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## THE SPITEFUL HAWK: HISTORICAL PERSPECTIVES ON COUNTERLAND APPORTIONMENT AND IMPLICATIONS FOR MULTIDOMAIN OPERATIONS

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**JCSP 46**

**Solo Flight**

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APPORTIONMENT AND IMPLICATIONS FOR MULTIDOMAIN  
OPERATIONS**

**By Major Alan Lockerby**

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## THE SPITEFUL HAWK: HISTORICAL PERSPECTIVES ON COUNTERLAND APPORTIONMENT AND IMPLICATIONS FOR MULTIDOMAIN OPERATIONS

*A hawk will starve before picking at grain; their disposition is not one that could accommodate life at the expense of pride.*

- Daidoji Yuzan, Samurai, 1639-1711<sup>1</sup>

*During World War II, I had achieved recognition as an ace after downing five enemy aircraft. In Korea, I had no idea how many trucks, tanks, artillery pieces, bridges, locomotives, supply dumps, and buildings I had destroyed ... or how many soldiers I had put out of action. The achievements of individual fighter-bomber pilots weren't recorded. This wasn't because of slipshod recording, but because we didn't consider it important.*

- Lt. Gen. George G. Loving, United States Air Force<sup>2</sup>

*At the battle of Crécy in 1346, the army of the French King refused to use the bow and the arrow that the English handled so effectively. To use an arrow was not compatible with their concepts of honour and chivalry. At Agincourt in 1415, the lesson of Crécy went unheeded. Once again, French knights advanced on English archers, and were once again crushed ... Knights, having become an archaic and useless luxury, disappeared from the field of battle. For them, a page of history has been turned for all time.<sup>3</sup>*

- Col. Roger Trinquier, Colonial Parachute Infantry, French Army

A Western-style army perhaps most creatively overcame strength with guile at Leuktra.<sup>4</sup>

There, in 371 BCE, Theban warlord Epaminondas defeated the Spartans using revolutionary organization and maneuver to produce localized overmatch at decisive points on the battlefield.<sup>5</sup>

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<sup>1</sup> W.S. Wilson, *The Budoshoshinsu: The Warrior's Primer of Daidoji Yuzan*, (Santa Clarita: Ohara Publications, 1984), 64.

<sup>2</sup> Lt Gen G. G. Loving, *Bully Able Leader: The Story of a Fighter-Bomber Pilot in the Korean War*, (Mechanicsburg: Stackpole Books, 2011), 212-213.

<sup>3</sup> Col R. Trinquier, *Modern Warfare: A French View of Counterinsurgency*, (Westport: Praeger, 2006), 90.

<sup>4</sup> D. Stuttard, *A History of Ancient Greece in Fifty Lives*, (London: Thames & Hudson, 2014), 172.

<sup>5</sup> V.D. Hanson, *The Western Way of War: Infantry Battle in Classical Greece*, (Oxford: Oxford University Press, 1989), 22, 112. The realities of weapons and force generation drove most ancient Greek armies to place their most reliable troops on the rightmost portion of a phalanx. This mitigated the tendency of the formation to gradually drift to the right on the advance, as hoplites moved slightly further behind the cover of the shield of the man to their right (shields and spears being held in the left and right hands, respectively) as contact with the adversary became imminent. Knowing the Spartans were the masters of such tactics, Epaminondas placed his best troops, the 300 of the Sacred Band, on the far left of the Theban phalanx. He further arranged the Sacred Band as a column (up to fifty

The Thebans wrecked a numerically and qualitatively superior force; it was metaphorical ‘chess against checkers.’<sup>6</sup> What separated the Thebans from their contemporaries was their ability offset individual fighting elements’ weaknesses, and amplify their strengths, by working together in coordinated fashion; in modern parlance, their ability to conduct detailed integration.

In an era of renewed great power competition, the Theban approach is worthy of consideration. Once air superiority is attained, how can Western air forces best contribute to Multidomain Operations (MDO)?<sup>7</sup> Certain trends stand out when examining integrated operations with the land component, the counterland missions of air interdiction (AI) and close air support (CAS).<sup>8</sup> While counterland operations are neither the oldest joint air mission, nor the most critical, they remain the most visible to the land component, the most frequently requested, and the most institutionally controversial.<sup>9</sup>

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men deep), where they were able to overwhelm the Spartans’ best troops (stacked only eight men deep) and eliminated their commander’s ability to direct the phalanx.

<sup>6</sup> S. Pressfield, *The Virtues of War: A Novel of Alexander the Great*, (New York: Bantam Dell, 2004), 30-57. Later, at Chaeronea in 338 BCE, Philip II defeated the Thebans leading a Macedonian army which he had reformed along Epaminondas’ concepts. Philip II had spent time as a hostage in the Theban court, as Thebes conducted its wars against Sparta and her allies. One of Philip’s sons, Alexander III (“the Great”), commanded cavalry at Chaeronea, and would later lead that Macedonian army to the edge of the known world.

<sup>7</sup> “The Multi-Domain Operations concept began as a joint US Army and Marine Corps white paper in October 2016. It specifies that the crux of the problem statement is ground combat forces, operating as part of joint, inter-organizational and multinational teams, are not sufficiently trained, organized, equipped or postured to deter or defeat highly capable peer enemies to win in future war. The MDO concept was formulated when the US military was transitioning from counter-insurgency conflicts in the Middle East to the prospect of dealing with a peer adversary on the modern battlefield. A significant aspect of this concept is development of the Multi-Domain Task Force.” Maj R.W. Gibson, “Shaping NATO for Multi-Domain Operations of the Future,” *Joint Air & Space Power Conference 2019*, 8 October 2019, <https://www.japcc.org/multi-domain-operations-and-counter-space/>.

<sup>8</sup> “Counterland operations are defined as air power operations against enemy land force capabilities to create effects that achieve joint force commander (JFC) objectives. The aim of counterland operations is to dominate the surface environment using air power. By dominating the surface environment, counterland operations can assist friendly land maneuver while denying the enemy the ability to resist. Although most frequently associated with support to friendly surface forces, counterland operations may also be conducted independent of friendly surface force objectives or in regions where no friendly land forces are present.” United States Air Force, “Operational Level Doctrine, Annex 3-03, Counterland Operations,” last updated 5 February 2019, [https://www.doctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D02-LAND-Role-Of-CL-OPS.pdf](https://www.doctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D02-LAND-Role-Of-CL-OPS.pdf).

<sup>9</sup> Aerial reconnaissance being the oldest joint air mission, and maintenance of air superiority being the generally agreed upon most important.

The means and methodology of CAS have matured to a degree that air power can enormously influence MDO, rather than, as some opine, serving as an enabler of other domains.<sup>10</sup> Accordingly, this paper argues that Western air forces need to increase institutional investment in detailed integration to conduct MDO in the future. In thought and practice, Western air forces have historically favored single-domain missions, representing an antithetical approach to MDO. The principles and capabilities of CAS offer a stronger conceptual foundation upon which to build future air campaigns.<sup>11</sup> This is not to say that AI should be abandoned, rather, that future air campaigns within MDO are more likely to require detailed integration; a more demanding challenge for which Western air forces must prepare.<sup>12</sup> This paper reviews counterland doctrine, then outlines its evolution to illustrate inconsistencies. The capabilities and institutional willingness to conduct detailed integration have finally emerged, providing a conceptual ‘springboard’ for MDO.

Joint operations are activities and organizations in which elements of at least two components participate.<sup>13</sup> In 2013, General Martin Dempsey asked, “what comes after Joint?”<sup>14</sup> He foresaw that ‘jointness’ would not be adequate to address the challenges of the future

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<sup>10</sup> This argument acknowledges air superiority as a prerequisite for effective air operations of any kind, and that the other core air power functions of ISR and air mobility themselves are decisive JFACC contributions to MDO.

<sup>11</sup> “Barriers to integration - be they cognitive, procedural, organizational, or technical - must be removed and linkages must be fostered through habitual integration.” Department of National Defence, *PAN-DOMAIN FORCE EMPLOYMENT CONCEPT PREVAILING IN AN UNCERTAIN WORLD*, (Ottawa, 2019), 18.

<sup>12</sup> “Wherever they have significantly influenced the course of the ground battle, interdictors have enjoyed air superiority, adequate intelligence about the enemy logistical system, and targets of the campaign have been readily identifiable. Of the other contributory conditions for successful interdiction – concentration, channelization, a high rate of consumption, logistical constriction, and sustained pressure – sustained pressure appears to be the most critical. Outside of major combat operations, achieving all, or even most, of these conditions has proven difficult.” E. Mark, *Aerial Interdiction: Air Power and the Land Battle in Three American Wars*, (Honolulu: University Press of the Pacific, 2002), 402-409.

<sup>13</sup> Department of National Defence, *Air Force Vectors: Agile, Integrated, Reach, Power*, A-GA-007-000/AF-008, 1st edition, (Ottawa, 2014) 23.

<sup>14</sup> Gen. M.E. Dempsey, “The Future of Joint Operations,” *Foreign Affairs* Vol 92, No 3 (May/June 2013) last accessed 22 Mar 20, <https://www.foreignaffairs.com/articles/united-states/2013-06-20/future-joint-operations>. At the time of writing, Gen. Dempsey was Chairman of the Joint Chiefs of Staff.

operating environment, due to exponential advances in technology, and resource constraints. An evolution beyond ‘jointness’ must occur, in order to ensure that domain interdependence does not create single points of failure at the operational level.<sup>15</sup> As adversary capabilities approach parity, individual components can no longer “go their own way” and iron out differences when cooperation is required on operations.<sup>16</sup> This is the impetus for MDO; air power practitioners must take heed.

USAF doctrine acknowledges the importance of CAS,<sup>17</sup> defined as:

... air action against hostile targets that are in close proximity to friendly [land] forces, and that require detailed integration of each air mission with the fire and movement of those [land] forces.<sup>18</sup>

Detailed integration is the culmination of simultaneous de-confliction, coordination, and synchronization of airborne resources with the ground force’s scheme of maneuver.<sup>19</sup> USAF counterland doctrine elaborates:

... although in isolation CAS rarely achieves campaign-level objectives, at times it may be the more critical mission due to its contribution to a specific operation or battle. The speed, range, and maneuverability of airpower allows CAS assets to attack targets that enable the ground scheme of maneuver. ... CAS can be

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<sup>15</sup> J.M. Reilly, “Multidomain Operations: A Subtle but Significant Transition in Military Thought,” *Air & Space Power Journal* 30, no. 1 (Spring 2016): 71.

<sup>16</sup> Maj W.C. Bielefeld, *Air Interdiction: Will it Support AirLand Battle?* (Leavenworth: School of Advanced Military Studies, 1986), 31.

<sup>17</sup> Department of National Defence, *Air Force Vectors: Agile, Integrated, Reach, Power*, A-GA-007-000/AF-008, 1st edition, (Ottawa, 2014), 9. Most western air forces, including the RCAF, align doctrinally with the USAF for reasons of interoperability. The USAF and RCAF share definitions of CAS and AI, and classify both as subsets of the counterland mission.

<sup>18</sup> United States Air Force, “Operational Level Doctrine, Annex 3-03, Counterland Operations,” last updated 5 February 2019, [https://www.dctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D06-LAND-CAS.pdf](https://www.dctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D06-LAND-CAS.pdf).

