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# Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield

HAROLD R. WINTON

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The field of classical music, which requires the harmonious blending of sounds produced by a wide variety of talented artists, has provided military historians and practitioners a rich trove of analogies for the description of battles and campaigns. It can, however, likewise be used to examine the interaction of two armed services in times of peace. It is thus perhaps fitting to consider the thoughts of George Szell, renowned conductor of the Cleveland orchestra, who opined that

the characteristics commonly associated with chamber music can be achieved in symphonic orchestras far more readily than is customarily imagined. It is a matter, first, of the excellence of the players themselves, and second of the manner in which they are trained to listen to what others are doing and to make their individual part contribute to the ensemble synthesis.[1]

This article will examine the extent to which Army and Air Force cooperation on air-ground issues met maestro Szell's standards in the years between the end of the war in Vietnam and the eve of Desert Shield.

The heart of the work is a critical, comparative analysis of Army and Air Force doctrine regarding air-ground operations in the period 1973-1990. For purposes of the analysis, air-ground operations are defined as attacks from the air against enemy ground targets that have either tactical or operational consequence for friendly ground formations. Such attacks are usually classified under the rubrics of close air support (CAS) and air interdiction (AI). The purpose of the analysis is to determine the degrees of commonality and divergence that marked the two services' approaches to air-ground operations and the underlying reasons for either the compatibility or tension between the emerging doctrinal positions. Initial factors to be examined include the services' visions of the nature of war, their doctrine development processes, and the roles of key Army and Air Force personalities in shaping doctrine.

The article is divided into three parts. The first focuses on the period from 1973 to 1979 when the Army and the Air Force began a partnership that was based primarily on the Army's realization of its need for Air Force support to execute its Active Defense doctrine. The second examines the period from 1980 to 1986, in which the partnership was strengthened as the Army transitioned from a doctrine of Active Defense to AirLand Battle and began to grapple with the concept of the operational level of war. The final section assesses the years from 1987 to 1990 in light of the Army's efforts to develop capabilities to conduct deep battle and the emergence of unofficial thought within the Air Force concerning the operational level of war.

## Forming the Partnership, 1973-1979

The Vietnam experience significantly affected both the Army and the Air Force, but in noticeably different ways. The Army was virtually shattered. The proud, confident days when troops had helicoptered into the Ia Drang Valley and put to flight multiple NVA regiments were, by 1973, a faded and distant memory. Instead, at the forefront of the Army's consciousness were a series of battles that were, at best, tactical stalemates, and a deep malaise brought about by an unpopular war, an inequitable draft system, a progressive unraveling of small-unit discipline, and a severe questioning of the competence and integrity of its senior leaders. While some placed the onus for the Vietnam debacle on misguided policy and faulty military strategy directed from the E-ring of the Pentagon, others realized that if the Army was to provide effectively for the common defense, it would have to reform itself both morally and intellectually. The intellectual component of that transformation was to be centered first in doctrine.

The Air Force experience in Vietnam was not as searing as the Army's, but it did possess some doctrinal implications. First, the evidence on air interdiction was mixed. While it had not been able to alter appreciably the support to guerrilla warfare, it had demonstrated the ability to disrupt substantially the logistical flow to conventional offensive operations. Second, seven long years operating under a badly fragmented command system strongly reinforced the Air Force's institutional preference for a single air commander in each theater of operations, operating under the direct purview of the theater commander. The implications of the Vietnam experience for the theory of strategic attack to negate an opponent's military capability and undermine his political will were less clear. Many Air Force analysts insisted that Linebacker II demonstrated what airpower could do when the politicians took the gloves off.[2] More thoughtful analysts, however, pointed out that there was no specific target set that neutralized the DRVN military capability and that Nixon's political objective of disengaging America from Vietnam was purchased with the carrot of concessions as much as it was imposed with the stick of airpower.[3] Vietnam provided rather uncertain grist for the Air Force doctrinal mill.

Army-Air Force communications on doctrinal matters were also influenced by the differing command echelons at which each service's most significant doctrine was developed. The Air Force doctrinal structure envisioned three levels: basic, or fundamental, doctrine, which is normally written at the Air Staff; operational doctrine, which is the responsibility of the major subordinate commands; and tactical doctrine, which is developed by a variety of schools and agencies.[4] The structure of Army doctrine is similar, but more closely tied to its level of organization. At the top is capstone doctrine, which is the rough equivalent of Air Force basic doctrine. Subordinate doctrine addresses warfighting and support concepts appropriate to corps, division, brigades, battalions, and ultimately even minor tactical units.

The major difference between the Army and the Air Force after 1973 was that the Army formed in that year a single organization, the Training and Doctrine Command (TRADOC), which was responsible for the development of virtually *all* its doctrine from the capstone manual to the lowest tactical publication. This gave the Army a powerful integrating agency that could, and did, make doctrine the engine that drove the Army. Perhaps doctrinal development in the Air Force was more diffuse because doctrine was a more tangential concern in Air Force than in Army life. This diffusion also created real problems in institutional communication. Both the Air Force and the Army recognized that the USAF Tactical Air Command (TAC), to which belonged all the continental US-based aircraft that flew CAS and interdiction missions, was the logical point of contact at which TRADOC should interact on doctrinal matters. But the TAC-TRADOC dialogue was always influenced by the fact that TAC did *not* speak for the Air Force--the Air Staff closely guarded its prerogatives in doctrinal matters.[5] Given the distinctly divergent institutional arrangements for doctrinal formulation, it is surprising that one actually finds a significant amount of cooperation between the two services during the era between Vietnam and Desert Shield. That story begins with the development of the Army's "Active Defense" doctrine published in 1976.

The 1976 edition of *Field Manual 100-5* was driven by three dynamics: the reorientation of the American national security focus from Indochina to Europe; the increased range, accuracy, and lethality of direct-fire weapons evident in the 1973 Middle East War; and the personal energy and determination of TRADOC's first commander, General William E. DePuy. The situation in Europe was grim. Army forces there had been bled white to support the insatiable manpower appetite of the war in Vietnam, and the continuously modernized Warsaw Pact forces appeared capable of launching a successful offensive into NATO territory. The 1973 Middle East War served as a wake-up call for the US Army. Tank and artillery losses from both sides were greater than the complete inventory of these systems in US Army, Europe.[6] General DePuy supplied the energy to apply the lessons that he derived from the Arab-Israeli War to the fashioning of an American Army that would be tactically capable of repelling a Warsaw Pact invasion in Europe.[7]

The centerpiece of this transformation was the 1976 edition of *Field Manual 100-5*. The second paragraph of the opening chapter contained the clear imperative, "Today the US Army must, above all else, *prepare to win the first battle of the next war*" (emphasis in original).[8] The entire second chapter was a discourse on the effects of modern weapons that graphically depicted their increased range and lethality from World War II to the 1973 Middle East War.

