

# The Coming Revolution in Military Space Professionalism

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## Introduction

Many recent events are coalescing to form a critical mass of energy that will soon give birth to the first true generation of military space professionals in history. Space professional development has been a major concern for the DOD, especially the Air Force since the *2001 Space Commission Report*, and a great deal of outstanding work has been accomplished, but three individual but mutually supporting events in 2017 promise to allow the space cadre to flower into full fruition and produce the military space professionals the nation needs. These events are the publication of President Donald J. Trump's new *National Security Strategy*, Rep. Mike Rogers (R-AL) and Rep. Jim Cooper's (D-TN) crusade to form a US Space Corps, and Air Force

Space Command (AFSPC) commander Gen Jay Raymond's execution of his Space Warfighting Construct (SWC), especially its Space Mission Force element originally conceived by US Strategic Command commander Gen John Hyten. The independent actions of these five men have combined to place military space personnel, especially its officer corps, in a position analogous in modern history only to US Navy officer corps of the 1890s—a group of highly skilled operators on the verge of attaining the heights of comprehensive professionalism.

## Professionalism

To understand professionalism, it is first necessary to define the term and determine if that definition is sufficient for its task. The USAF defined a *space professional* in 2004 as a person “skilled and knowledgeable in the development, application and integration of space concepts, doctrine and capabilities to achieve national security objectives.”<sup>1</sup> For almost two decades, the Air Force has attempted to build space professionals under that definition, and great strides have been made. Strict requirements for the professional development of the space cadre, in addition to the rigors of USAF professional military education (PME), have made today's space cadre perhaps the most skilled and knowledgeable at their job in the history of the Air Force.

However, in the recent congressional debates regarding Rogers and Cooper's drive to establish a Space Corps, Air Force leaders did not—by some accounts—comport themselves as well as expected in discussions with Congress. Rogers and others asked questions about the ramifications of advances in commercial space and other space subjects often encountered in today's news, and the responses by USAF officials were not satisfactory enough for Rogers and Cooper to drop their call for a Space Corps. The rank and file USAF space cadre responded to the national debate with overwhelming and deafening public silence. Arguably, at least in the open sources media, the USAF and the space cadre's performance did not assuage Congress' worries that something was very wrong with military space.

Perhaps some reason for the space cadre's lackluster performance may be found in the Air Force's definition of *space professionalism*. By way of comparison, naval historian Ronald Spector defined *professionalism* “as the process by which an occupational group acquires or develops a specialized, theoretical body of knowledge related to its area of expertise, develops a heightened feeling of group identity which is usually accompanied by the emergence of professional associations and journals, and takes on a body of rules and standards which regulate its relationship to the public.”<sup>2</sup> This definition is much more expansive than the definition used by the Air Force space cadre.

Reviewing the USAF space professional development program (SPDP) through Spector's lens is revealing. The SPDP certainly attempted to develop a heightened feel of group identity by identifying the members of the Air Force space profession and adjusting the space occupational badge from the smaller, nonrated space and missile badge to the modern “spings,” a much larger badge with prestige of place equal to rated badges like pilot and navigator wings, and even look indistinguishable from wings at a distance.<sup>3</sup> The *High Frontier Journal*, published quarterly by AFSPC

from the summer of 2004 to August 2011, encouraged further professionalism, although the Air Force major command effort did not prove as resilient or intellectually stimulating as private military professional associations such as the US Naval Institute and its *Proceedings* journal or the Air Force Association have been. Arguably, the rules and standards regulating the space cadre's relationship to the public is accounted for sufficiently by the simple fact that the space cadre are military personnel. The USAF SPDP accomplished many of Spector's requirements for a profession—save one.

The SPDP focused on skills and training and was successful in those areas, but in many ways it did not prove equally successful in developing a specialized, theoretical body of knowledge related to its area of expertise. SPDP schools, such as Space 200 and 300, imparted much deeper instruction into the execution of space power, and advanced courses developed experts across the many space systems fielded by the Air Force. Consequently, the USAF SPDP has trained skilled operators to expertly serve the joint war fighter. However, time for theory and professional reflection in the SPDP was always lacking. Program courses were invariably a short few weeks and long days. Theoretical knowledge on space power is intangible and, by military necessity, was discarded as more pressing training matters impinged on the limited time for the SPDP in the space cadre member's career.

