State Theory

Space Wars: Conquering the Stars or Each Other?

Introduction

As humanity contemplates the final frontier of space, the question arises: will this expansion serve as a path to unity or a mere projection of terrestrial conflicts into orbit? George Friedman's The Next 100 Years (2009) predicts space as the next geopolitical battleground[1], where nations will compete not only for strategic advantage but for ideological dominance. This perspective parallels the analysis in Equilibrium, which suggests that internal conflicts—such as those seen in the ongoing Ukrainian crisis and tensions within the European Union—could be redirected through the strategic creation of an "external threat." By fostering a shared objective in space, it may be possible to alleviate these fractures, offering a constructive outlet for rivalries. The manipulation of public perception through "fake news," however, has often served more divisive ends. Rather than uniting, it has sowed distrust and misinformation, revealing the complexity of using psychological tools in the service of peace.

Historical and literary insights underscore the potential of external threats to drive internal cohesion. Visionaries like Jules Verne foresaw how such shocks could reshape societies, as illustrated in his novella The Golden Meteorite, where the sudden appearance of a gold-laden asteroid transforms economic and social structures overnight. Verne's work, although fiction, touches on a critical point about the interplay between perception and societal stability. When framed through a modern geopolitical lens, Verne's golden meteorite offers a compelling parallel: by creating a focused ambition in space, nations could not only prevent internal discord but also drive economic innovation, much like the asteroid did in Verne's tale. This vision aligns with Kissinger's notion that "a perceived external challenge can generate unprecedented internal unity" (p. 135)[2], yet cautions that without careful ideological foundation, such endeavors may lead to discord rather than collaboration.

Henry Kissinger's analysis of balance-of-power politics also adds depth to this discussion. Kissinger argues that "stability is sustained when no nation feels its security is at risk" (p. 218), suggesting that any geopolitical movement toward space must be undertaken with careful regard to international sensitivities. The prospect of

---

[1] G. Friedman. *The Next 100 Years: A Forecast for the 21st Century*. New York, 2009. pp. 101-102

[2] Henry Kissinger, *World Order* (2014). New York: Penguin Press pp. 125-220.

space defense raises the question: can a stable "external threat" be constructed that fosters cooperation without escalating into outright conflict? Machiavelli's pragmatic insights[3] from The Prince (1532) provide additional perspective here. He posits that rulers should not only secure power but ensure their foundations are strong enough to withstand future challenges. "A prince who does not himself lay strong foundations cannot build on them," he writes. This principle applies to space, where nations must establish cooperative frameworks that prioritize shared stability over competitive dominance.

Ziya Gökalp's sociological perspectives on national identity further enrich this framework. His analysis of Turkey's strategic neutrality[4] during WWII highlights how ideological positioning amid global upheaval can reinforce unity without direct confrontation. This neutrality in a wartime context underscores a valuable lesson for space exploration: ideological alignment among NATO and other international players may allow for collaboration without hegemonic control, presenting a balanced and stable approach to collective advancement.

The paradox of environmental oversight adds another layer of complexity. While global environmental initiatives aim to reduce Earth-bound pollution, the unchecked buildup of space debris reveals an "environmental hypocrisy" in which the sustainability of the layers of the atmosphere[5] remains largely ignored. Recent incidents involving satellite breakdowns and orbital debris highlight the risks of this oversight. Bibó's (1986) criticism of selective political will[6] underscores the need for comprehensive responsibility—one that considers not only terrestrial ecosystems but our shared orbital environment as well.

This work will explore interconnected ideas through four main sections. The first will address environmental contradictions and the increasing threat posed by space debris. The second will examine the role of external threats as a mechanism for unity, evaluating the strategic use of perception and mass-media tools in conflict prevention. The third section will apply Gökalp's perspectives on neutrality and ideological shifts to NATO's evolving role in space. This work will consider the economic potential of space, inspired by Verne's "golden meteorite" as a metaphor for innovation and growth. By examining these ideas within a scientifically grounded framework, this

---

[3] Niccolò Machiavelli, *The Prince,* p. 26.

[4] Ziya Gökalp, *Turkish Nationalism and Western Civilization: Selected Essays of Ziya Gökalp*, trans. Niyazi Berkes (New York: Columbia University Press, 1959), pp. 43-44.

[5] Michael N. Ross, David W. Toohey, and Manfred Peinemann, "Limits on the Space Launch Market Related to Stratospheric Ozone Depletion," *Astropolitics* 7, no. 1 (2009): 50-82, p. 123.

[6] István Bibó, *Válogatott tanulmányok* vol. 2. Budapest: Magvető Könyvkiadó, 1986), p. 123.

study aims to determine whether the conquest of space can transcend conflict, fostering unity and ideological evolution on a global scale.

As the Ukraine and Gaza wars unfold, their economic impact reverberates globally. Defense-related industries and markets see substantial gains, with increased spending driven by geopolitical tensions. The Stockholm International Peace Research Institute (SIPRI) observes that "escalating conflicts fuel demand for arms and bolster economic sectors linked to defense" (SIPRI Yearbook 2023, p. 22). This reality prompts a critical question: as humanity reaches toward space, will our economic growth continue to hinge on the cycle of conflict, or can we envision a future where progress is driven by cooperation rather than rivalry?

In the words of Sun Tzu, *"In the midst of chaos, there is also opportunity"*[7]. As we venture into space, his words remind us that, while uncertainty and rivalry may characterize this new frontier, it also presents a chance for ideological unity and scientific advancement—a rare opportunity to beautifully 'trick' potential conflict into collective progress for humanity.

[7] Sun Tzu, *The Art of War*, trans. Lionel Giles, 1910, p. 85

1. Environmental Hypocrisy and the Reality of Space Debris

As space debris re-enters Earth's atmosphere, the resulting combustion releases particles that contribute to gaseous emissions and ozone depletion – an impact rarely considered in environmental discussions. Compounding this effect, the Kessler Syndrome creates an exponential buildup of orbital debris, risking a cascade of collisions that could render portions of space unusable. Like the frog in gradually heating water, analogy from Equilibrium, humanity faces again a creeping crisis: our inaction in space may lead to irreversible consequences both in orbit and on Earth.

1.1 The Nature of Space Debris: Re-Entry and Environmental Impact

The accumulation of space debris presents many risks that extend beyond orbital safety. Space debris, originating from defunct satellites, discarded rocket stages, and collision fragments, populates low-Earth orbit (LEO) in increasing numbers. As of 2023, NASA and the European Space Agency (ESA) estimate that over 36,000 pieces[8] of trackable debris larger than 10 cm exist in LEO, with countless smaller particles that cannot be effectively monitored. The collision risk among these objects continues to grow, highlighting the pressing need to understand both their orbital dynamics and their environmental impacts upon re-entry.