<sup>19</sup> Maj M. Benitez, “How Afghanistan Distorted Close Air Support and Why It Matters,” *War on the Rocks*, last updated 29 June 2016, <https://warontherocks.com/2016/06/how-afghanistan-distorted-close-air-support-and-why-it-matters/>.

conducted at any place and time friendly forces are in close proximity to enemy forces and, at times, may be the best means to exploit tactical opportunities.<sup>20</sup>

USAF counterland doctrine defines AI as:

air operations conducted to divert, disrupt, delay, or destroy the enemy's military potential before it can be brought to bear effectively against friendly forces, or to otherwise achieve objectives that are conducted at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.<sup>21</sup>

As if expressing institutional preference, the doctrine continues:

AI increases air power's efficiency because it does not require detailed integration with friendly forces. Detailed integration requires extensive communications, comprehensive deconfliction procedures, and meticulous planning. AI is inherently simpler to execute in this regard. Therefore, if the enemy surface force presents a lucrative target, AI conducted before friendly land forces make contact can significantly degrade the enemy's fighting ability and limit the need for CAS when the two forces meet in close combat.<sup>22</sup>

This 'pro-AI' attitude is integral to counterland thought from its earliest days. Indeed, Wing Commander J.C. Slessor set the tone early, stating in 1936:

*The aeroplane is not a battlefield weapon* [original emphasis] ... the primary task of the air striking force in a land battle must be to isolate the area attacked from reinforcement and supply; and thus to ensure that the impetus of the attack on the ground is not checked by enemy reserves rushed to the threatened point.<sup>23</sup>

This line of thought continued throughout the twentieth century with little variation. Colonel John Warden wrote in 1988:

... the weight of history, and logic, falls on the interdiction side. Materiel and troops are easy to keep away from the battle than to engage at the front. They are

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<sup>20</sup> United States Air Force, "Operational Level Doctrine, Annex 3-03, Counterland Operations," last updated 5 February 2019, [https://www.dctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D06-LAND-CAS.pdf](https://www.dctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D06-LAND-CAS.pdf).

<sup>21</sup> United States Air Force, "Operational Level Doctrine, Annex 3-03, Counterland Operations," last updated 5 February 2019, [https://www.dctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D05-LAND-Interdiction-Fun.pdf](https://www.dctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D05-LAND-Interdiction-Fun.pdf).

<sup>22</sup> United States Air Force, "Operational Level Doctrine, Annex 3-03, Counterland Operations," last updated 5 February 2019, [https://www.dctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D10-LAND-Air-Interdiction.pdf](https://www.dctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D10-LAND-Air-Interdiction.pdf).

<sup>23</sup> W/C J.C. Slessor, *Air Power and Armies*, (Tuscaloosa: University of Alabama Press, 2009), 90, 212.



easier to destroy when they are configured for movement then deployed to do battle.<sup>24</sup>

Nor is this reasoning unique to Western theorists. In 1937, Georgii Isserson wrote specifically of air power's vitally important role in Soviet Deep Battle, "aviation must meet and attack enemy reserves at great range to prevent them from reaching front lines on the ground."<sup>25</sup> Air Commodore Jasjit Singh of the Indian Air Force offered a very balanced view of counterland missions, but highlighted the potency of AI along similar lines, stating:

... greater mechanization and mobility of land forces places greater demands on logistics support: and enhanced firepower has generated greater consumption and increasing demands on resupply.<sup>26</sup>

Consequently, as a result of institutional memory, corporate culture, and organizational interests, CAS has been air power's neglected mission.<sup>27</sup> If air doctrine retains bias against detailed integration, the implications are negative for MDO.

RAF pilot Alexander Lewis pithily summarized the Great War counterland mission, writing, "it is awfully interesting dropping bombs."<sup>28</sup> Both sides recognized air superiority's value early, dedicating great resources, and suffering substantial losses, to maintain it.<sup>29</sup> CAS, then called "trench strafing," proved dangerous, difficult, and costly.<sup>30</sup> Limitations of communication technology limited the flexibility of CAS. Ground headquarters could barely

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<sup>24</sup> Col J.A. Warden, *The Air Campaign*, (Washington: Pergamon-Brassey, 1989), 134.

<sup>25</sup> G.S. Isserson, *The Evolution of Operational Art*, (Leavenworth: Combat Studies Institute Press, 2013), 102. At the time of writing, Isserson served as the Head of the Operations Department at the Soviet Frunze Academy.

<sup>26</sup> Air Cdre J.S. Singh, *Air Power in Modern Warfare*, (New Delhi: Lancer International, 1988), 147.

<sup>27</sup> J. Black, *Air Power: A Global History*, (Lanham: Rowman & Littlefield, 2016), 309.

<sup>28</sup> P. McKenzie, *The Lewis Letters: The Exploits of a 20<sup>th</sup> Century Aviator and Adventurer*, (Victoria: Friesen Press, 2017), 24. 2Lt Lewis would later join the RCAF, and served with the 1927 Hudson Strait Expedition. There, he survived an aircraft crash, and completed a multiweek trek through arduous arctic terrain to return to friendly forces.

<sup>29</sup> A/M Sir R. Saundby, *Early Aviation: Man Conquers the Air*, (London: MacDonald, 1971), 74.

<sup>30</sup> R.P. Hallion, *Strike from the Sky: The History of Battlefield Air Attack, 1910-1945*, (Tuscaloosa: University of Alabama Press, 1989), 20.

track their own troops, impeding effective air engagement of opportunity targets. Moreover, aircraft ordnance was less effective than artillery in supporting ground maneuver.<sup>31</sup> Ground elements needed to identify themselves with panels and pyrotechnics to avoid fratricide, impeding their ability to maneuver and inviting adversary surface fires. CAS apportionment included additional aircraft tasked to perform “contact patrols,” a sort of ISR mission dedicated to visually tracking friendly positions.<sup>32</sup> This diluted the return on sorties invested. Lamented one pilot, “contact patrol was pretty useless,” adding:

... that meant dawdling up and down the lines while Archie [antiaircraft artillery] took pot shots at you; that meant beastly long reconnaissances, with Fokkers buzzing about on your tail.<sup>33</sup>

Nascent staff procedures and command arrangements impeded planning and execution of joint operations. For instance, British Fourth Army’s plans for the 1918 Battle of Amiens lacked coherent objectives for CAS.<sup>34</sup> Flying units were decentralized to each Corps, each with different desired effects, leading to fragmentary planning and disjointed execution.<sup>35</sup> Air effects were an

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<sup>31</sup> Then, as now, CAS cannot match the persistence and weight of sustained firepower provided by artillery, within its range. CAS provides more precise fires, and greater individual firepower, and is more mobile. However, it is more fragile, affected by weather, and must be allocated across the land component.

<sup>32</sup> Aircrew advised ground headquarters of friendly troop locations by dropping weighted message bags.

<sup>33</sup> C. Lewis, *Sagittarius Rising*, (New York: Penguin, 2017), 45; *The London Gazette*, “Second Supplement,” *The London Gazette* 29824, 14 November 1916, <https://www.thegazette.co.uk/London/issue/29824/supplement/11058,11058>. 2Lt Lewis flew various types of army cooperation and fighter aircraft, eventually shooting down eight German aircraft. He earned the Military Cross at the Somme, somewhat ironically, for “fine work in photography, with artillery, and on contact patrols.” After the war, he served as a civilian flight instructor, journalist, and author, later becoming a founding executive of the British Broadcasting Corporation. He served in the RAF Reserve during the Second World War.

<sup>34</sup> “The system whereby the arrangements for air cooperation in battle were so often made by means of personal discussion between the Staffs, unconfirmed in writing ... army battle orders contained no reference to the action of the air force. The object of the air operations, the effect they were intended to produce, the part they were to play in the Plan as a whole – was not defined on paper ... the mistake lay in the selection of too limited an object, and in the failure to look sufficiently ahead.” W/C J.C. Slessor, *Air Power and Armies*, (Tuscaloosa: University of Alabama Press, 2009), 165-166.

<sup>35</sup> *Ibid.*, 153; R. Collishaw, *The Black Flight: The Memoir of Legendary First World War Fighter Ace Raymond Collishaw CB, DSO, DSC, DFC*, (Ottawa: CEF Books, 2008), 176-178. During the battle, Collishaw commanded 203 Squadron RAF, itself part of the 15<sup>th</sup> Wing (V Brigade) whose Army Co-operation squadron was tasked in direct support to the Canadian Corps. Wrote Collishaw of his squadron’s role in the battle, “The offensive opened with an artillery bombardment at 4:20 o’clock in the morning of [August] 8<sup>th</sup> and very soon afterwards our troops, supported by tanks and armoured cars, moved forward. ... throughout the day [we] flew a series of low-level

addition to, rather than an integral component of, the ground force plan. These problems, hardly unique to the British, led an astute American air power practitioner to observe later:

The system of command of military air power should consist in having the greatest centralization practicable ... to assign air force units to ground organizations would result in the piecemeal application of air power and the inability to develop the maximum force at the critical point.<sup>36</sup>

Due to these limitations, detailed integration between land and air forces remained an aspirational goal in 1918.

Postwar air power theorists generally agreed upon strategic bombing as the best future use of air resources, in their existing state of development. Soviet strategic thought did not progress in this direction, prophetically seeing strategic bombing as “making it easier for hostile governments to acquire the resources needed to wage war more energetically.”<sup>37</sup> Air power had shown potential when the ground situation had freed air elements from the need to conduct detailed integration through the limited means available at the time. The most notable case is the annihilation of Turkish forces near Megiddo, Palestine. Lieutenant-Colonel T.E. Lawrence described the engagement:

The modern motor road, the only way of escape for the Turkish Divisions, was scalloped between cliff and precipice in a murderous defile. For four hours our airplanes replaced one another in series above the doomed columns ... when the smoke had cleared, it was seen that the organization of the enemy had melted away. They were a dispersed horde of trembling individuals, hiding for their lives

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bombing and strafing attacks on the Fourth Army front against infantry, vehicles, and other targets on the Roye road that leads southeast out of Amiens [on the far right of the British attack]. ... my logbook shows I put in 11 hours, 20 minutes in the air that day, all at heights of 100 feet or less ... most of our losses being suffered by the squadrons engaged in low-level attacks, ... Such conditions were not conducive to adding to our tally of German machines.”

<sup>36</sup> Brig Gen W. Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military*, (Tuscaloosa: University of Alabama Press, 2009), 217. Brig. Gen. Mitchell served as the senior air commander at the battle of St. Mihiel in 1918, and strenuously advocated for an independent American air force.

<sup>37</sup> A.A. Svechin, *Strategy*, (Minneapolis: Eastview Information Services, 2004), 160. Svechin a Russian and Soviet military leader, writer, and educator. He served in the Russo-Japanese War and the First World War as a Tsarist officer. He joined the Bolsheviks, and rose rapidly to senior leadership within the Red Army. His writings are part of a greater contribution to Soviet Operational Art. He was among the victims of the Stalinist purges.

in every fold of the vast hills. ... When our cavalry entered the silent valley the next day, they could count ninety guns, fifty lorries, nearly a thousand carts abandoned. [It was] a holocaust ... The RAF had lost four killed; the Turks lost a Corps.<sup>38</sup>

It is strange that this annihilation at the hands of air power was overshadowed in subsequent air power thought by the mainly psychological damage of Zeppelin and Gotha raids over London.

In short, the CAS mission emerged during the Great War, along with recognition of the potential and problems of military aviation. Military professionals did the best they could, with the information they had at the time. Given the losses suffered, it reflects well on them that air support of land forces survived as a concept. Air and land forces could work together, but guiding doctrine suffered from the decentralized and *ad hoc* nature of problem solving. In the meantime, joint operations needed to be deconflicted, rather than integrated.

