With about 775 unmanned aerial vehicles—from miniature UAVs to the high-altitude Global Hawk—now in operation over Iraq and Afghanistan, the military services are once again confronting long-standing differences over roles and missions.

The latest debate about UAVs is not about career pilots feeling threatened by drones. It is about concepts of operations, ownership, service boundaries, and joint capabilities.

Sound familiar? If so, it may be because this unfolding debate has many of the same markings as historic face-offs over manned aircraft and helicopters.

Famous 20th century debates came about because of recurring differences over “organic” aviation missions in other services versus unique core functions of the Air Force. Today’s UAV debate is churning up familiar issues.

Recall how the success of airpower in World War II contributed to the creation of an independent Air Force in 1947. President Harry S. Truman the very next year had to summon the service chiefs and Pentagon officials to his haven at Key West, Fla., to broker a deal. There, the Air Force was assigned “primary interest” for operations in the air and became lead agent for air systems development.

However, the Key West agreements kept the door open for organic aviation functions in the other services. The Air Force had the lead in the air, but that did not stop the Army, Navy, and Marine Corps from developing their own separate fleets of aircraft for a range of support functions.

The attitude toward aviation was: organic until proven otherwise.

For example, the Navy retained the
responsibility to use its own organic aviation to mount naval campaigns, win local air superiority over enemy naval forces, participate in joint campaigns, and conduct aerial reconnaissance. That left the Air Force and Navy to squabble over whether supercarriers or long-range bombers were the best means to wage strategic warfare. Only a few months after the March 1948 Key West deal, Secretary of Defense James V. Forrestal had to drag the service Chiefs of Staff up to Newport, R.I., for another conference to clarify arrangements.

Helicopters were the next big issue to challenge Air Force primacy. The background of the helicopter debate was similar to the UAV debate of today. Although some experimental helicopters saw service in World War II, they weren’t commonplace on the battlefield until Korea. However, it was the Army’s development of attack and utility helicopters that heated up the debate in the early 1960s.

To the Army, attack helicopters were something other than classic Key West airpower. An Army general laid it out as a commonsense argument in 1965: “Army aviation is part of landpower,” he contended. “It provides us with the means to do what armies have always had to do since time immemorial—close with and destroy the enemy.”

He went on to say that Army aviation “is not airpower in any sense of the word, since airpower involves air-to-air combat, the gaining of air superiority, air strikes deep in the enemy rear with strategic objectives, interdiction of the battle area, close air support by high-speed tactical aircraft, and strategic airlift of Army and other forces. Army aviation is not any of these.”

The idea of Army aviation as a separate entity was crystallized in the Johnson-McConnell Agreement of April 1966. In it, Army Chief of Staff Gen. Harold K. Johnson and USAF Chief of Staff Gen. John P. McConnell authorized the Army to develop attack aviation (which had been under way for a decade), but barred the Army from major fixed-wing roles. A 1975 amendment clarified that the attack helicopter did not provide close air support.

In 1986, a new Army-Air Force agreement reiterated a role for organic aviation. It tapped the Army to “normally be the executive service” for manned aircraft, “in units organic to a land force” and employed within the land component commander’s area of operations. The Air Force remained the preferred executive agent “for manned aircraft systems that are designed to be most effective when organized under centralized control for theaterwide employment.”

That was before unmanned systems in all shapes and sizes started to blur the boundaries of small-unit and theaterwide employment.

Like helicopters before them, it took time for UAV technology to bump up against service traditions. Drones such as the Ryan-modified Firebee, used in Vietnam for low-altitude reconnaissance, fit squarely into Air Force missions. High-altitude, long-endurance platforms with autonomous flight completed some successful test flights in the 1960s and 1970s but ultimately found no long-term buyers.

The US Army, Navy, and Marine Corps bought the Pioneer, which logged more than 500 sorties in Operation Desert Storm in 1991. The Air Force deployed drones to spoof Iraqi air defenses, and one group of Iraqi troops famously tried to surrender to a Navy Pioneer UAV. But the Air Force lagged so far behind in UAV operations that many of the drones had to be borrowed from the Navy.