Of particular interest to the present study was Chapter 8, "Air-Land Battle," the second paragraph of which explicitly addressed the Army's dependence upon the Air Force:

Both the Army and the Air Force deliver firepower against the enemy. Both can kill a tank. Both can collect intelligence, conduct reconnaissance, provide air defense, move troops and supplies, and jam radios and radar. But neither the Army nor the Air Force can fulfill any one of those functions completely by itself. Thus, *the Army cannot win the land battle without the Air Force* [emphasis in original].[9]

This analysis paid particular attention to the suppression of Warsaw Pact air defenses, asserting, "Whenever and wherever the heavy use of airpower is needed to win the air-land battle, *the enemy air defenses must be suppressed*" (emphasis in original).[10] This suppression was depicted as a joint effort that required the integration of the intelligence and strike capabilities of both services. In short, the Army's 1976 doctrinal prescription for a future war in Europe clearly recognized that cooperation with the Air Force was a tactical and institutional imperative.

Air Force basic doctrine in the period 1973-1979 does not reflect a similar sense of commonality. The 1975 edition of *Air Force Manual 1-1* was a bland document. The manual listed eight combat operational missions that included strategic attack, counter air, air interdiction, close air support, aerospace defense of the United States, aerospace surveillance and reconnaissance, airlift, and special operations.[11] It also provided the stock definitions of and commentary on AI and CAS operations. The former were defined as those "conducted to destroy, neutralize or delay enemy ground or naval forces before they can be brought to bear against friendly forces." CAS operations were "intended to provide responsive, sustained and concentrated firepower of great lethality and precision . . . in close integration with the fire and maneuver of surface forces." There was, however, nothing in the 1975 edition of *AFM 1-1* to indicate that the conditions under which AI and CAS were to be executed had recently undergone radical transformation or that close cooperation with the Army, particularly in the area of the suppression of enemy air defenses (SEAD), had become a key element in the Air Force's ability to conduct these operations without suffering unacceptable losses.

The 1979 edition of *AFM 1-1* did little, if anything, to improve this situation. Now widely derided by airpower cognoscenti, this manual has been referred to by one informed analyst as representing "the nadir of Air Force doctrine." [12] The manual appeared to meet the objective stated by its original drafters three years earlier to "provide a document that is interesting, relevant, and useful at all Air Force organizational levels." [13] However, in attempting to be all things to all people, the manual also appeared to lose its focus.

Despite the fuzziness of Air Force basic doctrine, there is considerable evidence to indicate that the Air Force was closely scrutinizing the realities of a possible war in Europe and was actively cooperating with the Army to reach mutually acceptable solutions to those problems. The former was manifested in the decision to develop a single-mission CAS aircraft and in a series of studies that examined the details of a possible Warsaw Pact invasion of Western Europe. The latter was demonstrated in numerous joint ventures between TAC and TRADOC.

The development of the A-10 ground attack aircraft was the most tangible and, in many ways, the most significant indicator of the Air Force's commitment to air-ground operations between Vietnam and Desert Shield. The key problem was how to kill tanks with air-delivered munitions. The answer that emerged was an aircraft designed around a Gatling gun that fired 3000 to 4000 rounds of armor-piercing ammunition per minute.[14] From the Army's point of view, production and fielding of the A-10 not only vouchsafed the Air Force's commitment to the CAS mission, it also created a corpus of pilots whose whole professional being was centered around providing that support.

The Air Force's analytical focus began to shift toward the problems of a European war in the mid-1970s. In late 1975, RAND completed a study for the Air Force that examined the relative merits of additional manned aircraft, remotely piloted vehicles, and stand-off munitions for improving air-ground capability in NATO.[15] In May 1976, the Air Force sponsored a two-day conference at RAND to explore in some detail exactly how the Warsaw Pact ground forces might attack NATO.[16] Among the issues addressed were how the war might start, principal attack axes, the primacy of the offensive in Soviet doctrine, Soviet concepts and tactics, logistical support, air defenses, and chemical warfare capabilities. Other RAND studies requested by the Air Force included a 1978 analysis of the effects of weather on battlefield air support in NATO and a 1979 assessment of the potential vulnerabilities of Warsaw Pact forces to attacks against their tactical rear areas.[17] The main conclusion one draws from these analyses is that in the early post-Vietnam years, the Air Force took its mission to support the Army in a European war very seriously indeed and engaged in a comprehensive effort to determine how best to accomplish this mission.

The most obvious institutional arrangement that reflected Army-Air Force cooperation was the connection between TRADOC and TAC. Initial meetings between the commands were held in October 1973; on 1 July 1975, they established a joint office known as the Directorate of Air-Land Forces Application, or ALFA.[18] ALFA's location at Langley AFB, Virginia, TAC's headquarters and a mere 15-minute drive from TRADOC's headquarters at Fort Monroe, facilitated communication.

During the period 1975-1979, ALFA successfully resolved many of the tactical and procedural issues regarding air-ground interface on a highly lethal battlefield. Airspace management was addressed in a document issued by TRADOC, TAC, and FORSCOM (US Army Forces Command) that was successfully tested in the 1976 Reforger (Return of Forces to Germany) exercise.[19] The agency also produced a comprehensive volume on the Soviet air defense threat and a study of this system's vulnerabilities.[20] In September 1977, tests under ALFA's aegis were conducted at Fort Benning, Georgia, to evaluate techniques for the combined use of attack helicopters and A-10 aircraft against enemy ground formations.

At higher levels, however, ALFA was not able to bridge the gap between Army and Air Force views on air-ground cooperation. The genesis of the problem was General Creighton Abrams's 1973 decision to eliminate the field army as an echelon of army organization.[21] The demobilization of the Army and the elimination of the peacetime draft at the end of the Vietnam War led to a precipitous reduction in Army manpower. In order to satisfy Congress with an acceptable "tooth-to-tail" ratio and stabilize the Army's force structure, Abrams struck an agreement with Secretary of Defense James Schlesinger to retain 16 divisions on active duty in return for a guaranteed force of roughly 785,000. To hold up his end of the bargain, Abrams had to do two things: first, put a major portion of the support structure into the reserves; and second, cut manpower at command levels above the division. Thus, the field army as an organizational echelon disappeared.

The field army headquarters, however, had been the nexus of air-ground cooperation in both World War II and Korea. The fundamental precept that emerged from this relationship was that each field army would be supported by a collocated Tactical Air Command that worked for the theater air commander but whose *raison d'être* was assisting the supported ground commander in the accomplishment of his mission. A series of proposals involving the exchange of liaison elements between the two services culminated in a test of the concept late in 1977. In January 1978 TRADOC published its analysis of exercise Blue Flag, which concluded that there was adequate Air Force representation at the corps level and that the Army had adequate representation to the Tactical Air Control Center (TACC).[22] There was, however, an anomaly in this report. It envisioned individual corps commanders communicating directly with the air component commander regarding the redistribution of sorties among the corps, which was clearly not a position the Air Force relished.[23] The demise of the field army would continue to bedevil Army and Air Force planners in the years ahead.

