The Air War in Libya

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> *If there is one attitude more dangerous than to assume that a future war will be just like the last one, it is to imagine that it will be so utterly different we can afford to ignore all the lessons of the last one.*
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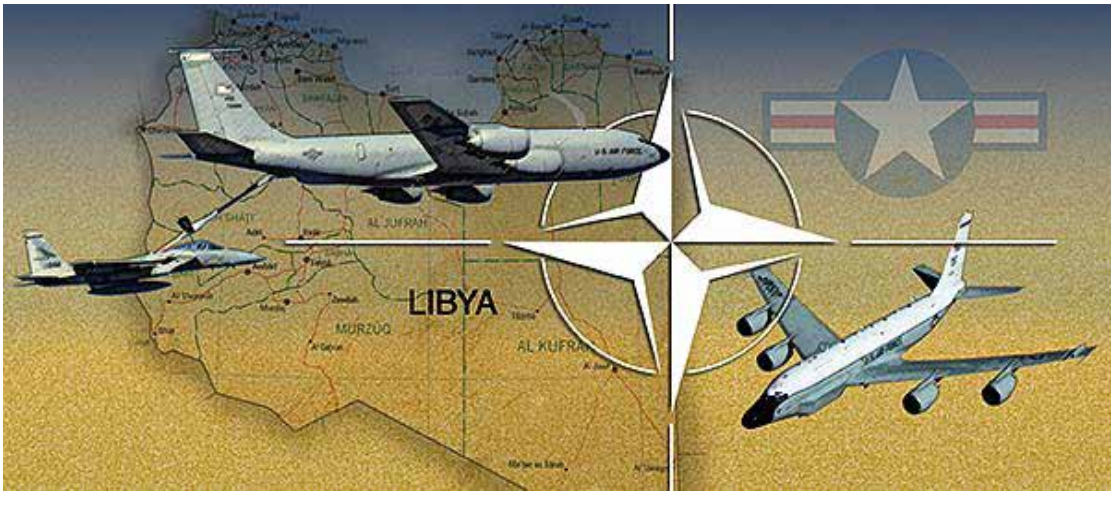
> —Sir John C. Slessor, *Air Power and Armies*, 1936



More than a year has passed since the last air mission of the North Atlantic Treaty Organization's (NATO) Operation Unified Protector concluded.[1] In just over seven months, the Western-led air campaign (see figure below), initiated in response to a United Nations Security Council resolution (UNSCR) to protect Libyan civilians, allowed a ragtag group of rebels to bring about the defeat of a well-armed military and the downfall of a dictatorship that spanned more than 40 years. Since the end of the mission, little public discussion or analysis of the campaign has taken place. Although some skepticism remains regarding the future of the oil-rich North African nation, an overwhelming consensus of opinion considers the air war in

Libya a resounding success and a testament to what a coalition-led operation can do. Tomas Valasek, of the Center for European Reform in London, asserts that it was "as good a war as it comes."[2] Diplomats from the United States and Europe agree with this evaluation, similarly describing the war's merits in superlatives. Before we consider replicating the coalition's efforts in another intervention, however, more deliberate review and scrutiny are not only prudent but required. Additionally, a thorough analysis reveals that these assessments do not address many operational issues that proved problematic and need further examination, including linkages to overall airpower implications and key concerns. In the end, although the campaign may have attained its strategic objectives, operationally it should in many ways serve as a wake-up call for everyone involved.

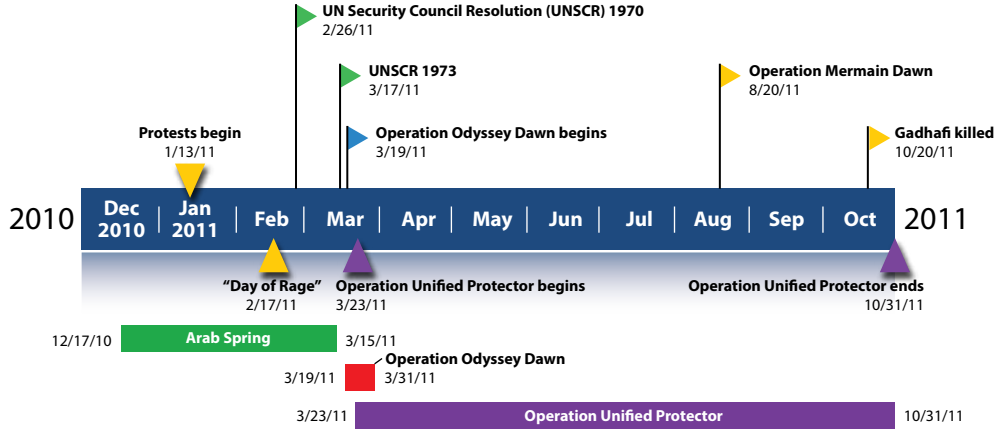


Figure. Timeline of the Libyan air campaign. Unified Protector consisted of three elements. NATO commenced an arms embargo on 23 March 2011 and enforcement of a no-fly zone on 25 March. On 31 March, NATO took control of all military operations, including the protection of civilians from attack or threat of attack. ("Operation Unified Protector: Final Mission Stats," NATO.int, 2 November 2011, http://www.nato.int/nato_static/assets/pdf/pdf_2011_11/20111108_111107-factsheet_up_factsfigures_en.pdf.)

