

# The Search for Space Doctrine's War-Fighting Icon

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The reason for the US Air Force's existence is rather straightforward—nothing more or less than to protect and defend the nation. It does so by holding adversaries at risk, unhampered by the tyranny of distance and time. How it goes about accomplishing this task is complex and occurs across all domains. The Air Force, as do the other services, looks to doctrine to provide a foundation and guidance regarding how to operate within each separate domain and collectively in the joint environment. Those who operate on the land, at sea, and in the air have lead theorists to whom they point as seminal to their doctrine development. Carl von Clausewitz, Alfred Thayer Mahan, and Giulio Douhet serve as foundational figures in the path toward war-fighting doctrine. For decades space professionals have asked, “Who is our foundational theorist?” or “Where is the space Mahan?” Who is space's doctrinal icon, and if one does not exist, why not?

Doctrine that revolutionized warfare involved forces which independently shaped the battlefield. Clausewitz, Mahan, and Douhet observed the world around them and chronicled what they saw as the keys to victory. What separated these men from others was their ability to see beyond existing convention or the current state of technological development. They could envision future potential by which armies, navies, and air forces should best deploy forces to defeat their enemies.

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Independently of other services, each man reflected upon how victory could be achieved within and through a specific domain.

Land and sea doctrine evolved over centuries. War-fighting air doctrine came about less than 30 years after the first powered flight. In each case, observation was the key element to developing effective theories and strategies that would lead to war-fighting doctrine. Given America's more than 50 years of experience in space, some people might expect war-fighting space doctrine to have fully matured. This article explores why this is not the case.

For example, joint doctrine defines *space superiority* as “the degree of dominance in space of one force over any others that permits the conduct of its operations at a given time and place without prohibitive interference from space-based threats.”<sup>1</sup> One significant problem exists, though. Unlike its ability to establish air superiority, the US military has limited means to create space superiority in a contested environment.<sup>2</sup>

## A Historical Milieu

For the uninitiated, Mahan was a US naval officer who in the late nineteenth century proposed theories of naval warfare. His theories provided a foundation for maritime doctrine that resulted in the United States becoming a global naval power in the twentieth century. If a space Mahan does not exist today, then the logical next question must be, why not? Maybe the time is not yet right to expect mature war-fighting space doctrine, and that is why the domain has not yet produced its icon. Then, one would logically ask, when might be the right time? To answer that question requires looking at the purpose of doctrine and why each service must describe what it does on the battlefield.

In the latter half of the twentieth century, space began to play an ever-increasing role in protecting and defending the nation. The services and the joint community developed doctrine to reflect how the

space domain is used to support the joint effort and the combatant commander's needs.

The Department of Defense defines doctrine as “fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.”<sup>3</sup> Thus, space doctrine is a necessity in conducting the joint fight. However, a less formal view could describe military doctrine. In its simplest terms, doctrine prescribes how military forces execute combat through campaigns, operations, and battles. If we use this definition, the question about war-fighting space doctrine might require a different answer.

We can best obtain an understanding of why this is not yet the time for mature war-fighting space doctrine by conducting a brief review of how current doctrine developed on land, at sea, and in the air. Before joint doctrine existed, each service followed certain guidelines—either codified or not—that directed their actions. The Roman phalanx, Genghis Khan's cavalry, and Horatio Nelson “crossing the T” gave their militaries a distinct advantage over their adversaries. These approaches loosely governed how armies and navies executed combat on a tactical and regional scale. Each in its own way contributed to 1,000 years of Roman rule in Europe, a Mongol Empire stretching across Central Asia and China, and the sun never setting on the British Empire.