In summary, the early post-Vietnam years were marked by a deliberate effort on the part of the Army and the Air Force to prepare themselves to defend Western Europe. The Army's effort was driven by the creation of TRADOC and the conscious use of doctrine as the device to refashion itself in the wake of the Vietnam trauma. In contrast, Air Force basic doctrine appeared to lack a unifying vision. Nevertheless, the Air Force developed an aircraft tailor-made for killing enemy tanks in Europe and it carefully assayed both the Warsaw Pact ground forces and the physical environment in which it would have to operate to help the Army defeat them. Finally, a promising start at forging cooperation between the two services was embodied in the TAC-TRADOC partnership. There remained, however, the troubling issue of restoring the higher-level ground-air interface in the wake of the Army's decision to eliminate the field army as an organizational echelon.

### **Strengthening the Partnership, 1980-1986**

Over the next six years, the Army significantly revised its capstone doctrine from Active Defense to AirLand Battle. The latter term generated a great deal of misunderstanding, particularly during the Gulf War. It is important to remember that AirLand Battle was *Army* doctrine; it was *not* Air Force doctrine, and it was *not* joint doctrine. Air Force basic doctrine was rearticulated in 1984, providing a somewhat more coherent view of the theory and application of airpower than had its predecessors. Air Force cooperation was absolutely essential to the execution of the Army's AirLand Battle doctrine. That cooperation was evident in the development of the "31 Initiatives," which focused

mainly on programmatic activities between the Army and Air Staffs, and ALFA's publication of several practical biservice manuals. However, the tension between Army and Air Force perspectives regarding air-ground integration at the operational level again surfaced, this time in the extent to which NATO doctrinal prescriptions for the control of air interdiction would be incorporated into American Air Force practice.

General DePuy had clearly intended for the 1976 edition of *FM 100-5* to be widely read. It was. It was also widely debated. As the debate matured, criticism of the Active Defense became focused on several key issues. First, it was too weapon-system oriented; soldiers were portrayed as mere operators, not warriors. Second, the defensive method of moving from blocking position to blocking position seemed to cede the initiative to the adversary. Third, the emphasis placed on winning the *first* battle left open the more important question of winning the *last* battle. Additionally, the doctrine's focus at division level and below omitted the important contribution to be made by the corps, particularly in disrupting Soviet second-echelon forces. Although this debate was in part prompted and abetted by outside analysts, it was largely an internal affair.[24] Army officers read DePuy's manual closely; and the more they read it, the less they liked it.[25]

This dissatisfaction in the ranks corresponded with two developments at the top. On 1 July 1977, General Donn A. Starry replaced General DePuy as TRADOC commander; and in June 1979 the Army Deputy Chief of Staff for Operations and Chief of Staff-designate, Lieutenant General Edward C. Meyer, suggested to Starry that it was time to begin work on a new *FM 100-5*. [26] Starry was already inclined in this direction. [27] Although as commander of the Armor Center, and a DePuy protégé, he had been one of the key participants in developing the 1976 edition of *FM 100-5*, his perspective began to change when he took command of the V Corps in Europe. [28] Here he realized the vital importance of not simply blunting the initial attack, but of engaging Soviet second-echelon forces as well. [29] After a period of casting around for a term that would adequately convey the sense of the doctrinal shift he envisioned, Starry announced his decision to refer to the Army's approach to warfare as "AirLand Battle." [30] There are two things noteworthy about this decision. First, although the doctrine espoused in the 1976 edition of *FM 100-5* came to be known as "Active Defense," that was a derived name, not a given one. In contrast, Starry deliberately hung a label on his emerging doctrine. Second, the "Air" part of AirLand Battle was clearly intended to signal the Air Force that the Army envisioned a strong partnership between the two services on any future battlefield. [31]

The 1982 edition of *FM 100-5* reflected both Starry's guidance and the input of a number of mid-grade officers who had found the previous edition badly wanting. [32] The new manual addressed virtually all of the concerns raised by the latter. Gone was the single focus on the first battle. Instead, the manual introduced the concept of an operational level of war that involved the planning and conduct of campaigns, defined as "sustained operations designed to defeat an enemy force in a specified space and time with *simultaneous and sequential battles*" (emphasis added). [33] The new doctrine espoused four "basic tenets" of *initiative, depth, agility, and synchronization* (emphasis in original). [34] The tenet of depth led to the concept of "deep battle," which was particularly significant for air-ground operations, for it articulated the Army's realization of the need to delay or disrupt--to interdict--Soviet second-echelon formations before they made contact with friendly troops.

In 1986 the Army published a new edition of *FM 100-5*, which updated and expanded the concept of AirLand Battle. [35] This edition contained much more explicit attention to the conduct of campaigns and major operations. Of particular note for the conduct of air-ground operations was this statement:

Operational level commanders try to set favorable terms for battle by synchronized ground, air, and sea maneuver and by striking the enemy throughout the theater of operations. Large scale ground maneuver will always require protection from enemy air forces and sometimes from naval forces. Commanders will therefore conduct reconnaissance, interdiction, air defense, and special operations almost continuously. Air interdiction, air and ground reconnaissance . . . must all be synchronized to support the overall campaign and its supporting operations on the ground, especially at critical junctures. [36]

This passage reflected a growing maturity on the part of Army doctrine writers, for it specifically referred to ground operations *supporting* an overall campaign plan. While it established the need for ground forces to receive air protection and for the synchronization of interdiction with them, especially at critical junctures, this doctrinal statement implicitly accepted the proposition that the critical decisions on how the synchronization would take place would be

made in the context of *campaign* objectives, not merely the tactical dictates of individual *battles*. This realization brought it much more closely into tune with the Air Force perspective on the employment of airpower.

That perspective was formally updated in the 1984 edition of *AFM 1-1*, now titled *Basic Aerospace Doctrine of the United States Air Force*.<sup>[37]</sup> It was divided into four chapters, dealing with the military instrument of power; the employment of aerospace forces; missions and specialized tasks; and issues of organization, training, equipment, and sustainment. The discussion of the coordination of interdiction activities with surface forces was particularly apt:

The effect of these attacks is profound when the enemy is engaged in a highly mobile maneuver scheme of operation dependent on urgent resupply of combat reserves and consumables. Air and surface commanders should take actions to force the enemy into this intense form of combat with a systematic and persistent plan of attack. The purpose is . . . to generate situations where friendly surface forces can then take advantage of forecast enemy reactions.<sup>[38]</sup>

In sum, the Air Force's 1984 statement of its basic doctrine represented a more coherent explication of airpower principles than its predecessor and recognized some of the potential for the cooperation of air and ground forces at the operational level, but stopped short of a fully developed typology of how this synergism could best be achieved.

