Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
2008		**00-00-2008 to 00-00-2008**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Unmanned Aircraft Systems Taking Strategy to Task	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **National Defense University,Institute for National Strategic Studies,260 Fifth Avenue SW Bg 64 Fort Lesley J. McNair,Washington,DC,20319**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**3**	

Air Force MQ–9 Reaper prepares to land after mission in Operation *Enduring Freedom*

U.S. Air Force (Brian Ferguson)

Unmanned Aircraft Systems
Taking Strategy to Task

By DAVID A. DEPTULA

As recently as 10 years ago, few would have predicted the speed and impact with which unmanned aircraft systems (UAS) would burst onto the national scene and become invaluable contributors in both combat and noncombat operations (including assisting in domestic relief efforts). The rapidity with which these systems have been incorporated into the Department of Defense (DOD) inventory is unprecedented. What should not come as a surprise, however, is that in the sprint to employ these systems for American national security interests, the evolution of UAS capabilities has outpaced the development and implementation of an overarching concept of operations to govern their use. We must remedy this situation now and set ourselves to the task of forging an appropriate UAS employment strategy that will ensure the integration of these resources to optimize their use in joint force operations.

The following perspectives are offered as a starting point for building and codifying a joint UAS paradigm that gets the most out of these resources in order to increase capability for joint forces, while promoting Service interdependency and the wisest use of Americans' tax dollars.

Categories and Capabilities

Given the multitude of UAS with different capabilities already in use by each of the Services, it is important to distinguish between those that could be optimized by a comprehensive employment strategy and those that could not. This distinction is best based upon the level of capability that a particular system possesses. To design a UAS employment strategy, it is necessary to ensure a shared understanding of the issue, as UAS have been categorized in a variety of ways. Some classify these systems according to operating altitudes and others according to sensor suites and payloads, while still others refer to UAS as tactical, operational, or strategic. In order to formulate and apply an optimal joint employment strategy for UAS, it is helpful to treat these systems and their capabilities in uniform, functionally useful terms.

Categorization of UAS by operating altitude of the aircraft does not address the versatility or capacity of a given system. Likewise, cataloging systems according to types of sensors and/or weapons onboard the aircraft omits consideration both of the platform's performance characteristics and the data processing capabilities associated with the system. Finally, the practice of referring to platforms—*of any type*—as "tactical," "operational," or "strategic" is not only misleading, but also simply inaccurate. These three descriptors are correctly invoked when parsing levels of war. They are also useful when gauging the magnitude of effects of a specific action. Aircraft themselves, however, are not constrained by these partitions; they can be employed at any level of war, and there are no platform-derived constraints on the nature of their achievable effects.

Consider, for instance, that tactical missions such as close air support were conducted by B–52s in Vietnam and have recently been flown by B–52s and B–1s in Afghanistan. These platforms were designed as long-range, nuclear-capable bombers, able to deliver strategic effects when required. Yet conceptually pigeonholing them as "strategic bombers" denies the success they have achieved at the tactical level of war. Conversely, the F–16 may have been optimized for mission sets at the tactical and operational levels of war, yet a single F–16 sortie generated strategic effects when it took out the terrorist Abu Musab al-Zarqawi in June 2006. Such examples—and there are many more across Service lines—demonstrate that platforms are capable of generating a wide array of effects and of carrying out a broad spectrum of missions. More importantly, however, such examples highlight the kind of innovative employment opportunities we may forgo if inaccurate, Cold War–type binning of aircraft as tactical, operational, or strategic continues.

UAS are more appropriately thought of, categorized, and employed on the basis of the *scope of their capabilities*, which must not be confused with *level of effects*. The scope of capabilities of a UAS is a comprehensive measure of the totality of the system's capabilities based upon all the components of the

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system, such as the aircraft characteristics and capabilities, onboard sensors and weapons, data processing and offloading capacity, distribution architectures, and back-end analysis and dissemination components. Collectively, these elements distinguish UAS with *theater-capable* utility from those that provide *localized* effects. It is this latter distinction—theater-level as opposed to local-area scope of capability—that should serve as the discriminator to select UAS that come under a joint employment strategy and those that do not.

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Optimizing Availability

Unmanned aircraft systems with theater-level capabilities are currently low-density/high-demand (LD/HD) assets. In other words, the number of UAS in DOD is not sufficient to meet the demand for the capabilities they provide. Of significance, demand is continuing to outpace capacity, despite the rapidly growing DOD theater-capable UAS inventory—a trend that shows no sign of abating. As force providers, it is imperative that the Services put a deployment and employment strategy in place to optimize availability of these systems across and within the combatant commands, maximizing effects for a joint force commander (JFC).