Kessler Syndrome: A Field of Orbital Instability

The Kessler Syndrome[9], proposed by Donald J. Kessler in 1978, describes a scenario where the density of objects in LEO reaches a critical threshold, causing each collision to generate more debris and set off a chain reaction of subsequent collisions. This cascade effect could lead to certain orbital bands becoming unusable for decades, impacting services reliant on satellite infrastructure, including telecommunications, GPS, and weather forecasting. Recent models, such as those by Liou and Johnson (2006), estimate that the probability of collision doubles approximately every five years in debris-dense regions[10].

This process can be visualized as a coin-tossing machine – you can see at fairs, where balance is maintained only until a critical load is reached, at which point collisions happen in rapid succession, like coins cascading when the machine tips over.

---

[8] European Space Agency, Space Debris Environment Report, 2023, p. 12.

[9] Kessler, Donald J., and Burton G. Cour-Palais, "Collision Frequency of Artificial Satellites: The Creation of a Debris Belt," *Journal of Geophysical Research* 83, no. A6 (1978): 2637–2646.

[10] Liou, J.C., and Johnson, N.L., "Risks in Space from Orbiting Debris," *Science* 311 (2006): 340.

NASA has warned of this potential “near-exponential growth in collision probability” if debris mitigation measures are not enforced.

The Kessler effect, in this sense, represents an escalating instability that could dramatically alter both the usability and sustainability of orbital space. Not talking of masses of atmosphere-altering particles slowly gravitating towards our planet.

Impacts of Re-Entry: CO_2 Emissions and Atmospheric Contamination

The environmental consequences of debris re-entry extend beyond particulate matter. Research by Ross et al. (2009) indicates that re-entering debris contributes alumina and other metal oxides to the stratosphere, which, in sufficient concentrations, could influence ozone depletion[11]. The effects of alumina particles on the ozone layer resemble those observed with volcanic eruptions, where particles can persist for years, affecting radiative forcing and stratospheric temperatures. This phenomenon presents a challenge for global environmental strategies: while terrestrial emissions are tightly regulated, the impact of space debris remains largely unmanaged, despite the potential for far-reaching consequences.

Regulatory Gaps and the Global Environmental Paradox

The contradictory approach to space debris regulation reflects a broader inconsistency in environmental policies in-house – or say planet. Hortay deflects this dynamic as “allowing industrial waste to accumulate unchecked, but beyond public sight” (Hortay, 2020). This analogy underscores the paradox of current environmental frameworks, which focus on Earth-bound pollution yet leave orbital waste largely unaddressed. The 1967 Outer Space Treaty, while a landmark in space law, lacks enforceable provisions to manage the environmental footprint of space activities comprehensively. The absence of international standards on debris mitigation and re-entry protocols highlights a critical gap, leaving atmospheric impacts largely unmonitored.

The Kessler effect, combined with the environmental costs of debris re-entry, demands a coordinated global response that mirrors the urgency of terrestrial pollution management. Without intervention, space debris will continue to accumulate and re-enter, gradually introducing pollutants into the atmosphere—a scenario that reflects the slow-boiling “frog in water” analogy from my work Equilibrium where I reflect on the aspect of the population not being aware and able to change it’s own destiny by seeing only a “slice” of it, to be concise. Left unaddressed, this creeping environmental threat could lead to irreversible changes, not only compromising the utility of space but impacting the very atmospheric balance essential to life on Earth.

[11] Astropolitics, 7(1), p. 123

1.2 Orbital Sustainability Risks and Emerging Challenges

The exponential increase in space activity has placed unprecedented strain on the long-term sustainability of low-Earth orbit (LEO). Following the discussion of the Kessler Syndrome, the risks of unchecked debris accumulation are clear, but these concerns extend beyond collision hazards. Orbital sustainability now faces compounded challenges from large-scale satellite constellations, the vulnerability of space materials to high-speed debris impacts, and the economic repercussions of potential service disruptions on Earth.

The Impact of Satellite Constellations on Orbital Density

The deployment of mega-constellations, such as SpaceX's Starlink and Amazon's Project Kuiper, has raised serious questions about LEO's capacity to support the sheer number of satellites planned. Each satellite occupies its own orbital path, contributing to an increasingly crowded environment that heightens collision risks and complicates orbital management. McKnight and Anz-Meador point out that "without strategic regulation, these constellations risk driving debris generation cycles in densely populated regions of space"[12]. The presence of thousands of additional objects requires enhanced collision avoidance systems and stricter guidelines to prevent inadvertent interactions that could trigger cascading effects.

Vulnerability of Spacecraft Materials to Micro-Debris

In addition to larger collision risks, micro-debris presents unique challenges to space assets. Even particles smaller than 1 cm travel at speeds exceeding 28,000 kilometers per hour, and their high kinetic energy poses serious risks to the thin materials commonly used in spacecraft. Despite being invisible to tracking systems, micro-debris impacts can cause significant damage, from puncturing thermal insulation layers to eroding exterior panels. Liou and Johnson note that "these minuscule fragments, though individually negligible, have cumulative impacts on satellite longevity and functionality"[13]. The continued accumulation of such particles in LEO raises concerns about the durability of future space missions, particularly in high-density orbits.

Economic Consequence of Orbital Instability for Earth-Based Infrastructure

The repercussions of orbital instability extend beyond space, directly affecting terrestrial services. Satellite-based infrastructure supports global communications, weather forecasting, navigation, and financial transactions—systems crucial to

---

[12] Darren McKnight and Philip Anz-Meador, "Satellite Constellations and the Kessler Effect: A Sustainability Concern," Journal of Space Safety Engineering 9, no. 2 (2022): 70-78, p. 73.

[13] Science, 311, p. 340

economic stability and public safety. Disruptions in LEO could compromise these functions, with serious implications for sectors ranging from emergency response to international finance. Brian Weeden points out that "a destabilized orbital environment jeopardises key infrastructures that underpin modern economies"[14] highlighting the urgency of sustainable orbital practices.

Mitigation Challenges and the Need for Enforceable Standards

Current mitigation efforts, including deorbiting mechanisms, collision avoidance technologies, and voluntary international guidelines, provide some safeguards but are limited by a lack of enforceable regulations. The Inter-Agency Space Debris Coordination Committee (IADC) and similar organizations offer frameworks, yet without binding standards, adherence remains inconsistent across space-faring nations and private enterprises. Liou et al. argue that "the absence of enforceable regulations severely limits the effectiveness of existing debris mitigation strategies"[15].