The partnership between Tactical Air Command and TRADOC was strengthened by a formal understanding at the departmental level "for enhancement of joint employment of the AirLand Battle Doctrine."<sup>[39]</sup> This April 1983 document, signed by the service Chiefs of Staff, committed the services to use the 1982 edition of *FM 100-5* as the basis for seeking increased integration of Army and Air Force tactical forces, enhancing interservice planning and programming, continuing the dialogue on doctrinal matters, working together on deep-attack systems, coordinating airlift requirements, and resolving issues concerning the integration of AirLand Battle into theater operations. It was followed in November 1983 by an understanding signed by the Air Force Chief of Staff, General Charles A. Gabriel, and the new Army Chief of Staff, General John A. Wickham. This paper emphasized the planning and programmatic aspects of the previous memo and pledged the services to "initiate herewith a joint process to develop in a deliberate manner the most combat effective, affordable joint forces necessary for airland combat operations."<sup>[40]</sup> This agreement committed the services to exploring 31 specific initiatives regarding air-ground operations that dealt with issues of air defense, rear area operations, suppression of enemy air defenses, special operations forces, munitions development, combat techniques and procedures, and the fusion of combat information.<sup>[41]</sup>

The "31 Initiatives" achieved mixed success. Within 15 months, action on 18 of them had been completed, including the Air Force's decision to cancel the development of a "mobile weapons system" (an ersatz tank) for airbase defense and a ground-based radar jamming system; concomitant cancellation of an Army program for an airborne radar jammer; joint development of a tactical missile system (J-TACMS) and a surveillance target and attack radar system (J-STARS); and agreement between TAC and TRADOC regarding procedures for CAS in the rear areas.<sup>[42]</sup> The services continued to find it difficult, however, to settle the issue of air-ground interface at the operational level of war.

The focal point for this obstacle was the divergence of perspectives over Initiative #21, battlefield air interdiction (BAI). BAI had a long and checkered past that arose from three issues: first, the divergence between the Army and the Air Force concerning the relative authority of various command echelons in directing aircraft to provide ground support; second, the elimination of the field army as a ground echelon of command; and third, the influence of NATO tactical air doctrine on US Air Force doctrine. The Air Force command philosophy, expressed most recently in the 1984 edition of *AFM 1-1* was one of "centralize control-decentralize execution."<sup>[43]</sup> Although the doctrine did not spell out the *level* of centralization, the Air Force preference was for control at the theater of operations. This meant, from the Air Force perspective, that the theater air commander would retain responsibility for control and direction of the air interdiction effort, while ground commanders supported by various air formations would have a voice only in the sub-allocation of CAS sorties to their subordinate units. As we have seen, however, the structure of the air-ground interface process was now in a state of disarray brought about by the disappearance of the field army.

The problem was further complicated by the military command structure in Allied Command Europe's Central Region, AFCENT, and divergences between British and American philosophies of air-ground operations. AFCENT was organized with a theater headquarters, a supporting air headquarters known as Allied Air Forces Central Europe

(AAFCE), which contained the 2d and 4th Allied Tactical Air Forces (2ATAF and 4ATAF), and two subordinate land headquarters, Northern Army Group (NORTHAG) and Central Army Group (CENTAG). Although 2ATAF and 4ATAF were subordinate to AAFCE, they were also responsible for providing air support to NORTHAG and CENTAG respectively. And, although both ATAFs and both Army Groups were truly allied formations, 2ATAF and NORTHAG were dominated by the British, while 4ATAF and CENTAG were dominated by the Americans. Furthermore, the British and Americans had distinctly different perspectives on air-ground operations.[44] Based on philosophy, economics, and aircraft capabilities, the Royal Air Force preferred to generate a large number of sorties in small, two-plane formations with relatively little centralized control. It also preferred relatively shallow interdiction to deep interdiction. The USAF, on the other hand, preferred a slightly more "above the fray" approach that emphasized a fewer number of larger formations under relatively tight centralized control. And, based on its possession of platforms that could conduct deep interdiction and its concern for the high density of air defense weapons arrayed at and immediately behind the front lines of Soviet forces, it preferred deep to shallow interdiction.

A compromise was worked out in NATO tactical air doctrine that provided for both relatively deep air interdiction (AI) and relatively shallow battlefield air interdiction (BAI).[45] More significantly, this doctrine also provided that BAI and CAS would be joined together in a category known as offensive air support (OAS).[46] And, reflecting the British preference for the nexus of air-ground operations to be at the Army-Group/ATAF level rather than at the AFCENT/AAFCE level, OAS sorties were allocated to the ATAF commanders. Furthermore, because the ATAF had responsibility for supporting an Army Group, the Army Group commander had significant influence in determining how the OAS sorties were sub-allocated among the corps under his command. On the whole, the US Army was quite satisfied with this arrangement. The OAS = BAI + CAS formulation gave the CENTAG commander (an American) sufficient influence over air operations to conduct major land operations under the theater campaign plan. Furthermore, this arrangement provided subordinate corps commanders access to an Army commander in the person of the commander, CENTAG, to whom they could make their case for priority of *both* BAI and CAS sorties.[47] The USAF, however, was much more ambivalent about BAI. While senior American airmen had been obliged by the constraints of allied diplomacy to accept it as NATO doctrine, they were reluctant to incorporate into US doctrine any provisions for ground commanders to influence air interdiction.

A long period of negotiation at the TAC-TRADOC and departmental levels culminated in a position paper on OAS in May 1981.[48] In essence, this document constituted formal biservice cognizance of the NATO doctrine. It also codified the previously agreed arrangement for an Air Support Operations Center (ASOC) to be assigned to each corps and it explicitly recognized that, "generally, only at corps level will sufficient information be available to determine whether it is possible to engage and counter a threat with conventional organic firepower or whether it is necessary to have this organic firepower supplemented by OAS." [49] In other words, the Army not only persuaded the Air Force to subscribe to the NATO doctrine on BAI, it also extracted acceptance of the reality that the ATAF commander's critical decision on the allocation of his OAS sorties between BAI and CAS would be dependent upon intelligence developed at the corps level and passed through the Army Group to the ATAF. There were, however, two problems. First, the position paper was just that--a statement of position; it was *not* doctrine. Second, the signature of the Air Force Deputy Chief of Staff for Plans and Operations did not remove underlying Air Force reservations about giving the Army influence over any form of interdiction.[50]

In sum, between 1980 and 1986, the Army and the Air Force institutionalized the partnership that had been formed from 1973 to 1979. This regularization was centered around the Army's development and refinement of its AirLand Battle doctrine and was manifested in the series of J-manuals produced by the TAC/TRADOC relationship and in the "31 Initiatives" at the department level. The Air Force also developed a more coherent statement of its basic doctrine. And, although this doctrine did not take explicit cognizance of the operational level of war articulated in the 1982 and 1988 editions of *FM 100-5*, it at least demonstrated a preliminary vision for how air and ground forces might cooperate at this level. There remained, however, divergences of perspective about the air-ground interface that were apparently resolved by the interdepartmental position paper on Offensive Air Support, but which continued to boil beneath the surface.

