



Evolution of Joint Warfare

Edward R. Lucas and Thomas A. Crosbie

Contents

Introduction	2
Evolution of Joint Operations	2
The Evolution of Joint Doctrine	5
Joint Operations in Non-Western Militaries	9
Conclusion: Beyond Jointness?	9
References	10

Abstract

The ability to employ force across the physical warfighting domains of air, land, maritime, and space is essential in contemporary conflict. In NATO doctrine, the term “joint operations” refers to military actions “in which elements of at least two services participate.” While doctrinal definitions differ slightly across Western militaries, the basic premise remains that “jointness” in military operations entails significant action in at least two of the physical warfighting domains. This chapter provides an overview of joint warfare, beginning with a brief discussion of its development over the past century. It then turns its attention to the development of joint doctrine and the joint functions. It concludes with a brief discussion of what some military theorists see as the next iteration of joint warfighting: multi-domain operations (MDO).

Keywords

Joint operations · Military doctrine · Joint warfare

E. R. Lucas (✉) · T. A. Crosbie
Centre for Joint Operations/Institute for Military Operations, Royal Danish Defence College,
Copenhagen, Denmark

Introduction

The ability to employ force across the physical warfighting domains of air, land, maritime, and space is essential in contemporary conflict. In NATO doctrine, the term “joint operations” refers to military actions “in which elements of at least two services participate” (NATO 2017). While doctrinal definitions differ slightly across Allied militaries, the basic premise remains that “jointness” in military operations entails significant action in at least two of the physical warfighting domains. This chapter provides an overview of joint warfare, beginning with a brief discussion of its development over the past century. It then turns its attention to the development of joint doctrine and the joint functions. It concludes with a brief discussion of what some military theorists see as the next iteration of joint warfighting: multi-domain operations (MDO).

Evolution of Joint Operations

War is fundamentally a land-based activity. Seizing and holding territory remains central to all major military campaigns, just as it has throughout history. Technological advances, however, now allow us to wage war at sea, in the air, and from space. (While currently no country has a stated ability to project kinetic actions from space, space assets [e.g., GPS, satellite communications] are essential to conducting military operations.) The ability to do two or more of these concurrently is essential in contemporary warfare. Amphibious landings are the earliest organized violence that might be considered joint operations. The ability to move ground forces by sea dates to when we first learned to build watercraft capable of carrying people. While a Paleolithic raiding party traveling by dug-out canoe or a medieval Viking longship force can perhaps be considered a proto-joint force, the relevance to the contemporary military planner or analyst is obscure. Instead, we begin our overview of the development of jointness in the First World War.

The 1915 Gallipoli Campaign provides a more manageable starting point for an examination of joint operations in modern warfare (Naughton 2019). It also exemplifies the challenges that arise when military services carry out operations in tandem. As part of an effort to drive the Ottoman Empire from the war and to open lines of communication with Russia, French and British forces (including many soldiers from the British Empire) undertook an amphibious landing to seize the Gallipoli peninsula in southwestern Turkey. The technology and tactics, such as the lack of dedicated landing craft and the generals’ reliance on frontal attacks against entrenched positions, proved woefully inadequate for the task. Entente efforts were also hampered by poor coordination and communication between ground and naval forces. For example, the British army relied partially on naval intelligence for planning its ground campaign. Since navies are more concerned with the location of sea mines than machine gun positions, this intelligence was deficient for the land campaign (Naughton 2019; Rudenno 2008). These problems, together with stiff

resistance from Turkish forces, resulted in an unmitigated Entente defeat, at the cost of 300,000 casualties.

Of course, many First World War battlefield disasters cannot be blamed on the limitations of jointness at the time. The opening day of the Battle of the Somme, where nearly 20,000 British soldiers were killed, provides a stark example of single domain military disaster. Although aircraft played a role on the battlefield in 1916, their relatively minor contribution means that operations, such as the Somme Offensive, were land rather than joint operations. These strategic and tactical failures forced strategists to recognize that modern warfare required coordination of different assets, both within and across services. In the armies, the doctrinal concept of combined arms (e.g., infantry, tanks, and artillery working in unison) was recognized as critical to overcoming the ascendance of defensive technology. Although an army concept, combined arms doctrine was essential for the development of joint force doctrine. Across services, failures like the Gallipoli campaign demonstrated the need to improve cooperation and coordination between armies and navies. As the war dragged on, the battlefield expanded to encompass greater aspects of the air domain, as aircraft played an increasingly important role, not only for intelligence, surveillance, and reconnaissance but also as a kinetic force. The perceived importance of airpower only increased after the war, as theorists such as Giulio Douhet and Billy Mitchell, touted the revolutionary shift that aircraft – and especially bombers – entailed. While these interwar airpower proponents overstated the strategic effects of air campaigns, the tactical importance of airpower was fully evidenced during the Second World War.