In the short term, discarding theory may have been the only responsible decision available, but perhaps the long-term consequences of that decision have revealed themselves in the Space Corps debate. Just as a master electrician may be able to perfectly wire a five-star hotel but would generally not be able to discuss the pros and cons of a superconducting power grid effectively, the USAF space cadre may be excellent at providing military space support to the joint war fighter but may also be susceptible to be completely nonplussed by space questions that differ significantly from their day-to-day activities. Without a theory that coalesces the myriad skills of the space cadre into a coherent and complete system of specialized knowledge of space operations, as Spector advises is necessary for professionalism, perhaps the space cadre will never be able to act as consummate professionals. Fortunately, a new front in the revolution into space professionalism will soon be in progress.

## Setting the Stage for Revolution

Circumstances are providing an almost perfect setting from which true space professionals will emerge because they are providing essential elements to the space cadre that have, until now, been absent. First, the new NSS published in December 2017 provides a much needed national vision and direction to fuel the revolution of military space professionalism. Pillar III of the NSS is to "Preserve Peace through Strength." In Pillar III's section on space,, the NSS states that the "United States considers unfettered access to and freedom to operate in space to be a vital interest." Further, the NSS describes three "priority actions" for the US in space, two of which directly interest the military space cadre. First, the NSS directs that the nation must "advance space as a priority domain" and charges the National Space Council (NSpC) to "develop a strategy that integrates all space sectors to support in-

novation and leadership in space.” Additionally, the NSS also directs the government to “promote space commerce,” charging the government space programs to partner with US commercial space entities to “improve the resiliency of our space architecture” and, very interestingly, to “consider extending national security protections to our private sector partners as needed.”<sup>4</sup> All of these pronouncements are very important. The NSS stresses the importance of the NSpC in national-level space strategy (in which the military space effort will have a significant role) and places emphasis on the military missions of ensuring access and freedom to operate in space and potentially defending space commerce. Of note, these missions were only achieved by the US in the sea domain when the Navy achieved professional status in the early twentieth century.

The second event driving the emergence of true space professionalism is Rogers and Cooper's efforts to establish a US Space Corps, which culminated in the 2018 National Defense Authorization Act (NDAA). Rogers opened his public campaign to reform national security space in an address to the 2017 Space Symposium in Colorado Springs, Colorado in early April. In his remarks, the congressman addressed many perceived flaws in the current system, including what he saw as a lack of promotions among space professionals in the Air Force, paltry space education, and career management, a bloated and confused space bureaucracy with a distinct lack of accountability, and inadequate funding for space programs.<sup>5</sup> Of specific interest to space professionalism, Rogers called for a single person dedicated to “leading [the military space] effort who wakes up every day and thinks about how to have the best military space program in the world. This leader must have the authority to make things happen and will be accountable for success.” Rogers continued, arguing that “space needs to be put on par with the other domains of conflict” and that:

there must be a clearly identified cadre of space professionals who are trained, promoted, and sustained as space experts. Air Force leaders have talked about normalizing space and treating space as a warfighting domain. All other domains of air, land, and sea have established cultures, professions, and identifiers. Now it's time for space to have the same. Because at the end of the day, we all know it comes down to people.<sup>6</sup>

Rogers and Cooper intended to make these changes and others by including a provision in the House version of the 2018 NDAA mandating the creation of a US Space Corps under the Department of the Air Force with the space authorities necessary to enact Rogers' change agenda. While the measure easily passed the House, the proposed service was highly controversial in the Senate and was opposed by President Trump, Defense Secretary James Mattis, Air Force Secretary Heather Wilson, and Air Force Chief of Staff Gen David Goldfein. Ultimately, the Space Corps proposal was dropped in the final NDAA, but Rogers and Cooper gained many concessions in negotiation with the Senate. Among other changes it made to national security space, Rogers has claimed the NDAA made AFSPC the sole authority for “organizing, training, and equipping all space forces within the Air Force,” rather than the Air Force itself, although this interpretation has been challenged. Rogers and Cooper, seemingly losing the fight to authorize the Space Corps to its Senate opponents, nonetheless claimed that the NDAA “refashioned AFSPC similar to the Air Corps Act of 1926, which established the Army Air Corps.”<sup>7</sup> It is an interesting