Operation Odyssey Dawn

So for those who doubted our capacity to carry out this operation, I want to be clear: The United States of America has done what we said we would do.

—President Barak Obama

From the outset, the United States did not want to take on the lead role during the crisis in Libya. Secretary of Defense Robert Gates advised against the establishment of a no-fly zone; even after Operation Odyssey Dawn began, he insisted that the conflict in Libya was not a vital interest to the United States.[3] Despite this initial reservation, Joint Task Force Odyssey Dawn stood up on 3 March 2011, commencing air operations on 19 March. Almost immediately thereafter, the United States began working diligently to transfer control of the campaign to NATO.[4] By 31 March, that organization had assumed full responsibility for the mission, with the United States taking on a secondary, supporting role in Unified Protector, and Odyssey Dawn concluded. Despite the brevity of the operation—less than two weeks of actual combat—it brought to light many deficiencies, both tactical and strategic. Nevertheless, this fact should not detract from the impressive feat of standing up a joint task force, focusing a coalition of 15 participant nations despite rapidly changing strategic guidance, executing 2,000 missions to gain air supremacy, and handing over operations to another organization—all in less than a month. As the joint force air component commander, Maj Gen Margaret Woodward, USAF, would later recall, "History is clear . . . the operation was a great success."[5] Failure to capture the improvements that need to take place, though, would be a disservice to those involved in this conflict and in future actions.

US Lessons Identified

US Africa Command (AFRICOM), tasked as the lead command for the operation, found itself beset with organizational deficiencies from the beginning. Secretary Gates unknowingly highlighted these inadequa-

cies during activation of the command in 2008, noting that "AFRICOM's mission is not to wage war, but to prevent it."[6] Initially tasked with a noncombatant evacuation operation and then reoriented toward a kinetic operation, the newest geographic combatant command had difficulty executing a mission it was never intended to carry out.[7] The lean staff (300 personnel) had never practiced joint task force operations with its component commands; neither could its air operations center (AOC) serve as anything other than "a transportation command to support personnel and material transfers within the (theater)."[8] Instead, AFRICOM had to rely heavily on European Command's personnel, facilities, and expertise to execute the mission successfully. Organized, trained, and equipped only to conduct theater engagement, AFRICOM struggled to put together a last-minute air campaign.[9] The rapidly developing strategic direction and shortfall in resources complicated the command's ability to carry out the mission, but external constraints also impeded progress.[10]

General Woodward quickly recognized the shortfalls and limitations that she faced with the organic capability at her disposal. As the mission evolved from a noncombatant evacuation operation, to a no-fly zone, to a mandate to protect civilians, the scope and sense of urgency grew as well. Unable to keep up with this sense of urgency, however, were the global force management / request for forces processes that the services use to apportion, assign, and allocate forces and "obtain required support not already assigned or allocated to the command."[11] Even though the first and only request for forces was submitted early and "almost immediately validated by AFRICOM and the Joint Staff, the approval for these resources simply did not occur in time for operations."[12] This want of resources proved the most challenging constraint in the development of strategy for the air campaign.[13] Particularly detrimental was the absence of critical aircraft such as the E-3 Airborne Warning and Control System (AWACS), the E-8 Joint Surveillance Target Attack Radar System (JSTARS), and additional tankers that arguably should have been there first but did not arrive until after combat operations began.[14] Additionally, because intelligence, surveil-

lance, and reconnaissance (ISR) assets possessing full-motion video were not available until after NATO took over the mission, pilots found it difficult to distinguish the rebels from the forces loyal to Mu'ammar Gadhafi and to identify time-sensitive targets. Indeed, after the pro-Gadhafi forces abandoned their conventional equipment, differentiating between the two forces without persistent ISR assets that could develop pattern-of-life information proved nearly impossible. Coupled with UNSCR 1973, which restricted the employment of NATO ground forces, the lack of ISR inhibited accurate battle damage assessment and led to additional strikes on "targets that might have already been neutralized."[15] The uncertainty about availability of assets and their arrival in-theater also affected the planners' efficient use of aircraft.

