

July 2024

Finding a North Star: Lessons in Space Law for the Nuclear Regime

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Recommended Citation

Magilton, Elsbeth J. (2024) "Finding a North Star: Lessons in Space Law for the Nuclear Regime," *Space and Defense*: Vol. 15: No. 1, Article 8.

DOI: 10.32873/uno.dc.sd.15.01.1040

Available at: <https://digitalcommons.unomaha.edu/spaceanddefense/vol15/iss1/8>

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Cover Page Footnote

A longer version of this paper, under a different title, will appear in a forthcoming issue of the University of Minnesota Law School International Law Journal. Both publications have given their permission to permit dual-publication of two versions of this paper. Elsbeth Magilton is the Executive Director of the Space, Cyber, and Telecommunications Law programs at the University of Nebraska College of Law. Elsbeth is also a 2023-2024 Scowcroft National Security Fellow at the Eisenhower Center for Space and Defense. Author's note: My background is in space law, and though I've spent many hours with colleagues at U.S. Strategic Command and in deterrence conferences and symposiums, I have no formal background in nuclear law and policy. I want to thank my friends who study political science, particularly Dr. Tyler White, for encouraging me to look at nuclear disarmament issues for the first time in my work. I also wish to thank my research assistants, Zach Hellen, a J.D. student in the Space, Cyber, and Telecommunications Law program, and Brooklyn Terrill, a J.D. student and Schmid Library Research Fellow, a program managed by Professor Stefanie Pearlman. Finally, as with all my articles and papers, I thank my family for always being my soft place to land, especially my spouse, Morgan Magilton, and our children Maxwell and Eleanor Magilton.

Finding a North Star: Lessons in Space Law for the Nuclear Regime¹

Elsbeth Magilton^{2, 3}

*This paper applies lessons from the Artemis Accords to the nuclear arms regime—specifically asking whether strategic soft law agreements could create a stop gap for the shortcomings of nuclear arms control. Soft law can lead to more consistent communications, helping build predictability and trust, which is a recipe for a more secure world. *This essay is updated from a previously published version and appears here by permission of the Minnesota Journal of International Law.*

In the past ten years the world has seen some major shifts in global thinking. From a rise in nationalism across many states, to the rattling of previously thought unshakable global institutions. The immediate impacts on global structures challenge what we know about peace, conflict, and stability. There is a rising sense of instability and tension, particularly in the realms of outer space and in nuclear weapons.

The basis of both space and nuclear legal frameworks stem from a post-World War Two (WWII) era of international collaboration and both are rooted in utilizing an international order to avoid catastrophic human destruction. While the Outer Space Treaty (OST) didn't take shape until more than 20 years after the end of WWII, it is born of the Cold War between the United States and the Union of Soviet Socialist Republics (Soviet Union) with the goal of not only preserving space, but also securing peace.

In the modern decade there is expansive growth in the space industry, and the legal and regulatory structures that support and maintain it. While many states are creating or expanding their domestic legislations and working collaboratively with other nations, there is a sense that no large new treaty or other form of multilateral agreement would be successful. States see the value in international collaboration in space, but there is a growing resistance to limiting activities via new obligations requiring a lengthy domestic ratification process. On the nuclear arms front, there is a decline in collaboration and mutual understanding of what it means to be a responsible nuclear state. Tensions are rising and international trust and communication is failing.

But all is not lost. While there is generally mutual agreement that a second Outer

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Space Treaty is unlikely in coming decades, the world is still actively working together in space.⁴ Innovative diplomatic and soft law tools are at work bringing states together to preserve access to space, mitigate debris, and generally advance human capacities to operate in space. Many legal scholars are dismissive of soft law approaches, and they may be right to feel that way. Soft law instruments are only quasi-legal with no binding force. However, they do serve the purpose of rapport and trust building over time, creating a continuity of discussion that may influence space stewardship, and lay the groundwork for future potentially binding legal instruments.

These tools may be able to provide a model for the nuclear arms realm.

This paper explores the feasibility of applying the soft law approaches found in space law, with particular focus on the Artemis Accords, to the nuclear regime. The Artemis Accords present a recent case study in a soft law approach for influencing norms of behavior in space. The paper starts by outlining the instruments of international law and describing the general, though complex, decline in multilateral agreements. Next, it covers the status of present agreements in the nuclear and space fields. Finally, it explores how lessons may be drawn from space law, specifically the Artemis Accords, and applied to the nuclear arms regime.

INSTRUMENTS OF INTERNATIONAL LAW

When testifying to Congress in 2015 then Secretary of State John Kerry said, “I spent quite a few years ago [sic] trying to get a lot of treaties through the United States Senate, and frankly, it’s become physically impossible. You can’t pass a treaty anymore.”⁵ Kerry was criticizing the United States Senate for its unwillingness to participate in the treaty process, allowing treaties to languish in committee.⁶ In fact, the United States has come to rely predominantly on executive agreements over treaties.⁷ This is particularly notable in the past 20 years, and a good number of legal scholars have explored the structural issues in the United States that have led to the domestic decline of treaties.⁸

The general design of this paper is not meant to deeply explore the United States treaty process or how international law functions. Instead, it is focused on how soft law

⁴ Dennis O’Brien, "SpaceWatchGL Opinion: Space Law 2023: Can Nationalists and Internationalists Find Common Ground?" (May 2023), available at <https://spacewatch.global/2023/05/spacewatchgl-opinion-space-law-2023-can-nationalists-and-internationalists-find-common-ground/>.

⁵ See <https://www.theguardian.com/world/2015/jul/28/john-kerry-iran-nuclear-deal-congress-hearing>.

⁶ Peake, *The Decline of Treaties? Obama, Trump, and the Politics of International Agreements* (April 6, 2018)

⁷ Bradley, Goldsmith, "Presidential Control over International Law," *Harvard Law Review* 131, no. 5 (March 2018): 1201-1297

⁸ Buys, C. (2014). *An Empirical Look at United States Treaty Practice: Some Preliminary Conclusions*. *AJIL Unbound*, 108, 57-62.

solutions may be tenable. However, in making that point, it is still valuable to review how international agreements and international law may be created and how it functions in broad terms.