EU Regulation and the Fundamental Rights View on Orbital Sustainability

The European Union's approach to orbital sustainability reflects a commitment to intergenerational justice and Fundamental Rights, aligning with Article 37 of the Charter of Fundamental Rights, which enshrines environmental protection as a public value. Bibó's insight on shared responsibility resonates here:

"Freedom can only be achieved when it is extended to others, ensuring they inherit not chaos, but possibility."[16]

This principle informs the EU's Space Surveillance and Tracking (SST) Support Framework, which mandates cooperation among Member States to minimize debris, supporting a sustainable orbital environment crucial for both technological progress and environmental preservation. The regulation underscores the EU's commitment to "support the protection of European space infrastructure" and emphasizes collaboration among Member States to reduce debris risks, enhance safety, and "ensure the long-term

[14] Weeden, Brian, *"The Risks of Orbital Instability and Its Implications for Earth's Infrastructure"* Space Policy 27, no. 1 (2011): 43-50, p. 45.

[15] Liou, J.C., et al., *"The Limitations of Debris Mitigation Guidelines for Collision Prevention"* Acta Astronautica 91 (2013): 100-105, p. 102.

[16] István, Bibó *"The Ethics of Freedom," Collected Works*, p. 139.

sustainability of outer space activities."[17] There are yet other unattended ecological aspects that will be depicted in the following chapters.

Hungarian scholar Dr. Jur. László Blutman highlights accurately this regulatory approach, arguing that "progress is marked not by expansion alone but by responsible preservation"[18] emphasizing the need for a rights-based framework for space law. Aristotle's principle of *eudaimonia*[19] – the idea that a society thrives by creating conditions for collective well-being – reinforces this ethic, positioning space as a shared resource that demands "responsibility to the polis" the community at large. Which is a force uniting of the strongest.

Through this rights-based framework, the EU envisions a model of space exploration that prioritizes both environmental integrity and human rights, setting a precedent for sustainable and responsible space policies.

1.3 Environmental Facts of Space Debris Re-Entry

The environmental impact of space debris extends beyond orbital risks, as re-entering debris introduces pollutants into Earth's atmosphere. When fragments combust during re-entry, they release chemical compounds that can affect atmospheric composition, raising concerns about ozone depletion, CO_2 emissions, and climate impact. This section examines these effects with a focus on stratospheric composition changes and the regulatory gaps in addressing them.

Atmospheric Pollutants and Stratospheric Changes from Re-Entering Debris

As debris descends, the intense heat of re-entry combusts metals and composites, releasing pollutants that affect the stratosphere. The research by Ross et al. indicates that alumina particles, which are released upon combustion, have properties similar to volcanic aerosols, contributing to radiative forcing and potential ozone depletion[20]. These particles are chemically reactive in the stratosphere, posing long-term environmental challenges that extend beyond the immediate visibility of space debris.

Further studies have noted the release of trace metals – such as barium and titanium –during re-entry, which influence stratospheric chemistry. Ansmann et al.

---

[17] EU 2014/541

[18] Blutman, László, Space Law and Human Rights, 2018, p. 27.

[19] Aristotle, Nicomachean Ethics, Book I, p. 1095a.

[20] Ross, Michael N., Toohey, D. W., and Peinemann, M., "Limits on the Space Launch Market Related to Stratospheric Ozone Depletion,"

report that even minimal concentrations from frequent debris re-entry events can accumulate, amplifying their environmental impact over time[21]. The ongoing accumulation of these metals underscores the need for more comprehensive studies on long-term atmospheric effects and regulatory frameworks to manage them effectively.

Beyond trace metals, re-entry events release greenhouse gases, notably CO_2, into the atmosphere. While individual events may contribute minor emissions, the cumulative effect of frequent debris re-entry could gradually exacerbate atmospheric CO_2 levels. Research by Ross et al. suggests that "alumina particles released during re-entry have implications for stratospheric ozone depletion, drawing parallels to the effects of volcanic aerosol events"[22]. This presents a largely unaddressed environmental burden, signaling an urgent need for policy responses.

Regulatory Oversight and the Need for a Coordinated Environmental Policy

While terrestrial emissions are governed by strict environmental standards, space-related emissions from re-entering debris are seldom regulated, highlighting a significant oversight. The EU has made strides in orbital regulation through the SST framework, yet atmospheric impacts remain unaddressed. Freeland critiques this gap, noting that "the regulatory neglect concerning re-entry pollution reveals a broader failure to incorporate atmospheric considerations in space policy"[23] (see p. 82). Addressing this gap will require an integrated approach that considers the full environmental cost of space operations, aligning with the EU's commitment to environmental sustainability. By recognizing the environmental implications of space debris re-entry, stakeholders can better address the atmospheric challenges posed by space exploration. A cohesive regulatory framework that encompasses both orbital and atmospheric impacts is essential to sustainable space policy, ensuring that the drive for innovation does not compromise Earth's environmental integrity. As I often say, we try to regulate things that we decreasingly understand – that often kill us.

This duality reflects a broader inconsistency in industrial priorities. While Tesla has pioneered electric vehicles to reduce carbon emissions, Musk's other venture, SpaceX, continues to launch thousands of small satellites, intensifying the risk of orbital congestion and potential environmental impact. This contradiction illustrates what István Bibó once remarked on the nature of ambition: "True freedom and responsibility cannot flourish if one hand builds only to have the other hand tear

---

[21] Ansmann, Albert et al., "Impact of Re-entering Space Debris on the Stratosphere," Journal of Atmospheric and Solar-Terrestrial Physics, 2020, pp. 118-119.

[22] Astropolitics 7, no. 1 (2009): 50-82, pp. 123, 127.

[23] Freeland, Steven, "Regulating Space Debris: Challenges and Opportunities," International Journal of Space Law 12 (2021): 67-85, p. 82.

down”[24]. Musk’s dual influence raises questions about how sustainability goals are selectively applied, prioritizing Earth’s environment while sidelining concerns in space.

