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Capability Gaps in Allied Space Deterrence

Mary Black

_U.S. predominance in space power is undermined by two capability gaps: the transatlantic gap for interoperability and the authoritarian gap for defense against asymmetric threats._

The space domain is becoming saturated. With countries like the United Arab Emirates to India, more actors are becoming involved in the domain in direct and tangible ways.\(^1\)\(^2\) Still, when looking at the Atlantic states, the United States is the predominant space power. This is a source of allied vulnerability. In terms of defense and power projection in space, the United States (US) faces two distinct capability gaps. As a leading power of the North Atlantic Treaty Organization (NATO), the US has historically taken on greater political and kinetic responsibility in allied defense initiatives, developing into what scholars call the transatlantic capability gap. This continues to be apparent in contemporary NATO space strategy.

Alongside this phenomenon, another gap has appeared. The United States once had space unipolarity through technological dominance. However, technological optimism has historically blinded American strategists from the reality that states could innovate and create asymmetric threats, now known as sharp power. This has given way to another hypothesized disparity of power projection in space, identified in this paper as the “authoritarian capability gap.” Because sharp power is relatively novel, this latter gap remains a theory.

Facing one, let alone two capability gaps, the US cannot expect to lead in space security. Thus, NATO Allies cannot reliably depend on American strategic, technological, or information superiority.
HOW WE GOT HERE: THE TRANSATLANTIC CAPABILITY GAP

James Appathurai, then policy planning officer of NATO’s Political Affairs Division, identified the transatlantic capability gap as disparities in burden sharing, due in great part to the US’s “lead in military technology” since NATO was established. He describes the origins of this gap as a combination of historical, structural, and financial factors. To engage in the Second World War, geographical factors caused the United States to achieve mobility through technology. Structurally, the European Union’s many armies, departments, headquarters, training facilities, and other infrastructures reflect a “duplication of effort and industry, lack of coordination in policies, and higher costs” that have hindered European technological advancement. Finally, the sheer, staggering financial disparity between the US and European defense makes the US military the most capable for virtually all missions. For example, according to the Center for Strategic and International Studies, the US’s 2019 defense expenditure was nearly 2.5 times more than other NATO allies, equaling 3.42 percent of its gross domestic product (GDP). The consequences this has for European defense are innumerable, including decreased capabilities in transport, refueling, precision strike, reconnaissance and intelligence, command and control, and communication. For these reasons, these NATO allies are incentivized not to expand their defense capabilities, relying on the United States to lead in the strategy and execution of NATO’s aims.

Now, as access to space, its resources, and terrestrial dependencies thereof have become increasingly vulnerable, the security environment appears to have formed two capability gaps: the transatlantic capability gap, which has developed among NATO allies for decades, paired with the asymmetric threats that China and Russia present, labeled hereafter as the “authoritarian capability gap.” This paper proposes, through the application of the historical case method, that the transatlantic capability gap persists and shapes NATO space deterrence strategy. Therefore, the future of sovereignty and security in space depends on the actions of more NATO members, not only the US. Additionally, this paper will provide suggestions for future analysis of the authoritarian capability gap through this method.

METHODOLOGIES: TECHNOLOGICAL OPTIMISM AND SHARP POWER

Technological advancement has been the purpose and ideal of defense acquisitions for as long as militaries have existed. Within this paradigm, it is easy for military and political leaders to uphold technology as the decisive and necessary element of military success and maintaining defense. This can be understood as technological optimism, a presumption that “the new technology is categorically different, delivers a devastating effect, and will be decisive in warfare, especially if its introduction on the battlefield is a surprise.”
Many scholars and strategists have been influenced by decades of technological optimism, making it difficult to assess the rising threats of authoritarian regimes fairly. In their 1996 article “America’s Information Edge,” Joseph Nye and William Owens made predictions about American technological advantages, perhaps having been influenced by technological optimism through decades prior. They asserted that the “American Century” was not coming to an end as other scholars believed; rather, they found that the “United States is better positioned than any other country to multiply the potency of its hard and soft power resources through information.” At that time, the US maintained a strategic advantage through “its ability to collect, process, act upon, and disseminate information,” which acts as a force multiplier in various ways: bringing allies and adversaries to negotiations, strengthening communications with democratic institutions, and linking US foreign policy and military power sources. Nye and Owens recognized conceptual problems with information power, specifically that strategists had been preoccupied with traditional measures of power (e.g., gross national product) and that the nature of information power made predicting its implications difficult. Nevertheless, they presented a very optimistic outlook on American information advantages, suggesting the few “prerequisites” of their maintenance were funding defense technologies, loosening information sharing restrictions, broadcasting information internationally, and promoting a healthy democracy domestically.