After Desert Storm, concepts changed. The Global Positioning System and more extensive satellite communications made remote-site control and in-flight rerouting of UAV missions easier. Commanders also wanted more real-time reconnaissance and surveillance. Increased bandwidth via satellite communications opened up new possibilities.

Enter the Predator

When you think about it, the Predator UAV is “an Austrian snowmobile engine, in a glider, with a camera,” said James G. Clark, director of the Combat Support Office on the Air Staff and a longtime Predator guru.

The Defense Advanced Research Projects Agency developed Predator forerunners, and the Air Force deployed them to Taszar, Hungary, in 1996. It was there that they flew surveillance missions for Army peacekeeping forces in Bosnia. With a permissive air defense environment guaranteed by no-fly zones, it was possible to operate the lightweight craft on longer missions.

The Army put in a bid for control of the Predator due to its surveillance capabilities. However, the Office of the Secretary of Defense turned the program over to the Air Force. (Some Predators remained in CIA hands.)

Then came the Global War on Terror. burgeoning requirements for agile, long-dwell surveillance put a premium on unmanned systems of all types. Predators tracked and targeted high-value targets. Their area of coverage was limited, but the full-motion video that Predators piped back demolished the old concepts of roles and missions for UAVs.
The same happened with the Global Hawk endurance UAV, which the Air Force rushed to war with great success. Global Hawk flew more than 22 hours on one Operation Enduring Freedom mission in Afghanistan and on its first night sent back more than 600 images. Global Hawk soon demonstrated that even a true “theaterwide” UAV had applications in small-unit tactics.

Operations in Afghanistan touched off a rush for additional, organic UAVs. “We don’t have enough organic UAVs,” asserted Army Lt. Gen. Robert W. Noonan Jr., who was head of Army intelligence, in April 2002. “When you have a scarcity of assets, if you only have one or two Predators, somebody has to make a call where this is flying and what is it looking at. We feel very strongly that all of our brigades [have] got to have UAVs.”

Enduring Freedom also showed the dark side of the technology. Those who saw Predator’s live video feeds found it seductive. “Full-motion video’s just a polite way of saying watching a TV camera with a UAV,” commented Clark. “You can go crazy staring at that, so you need to take a UAV with that capability and just use it smarter.”

That is exactly what the Air Force has done. Predators, for example, are now part of USAF’s information grid, with downlinks to command centers and Rover laptops in the field. They are also part of the battlespace air picture, with connectivity via the Link 16 data link.

Today, the popularity of UAV operations cuts across traditional service domains. UAVs fall clearly under classic Air Force “Key West” functions such as air interdiction, but they also fit in with the organic functions of other services. “We field a whole series of UAVs in a combat environment, to provide information to those getting shot at,” said Clark.

The different types of UAVs also complicate matters. In the Air Force alone, the unmanned stable includes the seven-pound Desert Hawk (used for base perimeter force protection) and the Global Hawk (which flies for up to 30 hours at 65,000 feet with a sensor swath sometimes wider than from a U-2).

Root of a Problem
In addition to the Air Force, the Army, Navy, and Marine Corps each employ several types of small UAVs. All have plans for more. And all of these unmanned vehicles operate in the same airspace.

To ground forces, UAVs represent a new means of conducting forward surveillance. They may replace helicopter scouts in some functions and add new organic capabilities for units from the platoon to the corps. “It’s a phenomenal way of looking at the other side of the ridge,” as Clark put it.

No one wants to deny ground forces the ability to see approaching threats. The real question is how to manage battlespace information.

A corps, division, or even a platoon UAV is not the only answer. Centralized control over most types of UAVs may be far more effective and efficient than organic ownership. The success of UAVs in Iraq and Afghanistan has come not from their inherent traits but from what they do when linked to joint forces.

Take the example of Global Hawk’s revisit tactics. The RQ-4A is a high-altitude system, but it can deliver tactical effects.

Lt. Col. Mark Corley, commander of the 12th Reconnaissance Squadron at Beale AFB, Calif., explained how the officials at a combined air operations center (CAOC) can divert Global Hawk
from ongoing imagery collection mission to high-priority targets. If Global Hawk “is going to be the only asset on station, we set up what we call a stop-sign pattern,” he said. “We can snap a picture of seven or eight targets in a cluster every couple of minutes,” creating a “constant stream of imagery” for that location.