### **Cross Currents, 1987-1990**

As the Army-Air Force partnership continued to mature (1987-1990), two developments--one in each service--



influenced the partnership in ways that were not immediately apparent. The first was the Army's development of a detailed doctrine for the corps' conduct of deep battle; the second was the publication of a National Defense University thesis entitled *The Air Campaign*, written by a then relatively obscure Air Force Colonel named John Warden.

The strength of the Army-Air Force partnership was evident in the continuation of a number of biservice projects. By December 1987, TRADOC and TAC, operating under the aegis of the 31 Initiatives, developed a draft summary of requirements for a follow-on to the A-10 as a CAS aircraft.[51] By 1988 the services had reached agreement on concepts for joint attack of Soviet helicopters, the alignment of air liaison officers and forward air controllers with Army maneuver units, and a follow-on to the J-SEAD manual of 1982. Further indication of the institutional solidarity was evident in an article by General Robert D. Russ, who was General Wilbur L. Creech's successor at TAC, entitled "The Air Force, the Army, and the Battlefield of the 1990s." Here Russ stated categorically, "Everything that tactical air does directly supports Army operations." [52]

In 1987, the Army took another step forward in the maturity of its deep battle concept with the publication of a handbook describing the capabilities of existing and developmental deep battle systems. The handbook outlined an integrated group of Army and Air Force systems to sense enemy targets, process information about these targets, communicate the information to appropriate agencies, and control the Army and Air Force weapons that would be used to strike them. The Air Force's Precision Location Strike System (PLSS) and Joint Surveillance Target Acquisition Reporting System (JSTARS) and the Army's Tactical Missile System (ATACMS) were particularly important components of this system.[53] The *pièce de résistance* of deep battle publications was the 1990 handbook "Corps Deep Operations (ATACMS, Aviation and Intelligence Support): Tactics, Techniques, and Procedures." This work was exactly what its title implied, a handy how-to book for use by corps commanders and their principal planners in sorting out the difficult coordination issues that would be involved in attacking second-echelon divisions of a Soviet-style combined arms army. It was the product of six years of hard thinking that conceptually represented the practical link between the technology developed to fight the deep battle and the overarching doctrine of AirLand Battle.

However, by developing extended-range systems that allowed the corps commander to fight the deep battle, the Army had raised the question of how the effects of these systems would be coordinated with air operations. The immediate focus of this issue was the placement of and procedures surrounding the fire support coordination line (FSCL). The FSCL, originally known as the "no-bomb line," was developed during World War II as a coordination measure to reduce, if not eliminate, the chance that aircraft might drop ordnance on friendly troops. It was defined as a line *short of which* the release of air weapons required the prior clearance of a ground commander, and it applied primarily to aircrews returning from interdiction and armed reconnaissance missions with unexpended ordnance who wanted to be able to take advantage of targets of opportunity without endangering friendly ground forces. The FSCL was normally placed at the range limit of friendly artillery. As long as this range was in the neighborhood of 10-15 kilometers beyond the friendly front lines, this placement did not present much of a problem, because air strikes within that range would, perforce, be coordinated with ground forces. However, with the advent of the multiple-launch rocket system and later ATACMS, the Army had weapons that could reach out to roughly 30 and 100 kilometers respectively. Additionally, the corps deep attack manual envisioned Apache helicopter attacks to a depth of 70-100 kilometers beyond the front lines. These newly developed capabilities placed the Army and the Air Force at loggerheads. If, on the one hand, the FSCL was pushed out to the depths of new Army weapons, it would significantly interfere with Air Force interdiction efforts and could potentially allow enemy forces to escape attack by friendly air formations. If, on the other hand, the FSCL was kept relatively close to the friendly front lines, the corps commander would lose freedom of action in the employment of his fire support assets if he was required to coordinate fires beyond the FSCL with the Air Force prior to execution. This conundrum defied mutually satisfactory resolution.[54]

Another indicator of the potential fraying of the Army-Air Force partnership was the 1988 publication of John Warden's *The Air Campaign*. [55] This book could be interpreted on two levels. At its most obvious, the book was an intelligent and imaginative tract that took the basic logic of operational art--the linkage of strategic objectives and tactical goals--and applied it to air warfare. As such, it addressed classic military questions such as the relationship between offense and defense, the trade-offs between concentration and economy of force, the employment of operational reserves, and the use of deception in war--all from an air perspective. In this sense, there was little revolutionary about it. In another sense, however, it was an airpower manifesto in the tradition of Douhet, Mitchell,

and de Seversky. Although carefully qualified, there was a theme of airpower dominance that ran through the book like a brightly colored thread. Chapter subheads such as "Single Arms Can Prevail," "War Can be Won from the Air," and "Command Is True Center of Gravity" suggested an airpower-centered approach to warfare that had perhaps not fully matured at the time of publication.

That soon changed. The pivotal question that *The Air Campaign* had not addressed was, "If airpower can be a war-winning instrument, *how* does it become one?" In the summer of 1988, Warden conceived of an answer to that question.[56] Picturing an enemy society as a system, he reasoned that its ability to generate power depended on five sub-systems which, in decreasing order of significance, were leadership, organic essentials, infrastructure, population, and fielded forces.[57] Warden represented these sub-systems as five concentric rings with leadership in the center and fielded forces on the circumference. This formulation directly confronted a central concern of almost all airpower thinkers: what to target. To Warden the answer was clear: start at the inside and work out. Had it not been for the pivotal role that Warden played in the early planning for air operations in the Gulf War, *The Air Campaign* and Warden's subsequent musings on targeting philosophies would not have been of much more than academic interest.[58] Even at the time, however, it did represent a view in the Air Force that the application of airpower could, and perhaps even should, be thought of as being independent of ground operations. To this extent, it constituted another cross-current in the story of the Army-Air Force partnership

## Conclusions

This article has examined two issues: the areas of convergence and divergence between Army and Air Force perspectives on air-ground operations between the end of the Vietnam War and the eve of Desert Shield and the underlying causes for them. It is clear that there was a great deal about which the services agreed. They agreed on the importance of CAS, that it was an Air Force mission, and that there should be a dedicated CAS platform and, therewith, a dedicated group of pilots whose sole training focus would be their ability to execute the CAS mission. They agreed on the importance of suppressing enemy air defenses, the fact that it was a shared responsibility, and the detailed procedures required to carry it out. They agreed on the importance of attacking enemy second-echelon forces, that Army helicopters and Air Force platforms could work in close cooperation to accomplish this mission, and the detailed tactical procedures such cooperation required. They disagreed over two issues: the amount of influence that senior ground commanders should have over Air Force interdiction operations, and the mechanisms for coordinating the effects of fixed-wing air and extended-range Army systems. At the risk of being somewhat simplistic, one can conclude that while at the tactical level there was very significant agreement, at the operational level there was noticeable divergence.