Granted, Owens and Nye expressed some uncertainty toward lasting American information supremacy, having predicted that information technology would change deterrence theory as it was once understood. They contended that, unless the United States enabled a network of allies through information and technology sharing, other countries would replicate or exploit the US’s advantages in information. Still, their suggested preventative measures only work under the assumption that countries would have to match US technology to become a threat in the first place. This was likely due to the contemporary, limited understanding of asymmetric information threats, now known as “sharp power,” a term popularized in 2017 by the National Endowment for Democracy.

Christian Walker, the Vice President for Studies and Analysis at the National Endowment for Democracy, defines sharp power as “efforts at censorship, or the use of manipulation to sap the integrity of independent institutions [with] the effect of limiting free expression and distorting the political environment.” The term “sharp” depicts how this form of power attempts to “pierce, penetrate, or perforate” various political and societal targets. Sharp power is a capability that is uniquely attributed to authoritarian actors, particularly those seeking to erode the liberal world order such as the Chinese Communist Party (CCP) and the Russian Federation. This is primarily because democratic institutions, in accordance with their values of openness and integrity, are vulnerable to such revisionary threats and incapable of responding in kind.
CASE STUDIES

Transatlantic Capability Gap: The Gulf War

Having defined the transatlantic capability gap and proposed the authoritarian capability gap, this paper will apply the historical method to assess the US’s capability to lead in space deterrence. The Gulf War is an appropriate case example of the transatlantic capability gap because it was a decisive coalition victory, typically attributed to the US’s strategic and technological superiority. Furthermore, in terms of technology and strategic planning, the US surpassed both its adversary and coalition allies, the United Nations (UN) in this case. This decisive victory entailed the swift implementation of a six-week allied air campaign, in which 88,500 tons of bombs were dropped during 116,000 sorties, leading to a 100-hour ground invasion that liberated Kuwait from Iraqi forces. In terms of manpower, the US provided a cumulative “540,000 troops, [and] some 28 other (mostly European) countries deployed air, sea, or ground forces totaling 245,000 personnel.” The US spent an estimated $61 billion on the Gulf War, and although other nations compensated for roughly 88 percent of this cost, the only European country to contribute significantly was Germany ($10 billion). While the US was by no means alone in this conflict, the fact that 28 of its allies made up roughly half of the material contributions is a staggering example of transatlantic dependency on the US to ensure global security.

Brent Talbot, a professor at the US Air Force Academy, asserts the European coalition members evidently desired the US to take leadership in this conflict: “Encouraged from the very beginning by the British Prime Minister to lead, Bush put together the coalition by building personal relationships with major contributors to the effort. His relationships with Thatcher/Major (Britain), Mitterrand (France) and Kohl (Germany) are particularly notable.” Furthermore, the US demonstrated leadership during the UN’s decision-making in response to the invasion through actions such as implementing a period of 48 days between the Security Council’s resolution and the launch of forces. Therefore, it is clear the US was a leader in terms of both assets committed and its diplomacy throughout the conflict.

The US’s leadership and kinetic superiority in the Gulf War contributed to an undue sense of technological optimism and unchallenged unipolarity. Strategists became overconfident that technology, namely long-range precision missiles, would enable US invincibility by subduing the largest of forces “in a matter of 100 hours.” This optimism, in turn, caused American leadership to become ignorant of the developments of asymmetric threats, what is now known as sharp power.
Authoritarian Capability Gap: Considerations For Future Study

At this time, it is not possible to examine the authoritarian capability gap according to the historical method. This is primarily because the authoritarian capability gap is inextricable from the demonstration of sharp power, a concept in political science that is still nascent. Furthermore, the study of sharp power actions themselves is relatively new as those actions are made capable by advanced information and cyber technologies. As such, this paper outlines possible conditions to analyze this gap in the future:

A historical study of the authoritarian capability gap requires the identification of two actors: one being an instigating actor that leans towards authoritarianism, and a comparatively more open and democratic target. In this context, the limitations of the historical method must be considered. To begin with, it is difficult to prove that sharp power is in action, not to mention the difficulty of attributing it to a specific state actor. Nevertheless, the intangibility of the authoritarian capability gap must be examined further to illuminate trends that can be attributed to space security. Below are some ongoing, contemporary, and thus hypothesized examples of authoritarian capability gaps:

- Confucius Institutes (China acting upon various democracies): These institutes, which claim to promote Chinese language and culture to students and universities, are suspected branches of propaganda for the CCP as instructors have pressured school administrations to avoid statements or events that the Chinese government also seeks to downplay;

- The Ukrainian Orthodox Church–Moscow Patriarchate (Russia acting upon Ukraine): President Vladimir Putin has invoked the Orthodox Church to assert the unity of Russia and Ukraine. This Kremlin-allied branch of the church has started promoting “the idea that Russia should be viewed as a guardian of Christian civilization and traditional family values in opposition to the relatively secular orientation of many European Union nations;”

- Russian media channels abroad (Russia versus various democracies): Channels such as the Russia Times and Sputnik, funded by the Russian government, broadcast to large audiences in several languages worldwide. They are thought to inject misinformation into societies through divisive narratives, which portray right-wing grievances and nationalism.

APPLICATION TO SPACE DETERRENCE TODAY

Transatlantic Capability Gap

The Gulf War case has direct applications to allied space deterrence today as it is often considered both the first space and information war. For the first time, satellites played a
critical role in US operations:

Space-based assets carried over 80 [percent] of all messages to and from the US Central Command’s (USCENTCOM’s) area of responsibility (AOR). Satellite intelligence data was essential for planning the air campaign, critical for early warning of SCUD ballistic missile attacks, and aided in determining enemy positions and activities... Global Positioning System (GPS) satellites provided precise position information essential for navigation over an almost featureless desert terrain.23

With minimal doctrine in space operations at the time, US operations in the Gulf War were challenged by integrating these technologies into relatively “uninformed and unprepared” forces.24 Such planning, integration, and capacity-building challenges are now exacerbated as more countries have access to these technologies, which were once advantages primarily held by the United States. While other NATO members have begun developing these capacities to various extents, this capability gap persists in allied space deterrence.

It is clear that the transatlantic capability gap applies to NATO members with regards to space deterrence. Other than the US, the remaining 29 NATO members each have varying degrees of space policy, institutions, and multilateral involvement. Figure 1 below categorizes NATO members into four tiers based on space policy engagement: Tier 4 (No official space policy, strategy, or security forum), Tier 3 (Has a space policy forum but no independent space capabilities), Tier 2 (Part of a national or international space agency), and Tier 1 (Has a national space agency and militarized space component). Tier 1 is subdivided based on space strategy: Tier 1a (Engagement in international or multilateral space programs) and Tier 1b (Isolationist space strategy).

Additionally, Appathurais’ structural cause of the transatlantic capability gap also exists in NATO’s collective space defense. Regarding structures of allied space deterrence, there appears to be redundancy among NATO allies in establishing norms. While the existence of the NATO Space Policy and similar doctrine unites the nations’ efforts for the sake of interoperability, the fact remains that space defense efforts are duplicated throughout Europe. This concept is exemplified by the existence of the European Space Agency (ESA), of which 17 of its 22 members are also NATO members.

Like NATO, the ESA has published a vision and strategic goals for norms and behavior in space. Furthermore, it has issued a joint statement alongside the European Union, reaffirming the value of freedom in space, pledging to cooperate to integrate space technology into European society, protect space assets, and foster competitive innovation in the space industries.26 It could be argued that redundancy in messaging might prove to be valuable for NATO space deterrence; more interconnectedness indicates a greater commitment to the goals that NATO, the ESA, and the European Union share in space.
Nevertheless, the fact stands that the United States is the leader among NATO members when crafting NATO space policy and narratives. The plurality of narratives, though they share a vision, is decentralizing and distracting other members from contributing strategic input to NATO and, more importantly, suggests any training exercises or ‘wargaming’ capabilities they have are spread thin across several coalitions. As such, the United States faces more pressure to lead in NATO space deterrence, its primary transatlantic defense forum and lifeline to the European powers.