In order to do that, Services must ensure that their force presentation of theater-capable UAS allows flexible allocation to combatant commands commensurate with their needs. Because theater-capable UAS are LD/HD assets with global demand, U.S. Strategic Command, through the Joint Functional Component Commander for Intelligence, Surveillance, and Reconnaissance (JFCC/ISR), is tasked to allocate these assets around the globe to meet the demands of combatant command. "Organic" assignment of theater-capable UAS prevents their tasking in support of the broader global need unless the entire unit to which they are assigned is deployed. Furthermore, any Service concept that tethers theater-capable UAS to subordinate units within a JFC's area of responsibility—where the "owning" unit's priorities take precedence over that of the JFC—negates the goal of maximizing UAS effectiveness for the joint campaign. Organically assigning theater-capable UAS to individual units risks making them unavailable where the priority for their use is highest.

Beyond the question of organic versus theater control, one must also consider the implications of operating concepts on UAS availability. One of the unique advantages of theater-capable UAS is their ability to be operated from remote locations using satellite datalinks for reachback in a concept known as *remote split operations* (RSO). Under this employment concept, UAS are launched via line-of-sight operations in the theater with command and control of the aircraft passed to a crew in the continental United States that executes the mission for the JFC via beyond-line-of-sight communications. Upon mission termination, command and control of the aircraft is returned to the crew in theater for recovery. The RSO concept has significant advantages over organic assignment of theater-capable UAS to individual units and strictly line-of-sight operations. It delivers capability without having to deploy the associated logistics and force protection or incur the added personnel tempo burden. In other words, it allows a JFC to *project capability while minimizing vulnerability.*

In addition to leaving the support tail stateside, RSO maximizes the number of deployable UAS assets. It separates the deployed assets from the rest of the force structure. For example, the vast majority of MQ–1 Predators come out of the factory and are shipped directly into theater to support combat operations. A fraction of the fleet is maintained at home for test and training, and the rest is engaged. Organic assets are tied to their parent unit. If a unit is not deployed, neither are the UAS associated with it.

If the Services are to meet the rapidly growing demand for theater-capable UAS, they must take all necessary steps to maximize the forward availability of these LD/HD assets. Presenting UAS forces as stand-alone capabilities enables JFCC/ISR to optimize their availability to the combatant commands. Allowing theater-capable UAS to be responsive to the JFC's priorities, as opposed to those of a subordinate unit commander, maximizes their impact and their contribution to the joint campaign across the entire theater, not just one small part of it. Finally, employment of RSO enables maximum forward combat capability within the total inventory of assets while minimizing vulnerability of the deployed force.

Integration in Joint Airspace

In addition to optimizing availability of systems with theater capabilities, another requirement of a sound UAS employment strategy is ensuring their seamless integration into the joint structure in which our forces operate. Under this construct, each of the four Services provides a unique array of capabilities through Service component commanders to a JFC, who may organize his command using Service component (Army, Navy, Air Force, Marines), or functional component commanders (land, maritime, air), or a combination thereof to achieve his prioritized objectives. Currently, multiple Service components own and operate theater-capable UAS with similar capabilities. The joint community lacks clear delineation of functional responsibilities for theater-capable UAS and lacks a consistent template for the employment of these assets in support of a JFC's objectives. The result is the presentation of duplicate (competitive versus complementary) capabilities between Service and functional components, insufficient employment deconfliction, inadequate airspace control, and the associated costs and hazards that result from these complications. Unless addressed decisively now, these problems will get worse as the number of UAS employed by the Services grows.

Today, over 1,000 UAS are deployed in the U.S. Central Command area of responsibility. Given the growth trends, it is not unrealistic to postulate future conflicts involving tens of thousands of UAS—both friendly and hostile—of all sizes and classes, operating in the same airspace as thousands of manned rotary- and fixed-wing aircraft along with an increasing variety and number of air- and surface-launched standoff weapons. The increased complexity of the joint airspace control and air defense challenge in the future will be immense. This complexity cannot be handled in an ad hoc manner at the tactical level but requires a standardized system at the theater level to ensure positive control of vehicles flying in theater airspace.

For example, current UAS airspace control procedures in Iraq rely, to a large degree, on the use of restricted operating zones to deconflict UAS from other air operations. Attempting to control large sections of airspace using restricted operating zones is not to control the airspace at all. It not only suboptimizes deconfliction of manned and unmanned operations, adding additional risks to manned aircraft, but also complicates the

timely engagement of hostile forces by indirect surface fires or rotary- and fixed-wing force application. Effective, responsive employment in joint airspace requires control of this airspace by the JFC's subordinate commander responsible for theater air operations. This is normally the Joint Force Air Component Commander, who executes the priorities of the JFC and currently serves in this capacity for all manned aircraft operating in joint airspace.