The decision regarding the basing of all airplanes coming into the theater appeared haphazard and did not effectively use the limited number of air-refueling assets available.[16] The vastness of Libya, roughly the size of Alaska, and the lack of suitable airfields close to the no-fly zone increased the transit time and made nearly all assets reliant on air-to-air refueling. Basing decisions resulted in placing fighter assets closer to the conflict at the expense of the heavy aircraft. Consequently, to remain on station, the latter needed a tanker for each sortie. A classic Catch-22 dilemma followed as the planners had to choose between fueling the heavy command and control (C2)/ISR platforms or the strike assets. The relatively few ISR assets, preplanned targets, and moral necessity of minimizing collateral damage meant that most attacks had to use dynamic targeting as well as strike coordination and reconnaissance tactics to seek out and destroy pro-Gadhafi forces.[17] By their very nature, these two missions make strike assets dependent upon air battle managers aboard the heavy C2 platforms.[18] Planners often had enough gas for aircraft that could pair shooters with targets or for the shooters themselves—but seldom both. Once a deliberate planning effort began, liaison officers and planners made changes that maximized the effectiveness of constrained resources. Clearly, this operation underscored the importance of aerial refueling and gaining access to bases. The tyranny of distance and the associated complexity of bas-

ing decisions in this theater were not new phenomena, however. Planners should have identified and mitigated these issues much earlier.[19]

One can say the same of communications barriers among allied forces. Gen Carter Ham, USA, commander of AFRICOM, praises the level of interoperability and coordination during Odyssey Dawn as the "ideal" that future operations should seek to attain.[20] Throughout that operation and into Unified Protector, though, several concerns impeded operations. Principal among these was the use of classified systems to communicate with NATO, a problem that hindered information sharing. US forces utilized the SIPRNET (Secret Internet Protocol Router Network) to plan and execute Odyssey Dawn, but NATO has no access to this system, instead using its Secret and Crisis Response Operations in NATO Operating Systems (CRONOS) for transmitting classified information.[21] Although the battlefield information collection and exploitation system (BICES) emerged in the late 1980s to bridge this gap, it was not widely available for US forces and "didn't exist in AFRICOM."[22] The absence of BICES complicated the handover to NATO, especially during the early stages of Unified Protector. Until the system became available at staging locations for US assets, no secure means existed for transmitting the air tasking order and other mission information. Thus, liaison officers could pass basic sortie information only to the crews, which would then have to check in with the airborne C2 agency for the remainder of their air tasking order. Moreover, compatibility issues did not confine themselves to personnel on the ground.

Another problem arose in learning the detailed capabilities of coalition aircraft. Most assets belonged to NATO nations, but no mechanism existed for disseminating basic information from all participants regarding their aircraft capabilities. Planners' lack of familiarity with the secure radio, data link, and other aircraft equipment of each nation had a detrimental effect on development of a communications plan, prioritization and deconfliction of frequencies, and the planning of search and rescue contingencies. The United States not only suffered from a paucity of compatible systems with its partners but also had

trouble getting the systems to communicate since the "NATO standard" proved neither standard nor even accessible to US assets. This issue applied to the loading of cryptology into radios and other devices to make them secure as well as to methodologies of employment such as the role played by tactical C2 assets like the AWACS.[23]

Implications for US Forces

Fortunately, most of the seams identified in the US operation lend themselves to quick resolution. The United States should address deficiencies in the organizational structures of geographic combatant commands. According to General Ham, "Combatant commands don't get to choose their missions."[24] If they are to have the same responsibilities and authorities as other commands, then appropriate resources and mission sets need alignment. Odyssey Dawn exemplifies how certain commands are not task organized to execute the full array of combat missions yet may be expected to lead during unexpected contingency operations within their geographic boundaries. In the case of this operation, deciding who led the mission based upon lines on a map rather than capabilities caused much confusion and consternation. Without assigned operational forces, save those in Seventeenth Air Force and Joint Task Force–Horn of Africa, transferring the mission after it evolved into a large-scale kinetic operation would have proved more efficient. European Command, which ended up providing the bulk of the infrastructure, manning, equipment, and expertise, would have been a logical choice. The Department of Defense should carefully consider whether all geographic combatant commands will have capabilities to conduct both low- and high-end operations or whether it should continue with certain "limited mission" commands. The deactivation of Seventeenth Air Force on 25 April 2012 may reflect the inclinations of strategic decision makers.