Simply put, the threats that NATO and the US face in space today are far greater and more complex than they faced in the Gulf War. Knowing, then, that China and Russia pose asymmetric threats, NATO members will not be able to rely on the United States to be the greatest contributor to a space coalition response as it has been because of such a wide capability margin.

**Hypothetical: Authoritarian Capability Gap**

The authoritarian capability gap could seriously reduce interoperability between NATO members. The revisionary, divisive, and distracting nature of sharp power may already be employed to erode information and cohesion of space strategies. The proposed examples of the authoritarian capability gap above are thought to reduce trust among democratic societies, particularly the trust in their institutions and government. Therefore, these authoritarian regimes may be attempting to degrade trust between state actors, including states that seek to cooperate in space, by injecting false narratives and disinformation.

As a result of the authoritarian capability gap, countries like the US, which respect international norms, sovereignty, and freedom, could be at a severe disadvantage in the prevention and response to sharp power attacks on space defense. Compounded with the transatlantic capability gap, which forces the US to assume greater responsibility in space operations planning and execution among NATO allies, the authoritarian capabilities gap may reflect the challenges in NATO’s ability to achieve space security. In this case, cohesion among allies, including information exchange and capacity building, is under contest when it is needed more than ever before.

**CONCLUSION**

As a result of the transatlantic and hypothetical authoritarian capability gaps, the US is less equipped to assure security in space, while NATO allies continue to depend on the US for leadership in space security. Therefore, NATO must no longer expect the US alone to uphold security against threats to space operations. To address these gaps, more NATO members must develop their national space capabilities and policy involvements, as the tier ranking in Figure 1 indicates. This begins with a widespread acknowledgment of the US and NATO’s blind spots: technology, kinetic size, and finances will not determine the winner of
a space conflict; NATO has and cannot continue to rely on the US for leadership and material prowess; and interoperability and information exchange are the strongest methods, known thus far, to deter sharp power actions towards democratic actors. Going forward, the most efficient way to deter threats to NATO space infrastructure is to demonstrate interoperability at the strategic and tactical levels, starting with eliminating institutional redundancy.

*2Lt Mary Black (USAFA ’23) is currently assigned to postgraduate school, earning her Master’s in International Affairs at Georgetown University, Washington, D.C.
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<th>Tier</th>
<th>Countries</th>
<th>Vulnerabilities in the Event of Conflict</th>
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| 1 a  | Canada, France, Germany, the United Kingdom, the United States            | - Heavy reliance on space-critical infrastructure  
                               - Vulnerable to rapid space conflict escalation                                                   |
| b    | China, Russia, Iran                                                      | - Lack of communication in the space domain; risk of miscommunication resulting in violence  
                               - Non-fluent flow of space situational awareness (SSA) data                                      |
| 2    | Bulgaria, Iceland, Italy, Netherlands, Norway, Poland, Slovenia, Spain,    | - Lack of redundancy across existing and emerging space platforms                                        |
|      | Turkey, Romania, Luxembourg                                              |                                                                                                         |
| 3    | Albania, Belgium, Croatia, Czech Republic, Denmark, Estonia*, Greece,     | - Other industries/domains are vulnerable to attack (e.g. cyber-enabled goods)  
                               Hungary, Latvia*, Lithuania*, Portugal, Slovakia                                                 | Still in a period of transition to modern space infrastructure                                      |
|      | *Former Soviet bloc                                                      |                                                                                                         |
| 4    | Montenegro, North Macedonia                                             | - Same as Tier 3; no independent capabilities; dependent on NATO political networks and technology     |

Figure 1. Tiered Ranking System of NATO Countries Regarding Space Policy Engagement
Figure 2. NATO Members Space Policy Engagement Diagram
Notes:

1. National Aeronautics and Space Administration, “Emirates Mars Mission.”
2. Bhattacharjee, “After the moon.”
3. Appathurai, “Closing the capabilities gap.”
4. Ibid.
12. Ibid, 12.
15. Horan, “How much did the Gulf War cost the US.”
17. Ibid, 67.
18. Bae, “From the First Gulf War to Islamic State: How America Was Seduced by the ‘Easy War.’”
24. Ibid.
25. N.b., chart includes China, Russia, and Iran to contextualize the capabilities of adversary space powers.
26. “Joint statement on shared vision and goals for the future of Europe in space by the EU and ESA,” European Space Agency.
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