The dynamics behind these similarities and differences of perspective were the product of the centripetal forces that tended to pull the Army and the Air Force together and the centrifugal forces that tended to pull them apart.

The relative cohesion and strength of the Army-Air Force partnership from 1973 to 1990 can be attributed in rough priority to:

- the unifying effect of the NATO defense mission;
- the close cooperation of personalities at or near the top of each service;
- a leadership shift in the Air Force that put fighter rather than bomber pilots in the majority of influential positions; and
- the clarity of the Army's vision of how it intended to fight a future war that tended to pull the Air Force in its wake.

The NATO defense mission gave each service a clear and *unifying* mission. The ability to defeat a Warsaw Pact invasion of Western Europe below the nuclear threshold was, for the period under analysis, the single most significant criterion of operational effectiveness for both services. When the Army and the Air Force looked at this challenge, each realized it needed the other. While it was true that the Army dependence on the Air Force was greater than vice versa, it could not be denied that to suppress hostile air defenses, the Air Force needed Army help. Furthermore, in order to make manifest its contribution to the national defense, the Air Force had to demonstrate its ability to destroy Soviet tanks as well as Soviet MiGs.

The close personal relations established between senior Army and Air Force leaders were vital to the strength of the partnership, helping to forge a bond in peace that one hoped would withstand the rigors of war.[59] These relationships were abetted by a gradual but distinct change in Air Force leadership. In 1960, bomber pilots held 77 percent of the top Air Force leadership positions, fighter pilots, 11 percent; by 1990 these percentages had become 18 and 53 percent respectively.[60] This shift seems to have been driven at least in part by the more prominent role of fighter pilots in the Vietnam War and the declining numbers of bombers in the inventory. While there are complications in the analysis, the trend is clear; and it is legitimate to suspect that the Air Force fighter community was slightly more favorably disposed to welcome the Army's doctrinal advances than was the bomber community.

The final factor pulling the Army and the Air Force together was the Army's clear vision of how it wanted to fight a future war and its distinct realization that Air Force support was absolutely essential for victory. Air Force centrality to the Army's view of tactics was integral to both the Active Defense and the AirLand Battle doctrines; the Army's articulation of the operational level of war in the latter also contained an explicit acknowledgment of the importance of coordinated air support. In something of a doctrinal muddle for several years after Vietnam, the Air Force appeared to follow the Army's lead.

There was, however, also a set of forces that tended to pull the services in opposite directions. These included:

- the operational differences between the media in which they fight;
- the cultural implications these differences engender;
- varying institutional structures for doctrinal formulation; and
- the capabilities of emerging technology.

Air and land forces fight in two distinctly dissimilar environments. The former enjoy the flexibility to focus their effects at different loci depending on the strategic, operational, and tactical dictates of the moment, but their presence is relatively transitory. The latter offer the offsetting advantage of much more permanent effects, but their flexibility is limited by gravity. These diverging operating characteristics produce cultural approaches to war that maximize the inherent strengths of each force, i.e., flexibility and permanence.

Beyond these endemic difficulties of developing common doctrine, the Army's 1973 decision to create a major subordinate command dedicated to the formulation and promulgation of doctrine and the Air Force's choice *not* to create such a command made it difficult for the two services to develop common doctrinal framework. Finally, the technological evolution that extended the ranges of land-based indirect fire systems and armed helicopters blurred the line between what had been the relatively exclusive operational domains of the two services, thus creating new doctrinal challenges that defied easy solution.

Interestingly, the partnership between the two services appeared to be independent of two factors that frequently play a role in interservice relationships: the size of the defense budget and external pressure for cooperation. The partnership began in the mid-1970s when the defense budget was falling steadily in the aftermath of Vietnam, and it continued to prosper throughout the 1980s when the defense budget was robust. It is also clear that the partnership was not foisted on the services by outside pressure for greater joint cooperation. The Goldwater-Nichols Defense Reorganization Act of 1986 was passed well after the TAC-TRADOC dialogue had matured into a full partnership and after the 31 Initiatives had been officially formulated. Furthermore the key joint publication, *Doctrine for Joint Operations*, which flowed from the Goldwater-Nichols Act's specific recognition of the Chairman of the Joint Chiefs of Staff as the promulgator of joint doctrine, was still in draft form in 1990.[61] The drive for "jointness" therefore had virtually no effect on the cooperation that was established between the two services during the period of this study. While it could be argued that an earlier start on joint doctrine might have settled the unresolved issues between the Army and the Air Force prior to 1990, the extent to which joint doctrine can compensate for a lack of internally generated interservice cooperation remains to be demonstrated.

From 1973 to 1990, the Army and the Air Force formed a solid partnership centered around the Army's ability to execute its AirLand Battle doctrine with Air Force support. The strength of this partnership was evident in extensive biservice training, doctrinal publications, and programmatic cooperation. There was, however, an underlying tension that can be primarily attributed to diverging perspectives between the two services about the modalities of air-ground

cooperation at the operational level of war. Had war broken out in Western Europe, it is arguable that the strengths of the partnership would have been much more apparent than its weaknesses. The tension in the partnership nevertheless became rather more apparent in the weeks and months after Saddam Hussein's tanks rolled into Kuwait, triggering the American-led coalition's responses of Desert Shield and Desert Storm. In this theater, the Army-Air Force partnership was severely strained; and the performance resembled neither a delicately balanced chamber session nor a finely tuned symphony, but a concerto in which each performer believed he was playing the featured instrument. Here, the mutual listening skills were exiguous, and the interaction between the two services at times resembled a dialogue of the deaf.[62] But that is another story.

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## NOTES

This is an abbreviated version of a study that will appear in a forthcoming anthology of airpower analyses prepared by the School of Advanced Airpower Studies, Air University. The author wishes to thank Andrew Bacevich, Dennis Drew, Douglas Johnson, Thomas Keaney, Phillip Meilinger, David Mets, and John Romjue for their substantive and useful comments on an early draft of the effort. All matters of fact and interpretation herein remain, however, the author's responsibility. They do not reflect the position of either the Air University or the Department of the Air Force.

