NATO AND ITS CHANGING APPROACH TO SPACE

While space has been a part of NATO's interests since the beginning of the Space Age, it is just within the past three years that we have seen an increase in NATO's efforts to use space to meet its mission needs as an organization. This is due to an increased importance of space for national security globally and concurrent proliferation of counterspace capabilities. While NATO has started evolving its policy framework to meet these new needs, much work needs to be done to ensure that the Alliance has access to space capabilities when it needs them.

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As space becomes increasingly important to national security priorities, geopolitical stability, and the smooth functioning of the global economy, how major actors approach space is changing as well. NATO's recognition of the importance of space to its mission, along with concerns about potential adversaries' intent and capabilities for space, echoes how and why several of its members have adapted their approach to space too. Over the past three years, NATO has been building up its policy framework to reflect this changed approach to space and while it has accomplished a lot in this area, still has some major gaps in how it views space. These lacunae should be filled while NATO has the luxury of thinking about these issues outside of a time of active conflict.

NATO's Interest in Space

Like for many national security infrastructures, space is critical for NATO in many areas, including position, navigation, and timing (PNT); early warning; intelligence, surveillance, and reconnaissance; environmental monitoring; and secure satellite communications.[1] A complicating factor for NATO is its own space needs versus those of its member states, many of which have their own military space infrastructures and priorities.

NATO currently does not operate any of its own satellites, but rather is dependent on the capabilities of its member states. It did operate some satellites during the early part of the Space Age in order to have its own secure and quick strategic communication network. The first NATO satellite was launched in March 1970 from Cape Kennedy; it was followed by 7 more satellites, all with the codename "NATO."[2] But by the early 2000s, NATO decided it would be better to just have direct access to communication satellites from the UK, France, and Italy via a program called SATCOM 2000, and stopped operating its own satellites.[3] It made up the gap in satellite communication (SATCOM) capabilities by using information provided by a British-French-Italian consortium from 2005-2019.[4] An agreement was signed in 2019 with France, Italy, the United Kingdom, and the United States that would guarantee NATO access to military communication satellites (at a cost of 1 billion dollars for the access to those services through 2034).[5]

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[1] NATO,"NATO's Approach to Space," last updated June 17, 2021, https://www.nato.int/cps/en/natohq/topics_175419.htm

[2] Kestutis Paulauskas, "Space: NATO's latest frontier," *NATO Review*, 13 March 2020, https://www.nato.int/docu/review/articles/2020/03/13/space-natos-latest-frontier/index.html

[3] "*The Cold War: Defence and Deterrence,"* NATO, accessed 1 July 2021, https://www.nato.int/cps/us/natohq/declassified_138278.htm

[4] Wojciech Lorenz, "NATO Augments Its Space Policy," Bulletin of The Polish Institute of International Affairs (PISM), 20 December 2020, https://pism.pl/publications/NATO_Augments_Its_Space_Policy

[5] Lorenz, (NATO Augments Its Space Policy).

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An increasing number of countries are looking to use space to enhance their military capabilities and national security. The growing use of, and reliance on, space for national security has led more countries to look at developing their own counterspace capabilities that can be used to deceive, disrupt, deny, degrade, or destroy space systems. NATO, like many of its member states, is concerned about counterspace capabilities, especially those of alliance competitors Russia and increasingly China. There is strong evidence that Russia has embarked on a set of programs since 2010 to regain many of its Cold War-era counterspace capabilities.[6] Since 2010, Russia has been testing technologies for RPO in both LEO and GEO that could lead to or support a co-orbital ASAT capability, and some of those efforts have links to a Cold War-era LEO co-orbital ASAT program. Additional evidence suggests Russia may have started a new co-orbital ASAT program called Burevestnik, potentially supported by a surveillance and tracking program called Nivelir. The technologies developed by these programs could also be used for non-aggressive applications, including surveilling and inspecting foreign satellites, and most of the on-orbit RPO activities done to date match these missions. However, Russia has deployed two "sub-satellites" at high-velocity, which suggests at least some of their LEO RPO activities are of a weapons nature. Russia is almost certainly capable of some limited DA-ASAT operations, but likely not yet on a sufficient scale or at sufficient altitude to pose a critical threat to space assets. While Russia is actively testing what appears to be a new DA-ASAT capability in their Nudol system, it is not yet operational and does not appear to have the capability to threaten targets beyond LEO. Russia appears highly motivated to continue development efforts even where military utility is questionable, due at least in part to bureaucratic pressures.