The Second World War was the first major war to fully exploit the three warfighting domains available at the time. Germany's military success in Western Europe in 1940 was due, in large part, to the effective coordination of ground, air, and at times, sea assets. Japan's expansion across the western Pacific islands – and the American island hopping campaign that came in response – relied on large amphibious forces comprised of significant air, ground, and maritime assets working in close coordination. The 1942 Allied landings in North Africa, known as Operation Torch, illustrate both the advances in joint operational warfare since Gallipoli and the significant impediments that remained. These landings demonstrated the power of military operations that used all available physical domains to project power ashore. At the same time, the operation was plagued by command-and-control (C2) and coordination issues between the armies and the navies of the United States and the United Kingdom. Operation Torch is also an example of the challenges of "combined operations," which in current military doctrine refers to operations with forces from two or more nations. Command rested with General Dwight D. Eisenhower, who in his official report (declassified in 1965) stressed the enormous bureaucratic and cultural barriers to jointness that became immediately clear. What is surprising today is that the struggle to overcome the boundaries between the two nations was no less than the struggle to overcome the boundaries between each nation's services. In Eisenhower's words:

Alliances in the past have often done no more than to name a common foe, and 'unity of command' has been a pious aspiration thinly disguising the national

jealousies, ambitions and recriminations of high ranking officers, unwilling to subordinate themselves or their forces to a commander of different nationality or different service (Eisenhower 1965, p. 1).

Torch required high levels of coordination between the United States and United Kingdom and between all services as many different elements had to come together in the right sequence in order to land the forces in Morocco and Algeria: “anything less than complete integration of effort would spell certain disaster.” Eisenhower realized jointness at this critical juncture through a rather mundane innovation: he created a two-star position designated Chief Administrative Officer (which he described as “a post unique in the history of war”) solely responsible for resolving interservice and Alliance disagreements (1965, pp. 1–2).

As Torch demonstrates, despite the acknowledgment of the importance of operating in all three domains, warfare remained tied to individual services. Only the most exceptional campaigns forced commanders to break traditional service divisions, and to do so required imaginative ad hoc bureaucratic innovations, which were then immediately dissolved.

While the advent and proliferation of nuclear weapons revolutionized warfare at the strategic level, service parochialism remained a fact of life throughout the early days of the Cold War. At the tactical level, conventional war proceeded much as it had before the nuclear age. “Jointness” remained elusive, as services fought wars in their own domains as part of what were often loosely coordinated campaigns. The American experience in Vietnam provides a clear example of this military strategy stove piping, especially evident in the rivalry between the US Air Force and US Army over the air domain (Horwood 2006).

The 1986 Goldwater-Nichols Act in the United States serves as a critical bureaucratic development in the history of the joint force in Western militaries. As part of a significant reorganization of the American armed forces, Goldwater-Nichols removed the military service branches from “operational control” of fighting forces. Instead, operational control was now held by Combatant Commanders who had designated areas of responsibility. For example, American forces deployed to the Middle East now fall under the operational control of the Commander of United States Central Command (USCENTCOM), regardless of their military service. There are exceptions to this: For example, the US forces who conducted the raid against Osama Bin Laden’s compound in Abbottabad, Pakistan, were under the Operational Command of US Special Operations Command (USSOCOM), not USCENTCOM. Although only applying to the American Department of Defense (DoD), by codifying the centrality of the Joint Force, Goldwater-Nichols fundamentally altered how the United States and its allies operate in international deployments. Wars were no longer fought – at least ostensibly – by armies, navies, and air forces.