In addition, the global force management / request for forces process demands further examination and refinement. The movement toward lean supply chains and a "just-in-time" mentality restricts the

flexibility of operations. Despite successfully executing a time-critical operation within a resource-constrained environment, the US Air Force could fully allocate assets for only four of the 90 requirements, a situation likely exacerbated by political realities because Congress did not approve this operation.[25] Although the deployment of assets does not depend upon such approval, its absence reveals the difficulty of rapidly responding anywhere in the world.[26] This also highlights a real danger of heavy reliance on what the Air Force calls "reachback," which "refers to relying on Stateside combat and support aircraft . . . or to CONUS [continental United States]-based support personnel tied electronically to forward units."[27] General Woodward echoed this sentiment, warning that Odyssey Dawn should serve as "a wake-up call."[28] Much credit goes to the capabilities and professionalism of the service personnel who performed the mission with the few forces on hand, but we may discover during the next contingency that operating this way may not be enough or may come too late. The United States can do much to ensure that its infrastructure and systems enable the right assets to get to the right place on time by lessening the dependence on reachback and refining the global force management / request for forces process.

Furthermore, America must consider standardizing equipment and integrating it with that of NATO's European members. It is incredible that members of the world's largest military alliance would continue to develop and field incompatible systems. Even though the United States upgrades its C2/ISR platforms with secure air-to-ground Internet chat ability, the US version (known as mIRC) is not compatible with the NATO version (JChat).[29] Differing objectives, practices, and political constraints may drive nations to different procurement sources, but they should at least agree on standards that make systems interoperable. A service may elect to retain specific US-only systems as well, but it must have some means of operating with NATO partners. The absence of NATO standard items prescribed by standardized agreements undermines the already tenuous ability of the partnership to fight even fairly close to Europe. For the most part, the United States

has overcome problems associated with communications and cooperation among its services but must expand that standardization to NATO partners. In 2010 European Command recognized the need to employ BICES rapidly throughout the theater since "other NATO countries have been using the system for years"; nevertheless, the AOC possessed only one BICES terminal.[30] Even when personnel used compatible equipment, the limited access to standard, available cryptology meant that, in many cases, they had to use code words to pass sensitive information over clear radio frequencies. Transmitting a 10-line targeting message securely between forces that speak the same language is relatively time-consuming. Doing so between individuals possibly not fluent in English or laden with heavy, dissimilar accents brings the process to a grinding halt.

Finally, the inherent trust and familiarity among partners involved at the operational and tactical levels seemed missing or at least slow to develop. Many countries were reluctant to fully integrate from the beginning and limited their interaction with support elements from other nations. For example, largely due to its policy of neutrality, Sweden had not engaged in combat or even deployed operationally in over 50 years prior to Unified Protector.[31] Certainly, no one questions the combat capability of Swedish forces, but they obviously had difficulty integrating seamlessly into NATO combat operations. To eliminate this hesitancy and improve mutual confidence, we must make regional exercises and training more realistic and inclusive. Participating in NATO or non-US-led coalition exercises will identify areas for improvement and any strictures in a training environment. The United States, however, has repeatedly shown that merely identifying lessons will not solve the problem since it quickly dismisses or forgets many of them. In 2000 the Air Force directed a comprehensive report by RAND that identified "potential interoperability problems that may arise in NATO Alliance operations or in U.S. coalition operations with NATO allies over the next decade" and offered solutions to mitigate those problems.[32] Yet, during the execution of Odyssey Dawn, many of these challenges clearly remained, demanding real-time workarounds. Both

General Ham and General Woodward rightfully affirm that this operation was a "testament to the day-to-day training, exercising, and interoperability we've built with various partners around the world," but the execution—especially during the early phases—reveals much room for improvement.[33]

Operation Unified Protector

The operation has made visible that the Europeans lack a number of essential military capabilities.

—NATO Secretary-General Anders Fogh Rasmussen

NATO Lessons Identified

Unified Protector was the first major NATO air operation since 1999's Operation Allied Force in the Balkans and the first time that Europeans have taken the lead role, with the United States agreeing to assume a supporting function.[34] An operation that began with much skepticism and shortcomings ended up prevailing, prompting some to declare it a model for future interventions.[35] Others felt that the operation represented a "dark lesson for NATO," exposing fissures in the alliance and gaps in capabilities.[36] Regardless of the outcome of these debates, NATO must contend with some clear issues, both strategic and tactical.

Unified Protector suffered from a lack of strategic cohesion insofar as fewer than half of the member nations contributed to the operation.[37] Discounting US and Canadian participation, only six European countries delivered any offensive capability. In light of Allied Force, which boasted forces from 14 of the 19 alliance members, little wonder that some people call into question NATO's ability to act in unison and ask what that bodes for the identity of future security. Last summer Secretary Gates blasted NATO, asserting that it had deteriorated into a two-tiered membership structure "between those willing and able to pay the price and bear the burdens of commitments, and those who enjoy the benefits of NATO membership but don't want to share the

risks and the costs."[38] Some of the nations that abstained could have participated but simply chose not to join the conflict.