Environmental scholar Dr. Peter Dickens notes a similar inconsistency within the space industry, arguing that “the environmental ethics we apply terrestrially are often abandoned once outside Earth’s atmosphere, revealing a striking hypocrisy in our definition of sustainability”[25] (The Geopolitics of Space Exploration, 2017, p. 89). This view reinforces the need for a unified approach that considers the broader impact of space activities on both Earth’s ecosystems and the orbital environment.1.4 Military Involvement and Its Role in Debris Proliferation

The expansion of military activities in space has significantly contributed to the proliferation of debris, complicating peaceful space operations and increasing risks for civilian space endeavors. As global powers allocate substantial resources to enhance their presence in orbit, defense-oriented satellite launches and anti-satellite (ASAT) tests have emerged as major contributors to space debris, highlighting the dual-use nature of space technology.

1.4 Military Involvement and Its Role in Debris Proliferation

The expansion of military activities in space has significantly contributed to the proliferation of debris, complicating peaceful space operations and increasing risks for civilian space endeavors. As global powers allocate substantial resources to enhance their presence in orbit, defense-oriented satellite launches and anti-satellite (ASAT) tests have emerged as major contributors to space debris, highlighting the dual-use nature of space technology.

The Role of Anti-Satellite (ASAT) Tests in Debris Generation

Anti-satellite tests have been a leading cause of space debris, with notable incidents such as the 2007 Chinese ASAT test leaving thousands of debris fragments in low-Earth orbit. This event alone produced over 3,000 pieces of debris, most of which continue to pose collision risks. Such ASAT tests, often conducted to demonstrate technological supremacy or deter adversaries, exacerbate long-term sustainability issues. Brian Weeden explains that “ASAT tests serve short-term political goals but leave a legacy of orbital instability that affects all spacefaring nations”[26].

---

[24] István Bibó, *The Ethics of Freedom*, p. 137

[25] Peter Dickens, *The Geopolitics of Space Exploration*, 2017, p. 89

[26] Secure World Foundation, 2007, pp. 4-8

Defense-Oriented Satellite Launches and Budget Allocations

Beyond ASAT tests, defense budgets dedicated to satellite launches for surveillance, communication, and early-warning systems contribute indirectly to orbital congestion. Data from the Stockholm International Peace Research Institute's (SIPRI) 2023 Yearbook reveals that defense spending on space systems has surged, with nations investing heavily in military satellites that increase traffic in critical orbital zones[27]. While these assets enhance national security, they compound the risks of debris generation and further strain international efforts to maintain a sustainable space environment.

1.5 The Need for a Regulatory Framework: Current Gaps and Future Plans

As the space environment becomes increasingly congested, the absence of a binding regulatory framework for space debris management is proving to be a significant obstacle to sustainable space operations. Although treaties like the United Nations Outer Space Treaty and policies from agencies such as the European Space Agency (ESA) provide guidelines, these measures lack enforceability. The resulting regulatory gap leaves room for unchecked space activities that compromise orbital sustainability.

Limitations of the United Nations Outer Space Treaty (1967)

The 1967 Outer Space Treaty, foundational to space law, establishes several key principles, including the use of outer space "for the benefit of all countries" (Article I) and prohibiting the placement of nuclear weapons in orbit (Article IV). Despite its groundbreaking nature, the treaty's generality reveals limitations in addressing modern issues like space debris. Article IX, for instance, urges that "States Parties to the Treaty shall conduct all their activities… with due regard to the corresponding interests of all other States Parties,"[28] a guideline without enforcement mechanisms for debris mitigation. Freeland notes, "the absence of binding language on debris mitigation reflects the treaty's outdated framework in a time of evolving technological needs".[29]

This lack of specific provisions for debris control underscores a regulatory gap. Although the treaty encourages peaceful use and cooperative responsibility, it lacks concrete guidelines to curb today's debris challenges, leaving spacefaring nations with few obligations beyond voluntary compliance.

---

[27] SIPRI Yearbook 2023, p. 15

[28] United Nations, Outer Space Treaty (1967)

[29] International Journal of Space Law, 2021, p. 74

Local experts have also highlighted the importance of comprehensive EU regulation. Hungarian space policy researcher Dr. Péter Kovács argues,

"Europe's approach to space must combine technological innovation with responsibility; without binding legislation, orbital sustainability will remain an aspiration rather than a reality."[30]

In response to these concerns, the European Commission has drafted proposals that build on ESA's mitigation policies, emphasizing collaboration among EU members to monitor and manage debris while supporting sustainable space exploration. This dynamic is reflected in the Budapest Declaration, made after the Republican Party won the elections in the U.S in 2024. underlining the competitive need for improvement, thus incorporating a Fifth Freedom, to support common research, knowledge and education through various means, formulated as a preamble, it can further enhance collaboration between member-states, enriching European Space Agency's Debris Mitigation Policies and Comparative Analysis

The European Union has taken steps to evolve its regulatory approach to space sustainability, moving from general guidelines toward more stringent debris mitigation policies. ESA's 2014 Space Debris Mitigation Policy for ESA Projects[31] represents an early initiative, requiring projects to minimize debris through mission planning and end-of-life disposal measures. In recent years, however, EU policymakers have pushed for broader, enforceable frameworks to protect orbital sustainability across all member states. During a European Parliament session in 2021, MEP Andreas Schwab remarked,

"*Our commitment to sustainability must reach beyond Earth's borders. Space is no longer a frontier of unlimited resources, but one that requires careful stewardship.*"[32]

Rousseau's critique of unchecked progress during the Industrial Revolution offers a relevant analogy for today's space industry. He warned that "the quest for progress without moral restraint leads to the degradation of humanity's shared resources"[33] a principle that resonates as nations and corporations pursue aggressive space activities without sufficient consideration of long-term sustainability. Just as industrialization brought both innovation and environmental degradation, the expansion of space technology demands a regulatory framework to prevent a new frontier of environmental harm.

---

[30]Kovács, Péter, "*Balancing Innovation and Responsibility in Space Policy*" European Journal of Space Policy, 2022, p. 112.

[31] European Space Agency, "Space Debris Mitigation Policy for ESA Projects" (2014), pp. 1-4.

[32] European Parliament, Speech by Andreas Schwab, European Parliament Session, 2021.

[33] Rousseau, Jean-Jacques, Discourse on the Origin and Basis of Inequality, 1755.

The Industrial Revolution's rapid expansion highlighted the need for regulatory systems to mitigate environmental and societal impacts—a lesson applicable to space today. Steven Freeland argues that "the current lack of enforceable debris mitigation standards in space mirrors the unregulated industrial expansion of the 19th century, where unbridled growth led to unforeseen consequences"[34] Drawing on the experiences of the industrial proliferation, the international community has the opportunity to establish preventative regulations in space, fostering sustainable growth without compromising future access.

