PLAYING BY THE RULES

Norms During Armed Conflict in Space

SOPHIA CHANG

The drastic increase in commercial space activities within the last decade has motivated the emergence of behavioral norms concerning space domain management. Although generally viewed as too restrictive on military activities, establishing and adhering to such norms may actively benefit rather than constrain military freedom of action. Consolidating broad-ranging discussions on space behavior, this article examines the incentives for the US military to abide by norms, the current international frameworks governing armed conflict in space, and the role of commercial integration in shaping space warfighting doctrine. By clearly delineating operational limits concerning debris generation, thresholds and triggers, information-sharing, and the use of antisatellite weapons, norms of behavior improve military freedom of action and support the Space Force's warfighting abilities.

Research regarding US military rules of engagement is extensive, covering the many facets of humanitarian and escalatory concerns about which a well-disciplined, prepared military should be aware. These legal frameworks are built on a number of national and international constraints such as the Law of Armed Conflict (LOAC) and on an understanding of previous conflicts' moral issues, dictating ethical and legal action in combat operations and centering on principles of distinction and proportionality.[1] Yet rules of engagement for the space domain remain in a formative stage for the young US Space Force.

In 2013, the United Nations pointed to the risks of an increasingly "congested, contested, and competitive" space domain; this issue remains largely unaddressed more than a decade later.[2] In a realm often portrayed as the "Wild West" and free from international law, the ways in which the United States responds during armed conflict

Sophia Chang is a second-year master's student in the security studies program at Georgetown University.

1. Adam, "Military Rules of Engagement: A Comprehensive Guide," *Uniform Code of Military Justice* [website], 10 June 2024, https://ucmj.us/.

2. *UN General Assembly, First Committee, Outer Space Increasingly "Congested, Contested and Competitive," First Committee Told as Speakers Urge Legally Binding Document to Prevent Its Militarization*, GA/DIS/3487 (October 25, 2013), (statement of Jeffrey L. Eberhardt), https://press.un.org/.

may heavily shape other actors' behavior. It is thus incumbent upon civilian and military leaders to develop a consensus on rules of engagement and restraint during armed conflict in space.[3]

Space operations, defined by joint doctrine as "those operations impacting or directly utilizing space- and ground-based capabilities to enhance the potential of the United States and multinational partners," may include capabilities not organic to the military and should be considered in the context of all activities and interests—military or otherwise—that originate from or impact the space environment.[4] With the military and civilians dependent on assured access to, from, and through space, US Space Command (USSPACECOM) faces challenges in responding to adversarial actions that threaten commercial and civilian capabilities or in countering adversarial actions without damaging the space environment.

Commercial space companies, scientific space capabilities, and the US space economy are core pillars of America's continued space superiority and space-powered way of life. The tangible benefits of the space economy and scientific research utilizing space systems have incentivized spacefaring nations to establish norms of behavior in space; these range from due regard of a state or nonstate actor's space activities to space sustainability, all designed to help make the domain safe, sustainable, and predictable for commercial and military day-to-day business.

Such norms, however, appear to only constrain military activities in space.[5] Civilian efforts to prevent space warfare might seem to restrict the Department of Defense's freedom of action in space—such as the moratorium on destructive, direct-ascent antisatellite weapons (ASAT).[6] Yet the United States had not officially conducted a kinetic ASAT test for decades before; in fact, the only official American ASAT test took place in 1985, when an ASM-135 missile was used to destroy an orbiting solar observatory in low Earth orbit.[7]

Counterspace threats range from reversible to irreversible, non-kinetic to kinetic; however, in a manner similar to cyberspace attacks, non-kinetic attacks may produce kinetic results.[8] Attacks in space can be complicated when trying to minimize impacts on civilian populations, interference with other space systems, and escalation risk.

---

3. Clayton Swope, "Rethinking Rules of Engagement for Space," Center for Strategic & International Studies (CSIS), 18 June 2025, https://www.csis.org/.

4. Joint Publication (JP) 3-14, *Joint Space Operations* (Chairman of the Joint Chiefs of Staff [CJCS], 26 October 2020), I-2; and John J. Klein, *Space Warfare: Strategy, Principles, and Policy*, Space Power and Politics 1 (Routledge, 2006).

5. See, for example, Michael J. Listner, "Two Years After the ASAT Test Ban: A Realistic Assessment," *Global Security Review*, 9 May 2024, https://globalsecurityreview.com/.

6. "FACT SHEET: Vice President Harris Advances National Security Norms in Space," The White House, 19 April 2022, https://bidenwhitehouse.archives.gov/; and Steve Lambakis, *The U.S. ASAT Test Ban: Implications for Security*, issue no. 529 (National Institute for Public Policy, 18 July 2022), https://nipp.org/.