In addition to such lack of resolve, Unified Protector exposed significant limitations in the alliance's military prowess. In general, many European leaders utilized NATO as a means of securing US involvement and obtaining "unique capabilities" not found elsewhere in the alliance.[39] The United States filled gaps in ISR platforms, air-refueling aircraft, and drones. Flying only 25 percent of the sorties, America still supplied half of the aircraft, flew 80 percent of the air-refueling and ISR missions, and augmented airborne C2 with 25 percent of the coverage and control.[40] The remaining ISR came primarily from the United Kingdom and France, which also accounted for half of the strike forces—again reflecting the lack of burden sharing among participants.[41] NATO also depended upon the United States for nearly all of its suppression of enemy air defense missions as well as combat search and rescue.[42] Quite simply, without significant support from the United States, the European partners would have found it very difficult to conduct this operation as successfully as they did.

Even the assets supplied by the European nations could not sustain long-term combat operations. Initially, NATO expected a short-term Libyan action, forecasting operations only until July. That organization deserves credit for successfully passing two three-month extensions, but even though it may have thought itself prepared for the long haul, NATO forces and supplies were not. By early June, reports surfaced that several nations were running out of weapons, so the United States had to replenish their depleted stockpiles.[43] Soon after, Norway, which had contributed 17 percent of the strike missions with just six aircraft, announced that it would withdraw its forces because of the excessive burden involved.[44] (This should not detract from Norway's contribution. That nation, along with Denmark and Belgium, "flew a percentage of the missions far beyond the size of their air forces," further magnifying the disparity in burden sharing among NATO's European members.)[45] The 26,500 sorties launched over the campaign may ap-

pear significant until one considers that in the 78 days of Allied Force, the coalition flew more than 38,000 sorties, non-US members flying 15,000 of those.[46] Of even greater concern during Unified Protector, air operations were designed "for an effort of 300 sorties a day but . . . struggl[ed] to manage 150."[47] That "a very small operation" strained the alliance is troubling.[48]

In addition to the lack of certain air assets, leading the operation on the ground proved more difficult than anticipated. Some senior officials contend that forces made a "seamless transition" from the US-led Odyssey Dawn to the NATO-led Unified Protector, but others involved in the operation dispute this claim, asserting that "momentum was lost during the transition to NATO control."[49] Indeed, contending with the deficient facilities of the combined air operations center (CAOC) alone would have made the transition anything but seamless. The CAOC at Poggio Renatico, Italy, had no infrastructure to support the handful of permanently assigned personnel there at CAOC 5, let alone the hundreds of liaison officers and other support personnel descending onto the base. Within a few days, its temporary facilities were overflowing. Right away, NATO appeared neither properly organized nor resourced to take control of the operation.

Command and control of the campaign had transitioned from a US Air Force AOC with a robust communications and computer infrastructure to one without equipment for an operation of this scope. The coalition's few securable radios (only two rudimentary satellite communications radios with handsets were available to conduct operations) compounded the new CAOC's equipment problems. Since US assets did not enjoy JChat capability, nearly all airborne communication—both time critical and administrative—had to go through only two available frequencies. Additional equipment interoperability issues emerged: secure telephones on the AOC floor could not communicate with US secure phones at their bases, and neither side could access the other's capability. The ad hoc facility constructed for US liaison officers gave them access to SIPRNET, satellite communications, and se-

cure phones to talk to their US counterparts but still did not allow them to communicate with the CAOC a few hundred yards away. As the author observed, messengers had to travel from one location to the other when personnel on the CAOC floor could not contact an airborne asset via the means available, or vice versa.

Differences in execution from Odyssey Dawn to Unified Protector did not stem merely from inadequate facilities; they also reflected the respective training programs and C2 structure. During Odyssey Dawn, the United States overcame the dearth of personnel experience by means of standardized training processes familiar to each person assigned to an AOC.[50] For the most part, each US AOC has the same functions, processes, and even a guidance document covering tactics, techniques, and procedures.[51] Although the United States invests considerable time and effort training its AOC personnel, NATO does not. Because of its organizational structure and internal processes, NATO has no standing forces under its command, and force generation does not begin until the North Atlantic Council approves the concept of operations.[52] The next step—the acquisition of assets and personnel—requires time for coordination across the entire NATO alliance, lending support to Lt Cdr Dave Ehredt's observation that "NATO is not known for its speed or agility when responding to an international crisis."[53] Because of the compressed transition schedule and NATO's slow, deliberate system, the CAOC in Italy needed major augmentation of US personnel—specifically targeting specialists.[54] Again, the author observed that NATO personnel working the CAOC functions on the floor had no experience, training, or qualifications to do so.