Treaties

Article 2, Section 1(a) to the Vienna Convention on the Law of Treaties has been widely accepted as the instrument governing the law of treaties since its adoption by the International Law Commission. It defines a Treaty as an “international agreement concluded between States in written form and governed by international law...”⁹ Treaties may be considered multilateral, being between more than two states, or bilateral, being between just two states or organizations.¹⁰ Treaties may sometimes take on other names, such as a Convention, a Memorandum of Understanding, or other names agreed to by the states.¹¹ Once the text of a treaty is fully negotiated the parties’ signatures authenticate it. The signatures only verify that the text accurately represents the agreed to stipulations. Most agreements have some kind of *intent to require ratification* or acceptance of terms stipulation – how a nation state creates that acceptance is subject to their own domestic processes.¹² Which brings us back to Kerry’s point, domestic processes are sometimes a significant barrier to treaty ratification.

Customary International Law

It is also useful to lay some groundwork for the discussion of customary international law as another method for creating international law. Customary international law dictates that states should behave in accordance with legal rules evident in established practices. Article 38 of the International Court of Justice Statute, the article which directs the Court to decide cases submitted to it through treaties or custom, refers to “international custom, as evidence of a general practice accepted as law.”¹³ There isn’t a magic formula for showing “general practice” and the phrase has long been fodder for legal scholars and law school competitions alike, but there are thankfully some established parameters. For example, the state whose interests may be affected must participate in the practice. Additionally, the practice should be broadly characteristic of all the states and not only to those states in a particular region.¹⁴

Soft Law

Growing in acceptance is what legal scholars refer to as *soft law*. Despite its name, soft law is more of a social norm than a legal one. Soft law is commonly understood to refer

⁹ Article 2, Section 1(a) to the Vienna Convention on the Law of Treaties

¹⁰ Lowe, *How International Law is Made*, Oxford Public International Law, 27 September 2007 (Book)

¹¹ Read, "International Agreements," *Canadian Bar Review* 26, no. 3 (March 1948): 520-532

¹² Lowe, *supra* note 8

¹³ Statute of the International Court of Justice, <https://www.icj-cij.org/statute>

¹⁴ Lowe, *supra* note 8

to a written instrument containing principles, norms, standards, or other statements of behavior.¹⁵ Soft law agreements are viewed as political agreements that could lead to law, but are not law, thus making them potentially easier to negotiate. Violations only give rise to political consequences.¹⁶ The sustainability of these commitments is debatable, but it is plausible that soft law norms may establish practices, which could harden into becoming customary international law or lay the foundation for subsequent treaties.¹⁷

A DECLINE IN MULTILATERALISM

In his 2018 Professor George Nolte described the cycle of treaties as, “the establishment of basic rules after the Second World War, a blossoming of treaties during the 1990s, and signs of crisis, and perhaps even decline, after the turn of the century.”¹⁸ While this exert notes a potential decline in treaties, Nolte’s outlook is not entirely pessimistic, and he goes on to reject a “doomsday mood” as premature.¹⁹ While world events continue to paint a bleaker picture than the one Nolte evaluated in 2018, so too this paper doesn’t aim to spread doom and gloom. International cooperation continues to flourish in many contexts, and the reasons for treaty decline are complex and numerous.

Taking an objective view then, we still see a decline when focusing on Article II treaties in the United States These are international agreements following the process specified in Article II of the United States Constitution, which require the President to obtain the consent of the of United States Senate. The number of treaties submitted to the Senate dropped to historic lows during the Obama administration and stayed there during the Trump administration.²⁰ There are a variety of theorized and substantiated reasons for this – from the Senate majority refusing to work with then President Obama, to the Trump administration likely not prioritizing international agreements.²¹ It may also be that the drop-off is an indication of decreased demand. On topics such as tax or extradition, the United States has already completed such treaties with most nations.²²

The relative decline is also not entirely limited to the United States Internationally,

¹⁵ Edwards, R. (1997). *Interpretation: The IMF and International Law*. By Joseph Gold. London, The Hague, Boston: Kluwer Law International, 1996. Pp. xxxi, 609. Index. Fl 275; \$192; £124. *American Journal of International Law*, 91(2), 405-407.

¹⁶ Dinah L. Shelton, *Soft Law in HANDBOOK OF INTERNATIONAL LAW* (Routledge Press, 2008).

¹⁷ This is particularly notable in the Human Right Field, where many agreements have been preceded by nonbinding agreements.

¹⁸ Nolte, George, *Treaties and Their Practice - Symptoms of Their Rise or Decline*, The Hague, Netherlands: Brill Nijhoff, 2018, 160.

¹⁹ Hollis, Duncan, "Treaties and Their Practice - Symptoms of Their Rise or Decline," *American Journal of International Law* 114, no. 4 (October 2020): 785-791

²⁰ Bradly, Hathaway, Goldsmith, "The Death of Article II Treaties?" Dec 13 2018, <https://www.lawfaremedia.org/article/death-article-ii-treaties>

²¹ Bradly, *supra* note 18.

²² Bradley, Goldsmith, "Presidential Control over International Law," *Harvard Law Review* 131, no. 5 (March 2018), 1201-1297

since the 1950s the rate of wars and conflicts that result in a peace treaty have been dropping.²³ This may be the result of a growing international framework for the law of armed conflict, but it may also be that states are unwilling to first acknowledge they were in a state of war – because war looks different these days. International conflict over the past 50 years is significantly different than throughout history.²⁴ The use of cyber and space tools and assets have significantly changed how states interact both in peace and in times of conflict. Authoritarians are pushing their own norms more aggressively in recent years, based on their own definitions.²⁵ New space and cyber tools provide an opportunity for reevaluation of principles and the definition of war – you need not resolve a war with a treaty if you never defined it as a war in the first place. Some countries are using that window to advance their own standards outside of a formal legal agreement.

It is with this context we look to the space and nuclear regimes. The United States is a significant world power with global influence, and it is experiencing a sharp decline in treaty participation. Globally, authoritarian governments are working to influence norms and principles outside the recognized legal framework. Resisting a fall into a “doomsday mood,” the present paradigm is still concerning.