7. "Vought ASM-135A Anti-Satellite Missile," National Museum of the US Air Force, accessed 28 July 2025, https://www.nationalmuseum.af.mil/.

8. C. Robert Kehler et al., "Rules of Engagement for Cyberspace Operations: A View from the USA," *Journal of Cybersecurity* 3, no. 1 (2017), https://doi.org/.

Establishing rules of engagement and abiding by norms in space is crucial for the US military, which operates in a shared space environment and would prefer to play a team sport in a rule-bound game.[9]

In exploring rules of engagement for future space operations that impact the operational environment and the United States' ability to prevail and generate terrestrial effects in an outer space conflict, this article argues that militaries stand to actively benefit from and not just be constrained by moderation in space activities. International law serves as the framework for identifying legal and illegal capabilities or actions that the military may use to more clearly define the future conduct of space warfare, and norms emerge from the practice of that law. Such norms refer to the "top-down" high-level principles designed for later codification into international law and the "bottom-up" best practices for regular operations.[10] This article will identify incentives for the US military to abide by these norms, including benefits for warfighting; discuss legal considerations for space during armed conflict; and examine approaches and arguments on the integration of commercial assets into military capabilities. By clearly delineating operational limits concerning debris generation, thresholds and triggers, and the use of antisatellite weapons, norms of behavior ultimately improve military freedom of action and support the Space Force's warfighting abilities.

Incentives to Abide by Norms Shaping the Operational Environment

The United States has focused on promoting norms of space sustainability and safety that broadly meet the following goals: not generating long-lived debris, acting with due regard in space activities, communicating with other actors, preventing interference with other space objects, and promoting international cooperation.[11] In 2021, then-Secretary of Defense Lloyd Austin Jr. directed the establishment of Tenets of Responsible Behavior in Space.[12] Although these tenets act as constraints for the conduct of war in space, military commanders and satellite operators will be enabled by these behaviors. Unilateral measures can lead to multilateral agreements, as demonstrated by the United States' ASAT moratorium that led to the signing of the UN resolution banning ASAT tests by 155 nations.[13]

---

9. "Internationally Recognized Norms Lead to Safety and Security in the Space Domain," US Space Command [USSPACECOM, website], 8 March 2024, https://www.spacecom.mil/.

10. Audrey M. Schaffer, "The Role of Space Norms in Protection and Defense," *Joint Force Quarterly* 87, no. 4 (2017): 88, https://ndupress.ndu.edu/.

11. *United States Space Priorities Framework* (The White House, 1 December 2021), https://bidenwhitehouse.archives.gov/; and Michael J. Listner, "The Paradox of Article IX and National Security Space Activities," *Æther: A Journal of Strategic Airpower and Spacepower* [*Æther*] 1, no. 4 (2022), https://www.airuniversity.af.edu/.

12. James H. Dickinson, "Tenets of Responsible Behavior in Space and Associated Specific Behaviors," attachment to memorandum by Lloyd P. Austin Jr., "SUBJECT: Tenet Derived Responsible Behaviors in Space," 9 February 2023, https://media.defense.gov/.

13. Jeff Foust, "United Nations General Assembly Approves ASAT Test Ban Resolution," *SpaceNews*, 13 December 2022, http://spacenews.com/.

Preventing the generation of long-lived debris improves the operational space environment. Given the speed at which objects travel in space, any object in orbit can be lethal to other satellites. In the commercial realm, having an accessible space environment makes operating a satellite cheaper and decreases the necessary number of collision avoidance maneuvers over the satellite's lifetime—an issue that plagues both mega-constellation operators and military space systems alike.[14] The nature of the space environment ensures that debris will continue to impact other objects in space, long after it was initially produced.

Although debris generation may represent an offensive advantage against an adversary's space systems and capabilities, it also precludes friendly operations in that orbital regime, affecting organic military capabilities, commercial space capabilities, and allied space systems. Debris generation acts as an indiscriminate weapon, which in addition to being illegal under the LOAC due in part to the inability to distinguish between combatants and noncombatants in space, directly contradicts USSPACECOM's role of protecting American space assets.

