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SYMPOSIUM ON THE NEW SPACE RACE

INTERNATIONAL LAW AND SECURITY IN OUTER SPACE: NOW AND TOMORROW

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Once the domain of a few spacefaring nations, outer space has exploded with new actors, state and private, in recent years. New actors and activities bring new potential threats and concerns for new and existing actors alike. In this complex environment, where mistrust and misunderstanding often prevail, international law can play an important role in bridging gaps and creating predictability, clarity, and consistency. Although new treaty law is unlikely, the ordinary incremental international law processes of state practice, *opinio juris*, and international jurisprudence will help to resolve critical questions about the content and application of international law in outer space over time.

The Military Space Environment: Main Players

Space has become bustling, with over seventy states, commercial entities, and international organizations operating in some fashion.[1] The U.S. Department of Defense (DoD) previously described the space environment as "congested, contested, and competitive," highlighting the challenges of expanding players and increasing numbers of objects vying for finite locations and operationally advantageous orbits and capabilities in outer space.[2] Although DoD excised this articulation from its 2016 *Space Policy*,[3] the actors continue to grow and a recent assessment continued the "Competing in Space" theme.[4] This congestion and competition is especially heightened in national security space operations, which include military, intelligence, national technical means, and command and control assets.

Although the overall number of military space players remains small, both the number and capabilities (particularly in command and control, computers, communications, intelligence, surveillance, and reconnaissance (C4ISR) platforms) have expanded in the new space race. The United States, Russia, and China—two Cold

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[1] Secure World Foundation, Handbook for New Actors in Space (Sept. 25, 2017); Saadia M. Pekkanen, *Introduction to the Symposium on the New Space Race*, 113 AJIL Unbound 92 (2019).

[2] Robert Gates & James Clapper, National Security Space Strategy (Unclassified Summary) 1 (Jan. 2011); U.S. Dep't of Defense, Dir. 3100.10, Space Policy para. 1 (Oct. 18, 2012 incorporating Change 1, effective Nov. 4, 2016) [hereinafter DoD Dir. 3100.10].

[3] DoD Dir. 3100.10, *supra* note 2.

[4] U.S. Dept. of Defense, Providing for the Common Defense 13 (Sept. 2018).

War powers from the dawn of the space age and a recently recognized peer player—remain the primary actors. Emerging participants include NATO members, Japan, New Zealand, and Australia working independently and with the United States,[5] and others less openly aligned with major space players, such as India, Iran, and Israel. At present, counterspace capabilities—such as antisatellite missiles (ASATs), rendezvous and proximity operation platforms (RPOs), space or terrestrially-based lasers, and other technology[6]—offer a key distinction between the primary actors and these emerging military space powers, which have only limited capability.

U.S. space doctrine calls for both offensive and defensive, kinetic and nonkinetic[7] space capabilities with the understanding that "peaceful purposes" in the Outer Space Treaty (OST) means nonaggressive uses of space—not nonmilitary uses.[8] This long-held position allows for intelligence, communications, and all other activities that do not breach Article 2(4) of the United Nations Charter prohibiting "the threat or use of force" in international affairs.[9] Although U.S. doctrine ensures maintenance of viable self-defense options in space[10] and the U.S. considers space a military domain,[11] DoD guidance emphasizes protection, deterrence, resiliency, redundancy, and international partnership as avenues for continued freedom of operations in space.[12]

Detailed Chinese and Russian doctrine, policy, and regulation are less accessible. However, both recognize space as a domain of potential conflict and an environment for the assertion of self-defense. China's space policy omits discussion of military uses, highlighting "peaceful purposes," noting its opposition to weaponization of space, and endorsing international cooperation and engagement.[13] However, Chinese military doctrine[14] and external assessments thereof recognize preparations for military competition in space, namely the 2015 reorganization of the People's Liberation Army to enhance space-based C4ISR, without limiting any counterspace options[15]—a capacity China maintains and has already displayed.[16] Russia's doctrine similarly notes space militarization as an "external hazard" and recognizes potential conflict in space, while stressing the importance and legitimacy

[5] Clayton Wear, *Liaison Officers at Vandenberg*, Vandenberg air force base (Nov. 8, 2018) (explaining that the Combined Space Operations Center (CSpOC) hosts officers from Australia, Canada, France, Germany, and the United Kingdom); Steven Hirsch, *Making the Most of Military Space*, Air Force Mag. (Aug. 2018) (reporting that the United States added Japan and New Zealand to the Schriever Wargames).