THE NUCLEAR FRAMEWORK

Building on the notion of a general decline in multilateralism, there seems to be some consensus that the long-standing nuclear legal regime has reached a watershed moment. From instances of noncompliance of bilateral agreements to growing resentments over historic multilateral treaties, nuclear weapons hold the world in a precarious balance. Just one state can change the course of the world. This section profiles four legal instruments of note, the *Treaty on the Non-Proliferation of Nuclear Weapons*, the *Treaty on the Prohibition of Nuclear Weapons*, the *Strategic Offensive Reductions Treaty*, and the *New START Treaty* with the goal of recognizing how these instruments may be in jeopardy, but also noting where they continue to provide insight into future opportunities.

The Treaty on the Non-Proliferation of Nuclear Weapons

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) aims to prevent states from growing an existing, or obtaining a new, nuclear arsenal.²⁶ The NPT is considered

²³ Fazal, Tanisha M. “The Demise of Peace Treaties in Interstate War.” *International Organization* 67, no. 4 (2013): 695–724. <http://www.jstor.org/stable/43282084>.

²⁴ *Id.*

²⁵ Office of the Director of National Intelligence, *Global Trends, United States Backed International Norms Increasingly Contested*, October 2021, <https://www.dni.gov/index.php/gt2040-home/gt2040-deeper-looks/future-of-international-norms>

²⁶ United Nations Audiovisual Library of International Law, *Treaty on the Non-Proliferation of Nuclear Weapons*, Introductory Note,

a cornerstone of the global nuclear framework and as “grand bargain” between nuclear powers.²⁷ States join the NPT as either a ‘nuclear weapon state’ or as a ‘non-nuclear weapon’ state. Under the NPT the United States, Russia, China, France, and the United Kingdom are the only recognized nuclear weapon states, having built and tested at least one nuclear device before 1967. Of course, though, other states have nuclear weapons. In fact, one-third of all nuclear armed states are not members.²⁸ To stay in line with its purpose, the NPT can’t allow for new nuclear weapon state members - acknowledging new nuclear state status would be remunerating their nuclear proliferation, in direct opposition to the intent of the treaty.²⁹

The effectiveness of any treaty is dependent on states seeing membership as necessary, and while it may be a “grand bargain,” there are challengers calling the necessity of the NPT into question.³⁰ There is a growing resentment from non-nuclear states that nuclear states are not actually moving toward disarmament. Throughout the life of the NPT it has commonly been interpreted as allowing the nuclear weapon states to retain their arsenal, so long as they share nuclear energy technology with non-nuclear weapon states.³¹ As time marches on and complaints about the lack of disarmament go unanswered, there is a declining sense of necessity for non-nuclear states.³² The NPT’s structure creates a “haves” and “have-nots” approach to nuclear weapons, which some scholars argue was never sustainable to begin with.

In addition to the dissatisfaction of non-nuclear weapon states is the issue of compliance. In 2022 the five nuclear states in the NPT released a joint statement on “preventing nuclear war and avoiding arms races,” declaring their commitment to the NPT.³³ However, at the treaty’s 10th Review Conference that year the states failed to reach consensus on goals regarding weapon free zones.³⁴ This failure to reach an agreement underscores the

<https://legal.un.org/avl/ha/tnpt/tnpt.html#:~:text=The%20Treaty%20on%20the%20Non-force%20on%205%20March%201970.>

²⁷ Carlson, John. “Is the NPT Still Relevant? - How to Progress the NPT’s Disarmament Provisions.” *Journal for peace and nuclear disarmament* 2, no. 1 (2019): 97–113.

²⁸ Pretorius, Joelen, and Tom Sauer. “Ditch the NPT.” *Survival* (London) 63, no. 4 (2021): 103–124.

²⁹ Pretorius, *supra* note 24.

³⁰ Lee, Manseok, and Michael Nacht. “Challenges to the Nuclear Non-Proliferation Treaty.” *Strategic Studies Quarterly* 14, no. 3 (2020): 95–120.

³¹ McGlinchey, ‘Diplomacy’, in Stephen McGlinchey (ed.), *International Relations* (Bristol: E-IR Publications, 2017)

³² Borger, Sample, ‘All You Wanted to Know About Nuclear War, but Were Too Afraid to Ask’, *Guardian*, 16 July 2018, <https://www.theguardian.com/world/2018/jul/16/nuclear-war-north-korea-russia-what-will-happen-how-likely-explained>

³³ Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races, January 3, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/03/p5-statement-on-preventing-nuclear-war-and-avoiding-arms-races/>

³⁴ Rosa, Gabriela, Arms Control Association, Updates from the 10th NPT Review Conference, August 26, 2022, <https://www.armscontrol.org/blog/2022/updates-10th-NPT-RevCon>

fear of a weakening nuclear regime, with some even contending the NPT is in a “deep crisis.”³⁵

The Treaty on the Prohibition of Nuclear Weapons

In response to the criticisms of the NPT, the Treaty on the Prohibition of Nuclear Weapons (TPNW) has emerged.³⁶ The TPNW outright prohibits nuclear weapons, leading towards their total elimination. Many scholars are optimistic of what is termed a humanitarian approach to nuclear disarmament.³⁷ Others have expressed concern that the TPNW is a risky distraction.³⁸ Though no nuclear weapon states signed the treaty, it received majority support in the United Nations. The intent, presumably, is to put pressure on nuclear weapon states and their allies by “naming and shaming” them.³⁹ It’s established that a treaty cannot bind third parties who haven’t expressly agreed to it, but proponents of the TPNW argue that the coming together of a majority of countries who follow a practice can create social norms against nuclear weapons.

The Strategic Arms Reduction Treaty (START) and Strategic Offensive Reductions Treaty (SORT)

In 1994, the Strategic Arms Reduction Treaty (START I) was the first agreement that required the Soviet Union (later the Russian Federation and the other three independent states resulting from the dissolution of the Soviet Union) and the United States to require reductions of strategic nuclear weapons.⁴⁰ START I was initially successful, calling for on-site inspections and other monitoring protocols. Running parallel to START I was START II. In 2002 the United States and Russia signed START II, which sought to establish a limit on strategic weapons and further required reductions – only it never entered into force. Reminiscent of Secretary Kerry’s comments earlier, after the United States Congress never voted to ratify the agreement, Russia declared it was not bound by it.⁴¹

³⁵ Knopf, J. “Not by NPT alone: The future of the global nuclear order.” *Contemporary Security Policy*, 43(1), 186–212.