Increased Freedom of Action

The positive benefits of contributing to space norms development and adhering to such norms for the military cannot be understated. Yet given the lack of direct conflict in space with a near-peer great power, the rules remain blurry at best. Adopting space norms of behavior during wartime can help define thresholds and triggers for space escalation ladders. For example, a norm preferring reversible counterspace attacks would help clarify that irreversible counterspace attacks should warrant a greater response. Unless each level of command in the space warfighting structures develops a shared cognitive framework for responsible warfare, command and control of reactive actions will rely on a more centralized governance structure, slowing down responses in a domain where time is of the essence.[15]

Military adoption of norms of responsible behavior can help to connect a theory of victory in space to overarching political goals and interests. Challenges with enforcing an arms control regime in space should encourage the military to be able to clearly articulate what thresholds should not be crossed; both Russia and the United States have demonstrated caution in direct attacks on the other actor's government and military satellites, instead preferring to use electronic warfare and to target uplink and downlink communications.[16] Yet, within Ukraine, American support has been largely unrestricted, except to prevent kinetic Ukrainian attacks into Russian territory; these

14. European Space Agency, "The Cost of Space Debris: In-Space Collisions Increasingly Likely," Phys.org, 8 May 2020, https://phys.org/.

15. Jerome P. Limoge III, "How To Win(g) a War on Space: Enabling Rapid Surge Space Capabilities" (master's thesis, Air Command and Staff College, Air University, February 2024), https://www.spacecom.mil/.

16. Robin Dickey and Michael P. Gleason, "Space and War in Ukraine: Beyond the Satellites," *Æther* 3, no. 1 (2024), https://www.airuniversity.af.edu/.

restrictions were changed in November 2024.[17] This practice of self-restraint keeps the scope of war in space limited and makes hostile kinetic actions seem much more out of the ordinary.

Currently, adversary actions in space consist of reversible attacks with temporary effects and non-kinetic means.[18] Once these thresholds and triggers are clarified by shared norms, the Defense Department will have more flexibility in its responses. By both upholding and communicating normative expectations of minimizing debris generation to allies and adversaries, commanders can expect to decisively counter hostile actions without risking escalation, making a significant difference in the ability to defeat the adversary in war.[19] The conflict escalation ladder and the severity of a weapon's effects may be interpreted entirely differently by an adversary, with spillover between terrestrial and space conflicts.[20] In a sequential game, the implementation of certain norms of behavior across military, intelligence, allied and partnered, and commercial functions can create a more credible, unified front. Thus, ambiguity can be mitigated to the greatest extent possible, enabling commanders to act upon operational and legal thresholds and triggers and increasing their freedom of action.[21]

This opens the door to deliberate signaling, which becomes possible thanks to the active adoption of norms during conflict by allies and partners, contributing to unified action. Military actions that are backed by a strong political narrative help to maintain political will, an essential component of irregular warfare.[22] Doctrine and operational art designed with this in mind will lead to the development and training for nonlethal, nondestructive capabilities, tailored for specific purposes. A precise lasing capability might be tailored to interrupt a portion of a satellite's functions or take temporary positive control over it.[23] Doing so might limit second- and third-order impacts on civilians through adverse infrastructure effects.[24]

A spectrum of options that are less harmful for the operational environment can fill in gaps for responses to novel, obscure, or isolated threats. While such shifts in operational art may serve as short-term challenges, the militaries that can adapt to the increasingly collaborative nature of spaceflight and effectively maintain operational security without sacrificing transparency will find themselves most fit for modern

17. Greg Myre, "Biden Removes Long-Range Missile Restraint on Ukraine's Armed Forces," *Morning Edition*, NPR, hosted by Leila Fadel and Steve Inskeep, 18 November 2024, https://www.npr.org/.

18. Joseph Trevithick, "U.S. Satellites Are Being Attacked Every Day According to Space Force General," *TWZ* [*The War Zone*], 30 November 2021, https://www.twz.com/.

19. Space Doctrine Publication (SDP) 6-0, *Mission Command* (Space Training and Readiness Command [STARCOM], November 2024), 18, https://www.starcom.spaceforce.mil/.

20. "USSPACECOM Releases Specific Behaviors," USPACECOM, 3 March 2023, http://www.spacecom.mil/.

21. Brad Townsend, *Security and Stability in the New Space Age: The Orbital Security Dilemma*, 1st ed. (Routledge, 2020); and Schaffer, "Space Norms."

22. John J. Klein, *Fight for the Final Frontier: Irregular Warfare in Space* (Naval Institute Press, 2023), 182.

23. David A. Koplow, *Death By Moderation: The U.S. Military's Quest for Useable Weapons* (Cambridge University Press, 2009), 169.

24. Jack Beard and Dale Stephens, eds., *The Woomera Manual on the International Law of Military Space Operations* (Oxford University Press, 2024), https://doi.org/.

warfighting. With civilians concerned about the militarization of space, military actions in space that are out of line with norms will only be more conspicuous.[25]

The use of destructive attacks in space or an operational reliance on rapid reconstitution and high launch cadences incentivizes a resource- and time-intensive way of war.[26] Principles of mass and maneuver should not be considered in the space domain isolated from joint fighting, but should recognize the reliance of terrestrial observation, decision, and implementation cycles on extant space capabilities.[27] Current Space Force rhetoric focuses on resilience of space architectures through distributed, proliferated, and diverse systems. In an offense-dominant domain, it is essential that space strategists mitigate first mover advantage by making attacks on space systems costlier and less likely to succeed.