There is strong evidence indicating that China has a sustained effort to develop a broad range of counterspace capabilities. China has conducted multiple tests of technologies for rendezvous and proximity operations (RPO) in both low earth orbit (LEO) and geosynchronous orbit (GEO) that could lead to a co-orbital ASAT capability. However, as of yet, the public evidence indicates they have not conducted

[6] For a more in-depth analysis of Russia, China, the United States, and France's counterspace research and development, please see *Global Counterspace Capabilities: An Open Source Assessment*, ed. by Brian Weeden and Victoria Samson, Secure World Foundation, April 2021, https://swfound.org/counterspace

an actual destructive coorbital intercept of a target, and there is no public proof that these RPO technologies are definitively being developed for counterspace use as opposed to intelligence gathering or other purposes. China has at least one, and possibly as many as three, programs underway to develop direct ascent anti-satellite (DA-ASAT) capabilities, either as dedicated counterspace systems or as midcourse missile defense systems that could provide counterspace capabilities.

Much of the conversation on what NATO should be able to do as an alliance has been driven by concerns about an aggressive Russia and an increasingly powerful China limiting NATO members' access to or use of space capabilities. This counterspace proliferation is occurring at a time where many countries are developing various kinetic and non-kinetic counterspace capabilities, not just NATO states of concern, and in fact, three NATO members have stood up military space organizations since 2019 (the United States, France, and the United Kingdom) as part of their national responses to counterspace proliferation.

In November 2019, NATO Secretary General Jens Stoltenberg gave some insight to the Alliance's thinking regarding China. He noted that while there is "no intention to move NATO into, for instance, the South China Sea," they do worry about China's "significant military capabilities which affect our security," and that furthermore, China's investments in other parts of the world (the Arctic, Africa, cyberspace) is bringing China closer to the Alliance and thus "we need to assess the consequences for our security of the rise of China. There are opportunities, but there are also some challenges. And I welcome the fact that NATO Allies have agreed that we have to address this together."[7]

NATO Policies Related to Space

Because of this increasing interest in and understanding of the importance of space to NATO's mission of collective deterrence and worries about intentions and capabilities of peer competitors, the Alliance has spent the past few years putting in place policies that acknowledge the importance of space to the organization. NATO needs to have resiliency and continuation of capabilities even in times of conflict or rising tensions.

The North Atlantic Council approved a policy on space support in NATO operations in May 2018, which gave it guidance on how the NATO command structure can integrate space support into its operations.[8] Two months later, at the Brussels Summit

[7] NATO, "Press conference by NATO Secretary General Jens Stoltenberg ahead of the meetings of NATO Ministers of Foreign Affairs," 19 November 2019, https://www.nato.int/cps/en/natohq/opinions_170972.htm

[8] Flavio Giudice, John Patrick, Robert Kroeger, Stephanie Vrac; "The Continued Evolution Of Space Effects And Capabilities Within Nato Trident Exercises," *The Three Swords Magazine*, Issue No. 32, 2019, https://www.jwc.nato.int/images/stories/_news_items_/2019/three-swords/NATOSpaceSupport2019.pdf

in July 2018, NATO leaders agreed to develop a NATO space policy in recognition of the changing role that space plays in the organization's defense and deterrence.[9]

A year later, at the Defense Ministers' meeting in June 2019, the NATO members adopted NATO's space policy, a document which as of writing (July 2021) has not been released to the public, so it is difficult to say exactly how it shapes the Alliance's space efforts.[10] At the time of the policy announcement, Stoltenberg said, "We can play an important role as a forum to share information, increase interoperability, and ensure that our missions and operations can call on the support they need."[11] The NATO space policy in theory also allows NATO to serve as a forum for allies to consult on space issues, although it is not clear exactly how these consultations would be undertaken.

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At the NATO leaders' meeting in London in December 2019, NATO members declared space a fifth operational domain after air, land, sea, and cyberspace. The leaders announced, "We have declared space an operational domain for NATO, recognizing its importance in keeping us safe and tackling security challenges, while upholding international law."[12] By declaring space an operational domain within NATO's collective defense mission, NATO planners will gain the ability to ask for the services and capabilities they need, thus requiring members to provide the necessary space capabilities while ensuring fair burden sharing. It is important to note that this is very different from declaring space a warfighting domain, like the way the United States has done. Alexandra Stickings explains, "By declaring space to be an operational domain, it appears that NATO is focusing on the integration and interoperability of assets belonging to different member states, and with a focus more on these assets as enablers of military operations (such as for communications and ISR) rather than those with the capability of denying space to adversaries."[13] Furthermore, NATO has stated repeatedly that it does not intend

[9] Paulauskas, (Space: NATO's latest frontier).