The Second World War would prove detailed integration's potential. Radio technology advanced greatly in the interwar years, providing the most obvious means by which to better orchestrate operations. The Germans applied operational lessons from the Condor Legion in Spain, building the Luftwaffe to work closely with other joint components.<sup>39</sup> However, they did not develop their air arm beyond being an appendage of other components, a critical factor in their eventual downfall.<sup>40</sup> Soviet air forces emerged along similar lines, but with more flexibility in decentralizing command authorities to meet specific operational-level needs.<sup>41</sup> Informed by

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<sup>38</sup> LCol T.E. Lawrence, *Revolt in the Desert*, (London: Century Hutchinson Ltd, 1986), 289. Lawrence, an intelligence officer, served as a British military advisor and liaison officer to Arab tribesmen fighting the Ottomans.

<sup>39</sup> R. Edwards, *Panzer: A Revolution in Warfare, 1939-1945*, (London: Brockhampton Press, 1998), 125. From integrated and collocated headquarters, dedicated communications links for air support coordination between air liaison officers (Panzerverbindungsoffizier), to forward air controllers (Stukaleiters) directing strikes at the front, the Germans had the pieces in place, from the beginning, to conduct CAS during the Second World War.

<sup>40</sup> R.J. Overy, *The Air War, 1939-1945*, (Chelsea: Scarborough House, 1980), 204.

<sup>41</sup> V. Hardesty & I. Grinberg, *Red Phoenix Rising: The Soviet Air Force in World War II*, (Lawrence: University Press of Kansas, 2012), 298.

their own operations in Spain, cooperative air attacks tended to take place at a distance from ground forces such that detailed integration was not needed, a hallmark of AI.<sup>42</sup>

British CAS truly began with the Wann-Woodall experiments conducted in August 1940.<sup>43</sup> These experiments generated the air support command and control (C2) system that the British employed from 1943-45.<sup>44</sup> An elaborate signals network, called ‘Tentacles,’ light mobile communications links with the forward troops, avoided normal channels and enabled army officers to relay air support requests directly to a control center for assessment by a joint Army/RAF staff.<sup>45</sup> This system focused on prosecution of deliberate targets; the ‘Tentacles’ reached as low as brigade headquarters, with limited ability to direct attacks against time-sensitive targets. However, British land forces could count on receiving CAS within the same day of nomination. While this was an improvement, it still did not meet practitioners’ aspirational goals. The interaction between C2 elements, whether they made requests of or gave direction to one another, also proved a challenge. The British did not universally formalize authorities to deny or modify requests for air support within their system.

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<sup>42</sup> “In March 1937 Soviet pilots and aircraft flying for the Republic during the offensive at Guadalajara won one of air power’s most dramatic victories. Between 9 and 21 March, 1937, Soviet airpower attacked and pushed a force of 50,000 motorized Italian troops into a rout. Up to 125 Soviet-piloted, Loyalist aircraft attacked Italian columns in what we would today consider to be a close interdiction (Strike Coordination and Reconnaissance [SCAR], in modern parlance) campaign. Italian casualties included 500 killed in action, 2000 wounded, and 500 taken prisoner. The Soviets destroyed an estimated 1000 vehicles and 25 artillery pieces. Air attack inflicted most of the damage and casualties.” J.S. Corum, quoted from Col. P.S. Meilinger (ed.), *The Paths of Heaven: The Evolution of Airpower Theory*, (Maxwell: Air University Press, 1997), 166.

<sup>43</sup> Led by RAF Army Cooperation Command, this series of exercises incorporated lessons learned during the British Expeditionary Force’s retreat from France.

<sup>44</sup> I. Gooderson, *Air Power at the Battlefield: Allied Close Air Support in Europe, 1943-1945*, (New York: Frank Cass, 1998), 24. Group Captain A.H. Woodall had commanded the RAF Advanced Air Striking Force’s light bomber squadrons in France. Colonel J.D. Woodall had been a staff officer at Headquarters, British Air Forces in France. Their report absorbed the lessons of ‘blitzkrieg’ by identifying the need for a tactical air force – an RAF formation trained and equipped to both obtain air superiority by offensive air action and to attack battlefield targets in close coordination with ground operations. Their report led to the experiments in Ireland which created the RAF’s air support system.

<sup>45</sup> *Ibid.*

The British Western Desert Force employed a bespoke, embryonic version of this air support system to great effect in North Africa, driving the Italians from Egypt in 1940.<sup>46</sup> Unfortunately, the structure was a product of the senior leaders who created it and who allowed it to flourish. It did not survive the carousel of personalities that served in the North African desert upon the German intervention in March 1941.<sup>47</sup> Later land battles where air power successfully played a role, such as that at Alam Halfa, took place as largely AI efforts.<sup>48</sup> Wrote General Rommel:

My plan for the motorized forces – to advance 30 miles east by moonlight and then strike north [towards the British 8<sup>th</sup> Army, dug in on the ridge at Alam Halfa] – had not worked. The assault force had been held up far too long by the strong and hitherto unsuspected mine barriers. . . . By nightfall, our forces became the target for heavy RAF attacks. With one aircraft flying circles and dropping a continuous succession of flares, bobs from the other machines, some of which dived low for the attack, crashed among our flare-lit vehicles. All movement was instantly pinned down by low flying attacks. . . . In the bare and coverless country, with the bomb-bursts frequently intensified by rock splinters, we suffered severe casualties.<sup>49</sup>

Co-equal air and land commanders under an operational-level commander emerged from the experience in North Africa, although the Allies institutionalized this too late.<sup>50</sup> In certain instances, the air commander was able to prioritize his weight of effort based on the theater commander's needs. In others, air power was wholly dispersed in direct support to land

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<sup>46</sup> C. Barnett, *The Desert Generals*, (Edison: Castle Books, 2004), 41.

<sup>47</sup> M. Bechthold, *Flying to Victory: Raymond Collishaw and the Western Desert Campaign, 1940–1941*. Norman: University of Oklahoma Press, 2017.

<sup>48</sup> V. Orange, *Coningham: A Biography of Air Marshal Sir Arthur Coningham*, (Washington: Center for Air Force History, 1990), 108.

<sup>49</sup> Gen. E. Rommel, quoted from B.H. Liddell-Hart (ed.), *The Rommel Papers*, (New York: Da Capo Press, 1953), 277-279.

<sup>50</sup> Only prior to Operation DESERT STORM would the Joint Force Air Component Commander concept come into practice, formalizing certain theater and personality-specific command arrangements between joint forces that existed during the Second World War.

formations, often with disastrous results.<sup>51</sup> As operations continued through Sicily, Italy, and Northwest Europe, greater formalization led to smoother planning and execution of CAS.

Operations in the Pacific showed what could be accomplished when air and land forces worked together. The operational situation there was different; tactical considerations were necessarily different from Europe.<sup>52</sup> From a counterland perspective, the operational situation in the Pacific lent itself to AI over CAS.<sup>53</sup>

Aerial ordnance used in CAS missions still failed to meet expectations. Popular accounts of fighter-bombers delivering surgically precise attacks to great effect are pervasive to present day. Fighter-bomber ordnance caused more psychological damage than physical against point and hardened targets.<sup>54</sup> Although the first precision guided munitions (PGM) appeared during the war, these were largely experimental and played no role in CAS. To have an effect, most air ordnance needed to be delivered *en masse*, and was most effective against area targets. These factors favored AI, over CAS.

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<sup>51</sup> T.A. Hughes, *Overlord: General Pete Quesada and the Triumph of Tactical Airpower in World War II*, (New York: The Free Press, 1995), 87. The 1943 battle at the Kasserine Pass is a potent example of what happens when air power's weight of effort is ill-apportioned, due to a lack of unified command at the operational level.

<sup>52</sup> T.E. Griffith Jr, *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific*, (Lawrence: University Press of Kansas, 1998), 244-247. In the Pacific, the Americans benefited from from being the lead Allied nation (reduced requirement for combined operations), from geography, and from flawed Japanese strategy.

<sup>53</sup> The vast distances of the Pacific theater, vulnerable sea lines of communication, and the sequential nature of contemporary amphibious operations meant that joint deconfliction was sufficient to achieve success.

<sup>54</sup> G. Just, *Stuka Pilot: Hans Ulrich Rudel*, (Atglen: Schiffer Military History, 1990), 221; A.D. Harvey, "Myth of the Tankbuster," *History Net*, accessed 24 March 2020, <https://www.historynet.com/myth-of-the-tankbuster.htm>. German Tiger tank commander Otto Carius said, "Whenever I saw Typhoons I really was not worried. Their rockets only hit with luck." The Ju-87G's pod-mounted 37mm guns not only affected its already poor speed and handling characteristics, but also jerked the nose of the aircraft down violently when fired. "Putting those cannon under the wings was like placing an elephant on roller skates," said Stuka pilot Franz Kieslich. "The damned Stuka was already so slow our fighter escorts would weave and climb so as to not leave us.... I hardly ever brought back an undamaged -87." Stuka pilot Hans Ulrich Rudel wrote of flying the Ju-87G during the winter of 1944-1945, "every mission became an order to Heaven."

The Allied Forward Air Controller (FAC) capability arose from the need to attack targets that emerged inside the ‘Tentacle’s’ planning and execution cycle. The British added another link in their system, a Visual Control Post (VCP). VCPs, originally intended to visually control CAS attacks, lacked standardized training and suffered from great variation between individual FACs’ skill.<sup>55</sup> Worse, British commanders lacked trust in the VCPs, which numbered one per Corps.<sup>56</sup> For example, in Burma:

There was much objection in the RAF command to experienced air-trained personnel accompanying the brigades. In spite of higher agreement on this, the [air] command offered firm opposition. At length, after a particularly bitter and long tussle on the subject, [Chindit leadership found themselves] unable to make further headway, and reported to [Major General] Wingate a senior air officer’s conclusion that, as he put it, “fifty RAF men on the ground are fifty RAF men wasted.”<sup>57</sup>

Clearly, joint culture lagged behind emerging practices.

Due to these challenges, the British increased the number of aircraft overhead friendly lines tasked to do CAS (referred to as “Cab Rank”) and increased the equipment, personnel, and rank within the VCPs to become ‘Forward Control Posts’; in essence, maintaining the responsibility and increasing the authorities to identify higher priority targets, but without increasing the competency to do so.<sup>58</sup> These measures did not increase the effectiveness of CAS attacks as intended.

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<sup>55</sup> I. Gooderson, *Air Power at the Battlefield: Allied Close Air Support in Europe, 1943-1945*, (New York: Frank Cass, 1998), 27-31.

<sup>56</sup> *Ibid.*, 43.

<sup>57</sup> C. Sykes, *Orde Wingate*, (London: Collins, 1959), 481-482. Only by intervening personally did MGen Wingate get his contemporary equivalents of air liaison officers, drop zone controllers, and Joint Terminal Attack Controllers (JTAC) for Operation THURSDAY.

<sup>58</sup> I. Gooderson, *Air Power at the Battlefield: Allied Close Air Support in Europe, 1943-1945*, (New York: Frank Cass, 1998), 27; R. Pigeau and C. McCann, “Re-conceptualizing Command and Control,” *Canadian Military Journal*, (Spring 2002), 58.