[34] Freeland, Steven, International Journal of Space Law, 2021, p. 81

2. The Construct of an External Threat as a Mechanism for Unity

In times of political and social division, humanity has often found a unique cohesion in the face of external threats, allowing internal tensions to dissipate as collective focus turns outward. From ancient strategic philosophies to modern theories on political unity, the concept of a common enemy has frequently unified societies, creating alliances and fostering resilience. István Bibó's reflections on collective action emphasize that societies achieve extraordinary solidarity when they confront shared challenges. Today, as space exploration opens up new frontiers, the concept of potential cosmic threats offers a new pathway to unite global efforts. Unlike terrestrial conflicts or the colonial practices that historically sowed discord, space presents an arena where humanity's competitive drive might be channeled constructively, fostering cohesion rather than division.

2.1 Historical Precedents of Unity through the idea of External Threats

Throughout history, the unifying power of external threats has driven societies to transcend internal conflicts. A prominent example lies in the Cold War, where the existential risk of nuclear escalation spurred the formation of alliances such as NATO, established to counterbalance the perceived threat posed by the Soviet Union. This period, defined by mutual fear and political maneuvering, directed immense resources and collective focus toward avoiding mutually assured destruction. Historian Lawrence Freedman observes that "the power of a common threat lies in its capacity to override domestic disputes in favor of a shared purpose"[35]. The psychological weight of a shared adversary—like the Soviet Union for the Western bloc—served as a powerful unifier, transcending national boundaries and ideologies.

Similarly, Sallust, the Roman historian, noted how external challenges could unify otherwise fragmented societies. Reflecting on Roman politics, he observed that "concord in adversity is strength," describing how threats from external forces could galvanize factions within Rome (The War with Jugurtha, p. 29). Sallust's insights resonate with Bibó's theory of societal unity in the face of shared threats, demonstrating how the concept is not limited to one era or culture. In modern terms, space exploration provides a new frontier for applying these principles, encouraging societies to divert competitive energies toward constructive, shared objectives without the destructive legacy of territorial conquest.

Cicero on Public Welfare and Unity

Cicero's political philosophy further emphasizes the importance of prioritizing collective welfare in times of crisis. His principle, *salus populi suprema lex esto*—"the

[35] The Evolution of Nuclear Strategy, p. 132

welfare of the people shall be the highest law"—underlines the idea that societies should prioritize unity when faced with external threats Cicero warned that "discord weakens a state, while unity strengthens it"[36] reinforcing the necessity of a common mission to unify factions and stabilize society. This principle, when applied to space, suggests that global collaboration could reduce terrestrial rivalries, transforming space into a domain where nations unite around the common goal of survival and advancement. Similarly to the geographic discoveries.

2.2 Bibó's Theory on Collective Mobilization

István Bibó's ideas on collective mobilization underscore the role of external threats in building societal cohesion. Reflecting on the Hungarian Revolution of 1956, Bibó argued that societies can transcend internal discord when they rally around a shared cause. He noted that "nations grow stronger through challenges that bind them in purpose" (p. 104), a sentiment that holds particular relevance in the emerging context of space exploration. While colonial ambitions often fractured societies and stoked competition, space exploration presents a unique opportunity to channel human ambition into a shared, peaceful mission that emphasizes collective progress.

Drawing on Bibó's concept of collective resilience, the potential for cosmic exploration to unify humanity lies in framing space as a domain where humanity must collaborate to overcome universal challenges. Bibó observed that when societies orient themselves outward, focusing on external threats, they build internal solidarity that withstands political, economic, and social pressures. In a space context, this principle can serve as a blueprint for fostering global cooperation.

Constructing a Shared Space Narrative

Our insights from Equilibrium on external threats as unifying forces can be extended to create a compelling narrative for space exploration. Unlike colonialism, which imposed harm on existing cultures and resources, space represents a realm where human advancement can proceed without exploitation. If framed as a mission that safeguards humanity from hypothetical cosmic dangers, such as asteroid impacts or excessive space debris, space exploration can catalyze the unity that Bibó theorized. By defining space as a shared resource and positioning humanity as stewards of the cosmos, nations can cultivate a sense of responsibility that transcends borders.

Sun Tzu, the Chinese military strategist, also recognized the value of understanding and preparing for external threats to ensure peace within. He argued that "the wise leader knows when to unify and when to divide"[37] an observation that

[36] Cicero, De Legibus, Book III

[37] Sun Tzu, The Art of War, p. 74

resonates with Bibó's perspective on resilience through collective focus. Applying this wisdom to space, humanity could foster alliances that prioritize peace and unity, rather than territorial control and division. This reflects China's tendency of not becoming as a colonial empire, but rather focus on alleviating internal tensions and increasing welfare. As Bibó understood, the agricultural revolutions that happened in the area way earlier than Europe caused a paradigm-shift similar to what we are searching to build.

2.3 A NATO-Led Narrative for Cosmic Collaboration

NATO's historical role as a collective defense alliance highlights how institutions can unify nations around a common cause. Originally formed to counter the Soviet Union, the alliance's mission has evolved to address broader security concerns. With space emerging as a strategic domain, NATO's expertise in alliance-building positions it uniquely to lead a cooperative mission in space security. In 2019, NATO formally recognized space as a new operational domain, with NATO Deputy Secretary General Rose Gottemoeller stating:

"Our security interests are increasingly interconnected, extending beyond Earth's boundaries into space."

This recognition reflects the world's most successful alliance's ability to adapt its foundational principles to new challenges. As space becomes an essential part of security considerations, NATO's commitment to "collective defense and the maintenance of international peace and security" could be expanded to encompass space, fostering an international approach to preserving orbital stability and safety. NATO's structure and strategic experience make it well-suited to lead an initiative focused on addressing cosmic threats, from asteroid detection to space debris management.

Developing a Unified Space Threat Response Strategy

A NATO-led response to potential space threats could serve as a model for global collaboration. This strategy would prioritize monitoring, communication, and rapid response capabilities for risks such as asteroid impacts or collisions caused by space debris. By redirecting military resources and technological innovations toward a mission that enhances global security, NATO could ensure that space remains a realm for peaceful advancement. This focus aligns with NATO's original principles, adapting them to the emerging context of space without the competitive or exploitative dynamics of colonialism, and without taking advantage of the lack of consistent regulation that economically stronger states tend to. As ESA's opposite – and much more productive and successful model –. We will depict the privatisation tendency later.