[6] *See* Secure World Foundation, Global Counterspace Capabilities: An Open Source Assessment (Brian Weeden & Victoria Sampson eds., 2018); Center for Strategic & International Studies, Space Threat Assessment 2018 (Todd Harrison et al. eds., 2018) [hereinafter Space Threat Assessment 2018].

[7] Space Threat Assessment 2018, *supra note* 6, at 3.

[8] *See* U.S. Dep't. of Defense, Law of War Manual para. 14.10.4 (updated Dec. 2016) [hereinafter DoD LoW Manual]; s*ee also* Central Intelligence Agency, Position Paper: Definition of Peaceful Uses of Outer Space (Contingency) [declassified] (Nov. 7, 2000); Central Intelligence Agency, Attachment 2: Definition of Peaceful Uses of Outer Space [declassified] (Mar. 13, 1962).

[9] UN Charter art. 2(4).

[10] DoD Dir. 3100.10, *supra* note 2, at para. 4.b; Pres. Donald Trump, National Security Strategy of the United States of America 31 (Dec. 2017) [hereinafter NSS].

[11] Joint Chiefs of Staff, Joint Publication 3–14, Space Operations para. I.2.a (vice II.16.d) (Apr. 10, 2018) [hereinafter JP 3–14].

[12] *See, e.g.*, *id.* at para II.16.d (vice 2.a); DoD Dir. 3100.10, *supra* note 2, at para. 4.c.

[13] Information Office of the State Council, Full Text of White Paper on China's Space Activities in 2016, at I.3, IV.5, V.1 (Dec. 28, 2016).

[14] Information Office of the State Council, China's Military Strategy (May 27, 2015).

[15] Kevin Pollpeter et al., The Creation of the PLA Strategic Support Force and Its Implications for Chinese Military Space Operations (RAND, 2017).

[16] *See, e.g.*, Brian Weeden, *Through a Glass, Darkly: Chinese, American, and Russian Anti-Satellite Testing in Space*, Space Rev. (Mar. 17, 2014); Steven Lee Myers & Zoe Mou, *'New Chapter' in Space Exploration as China Reaches Far Side of the Moon*, N.Y. Times (Jan. 2, 2019).

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of self-defense assertions.[17] Russia has an active Space Force[18] and is developing counterspace capabilities, including RPOs and antisatellite lasers.[19]

All three major players thus recognize space as a military domain of operations, and appear to act accordingly. They generally focus on developing new terrestrially-focused space applications and security of extant space assets (through deterrence or active defense) rather than offensive space operations. This focus is reasonable given the likelihood of kinetic activities only serving to diminish each state's own use of space for terrestrially useful applications through the creation of orbital debris or adverse political or military reactions.

Space may be an infinite expanse, but its useful zones or orbits for space and terrestrial applications are limited. As the number of sovereign and "newspace" actors seeking finite advantageous orbital locations, the range of military capabilities, and the number of states developing counterspace capacities all grow, so will tensions related to space activities. With new technologies now bringing old security concerns to the fore, the space race is at a new inflection point: geostationary orbit-reaching ASATs, RPOs, lasers, and hypersonic weapons may now be an imminent and distributed reality. Although kinetic-only options have an implicit practical limitation if the launching state also intends to use space (due to debris), emerging nonkinetic and nonattributable technology may allow for hostile activities without collateral harm to one's own assets, and without a guarantee of any response or reprisal. As the military space environment leans towards one of realistic threat of action—not just major-state planning for a distant, potential technological future—the national security space community is coming to a crossroads. One way to address competition in this congested, contested environment may be through shared understandings of the law governing state behavior in space.

Room for International Law in Military Space Operations?

Any discussion of international law and military space operations starts with two fundamental questions: does international law apply and, if so, how? It is well settled that international law applies in outer space, both as the law governing the interaction of states, and under the specialized regime of outer space law set forth in Article III of the OST. Whether and how the law of armed conflict (LOAC) applies to military space activities appears less established, however. U.S. views appear clear, but the views of other military space actors are less so given the paucity of open source materials or statements on topic.