The restructured US military’s first major test came during the 1991 Gulf War, where a large American and allied force obliterated the Iraqi army in Kuwait in a matter of days. On the surface, the Gulf War seemed to herald the long-awaited ascendancy of joint warfighting. This view was promoted by the DoD, stating that the war had “demonstrated virtually every principle of war and element of joint

doctrine in action” (Joint Publication 3-0 1995, p. x). Some analysts, however, have challenged this assertion, arguing that American military dominance in the conflict allowed US and allied forces to operate inefficiently and “to cater to the doctrinal preferences of the various services” (Winnefeld and Johnson 1994). This debate may surprise those who take the premise of American joint doctrine at face value. While the DoD has evolved a series of doctrinal publications intended to define a singular vision for how American force should be projected jointly at the operational level of war, a closer look at this doctrine reveals the persistent challenges in achieving the sort of unity across national and service boundaries that Eisenhower struggled against almost 80 years ago during Operation Torch.

The Evolution of Joint Doctrine

American and NATO joint doctrine originated in combined arms doctrines, which evolved to define the use of complementary land-based weapon systems (Crosbie 2019). The spirit of combining military instruments of power continues to inform policy development at virtually every level and is shared by most if not all of America’s allied militaries. By contrast, the failure to operate jointly is routinely disparaged as evidence of service parochialism or even corruption. While critics can be found, the weight of historical evidence and of informed opinion is clearly on the side of jointness. As military policy has evolved, this consensus has gradually moved to take center-stage, even as the reality of perfect jointness proves elusive.

As we have seen above, during times of conflict, instruments of power are combined and integrated through the Joint Force Commander and his or her staff. Officially, a Joint Force “is” joint when it includes elements from more than one service. However, it only actually “does” jointness when it actively combines instruments of power in some productive way. The term “joint functions” has emerged in doctrine as a shorthand way of expressing those dimensions of conflict where combining instruments of power is particularly useful. They are in this sense a sort of checklist to ensure that the latent potential of jointness is in fact being realized.

In American doctrine, there are today seven joint functions: Intelligence, Movement and Maneuver, Fires, Information, Protection, Sustainment, and Command and Control. For the NATO alliance, there are eight, since NATO doctrine also includes Civil-Military Cooperation (CIMIC). Despite their importance doctrinally and organizationally, the joint functions are little known and rarely discussed in the national security community and are often poorly understood by officers entering Joint Staffs. This is not entirely surprising. The joint functions are a paradox of stability and change. On the one hand, they are the pillars of operational doctrine, establishing a coherent framework for what a Joint Staff can and should do at the operational level of war. On the other hand, the list has undergone significant revision over the years, reflecting deep disagreements on what concepts merit inclusion – and even what each concept means. And while the term itself is fairly new, having only entered common usage with its inclusion in the US Joint Publication 3-0, *Joint Operations*

in 2006 (and adopted into NATO doctrine in 2011), it reflects ideas that have appeared off and on in US Army doctrine for well over a hundred years.

The challenge facing doctrine writers is how to realize the latent benefits of jointness given real-world limitations in time, attention, and resources. That is where the joint functions come in. By focusing on a delimited set of prioritized areas where joint effects can be achieved, a Joint Staff can give structure to the enormous complexity of contemporary military operations.

While the Joint Staff is designed to organize its work around the joint functions, the joint functions should not be confused with the Joint Staff directorates (J1-J8), which they superficially resemble. The relationship is clearly accounted for in doctrine. The purpose behind the staff directorates is to ensure that a Joint Staff has the right mix of expertise across key areas. The doctrine makes clear that an actual staff needs to break up the silos that can be created by the directorates, and instead, the experts should mix together in a number of subgroups (listed in the doctrine as “centers, groups, bureaus, cells, offices, elements, WGs and planning teams”) (Joint Publication 3–33 2007, p. xiii). Once reassigned to their subgroup, staffers need to achieve certain types of effects. Thus, while staffs are commonly divided into eight directorates and they are expected to achieve effects through seven or eight functions, the two things are ultimately quite different.

The joint functions, then, were never intended to be another level of organization. Rather, they are a heuristic model for understanding descriptively the way power can be directed to achieve ends on the battlefield. But why these particular functions, and what does it mean for the integrity of the list that is has changed and remains contested? To answer these questions, it is necessary to briefly look back over the history of the doctrine. The starting point is 1905, and the publication of the United States Army’s first combined arms manual, Field Manual (FM) 100–5, *Field Service Regulations* (Ancker 2013). Surprisingly, the first extended discussion of what combining arms actually entails would not arrive until the fourth edition (1914), where the combined arms are described as the effective balancing of the infantry, artillery, cavalry, special troops (mostly engineers), and heavy field artillery (U.S. Army Field Manual 100–5: Field Service Regulations 1914, pp. 74–76).