³⁶ Hanson, Marianne. “Power to the Have-Nots? The NPT and the Limits of a Treaty Hijacked by a ‘Power-over’ Model.” *Contemporary security policy* 43, no. 1 (2022): 80–105.

³⁷ Hanson, M. (2018). Normalizing zero nuclear weapons: The humanitarian road to the prohibition treaty. *Contemporary Security Policy*, 39(3), 464–486.

³⁸ Ruhle, M. (2017, May 19). The nuclear weapons ban-treaty: reasons for scepticism. *NATO Review*. <https://www.nato.int/docu/review/articles/2017/05/19/the-nuclear-weapons-ban-treaty-reasons-for-scepticism/index.html>.

³⁹ Ruhle, *supra* note 36

⁴⁰ The Lisbon Protocol later included all five states: Russia, Belarus, Ukraine, Kazakhstan, and the United States.

⁴¹ Kimball, Daryl, Arms Control Association START II at a Glance, July 2022, <https://www.armscontrol.org/factsheets/start2>

With START I still in place but with the START II process in shambles, the United States and Russia entered the Strategic Offensive Reductions Treaty (SORT). SORT required the decrease of strategic weapons and kept START I in place. SORT set no protocols for determining compliance, as it was decided the states could rely on the START I verification process. Confusingly, however, START I expired three years before some SORT limits took effect.⁴² In response, the two states created the Bilateral Implementation Commission, and later the Consultive Group for Strategic Security to address implementing the agreement and to explore arms matters. Though the success of these working groups and commissions is unclear, they provide an opportunity to examine how bilateral agreements may impact discussions. Russia and the United States were consistently brought together to negotiate in these working groups, and communication is beneficial to continued engagement.

Continued Bilateral Efforts: New START Treaty

The SORT was superseded in 2011 when New START was entered into force. Drawing on the provision of their first successful bilateral agreement, START I, the United States and Russia agreed to a new set of verification measures in New START. Though the process was not without significant tension, New START was set to run through 2026. However, in 2023 the United States announced that Russia was no longer in compliance with its obligations. As a result, the United States has refrained from facilitating Russian inspections of United States facilities or sharing data, but consistently notes that it “remains ready to work constructively with Russia to fully implement the treaty.”⁴³

Acknowledging that this paper has only provides a summary of these agreements and that the successes and failures of agreements are the result of many variables, security begins and ends with mutual understanding. Finding points of consensus is extremely difficult, and compliance is never assured, but communication and transparency provide some measure of ongoing security. While seemingly in jeopardy, these efforts foster discussion on a state-to-state level, which may create conditions to identify agenda items for future reduction debates.⁴⁴

⁴² Kimball, *supra* note 39.

⁴³ United States Department of State, Press Release, Russian Noncompliance with and Invalid Suspension of the New START treaty, June 1, 2023, <https://www.state.gov/russian-noncompliance-with-and-invalid-suspension-of-the-new-start-treaty/>

⁴⁴ Woolf, Amy F. “Promoting Nuclear Disarmament through Bilateral Arms Control: Will New START Extension Pave the Path to Disarmament?” *Journal for peace and nuclear disarmament* 4, no. 2 (2021): 309–320.

THE PRESENT SPACE LAW FRAMEWORK

Scholars generally concur: a new Outer Space Treaty is unlikely in the modern decade.⁴⁵ As commercial and military uses of space expand rapidly global powers show a resistance to any imposed limitation on their operations in space.⁴⁶ New nations are entering the space-faring age and it is likely they are also unwilling to agree to limitations above and beyond the landmark treaty. However, space is inherently global. A nation's satellites orbit the entire globe, all day every day. Like nuclear, the decisions of one state have significant security impacts on the entire world at once. Unlike nuclear, space has long been an area for global cooperation and engagement. It has not been without its tension, of course, but space exploration has historically been a positive spot in international discussions. It is with this change in tone that this paper turns to space law. This section takes a deeper look at the state of space agreements and the use of bilateral or soft law avenues in outer space.

The Outer Space Treaty

Signed and entered into force in 1967 the Outer Space Treaty (OST) is largely focused on the peaceful use of outer space. OST is largely considered the cornerstone of international space law and is generally viewed as successful. Signed during the of "Space Race" between the Soviet Union and the United States, the treaty relieved some tension regarding the use of weapons in outer space. Though the Soviet Union and the United States were not the only two original signatories, they were the most active space states at the time. The United States and the Soviet Union were also critical players in the construction of the treaty language itself. In 1966 the two states both submitted their own drafts of treaty language to the United Nations General Assembly. Over six months, mutually agreed upon language was created. This significant focus on the United States and the Soviet Union, as well as the emphasis on peaceful uses of space and the restrictions on weaponizing space, have led some scholars to think of the OST as purely another nuclear treaty, and minor one at that.⁴⁷

However, that view is reductive of the impact the OST has had on global space operations outside of the nuclear context. While its accurate that OST bans the stationing of weapons of mass destruction in outer space and prohibits military activities *on* celestial bodies, it covers activities beyond nuclear weapons, impacting the commercial and civil space communities significantly – from state liability for commercial actors to considerations

⁴⁵ O'Brien, *supra* note 4.

⁴⁶ Hoffmann, A. (2020). New Era In The Weaponization Of Space: The US Space Force & An Update To The Outer Space Treaty. *Transnational Law and Contemporary Problems*, 29(2), 327-352.

⁴⁷ Burbach, "H-Diplo ARTICLE REVIEW 1021," review of Merely a 'Scrap of Paper'? The Outer Space Treaty in Historical Perspective., by Stephen Buono, H-Diplo, February 24, 2021,

of what commercial activities may constitute appropriation.⁴⁸ It is important to not lose sight of the OST's purpose beyond serving as an arms control or nuclear treaty. While security is baked into it, the OST serves an array of purposes within space law, making it an incredibly unique instrument. It is serving double, maybe triple, duty in space.