Where norms against using destructive or kinetic ASATs are upheld, or where the military prepares for increased transparency and collaborative spaceflight safety practices in the space domain, maturing selective revelation strategies—strategies that limit and control the disclosure of information—helps to conserve resources.[28] Although a norm that pushes a space force to give due notification and to follow predictable paths with lower collision probability may seem to constrain deception and security, having capabilities that can be revealed for attribution or information-sharing purposes at any time helps to avoid other mission-critical satellites from being detracted from their primary purposes. In turn, having consistent access to satellites and disaggregating missions for reconnaissance, satellite communications, or targeting can speed up terrestrial actions and make ammunition use more efficient, particularly when considering combined fighting.[29]

Shifting Adversarial Calculus

Deterrence is an inherently psychological phenomenon, with punishment and denial core to the enemy's cost-benefit analysis. Between the two, denial capabilities are more useful in deterring "ambiguous forms of aggression"—an issue especially prevalent in the space domain.[30] Deterrence by denial in the space context may look like controlling key antipodal zones or launch areas, maintaining celestial lines of communication, or developing resilient space capabilities. Deterrence by punishment may include making the space operational environment unusable thanks to permanent

25. Thomas González Roberts, "Why We Should Be Worried About a War in Space," *The Atlantic*, 15 December 2017, https://www.theatlantic.com/.

26. SDP 3-0, *Operations* (STARCOM, July 2023), 9, https://www.starcom.spaceforce.mil/; and Limoge, "War in Space."

27. Edward F. Teigeler, "The Principles of Mass and Maneuver Applied to Space Operations" (student report, Air Command and Staff College, April 1988), https://apps.dtic.mil/.

28. Schaffer, "Space Norms."

29. Dickey and Gleason, "Space and War."

30. Glenn H. Snyder, *Deterrence by Denial and Punishment* (Princeton University, 1959), https://catalog.hathitrust.org/.

orbital debris or widespread disruption and denial of space-based capabilities: both painful alternative futures.[31]

The United States has historically dominated space, incorporating space-based capabilities like positioning, navigation, and timing services into military and civilian life, thus becoming the ultimate space user and the most "space-dependent" country. This prevailing view from adversaries, combined with the low barriers and costs of irregular space warfare, has cultivated the view that the United States stands to lose the most from a loss in space, making American space assets attractive targets. Under this framework, adversaries are incentivized to attack American space assets, even at the expense of their own access to the space domain.

In conflict, the enemy will want to interfere with war-supporting functions, such as satellites. Yet, promoting transparency and normalizing the disclosure of orbital ASAT capabilities for deterrence can decrease the potential for a security dilemma in space.[32] By bringing the focus away from destruction back to a fight, the adversary will be able to believe that they do not have to choose between defeat and a space Pyrrhic victory, and that they can win without crippling enemy assets and in turn having their assets crippled in space.[33] Although space is recognized as an offense-dominant domain, adversarial concerns about an opponent's growing reliance on space places the same perceived vulnerabilities on them.[34] A focus on behavioral norms paired with concrete punishments—rather than on technical, unambiguous limits—can mitigate actions that sit just below the threshold of a hypothetical red line, such as safe maneuvering distance between satellites.

This relies heavily on the nature of the state to be deterred, which may believe itself to have an alternative normative regime. In such cases, bolstering the credibility and visibility of behavioral norms may involve allied deterrence.[35] Although it is unreasonable to expect adversaries to perfectly adhere to American norms during conflict, a shift toward parity in space can help to move adversaries away from preferring the total destruction of American space capabilities and toward an understanding of space as a shared domain.[36]

Attribution for both deterrence by denial and deterrence by punishment benefits from behavioral norms in space. Strategies shaped by norms of military transparency and safe practices will emphasize the importance of selective revelation, which is nec-

---

31. Dennis M. Rice, *Deterrence and Space Strategy: A Framework from the Study of History and Theory*, Schriever Papers (Air University, 2023), https://www.airuniversity.af.edu/.

32. Alexander Fiore, "Deterrent and Defensive Applications of Orbital Antisatellite Weapons," *Æther* 2 (2023), https://www.airuniversity.af.edu/.

33. Koplow, *Death by Moderation*.

34. Kevin Pollpeter, *Coercive Space Activities: The View from PRC Sources, a CNA Report* (China Aerospace Studies Institute, February 2024), https://www.airuniversity.af.edu/.

35. Krista Langeland and Derek Grossman, *Tailoring Deterrence for China in Space* (RAND Corporation, 2021), https://www.rand.org/.