From the early days of human civilization, a nation's greatness was determined by the might of its army. During the Renaissance, naval power began to emerge as a significant determinant of power. Exploration and trade, as demonstrated by the city-state of Venice, began to show how ships at sea could create a nation's wealth and power. The American experience was no different. As the colonies attempted to break free of Mother England, the fledgling nation looked to the Continental Army to win its independence. Gen George Washington borrowed tactics and strategy from Europe, relying heavily upon the training and guidance of Frenchman Gilbert du Motier, Marquis de Lafayette—better known today simply as Lafayette. Up until the Ameri-

can Civil War, European doctrine continued to promulgate through the US Army. Young officers at the US Military Academy were educated first as engineers—a necessity demanded by civilizing a continent—and next as soldiers steeped in studies of the Napoleonic wars and the theories of Gen Antoine-Henri Jomini. Prior to the Civil War, the translated writings of Jomini were the only works on military strategy taught at West Point.<sup>4</sup>

When Pres. Abraham Lincoln called upon the US Army during the Civil War, it took years for a semblance of American doctrine to arise. Both Union and Confederate commanders attempted to execute the war in European fashion with traditional battle lines and frontal engagement. This all changed with Gen Ulysses S. Grant, who employed what might be described as attrition warfare—leveraging the greater manpower and industrial might of the North against a less populated, more agrarian South. Essentially, Grant set out to exhaust the Confederacy and destroy its ability to conduct military operations, earning him the nickname “Butcher Grant.”<sup>5</sup> The number of casualties in a conflict became secondary to the overall success of the battle. Whereas Union generals like George McClellan at Antietam and George Meade at Gettysburg failed to press the advantage in order to allow their troops to rest, Grant continued to engage the Army of Northern Virginia until Gen Robert E. Lee surrendered at Appomattox.<sup>6</sup> In his book *The American Way of War*, Russell Weigley described Grant’s approach as “a strategy of annihilation.”<sup>7</sup>

As the US Army moved toward modern warfare in the years between the Civil War and World War I—the United States’ nineteenth-century interwar period—it again turned to Europe, only this time to rising power Germany for its command structure and basic military guidelines. One German whom the US Army would eventually embrace—more so after the Vietnam conflict—was Clausewitz, a Prussian general who chronicled warfare during the Napoleonic era in his work *On War*. Clausewitz wrote of a thoughtful and philosophical approach to warfare, which he saw as something that could be studied and ana-

lyzed systematically, focusing on offense rather than defense, as had Jomini. Rather than viewing war as an event of chaotic disorder to overcome, he recognized that it involved economies and technologies—not just people on a field of battle.<sup>8</sup>

During the latter half of the nineteenth century, the US Navy had its own strategist and proponent of naval doctrine—Mahan. Called “the most important American strategist of the nineteenth century,” Mahan observed the political and military environment of his time and concluded that great nations must possess great navies.<sup>9</sup> During a period of technological change and global expansion for the United States, Mahan’s book *The Influence of Sea Power upon History, 1660–1783* transformed not only the US Navy but also the navies of France, Germany, Britain, and Japan.<sup>10</sup> Mahan emphasized mass at the strategic point of attack, detailing an approach to counter the global British threat while portending the naval battles of World War I and beyond.

The late nineteenth century also witnessed advanced technological innovation on and off the battlefield. Armies acquired artillery that could range for miles; navies moved from wooden sailing ships to steel-hulled warships; and for the first time, with the Wright brothers’ accomplishment at Kitty Hawk in 1903, the United States recognized the potential for powered flight. Entering World War I, European militaries possessed mature doctrine that directed the actions of their land and sea forces. The air component, however, required seasoning as it transformed from aerial observation platforms to aircraft that played an integral part in determining the outcome on the battlefield. Douhet, one of the earliest airpower theorists, was an Italian general who observed World War I warfare and looked beyond the fragile flying machines constructed of wire, wood, and canvas to their potential for shaping future wars. His goal in future conflict called for avoiding the stalemate of trench warfare and shortening the struggle through airpower, thus reducing the carnage that destroyed an entire generation of men in Britain, France, and Germany. In his treatise *The Command of the Air*, Douhet detailed gaining control in the air and attacking vital

centers as central to the conduct of any air operation.<sup>11</sup> More than 70 years later, his thoughts remain essential to airpower theory and doctrine.

During the interwar years, the Air Corps Tactical School at Maxwell Field, Alabama, began teaching air doctrine. Heavily influenced by the observation and thoughts of Brig Gen William “Billy” Mitchell and Douhet, a select group of former faculty members would go on to develop the airpower concepts employed in World War II.<sup>12</sup> Their work started the evolution of airpower tactics and strategies that would aid in transforming an isolated America during the 1930s into a global economic and military superpower.