1. Robert C. Marsh, "The Cleveland Orchestra: One Hundred Men and a Perfectionist," *High Fidelity*, 11 (February 1961), 38.
2. General William Momyer, who commanded the 7th Air Force in Vietnam, is explicit here. "It was apparent that airpower was the decisive factor leading to the peace agreement of 15 January 1973." William M. Momyer, *Airpower in Three Wars (WW II, Korea, Vietnam)* (Washington: Air Force History Office, 1978), p. 243.
3. Mark Clodfelter, "Nixon and the Air Weapon," in Dennis E. Showalter and John G. Albert, eds., *An American Dilemma: Vietnam, 1964-1973* (Chicago: Imprint Publications, 1993), pp. 182-83.
4. *Air Force Manual 1-1: Basic Aerospace Doctrine of the United States Air Force* (Washington: Department of the Air Force, 1984), pp. v-vi.
5. The TAC problem was exacerbated by the fact that it did not even speak for the entire tactical air community in the Air Force. United States Air Forces Europe (USAFE) and Pacific Air Forces (PACAF), like TAC, were four-star commands with their own perspectives on air-ground operations issues.
6. Paul H. Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations* (Fort Leavenworth, Kans.: Combat Studies Institute, 1988), pp. 30, 33.
7. Additional details on DePuy's personal and TRADOC's institutional role in driving the lessons of the 1973 Middle East War into the Army's psyche are found in the TRADOC Report of Major Activities, FY 1974, 1 August 1975, pp. 14-19; TRADOC Report of Major Activities, FY 1975, 20 September 1976, pp. 1-10; and William E. DePuy, "Implications of the Middle East War on U.S. Army Tactics, Doctrine, and Systems," in Richard M. Swain, comp., *Selected Papers of General William E DePuy* (Fort Leavenworth, Kans.: Combat Studies Institute, 1994), pp. 75-111.
8. *Field Manual 100-5: Operations* (Washington: Department of the Army, 1976), p. 1-1.
9. *Ibid.*, p. 8-1.
10. *Ibid.*, p. 8-4.
11. Remainder of paragraph based on *Air Force Manual 1-1: United States Air Force Basic Doctrine* (Washington: Department of the Air Force, 1975), p. 3-2.
12. Dennis M. Drew, "Two Decades in the Air Power Wilderness: Do We Know Where We Are?" *Air University Review*, 37 (September-October 1986), 12.

13. AF/XO Directorate of Concepts History, 1 July - 31 December 1976, p. 62. USAFHRA File No. K143.01.
14. Details on the A-10's design from William L. Smallwood, *Warthog: Flying the A-10 in the Gulf War* (Washington: Brassey's, 1993), pp. 11-17.
15. Donald E. Lewis, et al., "An Analysis of Alternatives for Improving U.S. Air-to-Ground Capability in NATO (1980): Final Report (U)," (Santa Monica, Calif.: RAND, 1975). (S) Information taken from this document is unclassified.
16. J. H. Hayes, H. A. Einstein, and M. Weiner, "How the Soviet Ground Forces Would Fight a European War: Proceedings of a Workshop Held at the RAND Corporation, 19-20 May 1976 (U)" (Santa Monica, Calif.: RAND, 1977). (S) Information taken from this document is unclassified.
17. See R. E. Huschke, "Effect of Weather on Near-Term Battlefield Air Support in NATO: Weather and Warplanes VII (U)" (Santa Monica, Calif.: RAND, 1978) (C) and D. E. Lewis, et al., "Potential Vulnerabilities of the Warsaw Pact Tactical Rear: Analysis and Results (U)" (Santa Monica, Calif.: RAND, 1979). (S) Information taken from these documents is unclassified.
18. TRADOC Annual Historical Review (AHR), FY 1976/7T, 22 September 1977, p. 55. TRADOC History Office (THO). ALFA was subsequently redesignated the Air-Land Forces Application Agency.
19. TRADOC AHR, FY 1976/7T, p. 56, THO.
20. TRADOC AHR, 1 October 1976 to 30 September 1977 (U), 29 August 1978, p. 34, THO.
21. What follows is based on Lewis Sorley, *Thunderbolt: General Creighton Abrams and the Army of His Times* (New York: Simon and Schuster, 1992), pp. 322-25.
22. TRADOC AHR, 1 October 1977 to 30 September 1978, 1 November 1979, p. 177, THO.
23. Ibid.
24. One of the earliest external critiques was William S. Lind, "FM 100-5, Operations: Some Doctrinal Questions for the United States Army," *Military Review*, 57 (March 1977), 54-65.
25. For a hard-hitting critique of the Active Defense, see Gregory Fontenot and Matthew D. Roberts, "Plugging Holes and Mending Fences," *Infantry*, 68 (May-June 1978), 32-36. Robert S. Doughty and L. D. Holder, "Images of the Future Battlefield," *Military Review*, 58 (January 1978), 56-69, contains a more scholarly and muted criticism that saw the "new tactics" as an intermediate step in a longer process. See also John M. Oseth, "FM 100-5 (Operations) Revisited: A Need for Better Foundation Concepts?" *Military Review*, 60 (March 1980), 13-19. For additional details, see John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973-1982* (Fort Monroe, Va.: US Army Training and Doctrine Command, 1984), pp. 13-21. The criticism of the Active Defense doctrine is also perceptively assessed in Richard M. Swain, "Filling the Void: The Operational Art and the U.S. Army," a paper presented at the Kingston RMC Military History Symposium, 23-24 March 1995, pp. 15-22.
26. Romjue, *Active Defense to AirLand Battle*, p. 30.
27. In an address to the Tactics/InterUniversity Seminar Symposium at Fort Leavenworth on 30 March 1978, Starry defended the rationale behind the Active Defense, but admitted that improvements could be made in the doctrine and that the emerging dialogue on the subject was useful. Donn A. Starry, "A Tactical Evolution--FM 100-5," *Military Review*, 58 (August 1978), 2-11.
28. The subtleties of the DePuy-Starry relationship during development of the Active Defense doctrine are explored in Herbert, *Deciding What Has to Be Done*, pp. 81-83.

