Force’s existing Irregular Warfare doctrine that suggests the JFACC may not always have the situational awareness and flexibility to make the best decisions.<sup>45</sup>
- Include decision-capable Army representatives in the combined air operations center (CAOC) during counterinsurgency operations. This would be more than a liaison officer who offers inputs to CAOC staff; the representative should be of sufficient rank to influence CAOC decisions and best represent ground commanders’ requirements. The Army representative should present the soldier’s perspective to CAOC staff, and share

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44. John T. Bennett, “Deptula: Not Yet For Unmanned, Autonomous Aircraft,” *Defense News*, 3 December 2009. <http://www.defensenews.com/> (accessed 24 February 2010).

45. U.S Air Force, *Irregular Warfare*, AFDD 2-3 (Washington, DC: Department of the Air Force, 1 August 2007), 9.

the airman's perspective with ground commanders. This would instill more trust and confidence between the services and lead to more effective joint operations.

- Reassign the Army's organic unmanned aircraft systems to the JFACC. Theater-level UASs should fall under the JFACC for unity of command, but during counterinsurgency operations, Army decision makers in the CAOC would ensure a decentralized C2 construct to provide the best support to ground forces. Assigning UASs to divisions, brigades, and battalions, whether deployed or not, is an ineffective and inefficient use of limited resources.
- Institute remote split operations for the Army. Ideally, the services would co-locate operations centers to allow more joint and integrated training opportunities and to increase synergy across the entire range of military operations.

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