For combat and stability operations in Iraq and Afghanistan, the Global Hawk has delivered real-time imagery to soldiers, marines, and “a host of black ops special forces,” Corley said. That’s a capability far beyond what smaller, organic UAVs do.

CAOC officers know how to get the most out of each platform. They take the theaterwide perspective of a high-altitude Global Hawk and hand off small areas of interest to the drill-down focus of Predator. Because the air component has the doctrine, training, and perspective for air and space operations, the employment of UAVs under CAOC control is harmonious and effective.

Rapid response also requires flexibility and orchestration that only the CAOC can provide.

One night in Afghanistan in fall 2004, a Global Hawk and Predator teamed up to provide emergency support. As Corley told it, “We actually had a platoon leader in a valley under fire, taking mortar fires on his platoon.” Over the radio, the platoon leader was patched in directly to the Global Hawk operations center and pilots at Beale Air Force Base in California.

“We could hear their conversations live,” Corley said. The platoon leader asked for an infrared image of a particular hilltop, “trying to narrow down where these insurgents ... were setting up their mortars” by picking up the heat signature. Global Hawk “set up a stop-sign pattern” and then passed the coordinates on to a B-1B bomber, which dropped six satellite-guided Joint Direct Attack Munitions on the target. The information was then relayed to a pair of A-10s.

Next, Predator arrived on scene and the Global Hawk returned to other collection tasks. “That was only one hour out of our mission,” Corley said of the event.

Integrating UAVs in such hand-in-hand operations is just as taxing as integrating manned aircraft. While neither Predator nor Global Hawk had an aircrew aboard, the data they were providing was essential to the lives on the ground.

Global Hawk has “incredible capacity,” said Lt. Col. John Johanson, who spent a year as intelligence-surveillance-reconnaissance director at the CAOC for Central Command Air Forces. The RQ-4 can rapidly toggle between television, infrared, and radar imaging. Targets of interest are selected in coordination with ground forces engaged in operations.

On the CAOC floor and classified chat rooms, retasking happens fast. However, the broad responsibility for coordination on long missions is best handled by airmen who are in a position to coordinate emergency response, preplanned imagery collection, and the growing mission of cross-cueing.

Operators can find targets with the E-8 Joint Surveillance Target Attack Radar System aircraft and visually identify them with Global Hawk, said Gen. T. Michael Moseley, then USAF vice chief of staff. That mission requires an airman’s view of the battlespace and skill in linking platform information. Without all airborne assets under CAOC control, key platforms might not be available at the right time.

Cross-cueing can assist with anything from watching insurgent nests to addressing immediate tactical needs of soldiers on the ground. Cross-cueing by Global Hawk is in so much demand that now cross-cue times are built in. Fencing off time works well because Global Hawk offers more time on station than Joint STARS aircraft. As Corley put it, the E-8s will “only be up in the area, let’s say for six or eight hours, and [UAVs] will have been in country for 10 hours already. We will just manage our scheme of maneuver so that we arrive in the same area as the JSTARS.”

Hurdles Ahead

While unmanned air vehicles have been proved in combat, hurdles stand ahead.

The airspace is becoming increasingly crowded with unmanned systems of all sizes. The popular Pioneer UAV has only a few hours of endurance and its advertised ceiling is 15,000 feet. Higher up, Navy aircrews reported being startled by Predators near their targets in the early days of Enduring Freedom.

Already, there have been three collisions between small UAVs and helicopters.

Airspace control and deconfliction is emerging as a significant challenge. At the Joint Air-Ground Operations Office at Langley AFB, Va., Brig. Gen. (sel.) Michael A. Longoria lists airspace deconfliction as a key point in the Air Force’s dialogue with the Army. “The ground is rising,” said Longoria in a recent interview. The Air Force’s Desert Hawk typically operates below 500 feet in part to avoid these problems.