36. Zachary Burdette, "The U.S.–China Military Balance in Space," *International Security* 49, no. 4 (2025), https://doi.org/.

essary in sharing attribution information to allies and commercial partners. As one analysis contends, denial-dominant and mixed forms of deterrence both utilize norms in tandem with selective revelation, more so than the offensive-dominant form does; however, it may be in a country's interests to reveal its counterspace capabilities during conflict to surprise and coerce the adversary in an offensive-dominant framework.[37] A balance must be kept between disclosing capabilities in order to deter and keeping secrets for warfighting.[38]

Revealing lesser capabilities can accomplish both objectives: the United States may credibly attribute attacks, and such capabilities are unlikely to not already be matched by adversaries.[39] Revealing select capabilities from a satellite or space system can maintain the potential for surprise and deception in the future while painting the picture of a responsible space warfighting force.

Norms of information sharing and transparency during conflict can help to counter adversarial narratives about the United States, where it might be made out as the aggressor. They provide a tangible benefit: information can be delivered to the warfighter faster, increasing the usability of that data and removing data stovepipes. The soft power produced by increased access to imagery and ability to release said information might manifest as political will and more support for military actions to counter irresponsible and malicious behavior in space.[40]

International Law and Space Operations

Although often perceived as a Wild West environment, space is a "law-deficient" domain.[41] Existing international law largely prohibits actions in space related to nuclear proliferation, but this by itself is not enough.

The 1967 Outer Space Treaty (OST) serves as the *lex specialis*—where specific laws override general laws—for outer space, most specifically tailored for activities in space.[42] The treaty does not prohibit the militarization of space but is widely understood to prohibit exclusively the placement of nuclear weapons or weapons of mass destruction in orbit or on other celestial bodies.

Article IX of the treaty requires international consultations prior to actions that would cause "potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space." "Harmful contamination and also

37. Stephen J. Flanagan et al., *A Framework of Deterrence in Space Operations* (RAND Corporation, 2023).

38. Michael P. Gleason and Peter L. Hays, *Getting the Most Deterrent Value from U.S. Space Forces* (The Aerospace Corporation, 2020), https://aerospace.org/.

39. Alexandra T. Evans et al., *Space Strategic Stability: Assessing U.S. Concepts and Approaches* (RAND Corporation, 2024), https://doi.org/.

40. Dickey and Gleason, "Space and War."

41. David Koplow, "*The Woomera Manual*: A Handbook on the Military Law of Outer Space," Center for National Security, Georgetown Law, November 2024, https://nationalsecurity.law.georgetown.edu/.

42. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty), 19 December 1966, UN Res 2222 (XXI).

adverse changes in the environment of the Earth" are banned—a flexible rule for unforeseen technological developments that reinforces the Environmental Modification (ENMOD) Treaty Convention.[43] This vague lexicon makes the OST an adaptable treaty but also places implementation at risk. While Article IX requires states to act with due regard in its space activities, this term is never defined. Nonetheless, the United States and satellite operators have developed best practices and norms in space that make the domain more accessible, akin to the eventual codification of norms in maritime law.

UN Charter Article 51 highlights the "inherent right of individual or collective self-defence if an armed attack occurs"; LOAC supersedes treaty obligations unless otherwise stated.[44] One interpretation could be that LOAC applies between belligerents but that third parties not involved in the conflict may still hold those belligerents accountable by the OST and the ENMOD Convention.

LOAC principles of military necessity, discrimination, and proportionality serve as a customary international law framework with which to pit new space capabilities against and are the lex specialis for armed conflict in space.[45] The intentional use of orbital debris for military purposes or to otherwise cause harm to other states is blatantly illegal. Orbital debris, much like minefields, fails all three principles listed, in accordance with Article 58 of Additional Protocol 1.[46] The inability to specifically target combatants makes it extremely damaging to civilian space systems, which fails to accomplish proportionality. By extension, then, it may be interpreted that kinetic attacks are off the table. Article 55, Protection of the Natural Environment, can be read in tandem with both the ENMOD Convention and the OST during war.[47] Between Article 57 and 58, armed forces are asked to facilitate distinction on their side, and to make a best effort to distinguish the other side's forces as well.[48]

Lex specialis rules that can be followed during armed conflict to a reasonable extent continue to apply—a benefit for the military in a law-deficient realm. Where technical, low-level rules do not exist in the OST, the military should work in conjunction with civilian and commercial operators to develop best practices and norms that can help maintain predictability in a high-threat operational environment. This involves developing a disciplined, well-trained space force that can effectively work with its civilian or commercial counterparts.