irony that the Air Corps Act itself was mostly a gutted version of Maj Gen Mason Patrick's proposal to reorganize the Air Service under a Marine Corps-type model that did little more than change its name to the Army Air Corps to increase its apparent prestige. Meanwhile, its 2017 counterpart grants AFSPC most (certainly not all) of the authorities of a Marine Corps-like independent organization but did not grant the "space service" a more prestigious name.<sup>8</sup> Important to professionalism, the NDAA may have confirmed the top military space professional—the single uniformed person to worry about the military space program Rogers originally wanted—by extending the commander of AFSPC to a six-year term armed with a dramatically increased set of responsibilities and authorities.

General Raymond, the current commander of AFSPC, can be considered the biggest winner of the 2018 NDAA. With a six-year term, he will have the longest tenure of any AFSPC commander and has been charged with managing AFSPC's expanded organize, train, and equip role, and has also been granted operational command of all US military space forces as the first-ever US Strategic Command joint force space component commander, among other changes. Speaking of the NDAA, General Raymond said, "It will help us get where we need to go. I always talk about having a foot on the accelerator. But I don't just want to have a foot on the accelerator. I want to run laps around our competitors."<sup>9</sup>

General Raymond intends to run those laps by pursuing the SWC, an effort designed to prepare AFSPC to both fight through and prevail in a space conflict, the third and most important of the three events driving space professionalism. Built on the previous work of the former AFSPC commander, General Hyten, the construct is comprised of six interconnected efforts: the Space Enterprise Vision, a joint AFSPC/National Reconnaissance Office pathway to develop a resilient space enterprise that can both deter and prevail in a space conflict; a set of space war-fighting concepts of operation for space situational awareness, command and control, and other operations, that will determine how AFSPC will fight and ensure success against a thinking adversary; resilient architectures; enterprise agility; and partnerships with civilian and allied space programs; and the Space Mission Force (SMF), the human capital strategy for the SWC, which intends to revolutionize the development of space operations crews (the heart of the space cadre) with advanced training scenarios on employing their space systems in and through an operationally degraded environment.<sup>10</sup>

While the NSS and the NDAA provide critical support, from the SMF will emerge the seeds of the revolution in space professionalism. General Hyten's *Space Mission Force* white paper, dated 29 June 2016, outlines the SMF well. General Hyten envisioned the SMF to be an "advanced training and force presentation model that prepares our space forces to meet the challenges of today's space domain." In response to adversary development of space control capabilities, US "space forces must demonstrate their ability to react to a thinking adversary and operate as warfighters in [the modern space] environment and not simply provide space services." The watchword for General Hyten's SMF is *training*. Hyten emphasizes pushing space crews to their limits and beyond through both continuation training—maintaining and enhancing foundational skills—and advanced training,—designed to teach crews how to overcome new and emerging counterspace threats. In addition, the

general also recommends participation in wargames to “enhance understanding of future warfighting concepts.”<sup>11</sup> General Hyten’s vision is unparalleled in scope and importance in the development of space professionalism. However, one word in conspicuously absent in the document—*education*.

General Raymond’s invaluable contribution to the SMF through his SWC concept, besides his intense focus on executing the SMF in the tactical space units, is his recognition that education must be a part of the SMF concept for it to be truly complete. While there much debate over exact differences, for SMF purposes it’s helpful to differentiate the terms by assuming training is about imparting skills and education illuminates theory. Using these definitions, we can see how the 2004 definition of space professionalism did not specifically mention education into theory as a goal of the program, although it did mention doctrine and concepts, without a solid grounding in theory both items are often brittle and transitory and cannot impart lasting professionalism. Spector’s definition posits that the space professional development program since 2001 has not achieved true professionalism because it has focused on training but not education, skills but not theory, and consequently has not yet developed the specialized, theoretical body of knowledge related to its area of expertise required of true professionalism. However, General Raymond has identified and corrected this oversight. Fortunately, history provides a wonderful example of how a military organization can use education to crest the final hill before winning the title of professional.