From their concepts of daylight precision bombing employed during World War II to attacks on the centers of gravity during Operation Desert Storm, airpower doctrine continued to evolve. Men like Mitchell and Col John Warden advocated airpower’s role in winning conflicts and protecting America’s sovereignty. Mitchell’s experience in World War I and Warden’s on the Korean peninsula and during the Vietnam conflict shaped their views of airpower. Through observation, both men formulated concepts that would later shape air warfare in the twentieth century. In particular, Warden’s first book, *The Air Campaign: Planning for Combat*, challenged prevailing AirLand Battle doctrine which held that airpower is subservient to the land battle and reemphasized the strategic nature of airpower.<sup>13</sup>

A brief look into the past helps demonstrate that observation of the battlefield has been a key element in the development and evolution of doctrine on land, at sea, and in the air. Historically, doctrine was developed so that soldiers on the battlefield who could not see their comrades might have a degree of certainty about how units on their right and left flanks would behave and respond in battle (i.e., so that they know what the guys to the right or left of them are doing). Consequently, in the days of linear warfare, troops had confidence that their flanks were protected and that they need not be concerned about the enemy attack from the rear. Today, warfare is considerably more complex, and doctrine has evolved to reflect the new environment. This

evolution in warfare took time. Indeed, one question that we must address asks whether space has been involved in warfare long enough to observe best practices.

Since the first successful US space launch in 1958 with Explorer, the United States has aggressively engaged in space exploration and exploitation. After more than 50 years, space has become both an integral part of everyday American life and critical to the twenty-first-century American way of war. Capabilities demonstrated by precision-guided munitions over the past two decades only hint at what space can bring to the battlefield. Even with our dependence upon space and the integration of its assets into the combat mission of all services, those assets alone cannot—yet—independently shape the battlefield, as can armies, navies, and air-breathing airpower. Without the ability to do so—like armies, navies, and air forces—it is impossible for a “space Mahan” to emerge.

## The Present Dilemma

The fact that space assets cannot independently alter the course of combat does not mean that the force should not think about, or even write about, space doctrine. If Douhet and Mitchell had not pondered air combat during World War I, then coherent air doctrine would not have emerged during the interwar years. Moreover, as US military doctrine has evolved, each service looks to the printed page to guide how it integrates and operates in the joint environment. For that purpose alone, space doctrine as written today finds relevance. Space professionals cannot afford to play catch-up or wait for the day when the battlefield is shaped from the heavens. Waiting could have disastrous effects, costing US lives and placing national sovereignty at risk. One more short departure into our history can help explain this urgency.

History is littered with examples of technological development outpacing doctrine. More often than not, the result has been needless loss of life. Centuries of warfare supplied the template. For armies in con-

tact, battle lines were separated by the approximate distance of the firing range of the standard firearm of the day. Troops would rush en masse across the open fields to ensure concentration of the greatest amount of firepower on the enemy's position, attempting to cover the distance before the opponent could reload. Despite the advancement from using the smooth-bore musket to placing helical grooves in a gun barrel (rifling), tactics remained essentially the same. From the American Revolution to the American Civil War, range and accuracy increased sixfold, from 100 yards to greater than 600 yards. Attempting to cover the increased distance, men found themselves deep within killing fields between lines. On a single day during the Battle of Cold Harbor, 90 percent of the more than 6,000 casualties occurred because of small-arms fire.<sup>14</sup>

Technology continued to advance over the next 50 years, further outpacing doctrine. World War I found the static battle lines employed for generations now in trenches, but artillery that could effectively range for miles as well as machine guns and barbed wire deterred advancing troops. Out of the horror of battle came airpower doctrine as an attempt to overcome centuries of ground doctrine that had led to stalemate and the death of hundreds of thousands.