With this important nuisance noted, the OST *has* largely been successful in limiting the weaponizations of space. As Nikita Chiu points out, "Since these treaties were concluded, to date, there have not been any atmospheric tests or nuclear detonations in outer space, nor have there been any installations of WMD detected in orbit."⁴⁹ This achievement is particularly notable when again considering the timeline of the OST. Throughout the 1960s the fear of nuclear weapons in orbit was sincere – and it is noteworthy the United States and the Soviet Union were able to work through the United Nations to prevent the nuclearization of space.⁵⁰

The Use of Multilateral Agreements following The Outer Space Treaty

Following the OST are several multilateral agreements that further refined and defined the language of the OST. In total there are five United Nations Treaties on Outer Space and five "principles" which constitute declarations of meaning. This section takes a brief look at just three of these instruments, The Moon Agreement, The Principles on Remote Sensing, and The Principles on Nuclear Power Sources.

Generally, The Moon Agreement reaffirms that celestial bodies, namely the moon, "should be used exclusively for peaceful purposes, that their environments should not be disrupted, that the United Nations should be informed of the location and purpose of any station established on those bodies."⁵¹ The Moon Agreement is largely clarifying terms within the OST. It has been ratified by most space-faring nations, except the United States who argues that the agreement opposes its interest in free enterprise. The subject and politics of the agreement aside, The Moon Agreement is an interesting example for the purposes of this paper, being a large-scale multilateral agreement in which one of the largest relevant states is not a member.

Principle VI of the Principles Relating to Remote Sensing of the Earth from Outer Space encourages the use of observational power of space assets in international agreements – such as the verification measures in several of the nuclear agreements.⁵² Again, like the OST, space instruments are serving a dual purpose. Supporting nonweaponized activity in space,

⁴⁸ Kimball, Daryl, Arms Control Association The Outer Space Treaty at a Glance, October 2020, <https://www.armscontrol.org/factsheets/outerspace>

⁴⁹ Chiu, "Orbis non sufficit — Co-operation and Discord in Global Space and Disarmament Governance," *The Hague Journal of Diplomacy* 18, no. 2-3 (2023): 351-379.

⁵⁰ Chiu, *supra* note 47.

⁵¹ United Nations Office of Outer Space Affairs, The Moon Agreement

⁵² United Nations Office of Outer Space Affairs, 41/65 Principles Relating to Remote Sensing of the Earth from Outer Space, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/principles/remotesensing-principles.html>

while additionally providing avenues for increased security.

The Principle on Nuclear Power Sources resolution adopted by the general assembly acknowledges that nuclear power sources are particularly suited for some space missions or even essential given their compact size and long life.⁵³ The principles further outline requirements for technical safety assessments and other measures of technical expertise regarding both nuclear and space technologies. The need for technical expertise is a frequent contention in the terrestrial nuclear regime, drawing a parallel between these principles and several of the nuclear arms control agreements.

These instruments are far from a conclusive list of all agreements pertaining to space, but looking at the totality of space law, no new treaty has emerged from the United Nation's Committee on the Peaceful Uses of Outer Space (COPUOS) since 1979. Why no new space treaties, after a flurry of them in the 1960s-1970s? That decade saw a boom of technology, and with it an immediate need for some kind of framework and rules for security.⁵⁴ Additionally, at the time, the COPUOS delegates recognized the technical expertise of the United States and the Soviet Union and gave their drafts significant weight.⁵⁵ With new players to the space field, came new opinions, needs, and factors. This crowded and complex new situation makes traditional methods of legal agreements a considerable challenge, leading to new avenues for collaborative space operations.

National Space Law, Commercial Contracts, and Intergovernmental Agreements

Much of modern space law lays outside the United Nations and the multilateral treaty structure. States must develop some measure of national space law to govern their space-related activities to comply with their international obligations under the OST. Most space faring states adapt national legal frameworks based on their specific needs and the range of space activities conducted in their state. There also exists a massive body of commercial agreements that impact outer space operations and the companies working in space. In addition to these commercial contracts are civil contracts and international ones applying to specific space missions undertaken by states.

A good example of this is the Intergovernmental Agreement (IGA) governing the International Space Station (ISS). The international cooperation on the ISS is governed by the IGA, a series of Memoranda of Understanding, and assorted agreements made when the needs

⁵³ United National Office of Outer Space Affairs, 41/68 Principles Relevant to the Use of Nuclear Power Sources in Outer Space, <https://www.unoosa.org/oosa/en/ourwork/spacelaw/principles/nps-principles.html>

⁵⁴ Wright Nelson, The Artemis Accords and the Future of International Space Law, American Society of International Law Insights, Volume 24, Issue 31, December 10 2020 <https://www.asil.org/insights/volume/24/issue/31/artemis-accords-and-future-international-space-law>

⁵⁵ Bin Cheng, Studies in International Space Law 205 (1997)

arise between NASA and the other agencies.⁵⁶ The United States, working through NASA, takes a lead role for the overall coordination and management of an integrated space station. The IGA gets into the weeds on issues such as jurisdiction, ownership, allocation of rights and resources, and beyond. In other contexts, these issues may be extremely adversarial, but the IGA manages to get the United States, Russia, Japan, Canada, and the European Space Agency into accord. To many the ISS IGA is a beacon of hope for international cooperation in space. While conflict and tension on earth make their way into the process, the ISS has remained operational through its existing lifetime – its 21 years of continuous human presence in space is an inspiration.

The precise mission of the ISS is not analogous to many other global challenges, but it does create a proof case for the possibility of long-term collaboration on an active level. With daily international interaction taking place both on the ISS and on the ground to support operations, the ISS requires constant communication between partners. This may be the key to its success in bringing varied parties together, even while they experience conflict on Earth.