Article IX's principle of due regard ceases to apply during armed conflict between belligerents; yet, continuing to abide by due regard to the greatest extent possible could make the antebellum state of space and discussions far smoother. *The Woomera*

---

43. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention), 18 May 1977, UN A./Res/31/72, https://2009-2017.state.gov/.

44. UN charter, ch. VII, art. 51.

45. Beard and Stephens, *Woomera Manual*.

46. Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), (8 June 1977), art. 58.

47. Protocol I, art. 55.

48. Protocol I, art. 57.

Manual on the International Law of Military Space Activities and Operations notes that due regard should continue to apply during conflict.[49] Extrapolating the normative and legal implications of yet-unseen military space activities is the mark of an adaptive military with a clear vision for a successful end-state.

Normalizing Commercial Integration

With respect to commercial satellites, there is a rapidly degrading norm—if not already degraded, as China does not distinguish between military and commercial space—that passive satellites are not legitimate targets of attack, even if they support the military.[50] This stems from a conflation of *non-aggressive* with *peaceful*. Even where terrestrial systems rely on space-based systems, satellites used merely to collect and transmit information are distinguished from satellites closer to the shooter. Yet, Russian cyberattacks on Viasat satellites during Russia's ongoing war in Ukraine and additional integration of commercial assets into American military functions demand further analysis of the implications of commercial assets' integration into the military space enterprise.

Given the dual-use nature of satellites and the various disaggregated functions a satellite may serve, simply labelling an ASAT as offensive may not be sufficient for military freedom of action. Establishing that an ASAT is necessary in reaction to suspicions of an adversary placing a weapon on orbit may make that capability defensive. The issue of distinguishability for satellites becomes increasingly difficult since only so much information can be gleaned from the satellite's orbit and designation.

Due to this issue, concerns abound with the use of commercial and civilian satellites for military purposes. As one legal expert argues, this violates international humanitarian law by putting civilians at risk and intentionally obfuscating a target's legitimacy. The United States must uphold "reverse distinction," which would entail preventing the deliberate intermingling of civilian and military assets, and to continue integrating commercial capabilities is a deliberate choice. These "mixed motivations" are not legally valid according to this line of thinking.[51]

Despite this, this article contends that the norm of hosting government payloads on commercial satellites is militarily necessary and can be addressed with nuance by international law. The purpose of the LOAC is not to protect civilians at all costs but to protect them against military excess, where a military objective fails to justify the costs.

During Russia's 2022 invasion of Ukraine, a Viasat cyberattack was accompanied by Russia's declaration that commercial satellites are legitimate targets. The United States has already integrated commercial capabilities into its warfighting strategies, as

49. Beard and Stephens, *Woomera Manual*.

50. Townsend, *Security and Stability*.

51. David A. Koplow, "Reverse Distinction: A U.S. Violation of the Law of Armed Conflict in Space," SSRN [Social Science Research Network], 18 January 2021, https://doi.org/.

evidenced by both the Space Force Commercial Space Strategy and the DOD Commercial Space Integration Strategy, with plans to continue to do so.[52]

The potential costs of disentangling military space capabilities from commercial companies would be astronomical and require time-intensive resourcing to build organic capabilities; entanglement is beneficial for deterrence and brinkmanship. The terrestrial effects of attacks on commercial actors might be more quickly addressed and mitigated if the military adheres to norms of transparency and threat-sharing.[53]

Space Doctrine Note, *Operations*, points to the benefits of hosting a payload on a commercial spacecraft, which in turn incentivizes a stronger and more efficient relationship between commercial partners and the military.[54] This may be seen as an active decision to make the adversary's responsibilities more complicated but is outweighed by the military necessity and benefit it provides to armed forces.[55] A militarily necessary act may be justifiable and also happen to complicate adversary planning, prioritized in that order, as demonstrated in the note. That does not mean that militaries should primarily intend to rely on dual-use systems to protect from lawful attack.[56] Instead, it warrants "constant care" of precautions on the effects of an attack both during peacetime and wartime.[57]

Mitigating harm to civilian populations during commercially-integrated armed conflict may manifest as setting base norms on what kinds of satellites are off-limits with regard to international humanitarian law. The United States might only disrupt or deny satellites that provide missile targeting, for example, and avoid targeting spacecraft that provide weather services over an area that is not relevant or necessary to certain local terrestrial tactical actions. Certainly, this is challenging for adversaries with heavily integrated commercial and military systems, such as Russia; LOAC provides unclear guidance for what threshold of collateral damage to civilians or civilian objects in space is illegal.