29. Starry's subsequent recollection of this experience: "The fact that we needed to fight the deep battle, not just with firepower, but by going deep with maneuver forces as well, starting with attack helicopters, followed by ground maneuver forces, much on the order that the Israelis did on the Golan Heights in October 1973, highlighted the deep surveillance-deep fires and command and control needs." John L. Romjue interview with Starry, 19 March 1993, THO. One of the interesting aspects of this revelation is how Starry's perception of the lessons of the Middle East War differed from DePuy's. To Starry it demonstrated the need to maneuver deep; to DePuy it indicated the need to blunt the breakthrough attack.
30. TRADOC Commander message, 29 January 1981, Subject: The Air Land Battle, THO.
31. Starry confirmed that the term AirLand Battle had its roots in the extensive discussions that had taken place between TAC and TRADOC since 1973. Author's interview with General Donn A. Starry (USA, Ret.), 13 May 1995. Starry also told his doctrine writers that getting the Air Force on board was absolutely necessary to make the doctrine work. Author's interview with Brigadier General Huba Wass de Czege (USA, Ret.), 16 February 1995.
32. One of the interpretive issues here is the extent to which AirLand Battle represented a logical extension of Active Defense and the extent to which it represented an overthrow thereof. Starry's position is the former, i.e. AirLand Battle = Active Defense + Deep Battle. Starry interview, 13 May 1995. One of the two principal authors of the 1982 edition of *FM 100-5* saw AirLand Battle and Active Defense doctrines as being almost antithetical. Wass de Czege interview, 16 February 1995.
33. *Field Manual 100-5: Operations* (Washington: Department of the Army, 1982), p. 2-3.
34. *Ibid.*, Appendix B and p. 2-1.
35. *Field Manual 100-5: Operations* (Washington: Department of the Army, 1986), p. I. Wass de Czege, who also worked the second draft of this edition, maintained that the first several years of teaching in the School of Advanced Military Studies at Fort Leavenworth, for which he served as the first Director, were essential to expanding the treatment of the operational level of war. Wass de Czege interview, 16 February 1995.
36. *Field Manual 100-5*, 1986, p. 28.
37. *Air Force Manual 1-1: Basic Aerospace Doctrine of the United States Air Force* (Washington: Department of the Air Force, 1984).
38. *Ibid.*, p. 2-14.
39. Army/Air Force "MEMORANDUM OF UNDERSTANDING ON JOINT USA/USAF EFFORTS FOR ENHANCEMENT OF JOINT EMPLOYMENT OF THE AIRLAND BATTLE DOCTRINE," 21 April 1983, reprinted in Richard G. Davis, *The 31 Initiatives* (Washington: Office of Air Force History, 1987), pp. 91-92.
40. Army/Air Force "MEMORANDUM OF UNDERSTANDING ON INITIATION OF A JOINT US ARMY - US AIR FORCE FORCE DEVELOPMENT PROCESS," 2 November 1983, reprinted in Davis, p. 93.
41. These categories of initiatives were established by Davis for purposes of historical analysis; the MOA merely listed the initiatives themselves. See Davis, pp. 47-64.
42. *Ibid.*, pp. 71-79.
43. *AFM 1-1*, 1984, p. 2-20.
44. What follows is based on Steven L. Canby, "Tactical Air Power in Armored Warfare: The Divergence within NATO," *Air University Review*, 30 (May-June 1979), 2-20.
45. This doctrine was codified in the NATO *Allied Tactical Publication 27 (B), Offensive Air Support*.

46. Stephen T. Rippe, "An Army and Air Force Issue: Principles and Procedures for AirLand Warfare," *Air University Review*, 37 (May-June 1986), 63.
47. The lack of such influence over shallow interdiction was a major point of contention for the US VII Corps in the Gulf War.
48. Army Deputy Chief of Staff for Operations and Plans and Air Force Deputy Chief of Staff for Plans and Operations Memorandum, Subject: USA and USAF Agreement on Apportionment and Allocation of Offensive Air Support (OAS)--INFORMATION MEMORANDUM, 23 May 1981, THO.
49. USA AND USAF POSITION ON APPORTIONMENT/ALLOCATION OF OAS, attachment 2 to *ibid.*, par. 6d.
50. These reservations were reflected in the AF/XO history of the period: "Following the Field Review, AF/XOXID forwarded much of the background data on the OAS Agreement to TAC and USAFE [United States Air Forces, Europe] in an effort to defend the issue. However, it is obvious that opinions continue to differ and that discussions on this subject will continue in the coming months." AF/XO Director of Plans History, 1 July - 31 December 1981, p. 90. USAFHRA File No. K143.01.
51. TRADOC AHR, 1 January to 31 December 1987, August 1988, p. 93, THO.
52. Robert T. Russ, "The Air Force, the Army, and the Battlefield of the 1990s," *Defense* 88, August 1988, p. 13. Russ's statement was quite controversial within some circles of the Air Staff because it seemed to preclude the use of tactical air assets for strategic attack.
53. "Deep Operations Capabilities Handbook: Present and Future (U)" (Fort Leavenworth, Kans.: US Army Combined Arms Center, 1987), pp. iii, 1-21, CAC historical files. Handbook is classified Secret; portions cited are unclassified.
54. The 1988 TRADOC annual history mentions an agreement signed that year by the service chiefs that established notification and coordination procedures for Army fires beyond the FSCL. TRADOC AHR, 1 January to 31 December 1988, June 1989, p. 35, THO. However, as in the case of the BAI agreement signed by the service OPSDEPS, the provisions of this agreement were not incorporated into doctrine.
55. John A. Warden, *The Air Campaign: Planning for Combat* (Washington: National Defense Univ. Press, 1988).
56. The summer of 1988 time-frame is from the author's interview with Colonel John Warden, USAF, 6 June 1995. In this interview, Warden explicitly stated that his purpose was to create a new vision of airpower that would supplant the Creech/Russ view that airpower's primary function was to support the Army.
57. The fully developed concept can be found in John A. Warden, "The Enemy as a System," *Airpower Journal*, 9 (Spring 1995), 40-55.
58. The role that Warden's ideas played in shaping the American military response to Iraq's August 1990 invasion of Kuwait is beyond the scope of this study. One version of that story is dramatically outlined in Richard T. Reynolds, *Heart of the Storm: The Genesis of the Air Campaign against Iraq* (Maxwell AFB, Ala.: Air Univ. Press, 1995).
59. Starry was emphatic on this point. He stated categorically, "We would not have had AirLand Battle had it not been for him [Bill Creech]. I could not have carried it off by myself." Author's interview with Starry, 13 May 1995.
60. These figures and those that follow are taken from a thesis by James M. Ford, "Air Force Culture and Conventional Strategic Airpower" (Maxwell AFB, Ala.: School of Advanced Airpower Studies, 1992), p. 60.
61. The JCS issued Joint Publication 3-0 as a test publication on 10 January 1990. TRADOC AHR 1 January to 31 December 1990, June 1991, p. 55, THO. The manual was not published in final form until 1994.
62. The literature of the Gulf War is replete with instances of ineffective communication between the Army and the

Air Force. See, inter alia, Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (New York: Houghton Mifflin, 1993), pp. 151-52, 218-23, 338-40; Robert H. Scales, *Certain Victory: United States Army in the Gulf War* (Washington: Office of the Chief of Staff, United States Army, 1993), pp. 174-81, 315-16; Richard M. Swain, "Lucky War:" *Third Army in Desert Storm* (Fort Leavenworth, Kans.: US Army Command and General Staff College Press, 1994), pp. 181-90; Michael R. Gordon and Bernard E. Trainor, *The General's War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), pp. 203-04, 324-48, 447-54, 494; and Barry D. Watts's perceptive review essay of Gordon and Trainor's work, "Friction in the Gulf War," *Naval War College Review*, 48 (Autumn 1995), 105. A dissenting view is that of Edward Mann, who contends that "the air campaign plan would eventually meld perfectly with schemes of surface maneuver to be developed later." Edward C. Mann, *Thunder and Lightning: Desert Storm and the Airpower Debates* (Maxwell AFB, Ala.: Air Univ. Press, 1995), p. 175.

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