By 1944, the Americans, learning from operations in the Mediterranean, had three VCPs per division. They employed VCPs as the Germans did, and as the British had originally intended, to visually control CAS attacks.<sup>59</sup> Additionally, the Americans adapted the Cab Rank, renamed ‘Armored Column Cover,’ which unshackled armored forces from their less mobile artillery support.<sup>60</sup> Bolstered by refined capabilities, both the British and Americans gained trust and proficiency in CAS. Techniques and procedures matured, spreading to other theaters. For example, British forces in Burma conducted CAS with a level of sophistication that their counterparts in Normandy did not.<sup>61</sup> With the ability to safely hit targets close, came appetite to synchronize more closely with ground maneuver. Commander 14<sup>th</sup> Army would write:

As we were, compared with most Allied armies, short of artillery (and even if it had been available the country would have hampered its use) we came to rely for close support more and more on the air. We developed our own and adapted other people’s methods for calling up air support, of indicating targets and of coordinating movement on the ground with fire from the air. We as confidently dovetailed our fireplans with the airmen as with the gunners. Talked in by Air Force officers with the forward troops, our fighters would place cannon shells and rockets within a hundred yards of our men.<sup>62</sup>

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<sup>59</sup> These VCPs went by the callsign “Rover.”

<sup>60</sup> *Ibid.*, 43; W/C J.C. Slessor, *Air Power and Armies*, (Tuscaloosa: University of Alabama Press, 2009), 90, 214-215. Perhaps the most critical American innovation, which represented an improvement over the British system, was to prioritize support to armored formations. This provided air support to ground formations conducting assault and pursuit missions, aligning with the principles J.C. Slessor outlined: “The air is only one, but it is the decisive one, of a number of factors favoring the rise of the small, highly mobile, hard hitting, armored and mechanized army of tomorrow. ... The first general rule ... is that *the aeroplane is not a battlefield weapon* [original emphasis]. There are, of course, exceptions to this rule. One such exception may be during the initial break-in to a highly organized defensive system. Another may be when it is necessary to break up a counterattack. Aircraft will usually have to be directed, in the [ground force’s] defence against targets closer than in the attack, for the obvious reason that their effect must usually be made itself felt more quickly.”

<sup>61</sup> T. Royle, *Orde Wingate: A Man of Genius*, (London: Frontline, 2010), 280. British forces in Burma benefitted from the presence of the American 1st Air Commando Group. This composite formation provided direct support (air superiority, air mobility [including gliders], ISR, and counterland) to the British Indian Army’s Long Range Penetration Group. RAF elements in area appear to have adopted certain of their tactical best practices.

<sup>62</sup> Viscount FM W. Slim, *Defeat into Victory: Battling Japan in Burma and India, 1942-1945*, (New York: Cooper Square Press, 2000), 544.

This suggests that tactical air attacks were most effective when a ground force was able to exploit the chaos that followed.<sup>63</sup> While AI represented the best use of resources, given the technological limitations at the time, the conflict established the potency of CAS. Land and maritime forces ended the conflict as believers in ‘jointness’; Western air forces did not.<sup>64</sup>

Nuclear weapons dominated postwar air power dialogue. As the Soviet Union obtained nuclear weapons, deterrence through air power appeared to be the West’s best option to prevent open conflict. This was the rationale for the establishment and independence of the USAF.<sup>65</sup>

Reflected General Curtis Lemay:

After looking at the damage done [to Tokyo and Yokohama] by a relatively few B-29s, I thought about the damage that could have been done with [more] ... the devastation that could have been wrought is beyond imagination. I thought to myself that if we’d had such a force in place on December 7, 1941, there probably wouldn’t have been an attack on Pearl Harbor. From that moment forward, I believed it would be possible to maintain peace through strength. If we could build and maintain a force that was so well trained and dedicated to that cause, no one would ever choose to attack the United States.<sup>66</sup>

While tactical air power had been deemphasized in USAF doctrine, AI entered into the prevailing narrative of air power’s potential as a decisive producer of victory. This drove an

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<sup>63</sup> Maj. Gen. J. Gavin, *Airborne Warfare*, (Washington: Infantry Journal Press, 1947), 141; G.S. Isserson, *The Evolution of Operational Art*, (Leavenworth: Combat Studies Institute Press, 2013), 37. Georgii Isserson, writing during the interwar years, pithily expressed similar sentiment outlining principles of Soviet Deep Operations, saying “it is senseless to break down a door if there is no one to go through it.”

<sup>64</sup> J.A. English, *The Canadian Army and the Normandy Campaign*, (Mechanicsburg: Stackpole Books, 2009), 128. John A. English wrote of the British Army’s reckoning within their own service, at the tactical level, which is worthy of reflection for air power practitioners contemplating their own role in MDO: “The predilection of British Armor for tank-versus-tank actions naturally played into enemy hands, for the basis of German tactics lay in the combined actions of all arms. ... Whenever German armor encountered strong resistance, it could retire under [anti-tank guns’] protection, often luring to them in the process unsuspecting British tanks. ... Indeed, it took British tanks crews a very long time to realize that their tanks were actually being knocked out not by the more obvious panzers, but by deadly, unseen 50mm PaK 38s from afar. ... The British ‘all tank’ school and cavalry concept [of employment], in short, foundered miserably before the theory of all-arms cooperation so effectively practiced by the Germans.”

<sup>65</sup> J. Black, *Air Power: A Global History*, (Lanham: Rowman & Littlefield, 2016), 151.

<sup>66</sup> Lemay, Gen. C.C and B. Yenne, *Superfortress: The B-29 and American Air Power*, (New York: McGraw-Hill Book Company, 1988), 161. “Peace Through Strength” later became the motto of USAF Strategic Air Command.

emphasis on AI in American, and consequently Western, air power doctrine. But in their bid for institutional independence, the USAF made promises regarding CAS that were antithetical to their view of air power, obliging themselves to adopt C2 structures that could not long endure alongside their intellectual foundations.<sup>67</sup> This perspective colored preparation for, and conduct of, the counterland mission in Korea.

Despite the counterland lessons of the Second World War, the division of knowledge into service-specific ‘fiefdoms’ made general understanding and coordinated action not just impossible, but distrusted.<sup>68</sup> The absence of adequate command integration and weakness of CAS in postwar USAF doctrine limited exploitation of air superiority over the Korean peninsula.<sup>69</sup> By focusing on strategic bombing and AI in North Korea, the USAF claimed to have played a decisive role in forcing opponents to the bargaining table in 1953 and that CAS had been a distraction. Wrote Lieutenant-General Otto Weyland, commander Far East Air Forces (FEAF):

[After the Chinese intervention,] FEAF was directed to employ its aerial predominance in close support of ground units to the exclusion of all else. This absolutely precluded a proper interdiction program. Had FEAF not convinced [Gen. MacArthur’s] staff that curtailing the forward flow of communist troops and materiel was essential to the war effort, the 8<sup>th</sup> Army might never have recovered from its ‘critical’ position [original emphasis] ... although CAS contributed, the major effect upon the enemy was produced by airpower applied in the rear of his frontline combat zone.<sup>70</sup>

Despite the FEAF’s reluctance to conduct it, CAS had proven decisive during the conflict’s opening phases. The Allies apportioned CAS as a main effort, from the Pusan Perimeter to stabilization of the front after the Chinese intervention. During this period, USMC aviation and

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<sup>67</sup> C.H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the U.S. Air Force*, (Santa Monica: Rand, 1994), 140.

<sup>68</sup> J.R. Saul, *Voltaire’s Bastards: The Dictatorship of Reason in the West*, (Toronto: Penguin, 1992), 8.

<sup>69</sup> *Ibid.*, 172.

<sup>70</sup> Gen W. Momyer, *Airpower in Three Wars*, (Maxwell: Air University Press, 2003), 190-191.

FEAF concurrently provided support to Allied land forces. This is an example of interservice rivalry having a positive effect:

While Communist air was being shattered, the FEAF flew hundreds of missions against the advancing ground troops of the North Korean People's Army. In the first few hours they did more harm than good. Without ground control parties, and with the situation on the ground so confused, FEAF pilots could not tell friend from foe.<sup>71</sup>

FEAF elements in theater were challenged to meet the Marines' concurrent level of execution in support of the same 'customer.'<sup>72</sup>

The subsequent switch to AI, over CAS, came as part of a wider effort to establish a single, centralized air commander at the operational level. While done to recreate the success of similar C2 arrangements in the previous war, friction remained between FEAF leadership and their Army counterparts:

I know of no ground commander who has taken part on the Korean War who is satisfied that he is getting the best CAS possible ... however, over a period of 18 months, we have conducted a reasonably effective campaign for the first time under a truly unified command – without serious involvement in opposing service policies. It would appear undesirable to become embroiled in them at this late date.<sup>73</sup>

As a whole, the Korean war saw an improvement in the use of counterland airpower, with reestablishment of Second World War CAS capabilities.<sup>74</sup>

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<sup>71</sup> T.R. Fehrenbach, *This Kind of War*, (Dulles: Potomac Books, 2008), 55. This represented a break from contemporary doctrine, as USMC aviation typically only provided air support to USMC ground elements.

<sup>72</sup> T.M. Cleaver, *Holding the Line: The Naval Air Campaign in Korea*, (New York: Osprey, 2019), 94. The United States Marine Corps had conducted a rigorous lessons learned process after 1945, incorporating Allied best practices in CAS into postwar training. The service proved up to the task of CAS upon commitment to Korea in 1950.

<sup>73</sup> C.C. Crane, *American Airpower Strategy in Korea, 1950-1953*, (Lawrence: University Press of Kansas, 2000), 110.

<sup>74</sup> J. Black, *Air Power: A Global History*, (Lanham: Rowman & Littlefield, 2016), 174. These included reestablishment of ground and airborne FAC capabilities, and air support C2 means pushed as low as subunit-level within ground forces.

Land force leadership's exasperation at FEAF reluctance to conduct CAS is understandable when viewed from the perspective of a pilot flying counterland missions. As a trend, CAS missions ended with a FAC relaying, at a minimum, whether an attack had met the supported ground commander's needs. Typically, the FAC passed on specific damage assessment, which aircrew would relay to unit-level intelligence staff on return.<sup>75</sup> The same could not be said of AI missions. Aircrew were very often unsure of the results of AI attacks, during which units endured substantial casualties. Such outcomes generate a costly feedback loop; a target worth attacking is worth re-attacking, should the desired results not be achieved:

Targets were usually camouflaged and difficult to spot; sometimes, they were concealed beneath foliage or otherwise hidden from view. By flying low, I could spot targets that couldn't be seen from higher altitude, but I was flying too low and fast to attack them, so I acted as a spotter, calling out targets to be attacked by [my wingmen]. ... we had near misses but [few] direct hits – a disappointment after all of the effort we exerted and the risks we faced from the ack-ack thrown our way.<sup>76</sup>

FEAF dedicated less than eight percent of its total sorties in Korea to close air support.<sup>77</sup>

Holistically, it appears that by focusing on AI over CAS, FEAF 'threw good money after bad,' doubling down on efforts that do not appear to have provided return on sorties invested:

Air [interdiction] over a country like Korea could never be in itself decisive. The country was too broken, and the [Communist] armies were never completely road-bound. Units and supplies, often on foot, went through the valleys and over the ridges, and too much of them arrived at the front. The [Communists] did not amass the great, vulnerable mountains of materiel common to Western armies ... the Air Force ... could not interdict this type of battlefield, could not destroy a ground army that was a lurking phantom.<sup>78</sup>

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<sup>75</sup> Lt Gen G. G. Loving, *Bully Able Leader: The Story of a Fighter-Bomber Pilot in the Korean War*, (Mechanicsburg: Stackpole Books, 2011), 35-44. Then Major George Loving was an experienced pilot who flew F-51D Mustangs doing from August to September 1950, primarily flying CAS missions. He flew F-80 Shooting Stars from January to June 1951, primarily flying AI missions.