Problems with equipment and trained personnel at the CAOC magnified issues associated with the national caveats in a coalition structure. Any coalition has different rules of engagement (ROE), approval processes, and levels of collateral damage that any nation is willing to accept. Unified Protector involved no standing coalition rules, so the ultimate decision on whether or not to strike a target typically occurred not in the cockpit but back in the CAOC by the nations' "red

card holders"—senior officials consulted during the targeting process. This additional layer of decision making further compounded the time delays resulting from incompatible cryptology, language barriers, and reliance on dynamic targeting and strike coordination and reconnaissance tactics. Often low fuel forced a strike asset to return to base after it had waited more than 30 minutes for approval to engage a hostile target, sometimes leaving it intact. Early on in Unified Protector, these delays likely contributed to rebel complaints that NATO's air campaign was not doing enough to attrite regime forces.[55]

Implications for NATO

Many of the issues that plagued the European-led NATO operation will not have an easy solution. The difficulty that the organization experienced in its attempt to gain consensus for an operation legally validated by UNSCR 1973 and deemed politically legitimate through support of the Arab League raises questions about NATO's European members ever coalescing around a common defense identity.[56] Some pundits perceive the operation as a "symbol of America's success in convincing its Allies that Europeans have to take a greater share of the burden and assume greater responsibility for security in Europe and its periphery."[57] Indeed, although it was promising to witness the United Kingdom and France take the diplomatic lead in the operation, the transition to NATO served only to highlight the lack of capabilities that the United States seeks to leverage in the future.

Both the European NATO partners and the United States must address the capability gap that exists in Europe and the latter's reliance on America. Some analysts may extol the European countries' improved capabilities by citing the relative proportion of sorties flown or weapons expended by non-US NATO and coalition partners, but even "the most advanced fighter aircraft are of little use if the allies do not have the means to identify, process, and strike targets as part of an integrated air campaign."[58] These are not optional extras in an air campaign; they are essentials that, at present, only the United States

seems able to provide.[59] Even with the European members' current capabilities, they must invest more in weapons and support to ensure successful operations in future conflicts. Allied Force taught us that shortages of precision-guided munitions pose a threat to the overall success of the mission.[60] In the much smaller Libyan operation, the problem arose again and early on. When NATO assumed control, the Libyan integrated air defense and airborne threat had already been eliminated, so NATO aircraft enjoyed a permissive environment from the start. Still, Gadhafi's antiquated defense system and minimal air force would likely have presented a daunting challenge to the Europeans alone. NATO relied on the United States not only for air assets but also for targeting and personnel, without which the operation would have proved far more problematic. Secretary of Defense Leon Panetta echoed his predecessor's warning to European leaders that the United States can no longer absorb and cover the alliance's shortcomings.[61]

Facing serious economic crises, the United States and European NATO partners are changing from the past practice of opulent spending and are attempting to minimize their investments on defense. Some nations, aware that they cannot afford a full spectrum of capabilities, appear to be molding their forces under the assumption that others can make up the difference. In the end, alliance participants may hedge their respective security objectives on leveraging the others' capabilities—which may or may not materialize in the future. Given the US national security strategy's dependence on alliance support, the United Kingdom's and others' diminishing force size, NATO's apparent two-tiered membership, and a global economic downturn, the prospect of burden sharing for collective security looks more daunting than anyone might have anticipated.

In the interim, NATO should seek innovative solutions as well as refine current structures and processes to find low-cost, high-payoff solutions. It may do so by improving training and rewriting publications so they align with actual practices of the member states. Several NATO members are in dire straits, and others face fiscal shortfalls, including

the US debt crisis. The alliance cannot afford to invest in disparate technologies or conflicting doctrine among member nations that require mutual support. NATO must also seriously consider merging and reorienting the C2 architecture further away from its legacy Cold War design.[62] Instead of maintaining several smaller CAOCs with limited ability, the alliance would do better to concentrate on one or two facilities appropriately staffed, trained, and equipped for modern combat operations. NATO has taken steps to reduce some of its redundancies and architecture, but the current design still presents a mismatch of capabilities and ambitions as long as the strategic concept maintains "out of area" operations.[63]

NATO would also benefit greatly from a training program similar to that of the United States—one which standardizes training for personnel assigned to a CAOC. Finally, although all nations that participate in future operations probably will not agree entirely on ROEs or on the amount of acceptable collateral damage, they could develop and codify a standard ahead of time to prevent the delays experienced in Libya. This might take the form of matrices of choices that a country's representative accepts from the outset—for example, NATO Standard ROE 1a, CDE B, which informs planners and operators who they can task to which targets.[64] These changes will help reduce the friction involved in early stages of the operation and make the force more effective from the start. In the future, the alliance may not have the luxury of dealing with an adversary that permits a gradual, escalatory response.

Airpower Lessons and Implications

For good or for ill, air mastery is today the supreme expression of military power, and fleets and armies, however vital and important, must accept a subordinate rank.