The Artemis Accords

In 2020 the United States began a push for a series of agreements called the Artemis Accords (Accords). The Accords underscore existing law from the OST, while also reinforcing United States interpretation of international law - advancing United States thinking about operations in space globally and seeking to define ambiguous language. The Accords cover a variety of topics including the need for peaceful purposes in space activities, transparency, the sharing of scientific data, protecting space heritage, space resources, and orbital debris.⁵⁷ Though the United States has referred to the Accords as “a bold, multilateral vision for the future of space exploration,” the individual agreements are signed bilaterally between the United States and its partners.⁵⁸ The agreements bolster existing multilateral instruments, while also perhaps attempting to set some norms of behavior.⁵⁹

In this effort, the Accords lay out a few controversial solutions to areas ripe for conflict or international disagreement in space. One notable issue is the notion of “safety zones.” The OST clearly bars state appropriation of celestial bodies, but for space mining activities the question of the extracted materials becomes cloudier. The Accords provide that

⁵⁶ St-Arnaud, Farand, Uchitomi, Frank ‘The Legal Framework for the International Space Station’ a presentation made to the UN Committee on the Peaceful Uses of Outer Space Legal Sub Committee, April 17, 2023, <https://www.unoosa.org/pdf/pres/lsc2013/tech-05E.pdf>

⁵⁷ United States Department of Space, Artemis Accords, <https://www.state.gov/artemis-accords>

⁵⁸ Littlejohn, Jennifer, ‘Space Unites Us’ United States Department of State, May 5, 2023, <https://www.state.gov/dipnote-u-s-department-of-state-official-blog/space-unites-us>

⁵⁹ Lee, Magilton, Ruffolo, Diplomatic Impact in the Stars? A Review of the Impact of the Artemis Accords on Global Relationships, 30 *Cath. U. J. L. & Tech* 1 (2022).

“the extraction of space resources does not inherently constitute national appropriation”, provided that “contracts and other legal instruments relating to space resources should be consistent with the [Outer Space] Treaty.”⁶⁰ Presumably seeking to support the United States commercial industry interested in space mining, the Accords then go on to establish the concept of safety zones, where a state must not interfere with other state’s resource extraction activities.⁶¹ The Accords don’t go into the specific logistics into designating territory or “zones,” only limiting them by the scope and timeline of the existing space activity’s operations. One can imagine that such a practice may favor states with ample resources – creating a “first in time, first in right” approach to resource extraction or other activities on celestial bodies. Further, the Moon Agreement (which the United States is not party to) expressly states that the Moon “and its natural resources are the common heritage of mankind,” and commits states to creating regimes for governing space resources.⁶² Such conflicts in language or notions of territorial delegations could easily lead to international tension – so why have 27 countries, several of whom are party to the Moon Agreement, signed?⁶³

The Accords initially targeted allies, as its first signatories included the United Kingdom, the United Arab Emirates, Luxembourg, Japan, Italy, Canada, and Australia. The Accords encourage the notion of cooperation and state a desire for establishing joint-efforts, including mention of the United States Artemis mission. However, there is no tangible “carrot” for the signatories, beyond affirming OST principles and showing an understanding for the United States’ interpretation of them. For some states, it may be that signing is meant to show appreciation for their relationship to the United States. It fosters a sense of collaboration and is a show of trust within the United States – who is an advanced and predictable partner in space activities.

Additionally, an interpretation of international law that benefits the United States space industry also benefits the commercial sectors of other signatories. The more lenient interpretation of appropriation and the policy focus on commercial endeavors would benefit space companies in any country. The ownership rights to the “fruit of your labor” are a tried-and-true incentive model for humans, underscoring the classical notion that to claim property

⁶⁰ The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids, NASA, <https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf>

⁶¹ Gross, Matthew, The Artemis Accords: International Cooperation in the Era of Space Exploration, Harvard International Review, January 27, 2023, <https://hir.harvard.edu/the-artemis-accords>

⁶² Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 18, 1979, 1363 U.N.T.S. 22

⁶³ United States Department of Space, Artemis Accords, <https://www.state.gov/artemis-accords>

has always been an economic incentive for human expansion.^{64,65} Is the “carrot” for the Accords a bet on the signatory’s own commercial space industry or a showing of good faith with the hope that it leads to engagement with the United States industry? Regardless, as more and more states join the Accords, their popularity grows.

It is too early yet to determine if the Accords have truly made space a safer and more collaborative domain. There is genuine concern that if China and Russia are not a part of the process, the Accords will contribute to the escalation of competition and rivalry in space.^{66, 67} In 2023, China announced its creation of the International Lunar Research Station Cooperation Organization (ILRSCO) in support of the China-led International Lunar Research Station (ILRS). ILRSCO is somewhat analogous to the Accords, and its political groundwork – the notion being to create an international collaborative group working on the Moon.⁶⁸ Russia is working with China on the ILRS, as well as a growing number of other countries. While the Accords and the ILRSCO may easily operate parallel to one another, it may also represent a “bifurcation in lunar governance and approaches to lunar missions, where you are either Team Artemis or Team ILRS.”⁶⁹

Given this bifurcation, it cannot be said that the Accords are the global success story they sometimes purport to be (at least not yet). Though that is not a signal of failure. Due to the Accords, significant dialogues are happening collaboratively on the world stage garnering public attention. Both the Accords and the ILRSCO represent new agreements, where none had come for many years. Like many issues of international law, both walk the line between friendly cooperation and escalating competition – but at least that line is up for discussion. The Accords, primarily underscoring established law in the OST, move the ball forward just slightly, keeping discussion of issues like resource allocation, jurisdiction, and common heritage productive. If these issues are to be solved, they had to be put forth beyond debates

⁶⁴ Brooks, Andrew, The Artemis Accords: The Necessary Incentive of Space Extraction Rights, *Columbia Journal of Transnational Law*, November 9, 2020, <https://www.jtl.columbia.edu/bulletin-blog/the-artemis-accords-the-necessary-incentive-of-space-extraction-rights>

⁶⁵ But in the reverse, that’s just what has some people worried – colonialization and human land grabs also have a rich history of harming marginalized populations. When it comes to the Moon there may not be an indigenous population to be harmed or displaced, but there are state’s less situated to compete for operational “safety zones.” Those nations are likely to miss out on valuable access to space as more space-advanced nations begin operations.

⁶⁶ Ortega, Artemis Accords: A Step Toward International Cooperation or Further Competition?, *LAWFARE* (Dec. 15, 2020 10:25 AM), www.lawfareblog.com/artemis-accords-step-toward-international-cooperation-or-further-competition.

⁶⁷ Wang, NASA’s Artemis Accords: The path to a united space law or a divided one?, *THE SPACE REV.* (Aug. 24, 2020), <https://www.thespacereview.com/article/4009/1>.