## Lessons from the Navy

In many ways, the state of the military space care of 2018 is similar to the state of the military sea cadre of the late 1800s. To historian Elting E. Morison, officers of the US Navy in 1890, while gentlemanly, were anything but professional. He explained:

In all, nobody really quite knew why there was a Navy at this period. The definition of what a Navy was supposed to do and how it was supposed to do it was not clear. There was no naval doctrine. There were no strategic ideas and there were very few tactical rules except the rules of thumb. In strategy the highest thought was that you existed to protect the coastline.

As Morison describes it, “Naval society was run by faith and habit,” and little else. There were individuals who made interesting advances in navigation, in steam engineering, and in gunnery, among many others, but they were without any unifying significance that a naval officer could identify. However, all that changed beginning about 1890 when that habit began to be supplanted by the first real theory in naval history.<sup>12</sup>

The theory was found in Adm Alfred Thayer Mahan’s *The Influence of Sea Power upon History*, and it was based on then-Captain Mahan’s lectures he presented to classes of the Naval War College. He had developed the theory that allowed the Navy to become professionalized, but he did not professionalize the Navy. The man who professionalized the Navy was rather Adm Stephen Bleecker Luce, naval reformer and founder of the Naval War College. Admiral Luce spent the majority of his career increasing the professionalism of the Navy by instituting advanced training

for both officers and enlisted personnel. He wrote the first book on sailing, *Seamanship*, for midshipmen as an instructor at the Naval Academy in 1863. By the early 1880s, his training ship system was bringing the newly-skilled Navy to the edge of professionalism, but Admiral Luce knew that one last requirement remained—the scientific study of war. Therefore, he devoted the rest of his life to the nurturing of the Naval War College.

Admiral Luce's vision was to establish an institution where officers could concentrate on the highest levels of their profession—war. With the heightened training across the service and the naval officer corps edging closer to professionalism in the late-nineteenth century, many officers decided to take advanced study in various arts: geology, ornithology, engineering, and astronomy. These were fine so far as they went, Admiral Luce believed, but they did little to advance the Navy. He thought that this increase in education was due to officers becoming bored with naval life and seeking education wherever they could find it—and it wasn't in the Navy. Why not, then, provide a way for the naval officer to study the naval profession instead of borrowing professionalism from another field? Thus, he founded the Naval War College so the naval officer could study his profession proper.

As its first president, Admiral Luce also instilled the institution's intellectual academic philosophy. He believed that naval officers using inductive reasoning, thinking about specific events to infer broad generalizations and then comparing these generalizations with tested principles from military strategy, could begin to develop a science of naval warfare.<sup>13</sup> With this science of naval warfare, seemingly isolated technological advances in naval warfare, such as new optics, wireless communication, steel hulls, and steam engines, could be investigated from a common vantage to assess their utility in naval warfare.

Luce considered "science" the collection of data linked by a generalized theory and accepted principles through the use of inductive reasoning. Citing an example that would be familiar to the modern space cadre, he explained, "while Tycho Brahe himself knew not the real value of his own work [compiling a comprehensive set of astronomical and planetary observations], [Johannes] Kepler, generalizing from the great mass of observations, was led to the discovery of those three great laws [Kepler's laws of planetary motion] which won for him the proud title of 'Legislator of the Heavens' and opened the way for the final generalizations of [Isaac] Newton."<sup>14</sup> Admiral Luce then expounded how a similar science can be erected around naval warfare:

Now, naval history abounds in materials whereon to erect a science. . . and it is [the Naval War College's] present purpose to build up with these materials the science of naval warfare. We are far from saying that the various problems of war may be treated as rigorously as those of one of the physical sciences; but there is no question that the naval battles of the past furnish a mass of facts amply sufficient for the formulation of laws and principles which, once established, would raise maritime war to the level of science. Having established our principles by the inductive process, we may then resort to the deductive method of applying those principles to such a changed condition of the art of war as may be imposed by later inventions or the introduction of novel devices.<sup>15</sup>