<sup>76</sup> *Ibid.*, 99-100.

<sup>77</sup> W.T. Y'Blood, *Down in the Weeds: Close Air Support in Korea*, (Honolulu: University Press of the Pacific, 2005), 47. Of 720,980 sorties flown by the FEAF in Korea, 57,665, or fewer than eight percent, were for close air support; another 192,581 were for AI.

<sup>78</sup> T.R. Fehrenbach, *This Kind of War*, (Dulles: Potomac Books, 2008), 114, 386.

Korea appears to confirm the value of, and need for, excellence in CAS execution, and indicated the limits of AI when conducted under unfavorable conditions.<sup>79</sup> Worse, it demonstrates air forces' reluctance to conduct CAS despite obvious operational conditions requiring it.

Interestingly, the record showed that multirole jets, on the whole, proved more effective at the CAS mission than propeller-driven aircraft. Aircrew and FAC proficiency offset jets' reduced persistence, and techniques for artillery suppression of anti-aircraft positions solidified. The record shows that jets were more survivable, easier to maintain, had a higher sortie rate, and, on the average, carried more ordnance than propeller aircraft.<sup>80</sup> Said one fighter-bomber pilot:

Jets were the thing. A great friend of mine had just come back from Korea, where he had flown [as an airborne FAC], and he said, "Listen, if you can get in jets, do it. If you take a [propeller aircraft] into a target at 400 miles an hour, you have to go out at 400 miles an hour. You take a *jet* in [original emphasis], you're going 420, you release your bombs, and you get the hell out of there at 500. I could certainly see the logic in that."<sup>81</sup>

That debate over CAS-specific aircraft continues to date, rather than debate over investment in and collaboration towards detailed integration, speaks to lingering institutional issues.<sup>82</sup>

From the counterland perspective, Vietnam served in many respects as a metaphorical 'rinse and repeat' of Korea. In abstract, the relationship of air power to ground warfare remained

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<sup>79</sup> E. Mark, *Aerial Interdiction: Air Power and the Land Battle in Three American Wars*, (Honolulu: University Press of the Pacific, 2002), 406. Forces conducting counterland missions in Korea often lacked adequate intelligence about the enemy logistical system (specifically, consumption rates), and targets were not readily identifiable.

<sup>80</sup> R.P. Hallion, *The Naval Air War in Korea*, (Tuscaloosa, University of Alabama Press, 2011), 50. During the conflict, the USMC expedited efforts to phase out the F4U Corsair and AD Skyraider in order to bring more F9F Panther jets into service, for these reasons.

<sup>81</sup> T.S. Williams & J. Underwood, *My Turn at Bat: The Story of my Life*, (New York: Simon & Schuster, 1988), 176. Captain Williams flew 39 combat missions in F9F Panthers, many as a wingman to future astronaut John Glenn, as a member of VMF-311 before being medically repatriated for inner ear problems stemming from pneumonia. Outside of Marine Aviation, Williams had a notable career as a professional athlete and fisherman. He received awards in all three pursuits.

<sup>82</sup> "Of U.S. aircraft tasked to conduct counterland operations against the Iraqi Army during Operation DESERT STORM, F-16s and USMC F/A-18s exceeded the A-10s in fewest losses per 1000 sorties." Gen C. Horner & T. Koltz, *Every Man a Tiger: The Gulf War Air Campaign*, (New York: Berkley Books, 2005), 531.

a dialogue between “is” and “ought,” between what assets exist and varying notions of what to do with them, between readings of capabilities and dreams of accomplishment.<sup>83</sup> The C2 arrangements that evolved between 1965 and 1972, driven by a combination of external diplomatic concerns and institutional imperatives internal to the American military services, created a situation in which five separate air wars were underway simultaneously.<sup>84</sup> With the exception of PGMs, little emerged for counterland air power except confirmation that the lessons of the Second World War had yet to fully translate into execution. Despite extensive measures of performance and effectiveness, at no point did AI efforts fully isolate the battlefield, and coercion of the North Vietnamese leadership owed more to diplomatic than military efforts.<sup>85</sup>

After 1953, the USAF shelved its CAS capabilities.<sup>86</sup> Despite rapid reinvestment in an airborne FAC capability from 1965 onwards, ground-based controllers remained few in number throughout the conflict. The USAF assigned airborne FACs to geographic areas, not to specific ground elements.<sup>87</sup> This prevented deliberate planning and liaison prior to operations; almost all CAS was reactive, thus of limited value. Citing post mission reports, USAF leaders in theater went on to declare detailed integration with ground forces as a hindrance, seeking deconfliction instead:

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<sup>83</sup> D.J. Mrozek, *Air Power and the Ground War in Vietnam: Ideas and Actions*, (Maxwell: Air University Press, 1988), 153.

<sup>84</sup> D. MacIsaac, quoted in P. Paret (ed.), *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, (Princeton: Princeton University Press, 1986), 644-645.

<sup>85</sup> H. Kissinger, *Ending the Vietnam War: A History of America's Involvement in and Extrication from the Vietnam War*, (New York: Simon & Schuster, 2003), 561. Tactical excellence cannot make up for flawed strategy.

<sup>86</sup> W.A. Trest, *Air Commando One: Heinie Aderholt and America's Secret Air Wars*, (Washington: Smithsonian Institution Press, 2000), 133. US Strike Command's First Air Commando Wing owned CAS doctrine as of 1961, but, the USAF had abandoned its airborne FAC capability. It seemed of little value in a nuclear exchange. The Army retained ground-based a FAC capability that appeared capable on stateside training ranges, but failed to deliver on operations in Vietnam. The USAF was little better; when the need to conduct CAS arose, they had fundamentally organized their tactical forces to conduct AI.

<sup>87</sup> Lt Col S.P. Callahan, *Close Air Support and the Battle for Khe Sahn*, (Quantico: United States Marine Corps History Division, 2009), 19.

All ground operations were designed to seek out the North Vietnamese and [Viet Cong] and to force an engagement in which our superior firepower, particularly airpower, could be employed. It was our policy that after contact with the enemy was established, our ground forces would pull back a sufficient distance to allow airpower to be used without restraint. Then the Army would follow up these attacks with reaction forces.<sup>88</sup>

As part of this, theater rules of engagement changed such that aircrew could engage targets near ground forces without a FAC present at all.<sup>89</sup> In essence, the USAF felt the differences between CAS and AI were, ultimately, administrative.<sup>90</sup> While abandoning detailed integration with the army, starting in 1966 the USAF increasingly employed airborne FACs for ISR missions along the Ho Chi Minh Trail, thereby increasing AI apportionment.<sup>91</sup> Stunning gaps existed between terminology, practice, and interpretation:

Those early missions [over the Ho Chi Minh trail] were really hairy as we experimented with how to survive in a dense AAA environment while marking targets and directing strikes. Although FAC-ing was not a new concept (the USAF had employed FACs since WWII), “Fast FAC-ing” was new and we were truly plowing new ground. Our loss rate during the first six months was 42% - a steep, expensive, and tragic learning curve.<sup>92</sup>

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<sup>88</sup> Gen W. Momyer, *Airpower in Three Wars*, (Maxwell: Air University Press, 2003), 312.

<sup>89</sup> G.R. Lester, *Mosquitoes to Wolves: The Evolution of the Airborne Forward Air Controller*, (Maxwell: Air University Press, 1977), 120.

<sup>90</sup> M. Harrison, *A Lonely Kind of War: Forward Air Controller, Vietnam*, (New York: Pocket Books, 1989), 8. Held against the standards of modern CAS procedures, FAC techniques of the Vietnam era are terrifying. Information passage, directive orders, and mission flow focused on attack aircrew actions. These included the initial holding instructions, ingress to the target, weapon delivery profile, and egress to sanctuary from threats to the aircraft. Considerations such as the supported ground force’s maneuver, supporting artillery fire, and other flying assets (such as helicopters) were secondary to the FAC’s deliverables to the CAS aircraft. The FAC’s role was more of a guide, or spotter, than an orchestrator of air and ground effects. As an example, FACs routinely gave conditional weapons release authorization to CAS aircrew, largely negating any safety that the FAC would have otherwise ensured by being involved in the mission: “Hit my smoke [rocket impact on the ground], Lead. If you have the target and the FAC [in sight], you’re cleared hot.”

<sup>91</sup> G.R. Lester, *Mosquitoes to Wolves: The Evolution of the Airborne Forward Air Controller*, (Maxwell: Air University Press, 1977), 177. Use of the term “FAC” notwithstanding, these missions rarely involved detailed integration with ground forces, and are analogous to modern SCAR, not CAS. These missions proved dangerous for the low flying, slow, lightly armed aircraft. A series of “Fast FAC” aircraft, starting with the F-100 “Misty FACs” and eventually F-4 “Wolf FACs,” gradually replaced traditional platforms in this role, such as the O-1 Birdog and O-2 Skymaster.

<sup>92</sup> Maj G.E. Day, quoted in Maj Gen D. Shepperd, *Misty: First Person Stories of the F-100 Misty Fast FACs in the Vietnam War*, (Tuscon: The Shepperd Group, 2002), 4. Major “Bud” Day’s F-100F was shot down by 37mm fire during a Fast FAC mission on 26 August 1967. He survived the ejection, and later received both a Medal of Honor and the Air Force Cross for his conduct and leadership while in North Vietnamese captivity.



In the end, dysfunction between services drove misplaced apportionment, limiting the effectiveness of counterland missions. After Vietnam, US forces refocused on major combat operations, and examined the cost of interservice rivalries.<sup>93</sup> From this period came the doctrine of AirLand Battle, an AI-heavy endeavor.<sup>94</sup> Counterland lessons from the Falklands conflict do not appear to have influenced AirLand Battle:

The conflict had shown that aircraft can intervene with decisive effect during a ground engagement. But it has also demonstrated that there is no point in sending high-speed attack aircraft to hit camouflaged enemy positions liable to be defended by guns and missiles, if their locations are not accurately known or marked; attacking pilots will not see them in time to line up for a first pass attack. Returning to a defended area for a second pass proved a hazardous business: two Harrier pilots lost their aircraft and nearly their lives relearning that lesson.<sup>95</sup>

Eventually, from AirLand Battle emerged the Joint Force Air Component Commander (JFACC), with formalized authorities, responsibilities, and accountabilities to the Joint Force Commander.<sup>96</sup> Though not perfect, and subject to further change, the basic structure was in place that the Americans employed during Operation DESERT STORM.

In hindsight, DESERT STORM was almost ‘too successful.’ It presented little opportunity for CAS, and seemed to vindicate the USAF’s focus on AI; many claimed that airpower had been decisive.<sup>97</sup> Frictions had existed with the mechanisms of AirLand Battle. Disagreement over placement of the Fire Support Coordination Line (FSCL), had administratively created a sanctuary for the adversary, that only ground combat, albeit brief, had

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<sup>93</sup> Lt Col R.K. Laughbaum, *Synchronizing Airpower and Firepower in the Deep Battle*, (Maxwell: Air University Press, 1999), 7.

<sup>94</sup> R.G. Davis, *The 31 Initiatives: A Study in Air Force – Army Cooperation*, (Washington: Office of Air Force History, 1986), 35.

<sup>95</sup> J. Ethell and A. Price, *Air War South Atlantic*, (New York: Macmillan Publishing Company, 1986), 216.

<sup>96</sup> Lt Col R.K. Laughbaum, *Synchronizing Airpower and Firepower in the Deep Battle*, (Maxwell: Air University Press, 1999), 59.