Active integration of commercial capabilities into military space operations increases the leverage and control that the military has over such companies, introducing the possibility of using shutter control.[58] SpaceX founder Elon Musk's refusal to service a surprise attack on Russian forces in Crimea certainly raised questions about

52. Audrey Schaffer, "Pedal to the Metal: Accelerating Pentagon Integration of Commercial Space," CSIS, 17 May 2024, https://www.csis.org/; and Secretary of the Air Force Public Affairs, "USSF Releases Commercial Space Strategy to Increase Competitive Advantage," USSF, 10 April 2024, https://www.spaceforce.mil/.

53. Theresa Hitchens and Colin Clark, "Commercial Satellites: Will They Be Military Targets?," *Breaking Defense*, 16 July 2019, https://breakingdefense.com/.

54. Space Doctrine Note, *Operations* (Headquarters, USSF, January 2022).

55. John Goehring, "The Legality of Intermingling Military and Civilian Capabilities in Space," *Articles of War*, 17 October 2022, https://lieber.westpoint.edu/.

56. Amanda Miller, "Resilient Architecture vs. Civilian Risk," *Air & Space Forces Magazine*, 16 February 2022, https://www.airandspaceforces.com/.

57. Protocol I, art. 57.

58. Sandra Erwin, "SpaceX Providing Starlink Services to DoD Under 'Unique Terms and Conditions,' " *SpaceNews*, 3 October 2023, https://spacenews.com/.

the power of transnational corporations to defy their home country's political and strategic desires.[59]

Locking down a contract and clearly delineating the roles and responsibilities of commercial actors will help both parties, especially where commercial actors are ill-prepared for space warfare. Commercial satellite companies may not have clear expectations of the risk they would accept during armed conflict and should work with the military to implement agreed-upon norms for minimizing collateral damage, such as limits on indiscriminate radio-frequency interference.[60] Commercial actors whose roles and responsibilities within military space operations are clarified can share mission data to deescalate miscommunications.

One example is the Commercial Augmentation Space Reserve, wherein contractors are called upon for "surge" capabilities in exchange for benefits during peacetime, such as threat briefs. Participating companies are considered on a case-by-case basis to determine where in the space enterprise they best fit.[61] The transactional nature of the reserve opens up possibilities for the military to deny services to other customers—foreign, commercial, or civilian. Already, the young program has begun to prove its worth, with commercial satellite communications companies participating in more Space Force wargames.[62]

The military bears the responsibility of developing an understanding of the role that commercial actors play in warfighting functions, especially since their integration and legitimacy as targets have already been normatively cemented by Russia's actions. Future norms during wartime could address collateral damage to commercial actors, communication means, and a preference for precise attacks rather than attacks with unknown second- and third-order effects.

Recommendations

Further engage with commercial, civilian, and allied and partner organizations in developing norms of responsible behavior that can be maintained during conflict. American rules of engagement acknowledge the importance of norms of responsible behavior in space. Chairman of the Joint Chiefs of Staff Instruction 3121.01B, Enclosure E "governs the actions to be taken by US forces in defense of terrestrial or on-orbit space assets," laying out broad goals.[63] Among these are minimizing debris generation and collateral interference, though it does not provide more specific guidance

59. "Elon Musk's Refusal to Have Starlink Support Ukraine Attack in Crimea Raises Questions for Pentagon," AP, 11 September 2023, https://apnews.com/.

60. Robin Dickey, *Commercial Normentum: Space Security Challenges, Commercial Actors, and Norms of Behavior* (The Aerospace Corporation, 2022), 6, https://csps.aerospace.org/.

61. Theresa Hitchens, "Join the Commercial Space Reserve: Get Longer Contracts, In-Depth Threat Briefs; Play Wargames," *Breaking Defense*, 25 October 2024, https://breakingdefense.com/.

62. Lisa Sodders, "Commercial Augmentation Space Reserve Hits Major Milestone with First Wargaming Event," Space Systems Command, 16 April 2025, https://www.ssc.spaceforce.mil/.

63. Enclosure E, "Space Operations," in CJCS Instruction 3121.01B, *Standing Rules of Engagement / Standing Rules for the Use of Force for US Forces* (CJCS, 13 June 2005, current as of 18 June 2008).

at an unclassified level. The publicly available 2005 Enclosure E appears to make a distinction between "commercial space assets" and national security space assets but indicates that both assets should be considered in national self-defense (Enclosure A).[64]

This poses a challenge for establishing and implementing norms during armed conflict in a reliable, timely manner. Norms continue to matter for civilians during and after armed conflict, and even voicing potential concerns may shape normative behavior for the better, rather than having domino effects down the line. These norms should have more specific guidance, continuing to draw on peacetime treaties.

Formal mechanisms for commercial and civilian input on military space doctrine should be implemented in conjunction with regular public forums with industry to discuss concerns. As a nascent service, the Space Force should seek to exploit the thriving American industrial base and academic debates surrounding space policy. At a higher level, existing international working groups, including non-UN bodies, could be a launching point for creating a consensus across epistemic communities on best practices.