—Winston Churchill, 1949

From the beginning of the Libya operation, scholars and pundits everywhere began postulating and prophesying what this operation would mean for airpower. Given that coalition ground forces would not participate, Odyssey Dawn offered a chance to finally determine whether airpower alone could attain victory. In the end, however, the operation produced no clear-cut results but suggested many different conclusions.

Key points regarding the use of airpower in Libya are important in many ways. First, the environment and circumstances associated with the war are likely representative of conflicts in the near future. Libya offered intervention advocates a new approach to attaining desirable outcomes when a "responsibility to protect" mission is warranted.[65] Tomorrow's conflicts will also probably involve piecemeal alliances. Nations will be less inclined to conduct unilateral operations, and the coalition that develops will encompass a wide variety of partners with disparate capabilities and national caveats. Second, in light of the recent end of the drawn-out land war in Iraq and the upcoming withdrawal from Afghanistan, alliances probably will not agree to large troop commitments in the near future.

Airpower offers a responsive, relatively inexpensive, scalable, and low-risk option for political leaders. For all the talk about the expense of cruise missiles and smart bombs, these elements of airpower remain a fraction of the cost of deploying an army. Finally, as nations everywhere confront inevitable decreases in military spending, they must make tough choices about the programs they wish to keep. Some observers postulate that Libya's results bode well for air forces around

the world while others suggest that the operations showed that these forces may not be worth the investment.

Some critics conclude that airpower failed to fulfill the promise of producing decisive results without support from a strong ground component.[66] Many theorists determined early on that Gadhafi's regime would crumble fairly quickly under coalition attack, yet it endured for seven months.[67] The regime certainly appeared to be heading for quick defeat when the first wave of attacks knocked out the Libyan air defense, grounded the air force, and flew unopposed within the first few days. But then "the world's premier military alliance and the three most formidable militaries in the world" barely prevailed "over a third-rate despot."[68] If the Libyans, whose defense spending was one eight-hundredth of the opposition's, nearly forced a stalemate with the Western alliance, then this campaign may not exemplify airpower's promise.[69]

To address accusations of airpower's not having been decisive, proponents claim that it did not attain overwhelming results against Libya because of military and political constraints that relegated airpower to tactical choices rather than strategic targets.[70] Instead of attacking communications nodes and command centers, aircraft had to carry out the laborious and inefficient task of "tank plinking," as in Kosovo during Allied Force.[71] Many people lament that such assignments turn "an air force into an exceedingly expensive artillery branch."[72]

Furthermore, the rapidly evolving political environment prevented the NATO air chiefs from receiving clearly defined objectives. According to Gen Charles Horner, USAF, retired, who led the coalition air campaign in Operation Desert Storm, "To succeed, military leaders need clearly defined goals that can be achieved by the use of force."[73] Many airpower advocates considered the UNSCR overly constrained in terms of what the air forces could accomplish. The nebulous mission of "protecting civilians" did not clarify how far the alliance should go offensively against pro-Gadhafi forces. Initially, it was apparent that the alliance needed to stop their advance toward the rebel stronghold

of Benghazi, but after that the mission became more ambiguous.[74] NATO then took on a more graduated and coercive approach that did not at first target Gadhafi's military capacity or attempt regime change.[75]

This constrained approach drew criticism from those looking for a "shock and awe" display of airpower and a quick, decisive victory, but it likely assured mission success because the rebels could not have exploited this initial advantage.[76] By extending the war and leveling the playing field for rebel forces, airpower gave the National Transitional Council the time it needed to organize and coalesce rather than create a power void. Perhaps, then, though not glamorous, airpower in Libya did exactly what it was supposed to do. The US Air Force has long contended that the strength of airpower lies in its flexibility and scalability. Among other forms of military power, only airpower can simultaneously hold a wide range of targets at risk and "provide a spectrum of employment options with effects that range from tactical to strategic."[77]

Regardless of the eventual assessments of air operations in Libya, one question that emerged and remains to be answered concerns the definition of the term *airpower*. The Air Force's capstone doctrine document describes it as "the ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives."[78] Conspicuously absent from this definition is any mention of delivering kinetic effects, indicating that airpower entails more than firing missiles and dropping bombs. NATO appeared to have sufficient strike assets but proved deficient in ISR, tankers, and remotely piloted aircraft. Displaying the versatility and adaptability of airpower, NATO's strike assets met some of the ISR requirements by fulfilling nontraditional-ISR collection roles as the ROEs developed for each nation. However, many individuals continue to argue that the limited number of enablers within NATO's European nations reflects significant gaps in what constitutes airpower. The fact that submarines launched a barrage of cruise missiles to destroy key air defense nodes illustrates the point that airpower involves

more than conventional aircraft.[79] This appears to demonstrate that in Libya, "the actual use of airpower . . . highlights the fact that 'airpower' is not necessarily the same thing as a country's air force."[80]

Many people may correctly assert that smaller nations will never be able to afford the full range of capabilities that make up "airpower," a fact that demands more focused attention on niche capabilities which contribute to the larger NATO force. If European members of NATO prefer specialization and the pooling and sharing of equipment for a common defense, then they must attain high degrees of coordination. Assuring the acquisition of correct assets and the proper training and equipping of personnel ready to plug into the overall airpower framework represents an enormous undertaking that demands substantial political cooperation.