In these early days, manual writers focused on what made up the combined arms. The 1923 edition adds the signal corps and air service and renames “special troops” as “engineers.” It also states clearly the value of combining arms: “No one arm wins battles. The combined employment of all arms is equal to success” (U.S. Army Field Manual 100–5: Field Service Regulations 1923, p. 11). Five more editions followed (in 1939, 1941, 1944, 1949, and 1954), with each adding elements to the list. By 1954, the list had grown to include ten components: infantry, armor, artillery, the corps of engineers, the signal corps, the chemical corps, the Army medical corps, the quartermaster corps, the transportation corps, and the military police corps. So unwieldy was this list that the 1962 edition cut back to the original 1923 list: infantry, engineers, artillery, and armor. Notably, information and intelligence elements are entirely absent throughout, since these were viewed as separate from the combined arms.

What we can conclude is that Army doctrine writers have long been committed to the idea that the combining of land power elements enables gains on the battlefield. This belief has tended toward a kitchen-sink effect, with more and more elements highlighted as standing to benefit from combination, until order is restored by a return to first principles. Prodigality balances against parsimony.

A quirk of the doctrine up to this point is that the writers never quite got around to explaining how a commander should manage all of this complexity. The doctrine exhorted combined effects and described the elements that needed to be combined, but failed to specify how the elements should be balanced together. In hindsight, then, the *Field Service Regulations* from 1905 through to 1954 had fairly modest aims, ensuring only that future leaders, when called upon to lead a campaign, would at least know what arrows are in their quiver.

The major intellectual breakthrough came with the doctrine revisions of the 1960s when the doctrine writers finally began to nail down the specific ways combining arms can lead to better outcomes. In the 1968 revision of FM 100–5, the writers switched from presenting a laundry list of functional elements that can be combined to identifying the types of needs that these elements can address. The doctrine now described the need for “multicapable forces” that combine their elements to achieve better outcomes in five fields: Intelligence, Mobility, Firepower, Combat Service Support, and C3 (command, control, and computers) (U.S. Army Field Manual 100–5, *Operations of the Army Forces in the Field* 1968).

For a time, this insight was forgotten. When General William E. DePuy drafted the famous “Active Defense” edition of FM 100–5 (1976), he dispensed with much of the verbiage and most of the concepts of earlier manuals, preferring a livelier style with vivid examples drawn from recent experience (U.S. Army Field Manual 100–5: *Field Service Regulations* 1976). Dissatisfaction with DePuy’s manual (described by Romjue) led General Donn A. Starry to oversee the publication of the equally renowned AirLand Battle edition (U.S. Army Field Manual 100–5: *Field Service Regulations* 1982). Here, DePuy’s ideas about active defense were blended with Starry’s ideas about AirLand Battle and with the 1968 manual’s ideas of multicapable forces. In the 1982, 1986, and 1993 editions, this intuition was refined through discussion of the so-called elements of combat power, now listed as *maneuver*, *firepower*, *protection*, and *leadership* (which replaced C3). This tighter focus (dropping intelligence and combat service support from the discussion) perfectly reflects what has been described as the Army’s cultural shift toward preparing for high-tempo, conventional force engagements (Melillo 2006).

Despite the prominent place given to these “elements of combat power” in the Army manuals of 1982, 1986, and 1993, the first Joint Publication on the topic (JP 3–0, *Doctrine for Joint Operations*, 1993) makes no mention of these principles. Nor do they appear in the 1995 or 2001 editions. Nevertheless, Army doctrine writers were still very much committed to these concepts, and in the 2001 edition of Army operational doctrine (re-designated from FM 100–5 to FM 3–0), a new element of combat power was added to the list: *Information*. This was not to last. Interestingly, the next edition, released in 2008, drops Information and brings back Intelligence, which had been missing since the 1968 edition, and defines these

elements of combat power as “Warfighting Functions.” This remains, as of 2018, the current state of Army thought, which builds its description of the Army’s capabilities around six Warfighting Functions: Mission Command (the new name for Command and Control), Movement and Maneuver, Intelligence, Fires, Sustainment, and Protection.