⁶⁸ Jones, Andrew, China to establish organization to coordinate international moon base, April 28, 2023, <https://spacenews.com/china-to-establish-organization-to-coordinate-international-moon-base/>

⁶⁹ Quote by Victoria Samson of the Secure World Foundation, from Jones, Andrew, Venezuela signs up to China’s moon base initiative, *Space News*, July 18 2023, <https://spacenews.com/venezuela-signs-up-to-chinas-moon-base-initiative/>

on the U.N. committee floor. Criticism of the Accords is just as healthy as praise because it keeps the dialogue in motion. Perhaps this is the victory of soft law. While lacking in weight, its ease is its superpower. Creating consistent and constant communication helps build predictability and trust, which is a recipe for a more secure world.

DRAWING THE ANALOGY: WHERE SPACE AND NUCLEAR FRAMEWORKS ALIGN AND DIVERGE

Reviewing the nuclear arms regime and space law there are some analogies that can be drawn between the two. Identifying these overlaps in function and purpose enables the discovery of useful lessons from one to the other. The first and most obvious of these are the players: the United States and Russia are the historical and modern powerhouses both in space and in nuclear weapons. While a focus on these nations remains at the forefront of both areas today, the arena looks different than it has in the past. The global scope is bigger, as smaller or less-resourced nations are actively pursuing space operations or seeking nuclear resources more aggressively for energy.

Looking back to the OST and its dual role as a space operations and arms control treaty there are some observable ways space law impacts nuclear arms control. For instance, the nuance between weaponization and militarization being front in center, shows a clear delineation in the purpose of activities. This is mirrored in the nuance between nuclear arms and nuclear energy and the balance of those dual uses. The dual use of space and nuclear technology is also reflected in how the agreements support one another – space treaties can assist with compliance monitoring of nuclear treaties. This space-based enforcement of nuclear treaties can help to alleviate less politically practical inspection methods, such as traveling to nations with fragile security. Ongoing norms in space are instrumental in supporting arms control measures.

Legal instruments regarding space also require a need for technical expertise, like nuclear agreements. Building a nuclear facility or objects meant for space is extremely complex and specialized work. It is one of the reasons that displaying capability in either, is a signal of strength and prosperity. A national workforce that can build nuclear weapons or rockets is an educated and well-funded one. This complexity also drives a need for technical expertise in agreements. Verification mechanisms, present in both space and nuclear arms agreements, require specialists who know what they're looking at. Facilitating reviews of the building processes, storage, and safety requires collaboration in identifying and agreeing upon who is an expert and qualified to verify terms are being met.

Nuclear arms control agreements and space law are also negative, or limiting, agreements. Rather than saying, "here is what can be done" they focus on "here is what may not be done." This is reasonable, for if the emphasis was on prescribing what *can* be done in space,

the list would be infinite. The implication that anything unlisted would not be allowed in space would be severely limiting in a domain so large. Turning to nuclear, the reasoning for the limiting approach is inherent: the desire is to reduce the number of nuclear weapons that exist, not to encourage new ways to use them. The negative approach feels practical in these instances – it addresses very specific limitations (as in, you may not create new warheads) and outlines actions meant to restrain operations (as in, you must reduce your warheads by a certain number), without touching the wide array of what is left outside of that specificity. This restrictive approach remains the norm in nuclear arms, but in space there is an apparent shift to permissive ideals. This is present in the domestic laws within the United States,⁷⁰ but also notable in the Accords. The Accords name activities and seek to protect them, such as resource extraction.

A shift from restrictive to permissive thinking notably coincides with the accelerated use of soft law mechanisms in space. Nuclear arms agreements and space both deal with the challenges of dual use technologies and the need for extremely specialized expertise. Could a shift to soft law thinking revive nuclear arms discussions in the same way?

APPLYING THE SOFT LAW LESSONS OF SPACE LAW TO THE NUCLEAR REGIME

The Artemis Accords fall into the soft law category as a non-binding normative instrument that lays out a set of understandings, principles of behavior, and standards. While there are no binding measures, the Accords further the legal perspective of the United States and show a growing trend towards permissive views on space operations. The crystallization of the standards and norms the United States hopes to eventually codify, may help override the views of present dissenters by laying the basis for forming new customary international law.⁷¹

Looking back to the TPNW, there is international interest in developing norms of behavior regarding nuclear weapons. Further, looking to the SORT, working groups and commissions have been agreed upon in the past by the United States and Russia. So, clearly, there may be some opportunities for soft law in nuclear arms control. This section will look directly to creating norms and to the power of communication channels instigated by soft law mechanisms.

⁷⁰ United States domestic law is working towards more permissive models in space governance, for example, in remote sensing. See, NOAA Eliminates Restrictive Operating Conditions From Commercial Remote Sensing Satellite Licenses, Office of Space Commerce, NOAA Satellite and Information Service, August 7, 2023, <https://www.space.commerce.gov/noaa-eliminates-restrictive-operating-conditions-from-commercial-remote-sensing-satellite-licenses/>

⁷¹ See, Dinah L. Shelton, *Soft Law in HANDBOOK OF INTERNATIONAL LAW* (Routledge Press, 2008), on page 8 discussing uses of soft law.

Developing Customary International Law to Support Non-Proliferation

International law may be formed through state practices that rise to the level of custom. Article 38 of the International Court of Justice Statute, refers to “international custom, as evidence of a general practice accepted as law.”⁷² For a practice to rise to the level of customary international law the state practice must be consistent, and the practice must occur out of a sense of legal obligation – often referred to as *opinion juris*.⁷³ In many cases lawyers have successfully argued that many treaties and agreements have become customary international law, obligating states to its terms and/or definitions whether or not they are signatories.⁷⁴ This can be an immensely powerful tool, then, when it comes to areas in which there are former treaties, but progress to making new agreements has stalled.

The consistency of observation of the general principles of the OST is well recognized – which is broadly true of the nuclear arms regime as well. However, whether the primary nuclear arms agreements have transcended to customary international law is less relevant than in space agreements – as only a limited number of states have nuclear weapons, compared to the number of states engaged in space operations. Further, the specificity of the nuclear state actors the NPT applies to, for example, removes most any argument of *opinion juris* for most of the active practices. The remaining “have-nots” are, of course, still legally obligated to some limitations, but again whether these instruments have become custom isn’t relevant to recent violations – the breaching state(s) are parties. So why then is the discussion of customary international in space potentially useful to the nuclear arms regime?