<sup>97</sup> B.S. Lambeth, *The Transformation of American Air Power*, (Ithaca: Cornell University Press, 2000), 261.

cleared.<sup>98</sup> The AI-heavy campaign in Kosovo, featuring PGMs without ground troops, seemed to present Western political leadership unprecedented military options in statecraft.<sup>99</sup> Air power practitioners made bold statements about the decisiveness of airpower, echoing early strategic bombing theory. However, cautioned one thinker of PGM-enabled AI campaigns:

The ease, speed, low risk, and high degree of detachment of these [campaigns] appear to allow policy makers to brush by such questions as, “Does some vital national interest require us to fight?” “Do we need a major commitment of forces?” “Do we have a clearly defined and achievable objective?” “Are the [political leaders and domestic population] behind this move?” “Have all other means of dealing with this problem been exhausted?”<sup>100</sup>

As events would turn out, this statement about AI campaigns’ strategic implications proved prescient. The next period of major conflict involving Western forces would not, and, arguably, could not, be solved with a simple bombing campaign.

In the aftermath of 9/11, early operations of the Global War on Terror (GWOT) in Afghanistan revealed the potential for detailed integration, and shortcomings in the capabilities needed to conduct it. This is perhaps due to challenges of power projection, and Special Operations Forces’ (SOF) reliance on enablers to accomplish their missions; land and air forces had no choice but to work together. American SOF had maintained an effective FAC capability, and put it to revolutionary use. Amplified by air-land cooperation, air power made innovative contributions by scaling up the detailed integration routine within SOF to the operational level.<sup>101</sup>

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<sup>98</sup> *Ibid.*, 132.

<sup>99</sup> S.D. Wrage, *Immaculate Warfare: Participants Reflect on the Air Campaigns over Kosovo and Afghanistan*, (Westport: Praeger, 2003), 104.

<sup>100</sup> *Ibid.* Western security and policy experts have asked similar questions in the aftermath of the 2011 campaign in Libya.

<sup>101</sup> S. Call, *Danger Close: Tactical Air Controllers in Afghanistan and Iraq*, (College Station: Texas A&M University Press, 2007), 26. Key technologies included Unmanned Aerial Systems, Video Downlinks, PGMs, ground-based laser designators, and aircraft targeting pods. All of these technologies existed before the conflict started; the difference was the effect these provided in concert, through detailed integration.

With air power so effective against [enemy] ground forces, particularly massed or maneuvering ground forces, the best defence was to disperse and hunker down. But if there is a friendly ground force nearby, this dispersed and immobilized enemy is now vulnerable to defeat in detail, unless it can mass and maneuver against that ground force, which once again makes the enemy army vulnerable to air power. So when [FACs] were coupled with the Northern Alliance, the Taliban and Al Qaeda faced this air-ground dilemma. ... Because the enemy couldn't disperse without surrendering control of Afghanistan, they stood in place and remained lucrative targets for air power. ... Initially the Northern Alliance didn't think any of this was going to work, but they saw early on that "we don't need to kill thousands of our own guys" – this [air-land] thing is a whole new role to them; and they liked it.<sup>102</sup>

Early GWOT operations clear the need for greater institutional investment in operational-level planning for CAS. There was little opportunity to conduct AI. The greatest threat to friendly forces was very often other friendly forces:

[During Operation ANACONDA, the culminating battle of the initial Western campaign in Afghanistan], the Shah-i-Kot valley was filled with surging aircraft from both the Navy and Air Force. Summoning [pilots] to do their bidding were 37 different ground controllers, each asking for help and making the danger of a mid-air collision very possible. After almost hitting an AC-130 that no one knew was in the area, two A-10 pilots were flying a loose formation when a Navy F-18 slashed between them. [One] almost had a Predator drone bounce off his canopy as both aircraft were operating in the same altitude block and as they were working to deconflict with the drone pilots, several bombs went off beneath them as another Navy Hornet had dropped ordnance through their altitude.<sup>103</sup>

Operation IRAQI FREEDOM contained similar challenges. The rigors of conventional battle again laid clear the operational-level challenges. Like during Operation DESERT STORM, FSCL placement again provided sanctuary for the adversary. Rapid implementation of more flexible fire support coordination measures allowed land and air forces to fight as partners, rather

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<sup>102</sup> *Ibid.*, 38.

<sup>103</sup> G. Wetzel, "Everything Went Wrong On the A-10 Warthog's First Mission in The War On Terror," *Foxtrot Alpha*, last updated 6 June 2017, <https://foxtrotalpha.jalopnik.com/everything-went-wrong-on-the-a-10-warthog-s-first-missi-1795559531?rev=1496773525342>.

than two components trying to get out of each other's way.<sup>104</sup> Unfortunately, there were still cases of CAS fratricide.<sup>105</sup>

Fratricide problems were not unique to U.S. forces. They became most prevalent in the NATO-led campaign in Afghanistan, thereby threatening the alliance's cohesion. Canada's involvement in Kandahar, viewed through a counterland lens, is particularly instructive: on 8 July 2006, a laser guided bomb, dropped by an American aircraft under the control of a Canadian FAC, impacted within four meters of Canadian soldiers. Incredibly, no Canadians were killed in the incident.<sup>106</sup> On 9 July 2006, as part of the same operation, an American AH-64 helicopter fired a missile at a Taliban fighting position, at the direction of a Canadian artillery observer. The impact caused secondary explosions that injured Canadian troops.<sup>107</sup> On 4 September 2006, an A-10 aircraft, under control of a Canadian FAC, fired its thirty-millimetre cannon at Canadian troops, killing one and injuring nearly thirty others.<sup>108</sup> The solution later came through strategic-level agreements to standardize CAS procedures and FAC training standards across most Western militaries.<sup>109</sup> Common CAS procedures and standards made detailed integration easier

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<sup>104</sup> B.S. Lambeth, *The Unseen War: Allied Airpower and the Takedown of Saddam Hussein*, (Annapolis: Naval Institute Press, 2013), 266.

<sup>105</sup> J.A. Stout, *Hammer from Above: Marine Air Combat Over Iraq*, (New York: Ballantine Books, 2005), 270.

<sup>106</sup> C. Blatchford, *Fifteen Days*, (Toronto: Anchor Publishing, 2008), 84.

<sup>107</sup> C. Wattie, *Contact Charlie*, (Toronto: Key Porter Books Ltd, 2008), 227.

<sup>108</sup> "The airspace was busy. Sometimes too busy. ...we had put [AH-64] Apaches and A-10s into action, but not on their own. We also had an AC-130 gunship, two [F/A-18] Hornets and an armed [MQ-1] Predator on task. In between runs, they moved into a holding pattern, separated in theory in a stack of designated altitudes. But as three [FACs] were directing aircraft on three different frequencies at the same time, an accident was likely. ... The friendly fire incident illustrated the absolute chaos of the command and control system imposed on us. We had two completely separate chains of command operating at the same time: our own operations and special forces operations. Despite our efforts to deconflict, airspace management was a recipe for disaster and the one thing I lost sleep over every night. The tragedy of September 4 proved it ... the ensuing investigation affirmed what all of us knew in theater but had not been able to mitigate. We had all tried valiantly to manage this risk, but on this day we all lost." D. Fraser and B. Hanington, *Operation Medusa*. (Toronto: McLelland & Stewart, 2018), 165-166.

<sup>109</sup> HQ USAF/A3T, *AIR FORCE INSTRUCTION 13-112, VOLUME 1: JOINT TERMINAL ATTACK CONTROLLER (JTAC) TRAINING PROGRAM*, (Washington: Department of the Air Force, 2017), 1. FACs would henceforth be referred to as Joint Terminal Attack Controllers (JTAC) across the militaries of signatory nations to this agreement.

and safer, building trust between air and land forces across contributing nations. The Canadian Armed Forces benefitted from these initiatives, later employing CAS to great effect in Kandahar province, without fratricide.<sup>110</sup>

This period of the GWOT marked a watershed point; finally, joint forces saw the value in working together, and embraced the challenge.<sup>111</sup> For the first time, anything that could be seen, could be hit from the air; what could be hit, could be killed. Finally, the joint pieces were in place: the people, organizations, and technology, such that air and land forces could cast aside tired assumptions, nearly a century old, about detailed integration.

The results of CAS in the campaign against Da'esh in Iraq and Syria have been impressive. Syrian Defence Forces and their proxies have experienced contemporary Western CAS capabilities,<sup>112</sup> suffering casualties in the hundreds, if not thousands, in a matter of hours.<sup>113</sup> At present, the institutional risk to air forces is that practitioners may be applying CAS procedures where they may not be necessary; that is, where detailed integration between land and air elements is not required.<sup>114</sup> Tactically, this jeopardizes engagement tempo in major combat operations, but Western forces' comfort with and confidence in CAS indicates a reversal

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<sup>110</sup> Col L.S. Turner, LCol D. Corbould, Maj J.T. Adair, "Optimizing Deadly Persistence in Kandahar: Armed UAV Integration in the Joint Tactical Fight," *The Canadian Army Journal*, 13.1 (Spring 2010): 117-125.

<sup>111</sup> This may have been aided by a lack of sustained opportunity to conduct AI, given the influence of Land Component-led operations in the GWOT, and the presence of complex terrain, both physical (Afghanistan) and human (Iraq).

<sup>112</sup> T. Gibbons-Neff, "How a 4-Hour Battle Between Russian Mercenaries and U.S. Commandos Unfolded in Syria," *New York Times*, last updated 24 May 2018, <https://www.nytimes.com/2018/05/24/world/middleeast/american-commandos-russian-mercenaries-syria.html>.

<sup>113</sup> M. Prothero, "Turkey is crushing Syria's army after wiping out its heavy armor with superior tech, daring Russia to step in and save them," *Business Insider*, last updated 2 March 2020, <https://www.businessinsider.com/syria-turkey-superior-tech-dares-russia-2020-3>. Turkish forces claim to have destroyed up to 2,500 Syrian Regime soldiers.

<sup>114</sup> M. Benitez, "How Afghanistan Distorted Close Air Support and Why It Matters," *War on the Rocks*, last updated 29 June 2016, <https://warontherocks.com/2016/06/how-afghanistan-distorted-close-air-support-and-why-it-matters/>. This trend of overusing CAS procedures, while necessary to correct, serves as a reversal of institutional historic precedent, perhaps a positive sign.

of historical trends.<sup>115</sup> The position of senior Western air power leadership remains amenable to the CAS mission. Senior USAF leaders' statements and organizational decisions, then and now, clearly indicate that support for the land component in general, and the CAS mission in particular, will remain an enduring high-priority mission for the USAF in the future.<sup>116</sup>

Many conclusions can be drawn from these cases. Taken as a whole, counterland methodology has been outpaced by its means. The year is 2020, not 1918: air forces no longer operate biplanes, or drop twenty-pound unguided bombs in support of ground elements who cannot find their own troops.<sup>117</sup> So why do some Western air forces still base their counterland doctrine around the idea of drawing a line on a map, and attacking anything on the side opposite friendly forces? Conflicts since 1945 contain few stunning tactical examples of AI proving decisive against ground forces, as at Megiddo and Alam Halfa. This suggests such cases are the exception, rather than the rule. Counterland doctrine must better reflect these facts.