Looking at the Joint and Alliance levels, the idiosyncrasies of Army thought come into focus. In 2002, NATO published its first joint operations doctrine, Allied Joint Publication 3–0, *Allied Joint Operations*. The imprint of US Army doctrine is plain to see in this document, with the elements of combat power now renamed “Joint Capabilities,” which included the most persistent elements of the Army manuals (C2, Maneuver, Fires, Intelligence, and Sustainment, renamed Logistics), dropped Protection, and added a number of unfamiliar items: Planning, Targeting, and CIMIC. Also included were two Information functions: Information Operations and Public Information. Where Army doctrine downgraded the role of information in this period, NATO emphasized it.

Meanwhile, American Joint Doctrine was revised in 2006 to finally incorporate the Army’s elements of combat power, now named for the first time as “joint functions.” Where NATO doctrine split Information between Information Operations and Public Information, US Joint Doctrine included it in the vague category “Other Activities and Capabilities,” a seventh joint function encompassing psychological operations and deception. The 2011 and 2017 versions of JP 3–0 dispensed with Information entirely, but finally brought it back as a fully fledged joint function with much fanfare in 2018 (Grynkewich 2018).

NATO and US Joint Doctrine were finally coordinated with the revision of NATO Allied Joint Publication 3, *Allied Joint Doctrine for the Conduct of Operations*, in 2011. NATO’s Joint Capabilities became joint functions. Public Information was folded into Information Operations and the outlier concepts Planning and Targeting were dropped entirely. In 2019, the doctrine underwent one last revision, with Information Operations renamed simply Information to align it with the 2017–2018 American doctrine. The current state of NATO doctrine thus defines eight joint functions: Command and Control, Maneuver, Intelligence, Fires, Sustainment, Information, Protection, and CIMIC. The current state of US Joint Doctrine is identical, except it excludes CIMIC.

At the very center of military innovation since Operation Torch has been the elusive promise of realizing tactical, operational, and strategic gains through combining arms and crossing domains. Combining, integrating, making joint: these are the explicit goals of the Joint Force, the US Department of Defense, and the unified combatant commands, and are now routinely celebrated by the separate services as well. The joint functions are the doctrinal culmination of taking jointness seriously, and the shifts we have traced in what constitutes the joint functions can be taken as a broader history of joint thought at the operational level of war.

Joint Operations in Non-Western Militaries

Scholarly research on military operations has tended to view the drive for increased jointness through the lens of the Western (and particularly the American) military experience. While major non-Western military powers also wrestle with many of the same issues as their Western counterparts, their experiences have been largely ignored in academia. Access to open source information on certain militaries, such as Chinese and Russia, presents a considerable challenge for researchers, important bodies of academic literature on joint operations beyond the United States and NATO.

In 2015, the Chinese military undertook significant reforms that have led to comparisons with the Goldwater-Nichols Act. A relatively new convert to jointness, China's military reorganization has generated some interest in professional military and scholarly journals (Blasko 2016, 2019; Saunders 2016). China's efforts to develop a capable joint force is a change from its traditional focus on land operations. Although Russian and Soviet military theorists are credited with many significant doctrinal innovations at the operational level of war over the past century, such as "deep battle" and "operational art," the contemporary Russian military's ability to conduct joint operations has been called into question. The 2008 War with Georgia demonstrated significant flaws in Russia's C2 systems. In an effort to avoid mistakes of the past, Russia has focused on developing its capabilities in joint warfare. Much of the interest in the West has focused on Russian use of information operations and hybrid warfare, some research has been conducted on conventional Russian joint military operations (Beehner 2018). Recent scholarship has also examined joint operations in India, Italy, and Israel, respectively (Ben-Shalom and Tsur 2018; Moro et al. 2018; Mukherjee 2017).

Conclusion: Beyond Jointness?

Jointness has been a central focus for militaries for much of the past one hundred years. Although problems persist, Western countries armed forces' abilities to conduct operations involving two or more services have improved dramatically since the Gallipoli landings or Operation Torch. More recently, non-Western militaries, such as China, India, and Russia, have also undertaken reforms to improve jointness, moving away from land force dominated doctrines. While scholarship on joint operations remains highly specialized and is largely found within professional military journals, such as *Joint Force Quarterly*, venues, like the *Journal of Strategic Studies*, have begun to publish research on the subject.