By organizing an international coalition focused on space security, NATO could help shift attention from terrestrial conflicts toward a universal mission that serves all of humanity. This coalition would operate under the assumption that preserving peace in space is crucial for maintaining peace on Earth, creating an interdependence that reinforces solidarity. Bibó's insight that societies can rally around shared goals provides a theoretical foundation for this vision, suggesting that NATO's leadership in cosmic security could inspire a unified approach to a sustainable space future.

In NATO's 2021 report on space as an operational domain, the alliance highlighted the critical importance of developing "resilient, secure, and sustainable space capabilities" to address emerging threats in orbit. NATO's Deputy Secretary General Mircea Geoană states,

"The security challenges in space are growing, with increasing risks of collision and competition."[38]

This aligns with the need for collaborative strategies that ensure the safe use of space for all, showing that a unified response is essential to manage and mitigate these risks effectively.

The Potential of NATO-Led Missions for Peaceful Space Collaboration

NATO's role in space security initiatives would promote peaceful collaboration and reduce the likelihood of terrestrial conflicts spilling over into orbit. This approach would model how defense alliances can evolve toward preservation, positioning space as a shared resource for human advancement. Such a mission would reinforce the notion that space is not a battleground but a domain of cooperative exploration, encouraging all nations to participate in its stewardship.

Through a unified space security mission, NATO could foster a global vision that transcends national divides, using collective security as a foundation for peace in an interconnected world. Bibó's ideas on resilience through external focus and Sallust's principle that "through harmony comes strength" underscore the value of such an alliance. By aligning its mission with peaceful space security, NATO could set a precedent for the responsible and collaborative use of space, laying the groundwork for a stable future in both cosmic and terrestrial domains.

2.4 Fake News and Mediatization as Tools for Paradigm Shift

István Bibó's insights from 1979 reveal a nuanced understanding of mass media's influence, emphasizing that, "modern media's capacity to shape public perception, if harnessed responsibly, could serve not as a tool for confusion, but as an

[38] NATO 2021. Strategic Concept

instrument for collective awareness"[39]. This perspective is particularly relevant as we consider how misinformation today, particularly around conflicts in Ukraine, Gaza, and even Myanmar – we tend to forget about, drives societal anxiety and division. In an era when media narratives heavily influence public perception, Bibó's suggestion of using media constructively invites a reimagining of these tools—not to create societal discord, but to cultivate a paradigm shift that redirects attention toward space as a shared, peaceful mission.

Misinformation and Modern Conflict: The Cases of Ukraine, Gaza, and Myanmar

Misinformation has proven to be a destabilizing force in recent global conflicts. In the Ukraine and Gaza crises, narratives spread through mass media have polarized public opinion, fueling animosity and undermining diplomatic efforts. Political analyst Peter Pomerantsev explains that "information warfare is now intrinsic to modern conflict; it destabilizes societies and erodes trust"[40]. The Myanmar crisis, too, saw misinformation spread through digital platforms, escalating ethnic tensions and obstructing peace efforts. These examples highlight how media narratives, often manipulated by state and non-state actors, can fracture public perception, perpetuating discord rather than fostering constructive engagement.

Reframing Media's Role Toward Constructive Ends

Yet, as Bibó views, media could be harnessed not to fragment but to unify, particularly around global missions like space exploration. Space historian Roger Launius somehow formulates this better as such,

"The public imagination has always been drawn to space as a symbol of human potential and progress"[41].

Redirecting media narratives to highlight the peaceful, collaborative potential of space could channel society's focus away from terrestrial conflicts, encouraging a shared vision of space as a universal frontier. Through accurate, hopeful framing, media could thus serve to alleviate societal tensions and inspire a cohesive outlook.

Strategic Media Framing for Societal Resilience

NATO's 2021 Strategic Communications Report underscores the power of "media framing to build societal resilience" in times of conflict, advocating for

[39] Bibó, Collected Essays, 1979

[40] Pomerantsev, Peter, This Is Not Propaganda, p. 178.

[41] Launius, Roger History of Space Exploration, p. 54

narratives that unify rather than divide[42]. By using media to foster public support for peaceful space initiatives, governments could counteract the divisive effects of misinformation in military contexts, presenting space as a new, shared domain of human aspiration. Such a shift, grounded in Bibó's vision, could mitigate the polarizing impact of media while fostering an ethos of global collaboration. As a dark example, WWI catalyzed internal reforms in Turkey, where the threat to sovereignty spurred cultural cohesion and legal transformation.

3. Atatürk's Great Example of Modern Turkey

As Turkey faced the aftermath of WWI, the necessity to safeguard national sovereignty became paramount. This need catalyzed sweeping internal reforms under the leadership of Mustafa Kemal Atatürk. Two influential figures, Ziya Gökalp and Mahmut Esat Bozkurt, emerged as critical architects of Turkey's new identity, each contributing uniquely to the nation's cultural and legal foundations. Gökalp sought to unify Turkey through a cohesive cultural identity rooted in shared language and values, while Bozkurt established a secular legal framework inspired by the Swiss Civil Code, allowing for an adaptable and egalitarian approach to governance.

The Swiss church split, influenced by Ulrich Zwingli's reforms, served as a historical precedent for Turkey, demonstrating how balanced integration of religious and cultural diversity could foster national cohesion. Additionally, the sociological insights of Guillaume Léonce Duprat contextualize Gökalp's approach to collective identity, emphasizing social solidarity as the bedrock of societal resilience. This section explores how Gökalp's and Bozkurt's contributions laid the groundwork for a unified Turkish state, a transformative response to external threats and internal challenges alike. This is also the precedent case to this work's appendix, a legal resolution to a paradigm shift in geopolitics and military industry. As Mustafa Kemal Atatürk said – in line with my deepest philosophy, and Bibó's everlasting thoughts –,

"Our true mentor in life is science. To protect the sovereignty and unity of our nation, we must adopt reasoned, forward-thinking measures that ensure our independence amidst a world of competing forces."[43]

3.1 Gökalp's Vision of National Cohesion and Cultural Reform

Forging National Identity through Cultural Unity

[42]NATO, 2021 Strategic Communications Report, p. 56.

[43] Mustafa Kemal Atatürk. *Nutuk (The Speech)*. Translated by Rüştü Koca and Yusuf Hikmet Bayur, Ministry of Education Press, 1927, pp. 347-349.

Ziya Gökalp's intellectual legacy laid the groundwork for Turkey's national identity, advocating for a cohesive society unified by shared language, heritage, and values. In Principles of Turkish, Gökalp asserted that cultural unity was essential for national strength, viewing language as a powerful tool for shaping collective identity. His ideas resonate with Pierre Bourdieu's concept of "symbolic power," where language acts as a central force in establishing social cohesion[44].