The U.S. applies LOAC to all military operations in outer space—space is a warfighting domain, where military members conduct military operations. In accordance with DoD Directive 2311.01E, "[m]embers of the DoD Components comply with the law of war during all armed conflicts, however such conflicts are characterized, and in all other military operations."[20] The DoD Law of War Manual explains:

> [LOAC] regulate[s] the conduct of hostilities, regardless of where they are conducted, … includ[ing] the conduct of hostilities in outer space. In this way, the application of [LOAC] to activities in outer space is the same as its application to activities in other environments, such as the land, sea, air, or cyber domains.[21]

[17] Military Doctrine of the Russian Federation I.8.d & I.6.g (Feb. 5, 2010).

[18] Russian Ministry of Defence, Aerospace Defence Forces.

[19] Maddy Longwell, *State Department Concerned over Russian Satellite's Behavior*, C4ISRNET (Aug. 14, 2018); Patrick Tucker, *Russia Claims It Now Has Lasers To Shoot Satellites*, DEFENSEONE (Feb. 26, 2018).

[20] U.S. Dep't of Defense, Dir. 2311.01E, DoD Law of War Program para. 4.1 (Feb. 22, 2011).

[21] DoD LoW Manual, *supra* note 8, at para. 14.10.2.2.

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U.S. partners—NATO states, Australia, and Japan—do not necessarily have similarly clear articulations, but share this general disposition towards the application of international law (and particularly LOAC) and can be expected to extend it to military activities in outer space.[22]

For the United States, adherence to the law is strategically advantageous and contributes positively to legitimacy and operational success.[23] DoD's National Defense Strategy focuses on near-peer competition, enhancing lethality for credible deterrence of (or reactions to) threats, and competition along the full spectrum of military operations (above and below the threshold of armed attack).[24] One of three pillars is to strengthen alliances and international cooperation, including by "maintaining the rules which underwrite a free and open international order" and deepening interoperability with allies.[25]

Less information regarding China and Russia's views on international law and military space operations is openly available. Their doctrine documents and seeks efforts to advance the draft Treaty on the Prevention of Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (PPWT); a No First Placement of Weapons resolution; and a Code of Conduct in Space suggest at least some reliance on international law. Questions remain, however, concerning whether these states will actually adhere to the law even if a treaty comes into force, a concern animating U.S. views on space cooperation.[26] Thus, U.S. diplomats openly lament the lack of verification and trust and confidence building measures in the PPWT draft and other arms and Code discussions.[27]

The next question is *how* international law applies. U.S. policy is to compete in the full spectrum of military operations, including when adversaries use "areas of competition short of open warfare to achieve their ends."[28] The *jus ad bellum*, LOAC, law of state responsibility, and law of friendly relations are therefore all implicated. However, the technology, geophysics, and geopolitics of outer space make tackling the contours and the sometimes domain-specific intricacies of general principles and customary international law a challenge. State practice will therefore be a, if not the, significant determining factor.

Applying International Law in Space: Key Issues and Challenges

As in other arenas of international engagement, international law is the primary mechanism for creating, implementing, and enforcing shared understandings of the rights, privileges, and duties of states, nonstate entities, and individuals in space. State actors seek to maintain freedom of action and protect their sovereign national interests.

[22] *See* German Ministry of Defence, Law of Armed Conflict Manual (Joint Service Regulation (ZDv)) 15/2 paras. 201 & 212 (May 2013); United Kingdom Ministry of Defence, The UK Military Space Primer ch. 2 (2010).

[23] NSS, *supra* note 10, at 4, 41.

[24] U.S. Dep't of Defense, National Defense Strategy (Unclassified Summary) (Jan. 2018) [hereinafter NDS].

[25] *Id.* at 8–9; *see also* JP 3–14, *supra* note 11, at para. IV.3.d; DoD Dir. 3100.10, *supra* note 2, at para. 4.f.