But Army and Marine Corps concepts of operations for UAVs are testing the limits. “We are proliferating things that fly in low airspace. There are thousands of small UAVs, all ranges and types—not just helicopters but mini- and micro-UAVs. We’re worried about the airspace that low,” Longoria said.
Airmen check an RQ-1 Predator after a mission over Afghanistan. The debate over who operates and controls UAVs harkens back to the long-ago arguments over who should have charge of manned aircraft.

According to Longoria and his staff, Army UAVs in action today are typically operating with a 2,000- to 3,000-foot ceiling. JAGO officials say they have heard requests for a block of airspace up to 10,000 feet. Contrast that with Cold War standards, where the combat ceiling for Europe was 200 feet. “We’d like 500,” concluded Longoria.

A related issue concerns positive vs. procedural control. Both are required. Trouble comes when a visual is needed, as vehicles work in the crowded airspace to provide close air support or pursue time-critical targets, for example—but other service air vehicles are operating in the same area only under procedural control.

The Air Force’s Desert Hawk is treated just like any other aircraft—even though its wingspan is just four feet. “We basically file a flight plan with the air traffic control tower and work with base ops and air traffic control folks,” explained SMSgt. Tim Poland, superintendent of tactical automated sensor systems at the Force Protection Battle Lab. The Desert Hawk is “not launched until the flight is deconflicted.”

Then, the UAV’s controller “is given parameters ... to stay at a certain altitude and [within] a certain box” for a particular mission,” Poland said.

Longoria expects the negotiating to continue. The debate on “centralized control vs. organic will never go away,” he said.

Airspace is a resource, just like airplanes. Future doctrine will have to cover how to use these resources that are becoming ever more scarce.

**Questioning Unity**

As in the debate over helicopters in the 1960s, unmanned air vehicles raise the question: Does unity of airpower have to include everything in the sky?

Certainly it is easy to understand why ground forces want their own UAVs. “When a company or battalion can’t get the larger UAV,” such as the Hunter or Shadow, the Raven works very well, Chief Warrant Officer 3rd Class Steve Schisler told *Army News Service* in February. “If you have guys doing a mounted or dismounted patrol in a city or a small town, you can have the Raven flying overhead providing far-sight security.”

Added Maj. Chris Brown, with the Raven detachment in Kuwait: “We had one commander’s team find an [improvised explosive device] on its first mission, and the commander has been sold ever since.”

For the future, it all comes down to where to place the limits on organic UAVs and how to ensure that all UAV systems are netted into a central battlespace information architecture.

The Joint UAV Center of Excellence, at Creech Air Force Base (formerly Indian Springs Air Force Auxiliary Field) in Nevada, will help ensure the systems are coordinated. The joint center will build on the Air Force’s decade-old UAV Battelab and will be a test ground for harmonizing concepts of operations and streamlining future development.

“If there are tribal jealousies about this, we’ll let some other service be in charge of it, be the command—I don’t care,” USAF Chief of Staff Gen. John P. Jumper said at the Heritage Foundation in Washington, D.C., in April. His goal: “Get everybody under the same roof, talking the same language, organizing ourselves toward a single purpose, and stop worrying about ownership issues.”

Future success will depend on building relations across the joint components, to avoid squabbling over roles and missions and maximize combat utility. Clark and his Combat Systems Support Office have briefed the Army’s operations staff on unmanned systems.

“It’s kind of a two-edge sword,” summarized Clark. “The problem now is like you trained a series of brilliant musicians, but the next challenge is to put these musicians [together] as part of a symphony. It isn’t that every company commander, battalion commander, brigade commander has to have only his indigenous assets. But if he’s got a Shadow, a Hunter, a Hawk—how do you choreograph that with Global Hawk?”

According to Clark, it all revolves around information flow between troops on the ground and the air component commander.

There the parallel with helicopters holds a telling lesson. Twice in Iraq, the air and land components ran into trouble over “organic” Apache helicopter maneuver. Both in 1991 and 2003, clearing airspace for deep Apache operations hindered fixed-wing sorties, and the combined force paid the price in effectiveness.

The lure of UAVs is their potential to become ever-more effective armed and unarmed tools. Desire for ownership must be put into perspective. UAVs are air vehicles, after all, and their development and employment will benefit from guidance from the masters of airpower.

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