Although we can say that "airpower" decided the campaign against Libya, it is less clear what that actually means. Undoubtedly, services and programs facing budget cuts will seek to leverage this ambiguity in vying for additional resources. The United States and European NATO forces involved in Odyssey Dawn and Unified Protector can extract and carry forward clear lessons from the planning and execution of the campaign. For advocates on either side of the primacy-of-airpower debate, however, the overall implications remain uncertain. It would be difficult to downplay the asymmetric advantage that coalition airpower gave the rebels; at the same time, the stagnation of NATO's air campaign legitimately calls into question its exclusive application. Clearly, the coalition and its use of airpower did not provide an optimal operational template for future conflicts but will still likely inform future tactics, training, and transformation decisions. Though military and political leaders continue to extol the campaign as an exemplary low-risk military solution, the Libyan operation did not conclusively resolve the notion of airpower's preeminence in war; in fact, it seems to have confused the traditional understanding of what airpower even means. Nor did the campaign clearly indicate how nations should shape their force during the inevitable period of budget austerity. One

hundred years after Italian captain Carlo Piazza first flew over Libya, it seems that Odyssey Dawn / Unified Protector may not have brought us any closer to answering some of these timeless airpower questions. Two facts, however, remain unquestionable: we must attain and maintain control of the air, and the legacy of the air campaigns in Libya will persist for some time.[81]

Conclusion

> *None would dare to aver that there will be no more war, for if that were so then the problem would have been forever solved; and if wars there are to be they will be lost or won in the air.*
>
> —Brig Gen P. R. C. Groves, Royal Air Force, 1922

After a brief campaign like Odyssey Dawn / Unified Protector, many reports will likely follow as more information becomes available. This critique in no way demeans or diminishes the action in Libya. In retrospect, perhaps we should embrace the assessment of Col Mark Desens, commander of the 26 Marine Expeditionary Unit: "Despite the warts . . . that you and I both know where those warts were . . . it was more or less successful . . . and certainly alleviated a lot of human suffering."[82] Undoubtedly, without the intervention, Gadhafi would have remained in power, and his forces would have brutally quelled the rebel uprisings in Benghazi and elsewhere throughout the country. Ultimately, history will judge the righteousness and success of the intervention.

Despite the successful outcome, if the United States and NATO's European members wish to continue partnering for similar interventions in the future, they must seriously examine this campaign's deficiencies and incorporate its lessons into future operations. America should examine the structure of its geographic combatant commands, refine its deployment processes, make compatible or standardize its technologies, and allow partner nations to take the lead in combined exercises. NATO has more difficult obstacles to overcome but, at the least, must start with a strategic decision by its members to determine their com-

mitment to conducting out-of-area operations. This determination will focus the development of capabilities during a period of economic downturn and allow allies to make informed decisions about maximizing interoperability with the organization. Even without clear-cut resolution to some of the timeless and recurring questions related to the efficacy of airpower, those on both sides of the debate must still carefully consider how the campaign will shape future engagements and force structure decisions. The next conflict will differ from this one, just as the Libyan operation differed from its predecessor. Rather than simply acknowledge the deficiencies of Odyssey Dawn / Unified Protector, however, the United States and NATO must heed Sir John Slessor's advice and learn from their experiences. ✪

Notes

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16. Initially all tankers and heavy ISR assets were sent to Moron Air Base and Naval Air Station Rota, Spain. Not until later did some of the tankers begin to flow to Istres, France. JSTARS and AWACS aircraft eventually moved to Souda, Greece, following a more deliberate planning effort. The initial decision to send the AWACS/JSTARS and their large maintenance /support footprint to Rota meant that on a few occasions during Odyssey Dawn, they could not fly because of insufficient fuel. The subsequent move of all support elements for these aircraft also created delays in obtaining limited airlift to rebase them elsewhere. Additionally, Naval Air Station Sigonella, Italy, offers a suitable runway for tankers, but the maximum aircraft on the ground became an issue because of the decision to base all fighters there. To my knowledge, there was also no concerted effort, even after Unified Protector commenced, to utilize some of the NATO forward operating bases such as Aktion, Greece, and Trapani, Italy, for US assets.

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