However, Admiral Luce noted that nineteenth-century science rarely emerged from whole cloth and often the generalizations required for imposing order on data

often came from a different field of study. But where can one start to look for general principles, and how might principles be best tested for truth? He called his preferred system the “comparative method” and offered:

naval tactics, using that word in its more extended sense, becomes scientific only through *comparative* tactics. For, having no authoritative treatise on the art of naval warfare under steam, having no recognized tactical order of battle, being deficient even in the terminology of steam tactics, we must, perforce, resort to the well-known rules of the military art with a view to their application to the military movements of a fleet, and, from the well-recognized methods of disposing troops for battle, ascertain the principles which should govern fleet formation. Thus, from the known, we may arrive at something like a clear understanding of what is now mere conjecture. *It is by this means alone that we can raise naval warfare from the empirical stage to the dignity of a science* (emphasis in original).<sup>16</sup>

Admiral Luce concludes his description of the Naval War College’s scientific philosophy with a final charge, “Inspired by the example of the warlike Greeks, and knowing ourselves to be on the road that leads to the establishment of the science of naval warfare under steam, let us confidently look for that master mind who will lay the foundations of that science, and do for it what Jomini has done for the military science.”<sup>17</sup> Admiral Mahan eventually became that master mind, but he would not have been found had Admiral Luce not lighted the path of discovery so successfully.

Can the same path light the way to develop a similar science for the military space cadre and lead them to true professionalism? General Hyten seems to think so. His *Space Mission Force* white paper states, “As we define and implement the SMF, AFSPC will adopt proven principles of operational art from other domains and apply them to space. We will tailor these proven methods, principles and terms to account for our unique domain and apply them.”<sup>18</sup> What else is this than another restatement of Admiral Luce’s comparative method? General Raymond has taken AFSPC a dramatic and important step further, by creating a dedicated program for education in space warfare.

## The Schriever Scholars Program

The task of developing a science of space warfare has fallen to Air University (AU), just as it successfully developed a science of air warfare almost 80 years earlier. AU was selected not only because of its history, but also because it had the right infrastructure with which to form such an effort. That effort, the Schriever Scholars Program (SSP) curriculum at Air Command and Staff College (ACSC)—beginning in July 2018—is the nation’s first academic year-long, degree granting, PME program that will provide Development Education and Joint Professional Military Education (JPME) credit with a focus on military space issues. As one of the three “concentrations” available at ACSC, SSP graduates will be awarded an accredited Master of Military Operational Art and Science (MMOAS) degree as well as JPME Level I and in-residence Intermediate Developmental Education (IDE) credit, as all ACSC graduates receive. SSP’s sister concentrations include the highly successful and competitive Multi-Domain Operational Strategist (MDOS) program and the School of Advanced Nuclear and Deterrence Studies (SANDS). Among them, SSP is unique.

The MDOS program has existed at ACSC for many years and SANDS, while new to ACSC, has existed as an independent school since 2015 devoted to the study of a classic field—nuclear deterrence. SSP, on the other hand, was personally directed by General Raymond to offer selected students an intensive, year-long curriculum devoted to the study the science of space war.

SSP students will come from many different background but with one common interest—space power. The initial class of SSP students will be one ACSC seminar—13 students. More than half of the students will be AFSPC-selected core space operations officers. Since SSP is intended to be a capstone space-centric experience, space operator students are highly encouraged to be graduates of Space 200 and 300, the critical space education courses managed by the National Security Space Institute (NSSI). SSP is intended to allot students the maximum amount of time to think about the science of space warfare. Only the NSSI's rich space education will enable SSP students to be wholly armed to take advantage of its opportunity.

To add richness to the experience, one Army and one sea service (Navy or Marine Corps) students will also be chosen by SSP faculty to attend to offer their joint opinions on the subject of space power. The remaining student positions will be filled by acquisitions, engineering, science, or intelligence officers with space experience. All students will have appropriate security clearances for the course, and capable of advancing the science of space warfare.

As Admiral Luce demanded of naval officers, SSP requires budding military space professionals “to study their profession proper—war—in a far more thorough manner” than has ever been “heretofore attempted, and to bring the investigation of the various problems of modern” space warfare “the scientific methods adopted” in the other professions.<sup>19</sup> Just like the early NWC, SSP applies the comparative method to turn space warfare into a true science. Their experience from the SMF training efforts, as well as their own background operating in the contested space domain, will provide the empirical “grist” from which SSP students and faculty, utilizing the comparative method, will develop the science of space warfare through comparing the facts of space operations to the sciences developed for terrestrial warfare, including its land, sea, and air branches, to discover the principles necessary to build the science of space warfare. The SSP curriculum is specifically designed to engender and advance that lofty goal.