[26] U.S.-China Econ. & Sec. Rev. Comm'n, China's Position on a Code of Conduct in Space 5 (Sept. 8, 2017) ("China has frequently broken its agreements, [including its] … promise not to further militarize land features in the … South China Sea, … agreements with India, and its bilateral cyber security agreement with the United States."); Yleem Poblete, Assistant Secretary, Bureau of Arms Control, Verification and Compliance, United Nations, Remarks at the 73rd UNGA First Committee Thematic Discussion on Outer Space (Oct. 23, 2018) ("They are fundamentally flawed proposals advanced by a country [Russia] that has routinely violated its international obligations.").

[27] *See* Poblete, *supra note* 26 (calling NFP a "Potemkin resolution"); Ambassador Robert Wood, U.S. Permanent Representative to the Conference on Disarmament, Explanation of Vote in the First Committee on Resolution L.54: Further Practical Measures for the Prevention of an Arms Race in Outer Space (Oct. 20, 2017).

[28] NDS, *supra* note 24, at 3, 5 (adversaries use "corruption, predatory economic practices, propaganda, political subversion, proxies, and the threat or use of military force to change the facts on the ground").

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Doing so often requires cooperative efforts and states are therefore willing to create mechanisms for greater understanding and foreseeable and predictable responses to challenges. The existing foundations of outer space law—the five primary international law treaties on outer space—are the fruits of earlier efforts to provide a critical foundation for this complex environment. Treaty law is the strongest, most enforceable, and most likely to define and regulate state behavior, and therefore to provide concrete guidance and parameters for states to assess threats, including the use of force in, through, or from outer space, and appropriate forcible and nonforcible responses. The likelihood of new treaties being developed and coming into force is slim, however, given the steadily growing cast of characters with an equally expansive set of competing interests in outer space. As a result, customary international law is the most likely tool for development of rules, as states develop patterns of practice and a willingness to accept such practice as binding legal obligation.

Among the most likely legal issues to arise and engender dispute in military space operations are the principle of nonintervention, the threshold for use of force and armed attack, the meaning and application of proportionality, and the status of military-oriented "newspace" objects. Although each has been examined, applied, and interpreted extensively in terrestrial domains, their application in outer space adds an additional layer of complexity.

With respect to the threshold for the use of force, interesting questions arise as to whether nonkinetic acts can meet the threshold for the use of force and whether the temporary or permanent loss of functionality of a space object can suffice to meet that threshold. In the context of armed attack, additional questions include whether, and which, space objects and activities constitute critical national infrastructure such that any attack on such objects or activities will be an armed attack. State practice, and the response of states to hostile or potentially hostile acts in, through, or from outer space, will begin to highlight the contours of these fundamental principles and thresholds, and will be essential in elucidating the content of international law in this domain.

Proportionality introduces further complexities, given the difficulty of understanding and predicting the consequences of attacks on space objects and the potential for objects that are destroyed to contribute to space debris in a consequential manner or to fall to Earth and cause harm on land. The LOAC principle of proportionality prohibits an attack if the expected harm to civilians will be excessive in relation to the anticipated military advantage gained. Although the military advantage of attacks in, through, or from outer space likely rests on the same or analogous information and assessments as in other domains, understanding the nature and foreseeability of civilian harm, including harm to the environment, is extraordinarily difficult.

As military and political practitioners in spacefaring states assess and develop legal positions on these matters, academics and other nongovernmental entities are seeking to help shape the understanding of the legal landscape. In particular, two projects—the Woomera Manual on the International Law of Military Space Operations[29] and the Manual on International Law Applicable to Military Uses of Outer Space[30]—seek to inform the analysis of existing international law related to military operations in outer space. Both projects have a stated goal to objectively articulate the law, including discussion of the contours and application of the relevant treaties and customary international law. Law provides a key framework from which state actors evaluate concerns, threats, or provocations in space operations—military practitioners must know the behavioral baseline, established in law or practice, before they can judge any deviations therefrom. Although the manuals will not be binding law, they can help state practitioners work through new challenges of the extant law, namely LOAC in the space domain. In particular, these manuals evince the recognition that prospective consideration of the law and legal challenges in outer space, as in any domain, is essential for efficient and effective application of the law when incidents arise.

[29] The Woomera Manual (last updated Jan. 11, 2019). Both authors are core experts.

[30] McGill Centre for Research in Air & Space Law, Manual on International Law Applicable to Military Uses of Outer Space.

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