In one modern-day example—cyberspace—we appear to be playing catch-up insofar as doctrine lags technology. The argument rages about using cyberspace for offense, while as a domain, cyberspace has already demonstrated that actions there can independently affect the battlefield, where nonkinetic actions can have kinetic effects. More specifically, in 2010 a software virus reportedly ruined almost one-fifth of Iran's nuclear centrifuges.<sup>15</sup> As a service, we still struggle with what is in cyberspace and what is not, from systems to career fields. But we must postpone the question "Where is the cyberspace Mahan?" for another day.

Today, US doctrine has reached the point where modern warfare is seldom executed solely by one service. The American military in the twenty-first century can be described in many ways, but none is more



telling than the word *joint*. Although combat may at times seem isolated to a single service, in reality each one must rely upon the other to ensure that the adversary is deterred or defeated, as necessity dictates. This precept is as true with space as it is in any other domain. One interesting observation: land, sea, and air doctrine as envisioned by Clausewitz, Mahan, and Douhet, respectively, developed somewhat independently, but war-fighting space doctrine may not have that opportunity. It will be very interesting to see how it evolves under this construct of “jointness.”

## What’s Next?

The next logical progression in relation to combat would be either warfare in the space domain or, more likely, assets in space independently influencing earthbound combat, be it in the air, at sea, or on the ground. Space is long past being weaponized or used to support military operations. Corona, launched in the early 1960s as the United States’ first “spy satellite,” provided information to our war planners on the state of the Soviet military arsenal. The Global Positioning System first offered navigation and timing to the US military for use in combat. Thus, both of these satellites weaponized space decades ago—and these are just two limited examples.

Since the 1950s, space professionals have talked about raining down death and destruction from above or launching kinetic projectiles from Earth’s orbit onto ground targets.<sup>16</sup> Technology has long evolved beyond the point where kinetic weapons, either nuclear or not, could be placed into orbit and directed upon a point on Earth. Some individuals argue that the antisatellite systems employed by the old Soviet Union and, more recently, China have crossed that redline. Political constraints, whether treaties or conventions, currently prohibit or restrict warfare in space. However, few would argue that warfare will eventually come to the space domain. Where mankind endeavors, conflict has always followed. Once that occurs, space combat will be observed

and documented, and then war-fighting space doctrine will readily emerge. Space will then have its Mahan. ✪

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## Notes

1. Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 8 November 2010 (as amended through 16 July 2014), 237, [http://www.dtic.mil/doctrine/new\\_pubs/jp1\\_02.pdf](http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf).
2. On 21 February, 03:26 GMT, the *Ticonderoga*-class missile cruiser USS *Lake Erie* fired an SM-3 missile, intercepting a deorbiting US satellite (USA-193) about 133 nautical miles above the Pacific Ocean. Although a successful demonstration of the US missile defense system, technically this action was neither an antisatellite event nor destruction of a satellite on-orbit, as demonstrated by the Soviet Union (now Russia) and China.
3. JP 1-02, *Department of Defense Dictionary*, 78.
4. John Whiteclay Chambers II, ed., *The Oxford Companion to American Military History* (Oxford, UK: Oxford University Press, 1999), 720.
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6. John Keegan, *The American Civil War: A Military History* (London: Hutchinson, 2009), 96–97.
7. Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana University Press, 1973), 128.
8. Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 75–76.
9. Keegan, *American Civil War*, 272.
10. A. T. Mahan, *The Influence of Sea Power upon History, 1660–1783* (New York: Barnes & Noble Books, 2004).
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13. John A. Warden III, *The Air Campaign: Planning for Combat* (Washington, DC: National Defense University Press, 1988). See also John Andreas Olsen, *John Warden and the Renaissance of American Air Power*, 1st ed. (Washington, DC: Potomac Books, 2007), 80.
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15. Michael B. Kelley, "The Stuxnet Attack on Iran's Nuclear Plant Was 'Far More Dangerous' Than Previously Thought," *Business Insider*, 20 November 2013, <http://www.businessinsider.com/stuxnet-was-far-more-dangerous-than-previous-thought-2013-11>.
16. Jonathan Shainin, "Rods from God," *New York Times*, 10 December 2006, [http://www.nytimes.com/2006/12/10/magazine/10section3a.t-9.html?\\_r=0](http://www.nytimes.com/2006/12/10/magazine/10section3a.t-9.html?_r=0).



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