### **The Schriever Scholars Program Curriculum**

To ensure that the Schriever Scholars become true war fighters, the SSP curriculum takes advantage of the inherent strengths of the Warfighting component of the ACSC core curriculum: War Theory, International Security I and II, and Joint Warfighting. These courses, which span all four terms (or quarters) of the academic year, are intended to fulfill the DOD's mission to “provide combat-credible military forces needed to deter war and protect the security of our nation.”<sup>20</sup> These courses form the backbone of the profession of arms by asking fundamental questions, beginning with what constitutes war (War Theory), then proceeding to why wars occur (Inter-

national Studies I), through how wars are fought (International Studies II), and ending with how wars are planned (Joint Warfare).<sup>21</sup>

To arm the Schriever Scholars with the space domain-specific understanding with which to ponder the science of space warfare, the SSP takes three separate approaches. First is the SSP's dedicated Spacepower component. Spacepower I explores the capabilities and limitations of space power through a comprehensive review of space-centric military and technology theory, as well as the history of the US space program. Spacepower II prepares the Schriever Scholars for the Joint Warfighting capstone course by adding both modern space power history and forming a space-centric view of establishing space superiority before successful integration can take place.

The second approach to develop space domain expertise is a series of SSP core courses that replaces ACSC's regular elective curriculum. Schriever Scholars take a specialized Space Horizons course that interprets space power from a holistic national perspective, including the civil space program and emphasizing the impact of commercial companies and visions of classic space power as critical drivers of space innovation. The second specialty course, Space as a Contested Domain, is a classified elective in which the students will study current documents and the history and lessons learned from modern space operations to found their own concept of the science of space warfare on the firmest foundations possible. Lastly, the Schriever Scholars will engage in a number of research trips, both individually and as a group (to be determined), to explore the state of space power in the field.

## The End of the Beginning of Space Professionalism

When they have displayed the theoretical competence to advance both the science of space warfare and apply that science to the practical considerations of joint multidomain operational planning and problems of national space power, SSP students will have proven themselves worthy of being called SSP graduates. As ACSC in-residence graduates, they will receive their MMOAS graduate degrees, JPME Level 1 certification, and credit for IDE in-residence. As SSP graduates, their follow-on assignments will be personally managed by the AFSPC director of operations (A2/3/6) through each officer's specialty development teams. Moreover, as SSP graduates, they will be uniquely suited to educate others in the science of space warfare, and to further their personal mastery of the subject. Collectively, they will become the first true military space professional class, armed with the theoretical understanding of the science of space warfare and ready to apply it to the pressing needs of the nation in the twenty-first century.

However, like the Navy more than a century earlier, becoming a military space professional will not require attendance at SSP. Indeed, not every space operator ACSC student (perhaps not even the majority) will be required to attend SSP and will instead complete the general ACSC curriculum, where they will take advantage of one of the most rigorous airpower curricula available. Rather, the science of space warfare that SSP aims to develop will become Spector's "specialized, theoretical body of knowledge" related to the space cadre's area of expertise required to elevate today's space cadre into space professionals. SSP graduates may be the founders of

comprehensive military space professionalism and the first scientists of space warfare, but they will not be the only ones. The fully-developed military space professional class will far surpass the tiny halls and scant graduates of the SSP program and spread across AFSPC, the USAF, DOD, and perhaps across the US. SSP and its graduates may, like Adm Stephen Bleecker Luce and Adm Alfred Thayer Mahan for the sea, drop the first stone into the pond of comprehensive space professionalism, but the wave made by the first generation of true space professionals will ripple far beyond the USAF, the DOD, or the nation.

Armed with a science of space warfare, the fully-equipped Air Force space professionals will be able to overcome all challenges the nation faces in space. Adversary aggression in the space domain will be thwarted and deterred. Enlightened government and military actions toward the burgeoning commercial space industry will maximally secure both US security and economic interests in space. Senior leaders will be able to assuage congressional concerns authoritatively and decisively. American leadership in all aspects of the space domain will excel.