[10] NATO, (NATO's Approach to Space).

[11] NATO, "NATO Defence Ministers approve new space policy, discuss readiness and mission in Afghanistan," 27 June 2019, https://www.nato.int/cps/en/natohq/news_167181.htm

[12] NATO, (NATO's Approach to Space).

[13] Alexandra Stickings, "Space as an Operational Domain: What Next for NATO?" *RUSI,* 15 October 2020, https://rusi.org/explore-our-research/publications/rusi-newsbrief/space-operational-domain-what-next-nato

to weaponize space; as Stoltenberg said, "Our approach will remain defensive and fully in line with international law. NATO has no intention to put weapons in space."[14]

Building upon this further, in October 2020, NATO defense ministers established a NATO Space Centre at the Allied Air Command already existing in Ramstein, Germany, with the goal of it coordinating Allies' efforts, supporting NATO missions and operations, and sharing information.[15] It is intended to allow NATO to streamline requests to national space entities so that NATO commanders have ready access to space services and data when needed.

Most recently, in June 2021 at the Brussels Summit, NATO leaders announced, "We consider that attacks to, from, or within space present a clear challenge to the security of the Alliance, the impact of which could threaten national and Euro-Atlantic prosperity, security, and stability, and could be as harmful to modern societies as a conventional attack. Such attacks could lead to the invocation of Article 5."[16]

Recognizing the need to be able to determine activities on orbit, NATO also announced at the 2021 Brussels Summit that it would be developing a Strategic Space Situational Awareness System (3SAS) at NATO headquarters.[17] Prior to that, it had been dependent on SSA capabilities of individual member states, as there was no NATO-wide SSA program.

Future for NATO in Space

As part of NATO's mission success strategy, NATO leaders acknowledge the importance of space, and are developing policies to strengthen the Alliance's space capabilities. However, there are still issues that must be worked out in order to fill gaps in governance.

To begin with, there is no collective threat-assessment process, which may hinder the Alliance's ability to reach consensus on the nature of a threat and consequently how to deal with it. It is further complicated by the fact that the international community has not yet figured out how it should respond proportionally to threats to space capabilities. The laws of armed conflict for space have not yet been worked

[14]NATO, " Press conference by NATO Secretary General Jens Stoltenberg ahead of the meetings of NATO Ministers of Foreign Affairs," 19 November 2019, https://www.nato.int/cps/en/natohq/opinions_170972.htm

[15] NATO, (NATO's Approach to Space).

[16] NATO, "Brussels Summit Communiqué, "Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Brussels," 14 June 2021, https://www.nato.int/cps/en/natohq/news_185000.htm

[17] NATO, "NATO and Luxembourg boost Alliance Space Situational Awareness," 15 June 2021, https://www.nato.int/cps/en/natohq/news_185365.htm

out to the point where it can be said that there is a general consensus on how to approach this. There are two efforts right now that are hopefully complementary: the MILAMOS (Manual on International Law Applicable to Military Uses of Outer Space) manual and the Woomera manual. These international efforts are trying to clarify how existing international law applies to outer space, with a focus on how to apply law on the resort to the use of force by and against States (*jus ad bellum*) and the law of armed conflict (*jus in bello*) in outer space. While they are not creating the norms themselves, they are identifying existing state practices and how they apply to military space activities. They are still attempting to finish their documents, which, once completed, could aid in the Alliance's thinking on this matter. NATO must, however, determine in the meantime how it should respond as an alliance and should have been discussing it beforehand, so it is not only making its decision as part of an emergency response.

Additionally, so much of how actions in space are viewed are shaped by what one thinks about the actor's intent that it is very possible that consensus may not be easily reached about the nature of an action. This is where multiple sources of SSA, both at the national and intergovernmental level and by commercial providers, can be helpful: generate enough sources of data and eventually a narrative emerges that most can agree with. It is hoped that NATO's new SSA effort can expedite these conversations once it is operational.

At the most recent Brussels Summit, the leaders did announce that actions in space against NATO member states could trigger an Article 5 response. This is an important first step to having a deterrent policy but is not enough. In order to make sure that there is not any inadvertent escalation, NATO member states need to determine what those actions might be; broad categories are fine, but there needs to be some foresight and analysis about this. For example, we have already seen non-destructive counterspace being used in active conflicts (like jamming and cyber-attacks) and not triggering an Article 5 response, so it is fairly clear that there is some level of interference that NATO members are perhaps not happy with but can accept. Along those lines, the Alliance must think about what its priorities are for protecting its space capabilities in order to determine which ones might be tied to an Article 5 response. It is not helpful to say that 'any' interference with 'any' space asset could lead to it – that is far too broad a description and does nothing to deter interference that could be escalatory.