Air Defense Implications

While burdensome in the relatively uncontested airspace that we have enjoyed for the past 20-plus years, the risks of ineffective integration of UAS will be significantly more dramatic when we face an adversary that presents a credible air threat. Positive identification and control of all friendly manned and unmanned aircraft flying in theater airspace will be critical to our ability to gain and maintain air superiority and effectively employ effects from the air domain. Employment of restricted operating zones to allow UAS that cannot function under positive control will introduce seams in our air defenses that an enemy can exploit.

In future conflicts, we cannot count on the permissive environment we have enjoyed in Afghanistan and Iraq. When hundreds—perhaps thousands—of hostile UAS are added to the manned air threat, the complexity of the joint air defense problem will increase dramatically. The need to counter this threat reinforces the need to control theater-capable UAS at the theater level and retain the ability to enforce command and control standards across all UAS that may operate in positive controlled airspace.

The magnitude of the contribution that unmanned aircraft systems are making today is significant. Yet even as quickly as these systems are advancing, demands for what they bring to operational environments are growing even faster. As UAS become normalized in their application and continue to increase in numbers and capability, it is becoming increasingly important to bring theater-capable UAS more fully into an employment construct that optimizes their contribution to a joint campaign.

Some critics may suggest that theater-capable UAS assigned to the JFC do not provide "assured support" and are not responsive to the needs of ground maneuver units. This thinking confuses a *sufficiency problem* for *a lack of responsiveness,* as well as the differences in capability between theater-capable and local-effects UAS. It also discounts the lessons learned early in World War II—lessons paid for with American blood, from which joint doctrine evolved.[1] It is important to highlight that the points made here refer to *theater-capable* UAS. Local-effects UAS are appropriate for assignment "organically" to units below the JFC level to provide assured support.

However, lack of coherent control over *what* theater-capable UAS are tasked to do has too often resulted in the inefficient use of scarce UAS resources, and cannot be afforded, either from economic or operational perspectives.[2] This situation can be alleviated by clearly assigning roles and responsibilities for optimizing employment of theater-capable UAS to the component commander tasked by the JFC responsible for theater air operations.

To get the most out of theater-capable UAS requires ensuring that their capability is exploited to the fullest. The key to achieving that potential is maximizing UAS use throughout a theater wherever they are needed, which is best accomplished by centralized control in accordance with JFC priorities, and decentralized execution to meet the immediate needs of the joint forces requiring them. Furthermore, in the context of the current fiscal environment, the low-density/high-demand nature of theater-capable UAS, and future threat environments, what is needed most to enhance joint warfighting capabilities is to build interdependency by leveraging unique Service core competencies that are optimally employed with sound joint doctrine. **JFQ**

NOTES

[1] It was prescribed at the time that aircraft were to be used for the direct support of ground forces, that the mission of the air arm was the mission of the ground forces, and that ordinary air units would be under ground commanders. Under such a philosophy of air operations, the air campaign during late 1942 and early 1943 in North Africa proved to be a model of inefficiency. Consequently, in the aftermath of the battle at Kasserine Pass, American airpower was placed under centralized control of airmen. Ensuing doctrine stated: "Land power and air power are co-equal and interdependent forces; neither is an auxiliary of the other. . . . control of available air power must be centralized and command must be exercised through the air force commander if this inherent flexibility and ability to deliver a decisive blow are to be fully exploited." See War Department Field Manual 100–20, *Command and Employment of Air Power* (Washington, DC: U.S. Government Printing Office, 1944).

[2] See April 2007 Government Accountability Office (GAO) testimony to the House Armed Services Committee on its findings regarding the DOD management of intelligence, surveillance, and reconnaissance (ISR) assets. The testimony specified the need for the JFACC to have visibility into which platforms were being tasked against which targets; as justification, the GAO cited an example of a single ISR requirement that resulted in two different Services' unmanned aircraft systems being sent to the same target at the same time. See GAO, "Intelligence, Surveillance, and Reconnaissance: Preliminary Observations on DOD's Approach to Managing Requirements for New Systems, Existing Assets, and Systems Development," April 19, 2007, available at <www.gao.gov/new.items/d07596t.pdf>.

Soldier remotely operates Raven UAS

U.S. Army (Teddy Wade)