The men and women at the forefront of the revolution in space professionalism sparked by the vision of President Trump and the efforts of Congressmen Rogers and Cooper and Generals Hyten and Raymond may help lead the world to unprecedented prosperity through space guarded by a thorough knowledge of how to defend that prosperity from all aggression. The impact of space professionals on America's national development will meet or perhaps even exceed that of their terrestrial brethren. But to do so first requires that they understand the specialized, theoretical knowledge that is unique to their profession. The great men who have galvanized the revolution have done their job. It is now up to the US space cadre to finish the task. The Air Force, the nation, and the world need complete space professionalism now! 🌟

## Notes

1. "Space Professional Development Frequently Asked Questions," *High Frontier Journal* 1, no. 1 (Summer 2004): 12, <http://www.afspc.af.mil/Portals/3/documents/HF/AFD-070622-055.pdf>.

2. Ronald Spector, *Professors of War: The Naval War College and the Development of the Naval Profession* (Newport, RI: Naval War College Press, 1977), 3.

3. The space badge was a true space cadre badge. Even though changes by Air Force Space Command (AFSPC) have again limited the badge to only space operations personnel, it is still seen as a marker of identity in the space cadre rather than just a simple operational badge.

4. Executive Office of the President of the United States, *National Security Strategy of the United States of America* (Washington, DC: US Government Printing Office, 2017), 31, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>.

5. "Remarks of Congressman Mike Rogers, Chairman, House Armed Service Strategic Forces Subcommittee, Presented to the 2017 Space Symposium," *Strategic Studies Quarterly* 11, no. 2 (Summer 2017), [http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-11\\_Issue-2/Rogers.pdf](http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-11_Issue-2/Rogers.pdf).

6. Remarks of Congressman Rogers, 11.

7. House Armed Services Committee, "Rogers & Cooper on Fundamental Space Reform," 8 November 2017, <https://armedservices.house.gov/news/press-releases/rogers-cooper-fundamental-space-reform>.

8. See James Tate, *The Army and its Air Corps: Army Policy toward Aviation, 1919-1941* (Maxwell AFB, AL: Air University Press, 1998), 45-47, for an interesting discussion on the "Patrick Bill."

9. Sandra Erwin, "Space Commander Enthusiastic about NDAA Reforms," *Space News*, 8 December 2017, <http://spacenews.com/space-commander-enthusiastic-about-ndaa-reforms/>.

10. AFSPC, "Space Warfighting Construct," fact sheet, accessed 17 April 2018, <http://www.afspc.af.mil/Portals/3/documents/Space%20Warfighting%20Construct%20Handout%20-%203%20Apr%202017.pdf?ver=2017-04-05-191055-757>.
11. Gen John E. Hyten, *Space Mission Force: Developing Space Warfighters for Tomorrow*, AFSPC white paper, 29 June 2016, 3. <http://www.afspc.af.mil/Portals/3/documents/White%20Paper%20-%20Space%20Mission%20Force/AFSPC%20SMF%20White%20Paper%20-%20FINAL%20-%20AFSPC%20CC%20Approved%20on%20June%202029.pdf?ver=2016-07-19-095254-887>.
12. Elting E. Morison, "The War of Ideas: The United States Navy, 1870–1890," in Lt Col Harry R. Borowski, *The Harmon Memorial Lectures in Military History, 1959–1987* (Washington, DC: Office of Air Force History, 1988), 414–18.
13. John Hayes and John Hattendorf, *The Writings of Stephen B. Luce* (Newport, RI: Naval War College Press, 1975), 46.
14. Stephen Luce, "On the Study of Naval Warfare as a Science," quoted in John Hayes and John Hattendorf, *The Writings of Stephen B. Luce* (Newport, RI: Naval War College Press, 1975), 52.
15. *Ibid.*, 53.
16. *Ibid.*, 55–56.
17. *Ibid.*, 68.
18. Hyten, "Space Mission Force," 3.
19. Luce, "On the Study of Naval Warfare," 47.
20. DOD, *Summary of the 2018 National Defense Strategy of the United States of America*, 1, <https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.
21. Dr. Jim Forsyth (presentation, Air Command and Staff College, Maxwell AFB, AL, 2018).



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