Stoltenberg said in November 2019 that "We will always consider, on a case-by-case basis, whether to trigger Article 5, and we will not give the advantage to any potential adversary that will specify exactly what is the threshold for triggering

Article 5."[18] But surely there is an interim ground between spelling out exactly what the Alliance members do not want to see happening and having overly vague warnings about interference with space capabilities.

Then there is the question about where to respond. The United States has opted to respond to attacks in the time and place of its choosing, but not necessarily in space. Its 2017 National Security Strategy warns, "[A]ny harmful interference with or an attack on critical components of our space architecture that directly affects this vital U.S. interest will be met with a deliberate response at a time, place, manner, and domain of our choosing."[19] Is this a model for how NATO will respond to interference with its space capabilities?

Benjamin Silverstein has also pointed out what is perhaps a bureaucratic issue but still one that needs to be sorted as NATO evolves its use of space as an organization. He notes, "Article 6 of the Alliance's foundational text affirms that allies may only invoke collective defense in response to armed attacks against territory, vessels, forces, or aircraft stationed on allied territory, in the Mediterranean Sea, or in the Atlantic north of the Tropic of Cancer. Even the most creative interpretations fail to include satellites within this demarcation."[20]

A clear-cut agreement between the international community as to what is considered responsible/irresponsible behavior would be helpful in this case. Instead of having to create a response from scratch every time a new type of activity takes place in orbit, NATO members could have guidelines to compare their actions against. At present, there is no firm agreement on what is irresponsible behavior on orbit. The 1967 Outer Space Treaty (OST)[21] prevents the placement of weapons of mass destruction in orbit or on the Moon and bans military installations on the Moon and other celestial bodies, but is silent about weapons in or targeting space. The United Nations has discussed space security for decades now but has been stuck on whether a treaty banning weapons (as Russia and China have proposed) would be helpful or if the focus should be on responsible actions, not technologies (as the United States and its allies have argued for). In December 2020, the UN General Assembly passed UNGA Resolution 75/36, which called for countries to submit to the UN Secretary-General what they deem to be the threat to space, what they see

[18]NATO, "Press conference by NATO Secretary General Jens Stoltenberg ahead of the meetings of NATO Ministers of Foreign Affairs," 19 November 2019, https://www.nato.int/cps/en/natohq/opinions_170972.htm

[19] National Security Strategy of the United States of America, December 2017, p. 31, https://trumpwhitehouse.archives.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf

[20] Benjamin Silverstein, "NATO's Return To Space," *WAR ON THE ROCKS*, 3 AUGUST 2020, HTTPS://WARONTHEROCKS.COM/2020/08/NATOS-RETURN-TO-SPACE/

[21] UN, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," 1967, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html

as responsible/irresponsible behavior in orbit, and what they think should be the next steps forward.[22] Reading through the national submissions, a few points of agreement crop up about not deliberately creating debris on orbit and no non-consensual close approaches, so it could be said that there is potential for international consensus on this issue.[23] Much work still remains to be done, and NATO could contribute to this discussion. Frank Rose has suggested, "NATO should task the Arms Control and Disarmament Committee to examine what role the Alliance could play in developing norms of behavior to encourage responsible use of outer space."[24]

NATO is at the edge of a new space governance, both in how it approaches space and how it coordinates its space efforts with those of its members. While it still has to develop exactly how space fits into its deterrent strategy, it has taken important steps recently to allow its connection to space to evolve. If the Alliance can continue to prioritize sharing information and capabilities as they are appearing to do so right now, space can become a solid part of NATO's efforts to ensure geopolitical stability and international security.

[22] UN, "UNGA Res. 75/36, Reducing Space Threats Through Norms, Rules And Principles Of Responsible Behaviours," 7 December 2020, https://undocs.org/en/A/RES/75/36

[23] UN "Report of the Secretary-General On Reducing Space Threats Through Norms, Rules And Principles Of Responsible Behaviors (2021), United Nations Office for Disarmament Affairs" accessed July 4, 2021, https://www.un.org/disarmament/topics/outerspace-sg-report-outer-space-2021/

[24] Frank Rose, "NATO and Outer Space: Now What?" *Brookings Institute*, April 22, 2020, https://www.brookings.edu/blog/order-from-chaos/2020/04/22/nato-and-outer-space-now-what/