The Accords leverage the OST’s broad principles and operationalize them.⁷⁵ These soft law agreements don’t create obligations so much as they construct definitions and elaborations on existing principles. The political and diplomatic move to bring nations into the United States space system with a non-obligatory agreement, that so frequently refers to the beloved OST, has no doubt played a part in their popularity.⁷⁶ As more nations sign, more states develop a sense of legal obligation to these definitions – by which they may craft their own practices. It is a slow game, but in their own way the Accords are slowly building on to the OST; something that would have proved impossible on the floor of the United Nations.

There is an opportunity for the nuclear arms regime to learn from this. First identifying what has worked with the major nuclear players. Second, looking to ways to move the ball only slightly forward – as in, what definitional or marginal terms push the

⁷² Statute of the International Court of Justice, <https://www.icj-cij.org/statute>

⁷³ Statute of the International Court of Justice art. 38, June 26, 1945, 59 Stat. 1055, 33 U.N.T.S. 933.

⁷⁴ See, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)* Merits, Judgment, I.C.J. Reports 1986, p. 95, para. 177

⁷⁵ Walker A. Smith, *Using the Artemis Accords to Build Customary International Law: A Vision for a United States-Centric Good Governance Regime in Outer Space*, 86 J. AIR L. & COM. 661 (2021)

<https://scholar.smu.edu/jalc/vol86/iss4/5>

⁷⁶ Walker, *supra* note 84

goals forward without rocking the boat too hard. There may be an opportunity to bring the major nuclear weapon states more meaningfully back together without the baggage of the arguments over the existing agreements. The Accords are a way to say, “we all love the OST and respect it; let’s build on that.” Which, while it caused controversy and criticism (which is largely unavoidable), it was not so far as to make states reject it outright. In nuclear arms there may be room to say, “we all appreciate the NPT; let’s build on that.”

However, using customary international law to create new law is a long process, and ripe with uncertainty. Further, where nuclear arms are so fundamentally dangerous, friendly agreements are harder to come by. It’s much easier to agree to space missions on the Moon that don’t inherently threaten other nations. Competing space operations may prevent a state from completing the same work or limit future space access, but they do not threaten to end life on Earth. So, while customary international law may be “a tool in the toolbox” for diplomats and law makers working within the nuclear arms control regime, it is unlikely to experience the same success the Accords have experienced thus far.

Developing Soft Law to Support Non-Proliferation

The Accords are a controversial initiative, but they have largely well received. This is partially because the United States is an excellent partner to have, as one of the most active nations in space. The Accords are an opportunity to revisit old allies and partners and reach out to new ones outside of the traditional walls of U.N. Utilizing distinguished figureheads in space and celebrating the notion of partnerships, they also facilitate trust.⁷⁷ The importance of the U.N. structure and the formal treaties is not in question, but the Accords operate outside such formality. They serve as a secondary mechanism for dialogues on space operations. This is where soft law can shine: its non-obligatory nature makes finding assent easier and it keeps relevant conversations happening. The process of making soft law may be where the nuclear arms regime can glean its greatest lesson from space law.

There is a general fear that the former nuclear arms structure is weakening, and norms are degrading. That shift is alarming and scary as the world aims to work toward total disarmament. If coming to a new agreement is not an option, which seems likely, keeping channels open is better than nothing. If agreements are heading toward deterioration, retaining communication keeps us safer than channels going dark. While soft law agreements may not be able to go as far as states desire, and may not even provide new additional safety measures, they *can* play a role in keeping communication channels open and functioning.

In the same way that the Accords provide the United States a less formalized way to communicate with partners and celebrate alliances and partnerships, soft law mechanisms in nuclear arms may re-open or keep-open channels of communication with critical states like

⁷⁷ Riordan, Machoň, Csajková, “Space Diplomacy and the Artemis Accords,” *The Hague Journal of Diplomacy* 18, no. 2-3 (2023): 380-408.

Russia and China. Learning from the Accords, it is important to start small and view this style of agreement for what it is, a trust builder. A future new nuclear arms agreement may not be capable of overhauling the regime, but it may be able to promote global values of nonproliferation and influence other actors. In this way, using soft law as its being used in space via the Accords, may be extremely useful to nuclear arms goals.

To do this, the United States must determine some general principles that are most critical – reaffirming and building on existing principles. An agreement must garner a feeling of partnership and mutual respect for long held traditions. This could range from what constitutes an inspection, to the facilitation of working groups like those instigated through the SORT, to underscoring existing nonproliferation obligations. The aforementioned 2022 joint letter between the five nuclear states in the NPT, reaffirming their commitment to the treaty, could serve a launching point.⁷⁸ The goal of an Accords style soft law agreement is to foster positive and friendly communications in an operation domain, starting from mutually understood principles. Leveraging positive communications and agreements of the past, like the Accords do with the OST, is a pathway to future agreements because it generates expectations and predictability.

Expectations and predictability are a pathway to trust. In an arms regime lacking in trust, as it appears to be now, soft law agreements may be a guiding star back.

CONCLUSION

This paper has argued that the nuclear arms regime could learn from modern space law, by utilizing the soft law model laid out by the Artemis Accords. To do this the functions of international law and the status of multilateral agreements in both space and nuclear arms were detailed. In exploring the analogies between space law and nuclear arms agreements, the Artemis Accords, and their creation, was described. While the comparison is imperfect, there are lessons from the Accords, and the creation of soft law, that arms control methods may benefit from. The creation of customary international law may play a role, but more significantly the quiet superpower of soft law is communication. The Accords have relied on long held principles from the OST, included notable and distinguished individuals, and invited other nations to be a part of space traditions. They've worked to generate a feeling of inclusivity over obligation, and progress over restrictions. Whether or not this shift in tone lasts, soft law keeps the dialogue moving and makes it easier for states to come together than more formal tactics do. Even when communication is contentious, it creates predictability, which is a pathway to trust. When global nuclear security is at risk having open channels of

⁷⁸ Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races, January 3, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/03/p5-statement-on-preventing-nuclear-war-and-avoiding-arms-races/>

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communication makes the world safer than not. Soft law, as used in the recent Artemis Accords, may be a viable model for facilitating that communication.

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