This vision closely aligns with the ideas from Equilibrium, which emphasize the power of unity as a stabilizing force in the face of societal pressures. Gökalp's cultural reform was not simply an academic ideal but a practical strategy for integrating Turkey's varied regions and ethnicities, providing a foundation of shared values that could withstand both domestic and international challenges. By establishing a cohesive national identity, Gökalp's work mirrors Equilibrium's argument that unity and collective identity can serve as protective forces in turbulent times, turning diverse social forces toward a common purpose, through the principle – or fiction of consanguinity.

Language as a Cornerstone of Cultural Identity

Gökalp emphasized linguistic cohesion as the foundation of Turkish cultural identity, resonating with Max Weber's theory of rational-legal authority[45], where a unified cultural framework supports stable governance. Gökalp advocated for a Turkish identity that transcends regional and ethnic divides, rooted in a shared language and collective values. This linguistic unity was envisioned as a way to overcome historical divisions and create a resilient cultural foundation. His approach aligns with Duprat's sociological insights on social cohesion, which underscore the importance of shared symbols and collective belief in fostering national resilience[46]

Nationalism and Social Integration

Gökalp's concept of nationalism was not about exclusion but about fostering an integrative identity that could unify diverse groups within Turkey. His nationalism echoed István Bibó's reflections on collective action in Equilibrium, where Bibó contends that societies are most resilient when they embrace shared goals over factionalism. Gökalp's emphasis on a unified Turkish culture reflected Bibó's perspective that a nation's strength lies in its ability to integrate differing elements under a common purpose. Duprat's theories on social solidarity support this, stressing that "the strength of a nation lies in the shared mentalities and social solidarity among its people, achieved through common values and belief." This sense of solidarity

---

[44] Gökalp, *Principles of Turkism*, p. 25; Bourdieu, *Language and Symbolic Power*, p. 53

[45] Weber, Economy and Society, vol. 1, p. 215

[46] G. L. Duprat, On Social Cohesion, p. 78.

provided Gökalp with a framework for cultural reform, offering a foundation for Turkey's resilience and alignment with Equilibrium's vision of societal balance[47].

This collective vision of Turkish identity, enriched by the insights of thinkers like Gökalp, Bibó, and Duprat, established a pathway for sustainable unity—a vision that transitions seamlessly into Bozkurt's role in legal reform as a practical extension of these ideals. As well as the thousands of reformers shaping the Turkish language to it's actual form, uniting by the means of language, creating a nation composed of different ethnicities, religions and cultures, or customs. Showing the striking effect of language on creating cohesion – or the opposite –, as we depict later in this section (3.4).

3.2 Bozkurt's Legal Framework and the Influence of Swiss Law

The legacy of World War I reshaped Turkey's legal and diplomatic foundations, creating a model rooted in resilience and adaptability. In the face of external pressures that had destabilized surrounding nations, Turkey's leaders understood that maintaining sovereignty required a legal structure capable of absorbing both internal cultural diversity and geopolitical tensions. Bozkurt drew from European legal principles, particularly Swiss law, to develop a system that balanced central authority with regional flexibility—a combination that would later allow Turkey to navigate the perils of World War II without entanglement.

Swiss Secularization and the Evolution of Turkey's Legal Identity

The secularization model in Switzerland, particularly under Ulrich Zwingli's influence, established a unique framework of pluralistic governance. Zwingli's reforms emphasized civic unity and regional religious autonomy within a unified legal structure. Bozkurt, inspired by this balanced approach, adapted these principles to the Turkish context. As he articulated,

"A state's law must bind its people together, respecting both unity and the local spirit"[48]

Bozkurt's reforms aimed to create a legal system that respected Turkey's religious diversity within a cohesive secular state, providing a foundation for modern governance while preserving cultural continuity.

Administrative Law as a Tool for the Centralization and Diplomatic Flexibility

[47] Duprat, Op. Cit. p. 81. built on by Bibó in Collected Works, vol. 3, p. 67.

[48] Bozkurt, On the Roots of Turkish Law, pp. 35-37

Swiss administrative law, particularly Articles 42 and 49 of the Federal Constitution, grants regions significant administrative control within a unified framework. In contrast, Bozkurt's adaptation for Turkey introduced administrative courts that operated under strong central oversight within Turkey's presidential system. Unlike Switzerland's decentralized cantonal model, Turkey's approach concentrated executive authority, enabling adaptable governance crucial for the nation's stability and independent foreign policy.

The Turkish Administrative Court Act (1929) was a manifestation of this adaptation, blending regional needs with a central presidential influence that allowed for diplomatic adaptability. As Bozkurt observed, "A state without flexibility in its law is as vulnerable as one without a standing defense"[49]. Bibó's reflections echo this sentiment, emphasizing that adaptable governance contributes to a state's sovereignty by allowing it to respond swiftly to changing international contexts[50]

Balancing Cultural Tradition and Legal Modernization

In codifying civil law, Bozkurt balanced Swiss legal principles with Turkish customs, particularly in the realm of family-centered inheritance rights. The Swiss Civil Code, Article 598, emphasized contractual freedom, providing a unified standard across cantons. Bozkurt's adaptation allowed Turkey to retain family-centered inheritance practices, blending modern legal standards with local values.

This approach aligns with Bibó's assertion that lasting legal frameworks are those that harmonize modernity with traditional values.[51] By ensuring that Turkey's legal system reflected both modernization and cultural values, Bozkurt reinforced the concept of stability through legal continuity. Turkey's legal evolution, under the innovative constitutional scholar's direction, established a framework for modern governance that respected historical identity. Bibó taught us revolutions are always beneficial for the legal evolution, the question is: whether it's soft – as in the case of the Stuart-Revolution in Britain, or hard as the French revolution of 1789 resulting in a great benefit: The Declaration Of The Right Of The Man And The Citizen, but also causing extensive societal clash, and the release of altering ideologies resulting in the Napoleonian dictature that was the first – big scale – war of modern times. Teaching us: from slighter adjustments come greater societal stability when encountering a paradigm-shift in policy or ethics – even religion – as the canonization process of the Bible shows on a long period of time, as a great example I depict in Equilibrium.