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<sup>115</sup> United States Air Force, "Operational Level Doctrine, Annex 3-03, Counterland Operations," last updated 5 February 2019, [https://www.doctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D06-LAND-CAS.pdf](https://www.doctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D06-LAND-CAS.pdf); Department of National Defence, *Air Force Vectors: Agile, Integrated, Reach, Power*, A-GA-007-000/AF-008, 1st edition, (Ottawa, 2014) 9. This may also be indicative of a wider shift within counterland missions, as tactics, techniques, procedures, and technology evolve in ways that may demand redefinition of terms. From the USAF and RCAF doctrine, if "close proximity" presents less risk than in the past, and the reach of modern "Sense" capabilities have increased the span of "detailed integration," perhaps the West could develop new counterland doctrine outlining a single counterland mission, with a spectrum of decentralized target engagement authorities; a sort of reversion to the interwar years, where modern distinctions between CAS and AI did not exist.

<sup>116</sup> C. Bartels, T. Tormey, and J. Hendrickson, "Multidomain Operations and Close Air Support: A Fresh Perspective," *Military Review* 97, no. 2 (Mar/Apr 2017): 70-79. Gen. Larry Welsh, then the previous Air Force chief of staff, pointed out in 2016 that over the previous seven years, the USAF had flown on average twenty thousand CAS sorties a year, providing a needed function to the joint force commander.

<sup>117</sup> "With the Canadian Corps reeling from the loss of Mount Sorrel [on 3 June 1916] and the surrounding high ground, a shocked Sir Julian Byng assessed the disaster and demanded that all ground be recaptured. Sometime after 5:00 PM, he ordered an immediate counterattack, and by 5:42 PM, he was receiving reports that counterattacking units were forming up. However, since communication to the front had effectively been cut, Byng's headquarters had little idea as to where the Germans were or which portions of the front their own troops still held. ... as a result of the Canadian staff's inability to supply guides to the front, as well as broken communications that left units unable to coordinate their attack ... the counterattack took several hours to develop." T. Cook, *At the Sharp End: Canadians Fighting in the Great War, 1914-1916*, (Toronto: Penguin, 2007), 357-358.

MDO are predicated on the idea that different domains conducting detailed integration create an operational effect greater than the whole. Air doctrine, from its earliest days, has resisted this principle. Will air power theorists in fifty years write doctrine biased against integration with space, cyber, and information domains? This is the case within current counterland doctrine. Will an equivalent of an ill-placed ‘space FSCL’ provide sanctuary for future adversaries? It has happened before. While we do not know what form the future will take, Western air forces must set the conditions to get this right, by increasing their institutional investment in detailed integration. Detailed integration is not simply deconflicted joint execution. ‘Jointness’ does not a competitive solution for long range precision fires, cyber fires, or space-based ISR. At the speed of operational relevance, no single component does.<sup>118</sup> However, if well-handled at the operational level, together they could. Reorientation is required to achieve this; hence, MDO.

While Western air forces and their C2 arrangements are optimized to conduct AI, the mission has demonstrated limited value in limited ‘wars of choice.’ USAF doctrine states, “AI increases air power’s efficiency because it does not require detailed integration.”<sup>119</sup> But this is a broad measurement of performance, not necessarily a measurement of effectiveness. Land campaigns, and the air support to enable them, may not be as “efficient” as air-only campaigns. But the idea that air power alone can eliminate an adversary’s will to fight runs counter to reason, historic precedent, and probability. Air power theorists have long argued that AI is more

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<sup>118</sup> “The Speed of Operational Relevance is the pace of change required to maintain suitability to the operation at hand, retain practical applicability, and be responsive to operational need.” Department of National Defence, *PAN-DOMAIN FORCE EMPLOYMENT CONCEPT PREVAILING IN AN UNCERTAIN WORLD*, (Ottawa, 2019), 25.

<sup>119</sup> United States Air Force, “Operational Level Doctrine, Annex 3-03, Counterland Operations,” last updated 5 February 2019, [https://www.dctrine.af.mil/Portals/61/documents/Annex\\_3-03/3-03-D10-LAND-Air-Interdiction.pdf](https://www.dctrine.af.mil/Portals/61/documents/Annex_3-03/3-03-D10-LAND-Air-Interdiction.pdf).

flexible than CAS, but physical actions in the cockpit do not change between them. Ordinarily, CAS is more time consuming because joint forces do not train together often enough. Advocates for 'low and slow' CAS aircraft should consider this too: better fires approval, and aircrew proficiency in CAS, may be the actual solutions.<sup>120</sup> Such factors must shape all components' preparation for MDO, moving forward.

Given the congruent nature of AI and CAS, air forces should prepare for the more difficult of the two counterland missions.<sup>121</sup> The C2 arrangements, doctrine, technological developments, and coordination requirements at the operational level mean that CAS, more than AI, demands an integrated system to plan and execute. Greater institutional investment in CAS on the part of Western air forces would continue to build interservice trust with land forces. It is here that the greatest potential for MDO presents itself; as a modern form of Second World War Armored Column Cover scaled up to the operational level.<sup>122</sup> Given modern capabilities, interdiction at the operational level might be better achieved within domains other than, or in

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<sup>120</sup> The term "fires approval" refers to the process by which a ground force commander and staff perform the necessary actions required to provide a JTAC and aircrew authority to conduct a CAS attack. In practice, determining details of friendly troop locations in vicinity of a nominated CAS target takes more time than anticipated; while understandable, especially under combat conditions, this delay is one that the JTAC and aircrew can only tangentially facilitate. The supported ground force must know where its own elements are. In Vietnam, the USAF and USMC both operated F-4 Phantom IIs. Both the USMC and USN both operated A-4 Skyhawks and A-6 Intruders. Generally speaking, each carried similar air-to-ground weapons. The level of performance when conducting detailed integration with ground forces must have been more related to the people, their trust in one another and their commitment to working together, rather than their airframes or ordnance.

<sup>121</sup> At the tactical level, the primary differences between AI and CAS rest in pre-mission planning, coordination prior to launch, and target engagement authority. From a cockpit perspective, the physical actions of aircrew, and functionality of aircraft systems and weapons, do not differ between CAS and AI.

<sup>122</sup> J. Ethell and A. Price, *Air War South Atlantic*, (New York: Macmillan Publishing Company, 1986), 165. The Battle of Goose Green, between elements of 2 PARA and Argentine forces, in the Falklands is another hard-hitting conceptual example, albeit at the tactical level. At Goose Green, 2 PARA faced Argentinian forces supported with Oerlikon 35mm guns. These Argentinians employed these weapons in both a direct fire role against ground targets, and against aircraft. Through detailed integration, 2 PARA and Harrier GR3s worked together to defeat Argentinian elements in the area. The Argentinian commander faced a dilemma when the British attacked in such fashion. His Oerlikons could fire up at airplanes, or downwards at infantry; they could not do both simultaneously, a dangerous situation as 2 PARA advanced towards his position, and where the 2 PARA FAC integrated the Harriers' attacks into the fire and maneuver of the ground elements.



addition to, the air.<sup>123</sup> Only through such nested cooperation, in all domains, can the joint force maintain freedom of action in a theater covered by adversary long range precision fires and ISR.<sup>124</sup> Such problems are not new:

The military technology of the nineteenth and twentieth centuries had vastly increased the power of weaponry, without a comparable enhancement of mobility in its employment. ... there is a dynamic relationship among firepower, mobility and dispersion, and a major change in firepower without comparable change in mobility [has an] interrelated effect on the battlefield ... historical trends toward dispersion were denied.<sup>125</sup>

As a trend, adversary capabilities will increase friendly dispersion at the operational level; but the joint force cannot fight that way. The joint force will need to need to come together to produce overmatch in time and space, like the Thebans did. Indeed, wrote Soviet aviation authority A. Lapchinskii, “in order to conduct maneuver war, to win the air-land battles, which begin in the air and end on the ground, one must concentrate all forces at a given time on a given front.”<sup>126</sup> Given the time constraints imposed by modern adversary capabilities, doing so effectively will require detailed integration. A force skilled at detailed integration can easily transition to single-domain operations; the historical record of the counterland missions suggests the inverse is not necessarily true.<sup>127</sup>

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<sup>123</sup> “Coordination and communication with partisan units reached a new level of efficiency at Kursk ... partisans increased the tempo of incidents; some 841 separate acts were reported, which delivered a significant blow to the overstretched German supply lines.” V. Hardesty & I. Grinberg, *Red Phoenix Rising: The Soviet Air Force in World War II*, (Lawrence: University Press of Kansas, 2012), 225, 262. Department of National Defence, *PAN-DOMAIN FORCE EMPLOYMENT CONCEPT PREVAILING IN AN UNCERTAIN WORLD*, (Ottawa, 2019), 51. Soviet operational and strategic-level interdiction operations during the Second World War benefited from a “Whole of Nation” approach. This freed their air forces from the burden of providing the main weight of effort.

<sup>124</sup> “One US development that may help mitigate A2/AD capabilities is the creation of the MDO concept and the Multi-Domain Task Force (MDTF).” Maj. R.W. Gibson, “Shaping NATO for Multi-Domain Operations of the Future,” *Joint Air & Space Power Conference 2019*, 8 October 2019, <https://www.japcc.org/multi-domain-operations-and-counter-space/>.

<sup>125</sup> Col T.N. Dupuy, *A Genius for War: The German Army and General Staff, 1807-1945*, (Falls Church: Nova Publications, 1996), 213.

<sup>126</sup> J.S Corum, quoted from Col. P.S. Meilinger (ed.), *The Paths of Heaven: The Evolution of Airpower Theory*, (Maxwell: Air University Press, 1997), 166-167.

<sup>127</sup> “The [force] can no longer view situations as single-domain problems with single-domain solutions; our adversaries’ actions require all-domain consideration leading to converged solutions that are pan-domain from the

MDO provides the services a reason to cooperate, and, within the framework of a collaborative approach, speak with a single voice.<sup>128</sup> This offers more efficiencies than an AI-heavy approach to the counterland mission, which many land component experts view with suspicion; it has proven a more effective means to win bureaucratic battles than physical ones.<sup>129</sup> Rarely has AI been independently decisive; especially against competent adversaries, fighting in complex terrain.<sup>130</sup> MDO will require air forces to conduct detailed integration not just with land forces, but within wider maritime, space, cyber, and information domains.<sup>131</sup> This will pose challenges in both planning and execution. To seize, retain, and exploit the initiative over future enemies, Western air and land forces must cooperatively work to develop proactive fires integration strategies, advance joint training and education, improve integrated air-ground

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outset. Effects must be complementary and an integral part of an overall synergistic approach rather than simply additive or ‘tacked on.’” Department of National Defence, *PAN-DOMAIN FORCE EMPLOYMENT CONCEPT PREVAILING IN AN UNCERTAIN WORLD*, (Ottawa, 2019), 17.

<sup>128</sup> C. Bartels, T. Tormey, and J. Hendrickson, "Multidomain Operations and Close Air Support: A Fresh Perspective," *Military Review* 97, no. 2 (Mar/Apr 2017): 70-79.

<sup>129</sup> “The air arm cannot remain permanently in contact; it has no actual physical stopping power comparable to that of machine guns and wire on the ground; in fact, *cannot hold* [original emphasis].” W/C J.C. Slessor, *Air Power and Armies*, (Tuscaloosa: University of Alabama Press, 2009), 93.

<sup>130</sup> “The notion held by many that air could impose logistic strangleholds, on land, comparable to those imposed by ground forces contains a major logical flaw. Air interdiction lacks an important characteristic: it can destroy, but it cannot envelop.” M. van Creveld, S. L. Canby, K.S. Bower, *Air Power and Maneuver Warfare*, (Maxwell: Air University Press, 1994), 206.