Proliferate norms of behavior and doctrine across all functions and levels. To cultivate a disciplined force that is able to consider various methods of achieving a certain effect, creating a shared understanding of norms of behavior is essential. The development of decision trees and integration of norms of behavior into professional military educational institutions will help to standardize their application during warfare. Decision matrices and operational thresholds and triggers should be regularly reconsidered and reevaluated across the cooperation to conflict spectrum. Delineating the command levels of each norm will naturally create chains of responsibility, while avoiding creating overly-centralized command and control structures.

Given the reliance on space-enabled capabilities by the rest of the joint force, the Space Force should take steps to deconflict and encourage interservice cooperation, thus ensuring that each separate component will have a lower likelihood of escalation. The most recent March 2025 DOD Commercial Integration Strategy describes "unity of effort across planning horizons" as a goal it shall achieve through "responsible conduct in space" and "reinforcing behavioral norms"—an indication that the organization understands the strategic benefits of norms in space.[65] While it may not necessarily be desirable to empower the most tactical operator with such decisions, a more thorough understanding of what issues to escalate could prevent an uncomfortable trip to the UN.

Conduct more wargames and exercises, including commercial actors and allied and partner organizations. The Combined Space Operations Center and upcoming Space Futures Command emphasize wargaming with commercial actors and allies and part-

64. Enclosure A, section 3(b), National Self Defense, "Standing Rules of Engagement for US Forces," in CJCSI 3121.01B.

65. Stephen N. Whiting, *Commercial Integration Strategy* (USSPACECOM, 2025), 9, https://www.spacecom.mil/.

ners; however, cooperation must be consistent and focused to be effective. High-level operational wargames ensure that partners are on the same page and understand the ways in which the other may approach the same issue, and low-level crisis scenarios may ensure cooperation between parallel organizations, which creates trust and improved communication at the tactical level. Although traditional physical joint training exercises are impractical for the space domain, practicing the skills used in operating satellites and coordinating multidomain operations can be handled without broaching sensitive issues. By tackling the mechanisms and confluence of multidomain issues, wargames inherently work around classification barriers and promote flexibility in high-level approaches to operational scenarios.

Commercial actors will increasingly be involved in conflict in space. USSPACECOM may even "protect prioritized commercial space assets."[66] Rather than being limited to the US military, wargames should include a variety of actors, allowing them the decision-making space and agency to interact with complex technical issues and their consequences—a muscle not trained by commercial operators. Wargames can speed up the decision-making cycle during armed conflict by creating a conceptual framework of reaction options and their potential consequences. Using a synthetic environment to walk through various potential norms and deconflict their impacts on commercial or military operators would strengthen the arguments for implementing such norms across the board—norms that would apply before, during, and after armed conflict.

Proactively work with commercial actors in threat-sharing and clarifying their integration into warfighting functions. The lack of an effective, fast, and accessible threat-sharing mechanism with industry actively harms American space resiliency and creates unwanted surprises down the line. Threat-sharing should include proactive communication and quick updates in times of crisis, for as many vetted American aerospace and defense companies as possible.[67] Automated collision avoidance systems could be encouraged or required for all contractors, increasing those commercial actors' resiliency and building on space sustainability norms. Expansion of the Commercial Augmentation Space Reserve program would help integrate companies into the appropriate warfighting functions, helping with distinguishability.

As the Pentagon becomes increasingly reliant on commercial space services, clear categories and thresholds for different kinds of military support functions are needed. Military payloads on commercial satellites could be specific to relaying communications or other active defense functions, whereas active counterspace attacks would rely on military payloads, on military satellites.[68] Maintaining some degree of integrity in disentanglement will relieve concerns about their integration according to interna-

66. Whiting, *Strategy*, 9.

67. Lisa Sodders, "Space Systems Command's CASR Conducts Second Wargame," USSF, 24 July 2025, https://www.spaceforce.mil/.

68. Koplow, "Reverse Distinction."

tional law. Barring that, the government should clearly delineate the roles of commercial actors and the threats they may face in conflict.

Conclusion

Although these recommendations have been incorporated in space strategy documents, there must be consistent implementation to ensure that the US military may reap their benefits. Efforts to leverage the burgeoning commercial space industry may recognize the economic upsides, but it is important to consider the legal, ethical, and practical challenges of involving commercial actors as well.

The ties between norms of behavior in space and warfighting may not seem obvious, but the shared environment of space demands that all actors play by the same rules. Where international law does not necessarily suffice for providing technical guidance, military interpretation of international law for the benefit of norms development can act as a force multiplier: a politically savvy space force is one ready to handle the escalatory risks of the space domain, even with the introduction of commercial actors. Æ