Jointness is inextricably linked to technological advances, such as the advent of sailing ships or powered flight. Most recently, technology has allowed access to a fourth physical domain: space and created whole cloth a fifth warfighting domain (at least doctrinally) – cyberspace. With these advances, some senior military officers and theorists have begun to question whether it is time to move beyond the concept of joint operations and adopt multi-domain operations (MDO) as a

guiding principle. Rather than jointness, which is predicated on the assumption that military services operate in their own organic domains (e.g., navy = maritime, army = land), but coordinate closely with the other services, MDO envisions a much more fluid battlefield. While services will retain their domain specializations, every service will produce effects across all domains. MDO, however, is in the early stages of development, and it is too soon to tell if it will become a fully fledged military concept that replaces jointness.

Regardless of what concept (if any) eventually displaces jointness from its central role in US and NATO doctrine, the need to operate across air, land, maritime, and space will remain essential to contemporary conflict.

NB: Parts of this chapter are revised from Crosbie (2019), with permission from *Joint Force Quarterly*.

References

- Ancker, C. J. (2013). The evolution of million command in U.S. Army doctrine, 1905 to the present. *Military Review*, 93(2), 42–52.
- Beehner, L. (2018). *Analyzing the Russian way of war: Evidence from the 2008 conflict with Georgia*. Modern War Institute at West Point.
- Ben-Shalom, U., & Tsur, Y. (2018). Scripts of service culture and joint operations of air and ground forces: An IDF case study. *Israel Affairs*, 24(1), 84–98. <https://doi.org/10.1080/13537121.2017.1398451>.
- Blasko, D. J. (2016). Integrating the services and harnessing the military area commands. *Journal of Strategic Studies*, 39(5–6), 685–708. <https://doi.org/10.1080/01402390.2016.1208613>.
- Blasko, D. J. (2019). The PLA army after ‘below the neck’ reforms: Contributing to China’s joint warfighting, deterrence and MOOTW posture. *Journal of Strategic Studies*, 32(6), 1–35. <https://doi.org/10.1080/01402390.2019.1701440>.
- Crosbie, T. (2019). Getting the joint functions right. *Joint Force Quarterly*, 94, 96–100.
- Eisenhower, D. D. (1965). *The white house years*. New York: Doubleday.
- Grynkewich, A. G. (2018). Introducing information as a joint function. *Joint Force Quarterly*, 89, 6–7.
- Horwood, I. (2006). *Interservice rivalry and airpower in the Vietnam war*. Fort Leavenworth: Combat Studies Institute Press.
- Joint Publication 3-0. (1995). *Doctrine for joint operations*. Washington, DC: Joint Chiefs of Staff.
- Joint Publication 3-33. (2007). *Joint task Force Headquarters*. Washington, DC: Joint Chiefs of Staff.
- Melillo, M. R. (2006). Outfitting a big-war military with small-war capabilities. *Parameters (Carlisle, Pa.)*, 36(3), 22–35.
- Moro, F. N., Cicchi, L., & Coticchia, F. (2018). Through military lenses. Perception of security threats and jointness in the Italian air force. *Defence Studies*, 18(2), 207–228. <https://doi.org/10.1080/14702436.2018.1461014>.
- Mukherjee, A. (2017). Fighting separately: Jointness and civil-military relations in India. *Journal of Strategic Studies*, 40(1–2), 6–34. <https://doi.org/10.1080/01402390.2016.1196357>.
- NATO. (2017). *AJP-01: Allied Joint Doctrine* (E, Version 1).
- Naughton, P. W. (2019). Gallipoli: Lessons from the great war on the projection of power and joint forcible entry. *Joint Force Quarterly*, 93, 93–99.
- Rudenno, V. (2008). *Gallipoli: Attack from the sea*. New Haven/London: Yale University Press.

- Saunders, P. C. (2016). *China's Goldwater-Nichols?: Assessing PLA organizational reforms*. Institute for National Strategic Studies, National Defense University, Center for the Study of Chinese Military Affairs.
- U.S. Army Field Manual 100-5, Operations of the Army Forces in the Field. (1968). Headquarters, Department of the Army.
- U.S. Army Field Manual 100-5: *Field Service Regulations*. (1914). Government Printing Office.
- U.S. Army Field Manual 100-5: *Field Service Regulations*. (1923). Government Printing Office.
- U.S. Army Field Manual 100-5: *Field Service Regulations*. (1976). Government Printing Office.
- U.S. Army Field Manual 100-5: *Field Service Regulations*. (1982). Government Printing Office.
- Winnefeld, J. A., & Johnson, D. J. (1994). *Air power in the Gulf war: Evaluating the claims*. Santa Monica: Rand Corporation. https://www.rand.org/pubs/research_briefs/RB19.html.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