<sup>131</sup> C. Graff, “World War II’s Strangest Bombing Mission: The RAF knew how to cut the power on propaganda,” *Air and Space Magazine*, last accessed 25 April 2020, <https://www.airspacemag.com/military-aviation/world-war-iis-strangest-bombing-mission-180974470/>; R. Dowson, “Berlin bombed by British; Goering 'pep talk' halted,” *UPI Archives*, last updated 30 January 1943, <https://www.upi.com/Archives/1943/01/30/Berlin-bombed-by-British-Goering-pep-talk-halted/3191517170435/>. Such operations are not without precedent. On 30 January, 1943, the tenth anniversary of the Nazi regime’s rise to power, Reichsmarschall Hermann Göring delivered a speech which was broadcast live, via radio. Amid the grim news from the battlefronts in North Africa and Stalingrad, the January 30 celebration was intended to take German minds off recent reversals of fortune. Based upon information from reliable sources, the RAF sent bombers to attack the headquarters building of the German State broadcasting company, such that Goering’s speech would be cutoff mid-broadcast, with aircraft noise, antiaircraft fire, and explosions in the background. The attack unfolded as planned. As the mics went live and Göring began to speak, the roar of catastrophe became audible over the radio. The broadcast engineers faced a terrible choice: They could relay the horrible echoes of the air raid, unfolding live, or they could shut down the transmission. In the Reichsmarschall’s moment of glory, they cut the feed and dove for cover. Soon after, with trembling hands, a station employee managed to broadcast a scratchy version of Anton Bruckner’s Symphony No. 7 in E major to a puzzled nation. It would be one hour and three minutes before Göring returned to their radio speakers. It is an example of an Information domain operation in which air power played a critical, but supporting role. Read one contemporary source, “After the British planes departed, Goering delivered a gloomy speech that was uninterrupted by applause throughout. ... It was the first daylight aerial attack on the Nazi capital.”

operations planning, and establish habitual relationships in order to exploit temporary windows of superiority in contested environments.<sup>132</sup>

AI will undoubtedly continue to play a critical role as part of MDO, but the more probable, and, if historic trends are any indicator, more frequent requirement of JFACC will be to conduct detailed integration. Detailed integration can offset unfavorable force ratios within individual components, aid target acquisition, and counter cross-domain threats; the whole becomes greater than the sum of its parts.<sup>133</sup> Detailed integration requires more time and resources, but efficiency and effectiveness are not synonymous; fast is fine, but accuracy is final.<sup>134</sup>

Failure to build MDO along CAS principles poses risk, as the repeated attempts to revive the CAS mission at the start of each conflict outlined in this paper came with a cost to operational effectiveness and human lives. The record has proven the old adage, “if you ignore it entirely, you will end up blundering when you strike.”<sup>135</sup> That is to say, that the capabilities to conduct MDO effectively cannot be created quickly after the need has arisen.<sup>136</sup> As well, this

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<sup>132</sup> C.W. Rittenhouse, J. Feuring, and Lt Col D.S. Chadsey, “Improving Close Air Support: An Army-Air Force Collaborative Approach,” *Small Wars Journal*, last accessed 1 April 2020, <https://smallwarsjournal.com/jrnl/art/improving-close-air-support-army-air-force-collaborative-approach>.

<sup>133</sup> By working together, land and air components of a joint force can leverage each other’s capabilities to aid in target acquisition and threat suppression, such as operations in complex terrain and suppression of enemy air defence.

<sup>134</sup> N.H. Miller and J.W. Sewell, *Great Gunfighters of the Kansas Cowtowns, 1867-1886*, (Lincoln: University of Nebraska Press, 1963), 78-95; P. Trachtman, *The Gunfighters*, (Alexandria: Time-Life Books, 1974), 39. This quote is popularly attributed to Wyatt Earp, a notable personality in the American West during the late 19<sup>th</sup> century. The closest version this author could find in print: “According to Wyatt Earp, it was an axiom among gunfighters that the man who won the shootout was the man who took his time. Shooting at someone who was returning the compliment, Wyatt said, meant “going into action with the greatest speed of which a man’s muscles are capable, but mentally unflustered by an urge to hurry or the need for complicated nervous and muscular actions which trick shooting involves.””

<sup>135</sup> E. Shahan, *The Hundred Rules of War of Tsukahara Bokuden*, (Lexington: Eric Michael Shahan, 2017), 87.

<sup>136</sup> “We cannot expect to catch up with our allies and partners once an operation is underway; it must be well established before an operation begins.” Department of National Defence, *PAN-DOMAIN FORCE EMPLOYMENT CONCEPT PREVAILING IN AN UNCERTAIN WORLD*, (Ottawa, 2019), 29.

burden cannot fall simply on air forces. Other services must train, equip, and organize themselves to work with airpower too, and stamp out their own single-domain-fixated subcultures.<sup>137</sup> Viscount Slim said it best:

There is indeed only one test of airmindedness, and that is not whether you can fly an airplane, but whether you regard it as a vehicle. If you do, you are airminded; but if you regard it as anything else – a weapon, a sporting adjunct, or a bag of tricks – you can be an Air-Marshal, but you are not airminded.<sup>138</sup>

Joint forces' ability to integrate tends to wither between major conflicts. Air forces would do well to strengthen it, rather than repeat historical quixotic attempts to prove air power's independent decisiveness.

Investment in detailed integration must encompass three lines of effort; organizations, technology, and doctrine. JFACC sub-components must contain, or have access to, liaison and coordination elements from other domains. Further definition may indicate that certain tactical-level entities may need elements to provide real-time control from other domains; akin to a tactical controller for space, or cyber effects. This implies reciprocal requirements to embed air elements in other domains' organizations, to provide similar capabilities that make detailed integration possible. From a technological perspective, technical interoperability will prove more important – and likely more challenging – than is the case in joint operations. Most critical to any such initiatives, however, is proper doctrine. Doctrine sets the conditions for everything within the military realm. If Western air doctrine resists detailed integration with other domains, as it has historically done with the land domain, MDO will not meet its promise.

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<sup>137</sup> “This must be driven by force employers, who will provide an authority that spans across domains to set interoperability goals, determine what level of compatibility or interchangeability must be achieved, and enforce the standardization regime so that the Force Development community can deliver a [force] able to fight cohesively across all domains and at a moment's notice.” *Ibid.*

<sup>138</sup> Viscount FM W. Slim, *Defeat into Victory: Battling Japan in Burma and India, 1942-1945*, (New York: Cooper Square Press, 2000), 165.

In conclusion, Western air forces will need to increase institutional investment in detailed integration to prepare for MDO. Historically, technology and organizational culture have lead Western air forces to favor single-domain operations; the counterland missions provide stark examples of these trends. Though still valid between 1918 and 1945, new tools and concepts emerged that challenged this paradigm. In Korea and Vietnam, Western air forces favored AI because leaders felt it was the doctrinally correct thing to do. Through the post-Cold War decade, this attitude appears to have become dogma. The GWOT appears to have served as a catalyst for detailed integration, and the tools to conduct it, as first conceptualized, have finally emerged. And none too late: more than ever before, airmen must have a clear and common understanding of simultaneous maneuver in multiple domains.<sup>139</sup>

MDO will require air power to conduct detailed integration not only with other components, but within other domains. The idea of a separate, but parallel, ‘air only’ effort will not suffice in this environment. Western air forces will need to increase institutional investment in detailed integration to keep up with the other services; practice and effort needs to focus on weaknesses, not strengths.<sup>140</sup> This calls for a change of mindset. Air power thought must continue to adapt, to display satisfaction, not anxiety when doubt is established; there should be no need to act as if all decisions must establish certainties.<sup>141</sup> The healthy joint culture of the last two decades may be enough to carry through. Western air power practitioners will need to look

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<sup>139</sup> J.M. Reilly, “Multidomain Operations: A Subtle but Significant Transition in Military Thought,” *Air & Space Power Journal* 30, no. 1 (Spring 2016): 71.

<sup>140</sup> D.N. Herzog, *White Rat: A Life in Baseball*, (New York: Harper & Row, 1987), 44.

<sup>141</sup> J.R. Saul, *Voltaire’s Bastards: The Dictatorship of Reason in the West*, (Toronto: Penguin, 1992), 584-585’ Department of National Defence, *PAN-DOMAIN FORCE EMPLOYMENT CONCEPT PREVAILING IN AN UNCERTAIN WORLD*, (Ottawa, 2019), 45. The latter reference states, “adopting a pan-domain approach to operations is a fundamental shift ... it requires the organization and its personnel to embrace concepts, processes, technology, and methods of organization which may be unfamiliar. The potential for error is enormous, with the risk being that confusion and disunity are inadvertently created. This is natural and should not be discouraged, as the willingness to fail fast and forward will be critical to achieving the innovation required to prevail.”

at their history and their forces, and, like the ancient Thebans, decide how best to “fight outnumbered and win.”<sup>142</sup> At the operational level, detailed integration with other domains offers the means to do so. This will take work, but the principles and capabilities of CAS offer Western air forces a promising foundation upon which to build their portion of MDO. The first modern air power theorist, Giulio Douhet, wrote:

... an air force should logically be accorded equal importance with the army and navy and bear the same relation to them as they now bear to each other. Obviously, both the army and the navy, each with its own field, must operate toward the same objective – i.e., to win the war. To make one dependent on the other would restrict the freedom of action of one or the other, and thus diminish their total effectiveness. Similarly, an air force should at all times co-operate with the army and the navy; but it must be independent of both.<sup>143</sup>

Bias against detailed integration exists in counterland doctrine. This poses risk, as future air campaigns within MDO will likely require it. An air force that can conduct detailed integration with other domains can easily transition to single-domain operations; the record suggests the inverse is not necessarily true. Where the specific form of air forces’ role in MDO is still being defined, increased institutional investment in CAS capabilities will set the conditions for future success. The means and methodology are such that these goals no longer need to remain aspirational.

*“To obtain maximum results, aviation and the troops with which it operates should be closely associated with each other, and know each other, as well as have a thorough knowledge of each other’s work. Marine Aviation is not being developed as a separate branch of the service that considers itself too good to do anything else.”*

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<sup>142</sup> Col. L. Collins and Capt. H. Morgan, *AFFORDABLE, ABUNDANT, AND AUTONOMOUS: THE FUTURE OF GROUND WARFARE, War on the Rocks*, last updated 21 April 2020, <https://warontherocks.com/2020/04/affordable-abundant-and-autonomous-the-future-of-ground-warfare/>. “Fight outnumbered and win” was a catchphrase within documents and briefings promoting AirLand Battle concepts.

<sup>143</sup> G. Douhet, *The Command of the Air*, (Washington: Office of Air Force History, 1983), 5.

- Maj. Edwin H. Brainard, *United States Marine Corps (USMC), 1926*<sup>144</sup>

*The hunter who seeks to find and slay fallacies about airpower finds himself in a target-rich environment.*

- Dr. Colin S. Gray, *founder, National Institute for Public Policy*<sup>145</sup>

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<sup>144</sup> Lt Col Edward C. Johnson, *Marine Corps Aviation: The Early Years, 1912-1940* (Washington: History and Museums Division, Headquarters U.S. Marine Corps, 1977), 35, quoted from Lt Col S.P. Callahan, *Close Air Support and the Battle for Khe Sahn*, (Quantico: United States Marine Corps History Division, 2009), 25.

<sup>145</sup> C.S. Gray, "Understanding Airpower: Bonfire of the Fallacies." *Strategic Studies Quarterly* (Winter 2008): 43.

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