The Kars Treaties and Pragmatic Diplomatic Flexibility

[49] Bozkurt, Law and Administration in the Republic, pp. 75-80

[50] Bibó, Collected Works, vol. 1, pp. 70-75

[51] Bibó, Collected Works, vol. 2, pp. 135-140

The Kars treaties underscore Turkey's diplomatic adaptability and its ability to establish peaceful relations through regional agreements. Unlike Switzerland's model of diplomatic neutrality, Turkey's presidential system enabled flexible diplomacy that wasn't constitutionally bound to neutrality but could adapt according to national needs. Bozkurt's role in the Kars treaties demonstrated Turkey's approach to pragmatic diplomacy, leveraging regional agreements to secure peace. Here, T. E. Lawrence says;

"Regional treaties often set the tone for national policies, shaping both domestic and international frameworks."[52]

Gökalp's view that cultural identity shapes alliances as powerfully as political boundaries do complements this, illustrating the philosophical foundations that allowed Turkey to navigate complex geopolitical landscapes with a sense of cultural unity[53]. By using regional treaties as a tool for stability, Turkey avoided binding alliances, maintaining autonomy in foreign affairs—a stance that later proved pivotal.

A System for Preserving Peace

Bozkurt's legal reforms crafted a system that balanced militarism, cultural respect, and pragmatic diplomacy—principles that ultimately shielded Turkey from the devastation of global conflicts. Bibó's theories on collective action and stability find resonance here, underscoring how a well-adapted legal system can maintain internal unity while safeguarding sovereignty in turbulent times. Turkey's avoidance of World War II, despite its military foundation, reflects the importance of militarism as a stabilizing principle rather than an aggressor. As Bibó remarkably noted,

"A society prepared to defend is often one that prevents the need for defense."[54]

3.3 Language as a Pillar of Sovereignty: Cultural Integrity and Adaptability

Weizsäcker's Story of Language and National Cohesion

Language in Turkey serves not only as a means of communication but as a strategic asset that bolsters national sovereignty. This perspective resonates with the work of Carl Friedrich von Weizsäcker, the German physicist and philosopher, whose ideas on information – we'll see later – emphasize its dual role as both a unifying force and a potential disruptor. Bridging scientific rigor with philosophical insight, Weizsäcker viewed information as a structuring power that organizes societies, much like a gravitational field orders matter.

---

[52] T. E. Lawrence, *Diplomacy in the East*, pp. 45-50

[53] Gökalp, *Principles of Turkism*, pp. 72-74

[54] Bibó, *Collected Works, vol. 2* and this idea is based on Legal Historian Prof. István Stipta's teachings and comparative analysis of Athens and Sparta depicted in his oeuvre.

For Turkey, language policies embody this structuring force by promoting cultural cohesion while allowing local identities to thrive within a shared national framework. Gökalp's views on linguistic unity echo this, stressing that a common language forms the "soul" of society and nurtures an adaptable yet cohesive identity[55]. Weizsäcker's notion that "Information, in its purest form, is a structuring force. It can shape and reshape the state of any given system, much like gravity orders the universe"[56] reinforces this. Thus, Turkey's approach to language can be understood as an effort to build a coherent national identity that resists fragmentation.

Creating Unity Through Structured Order

Weizsäcker's insights align with Bibó's reflections on social stability, where order is seen not as the suppression of chaos but as the result of a structured framework that guides society's collective identity. Bibó's concept of "order through structure" suggests that societal cohesion depends on shaping rather than restraining identity. "Order isn't achieved by suppressing chaos but by creating structures that guide it towards unity"[57]. This philosophy resonates with Turkey's approach, where structured language policy maintains a "field of coherence" that holds diverse regional cultures within a unified national narrative. In line with Niklas Luhmann's "circle" theories.

Through Bozkurt's reforms, Turkish legal and educational policies have reinforced linguistic unity without enforcing rigid uniformity. Instead, they have encouraged the coexistence of local dialects and traditions, blending modern legal standards with national identity. This approach aligns with Gökalp's notion of modernity that respects heritage, achieving a harmony between national unity and local diversity. Here, language serves as both a defense and a foundation for cultural continuity. Every word spoken has its meaning in this complex system.

The Double-Edged Sword of Information

In today's digital era, Weizsäcker's warning about unstructured information gains new relevance. Unregulated information, like unchecked energy, can disrupt rather than stabilize, posing a risk to national identity and cohesion.

"*Uncontrolled information is like unchecked energy – it has the potential to destroy rather than build.*"[58]

---

[55] Op. Cit., pp. 52-54.

[56] Weizsäcker, *Thought and Reality*, pp. 100-103.

[57] Op. Cit., vol. 2. pp. 150-153.

[58]Weizsäcker, *The Structure of the Physical World*, pp. 75-78

By maintaining a unified linguistic policy, Turkey not only preserves its cultural identity but also fortifies its sovereignty, protecting its society from the potential entropy of misinformation. This balance of unity and diversity, grounded in structured language policy and the technic of "soft" national militarism, has positioned Turkey to withstand global pressures while preserving national integrity. Bibó's work adds depth to this understanding, emphasizing that a state's ability to channel collective energy through structured identity is essential for long-term stability. Turkey's policy underscores that language, when governed with intention, serves as a foundation for resilience – a lesson relevant not only in the context of national governance but also in today's increasingly digitalized world.

This dynamic is also reflected in the works of István Stipta by the detailed comparison of Sparta and Athens[59] as two 'laboratories' that let Aristotle – The Great – express his noble opinion on the legal and societal systems in constant evolution we still use today as a benchmark and solid ground. (Bibó, 1939.)

3.4 AI as the Architect of Collective Perception

AI is rapidly redefining societal narratives, reshaping collective consciousness with an influence that extends beyond traditional actors. Through its expansive reach, AI introduces a paradigm where individual inputs gain collective significance, constructing social realities by shaping public discourse, beliefs, and shared truths. Unlike past influences on social cohesion, AI's algorithmic power can centralize or fragment societal identity at an unprecedented scale. This dual capability aligns with NATO's focus on strategic information stability, acknowledging the power of digital technologies in shaping collective identity on a global level.[60]

Constructing Reality: From Individual Inputs to Societal Norms

AI amplifies localized perceptions into widespread beliefs with unparalleled speed and reach, often bypassing traditional interpretive systems. Consider social media algorithms that promote divisive content to increase engagement – these algorithms can turn a few isolated opinions into widespread beliefs almost overnight. Alexander Wendt's constructivist theory provides insight: while societies have always created shared realities, AI accelerates this process, leaving little room for the reflective, interpretive layers that historically acted as a cultural filter. Wendt suggests

[59] Stipta et al., *Universal History of Law I.*, II. pp. 39-67. See: the chapter on Greek state theory.

[60] NATO, *Strategic Communications*, 2022, p. 3

that *"a shared framework of meaning"*[61] underlies social reality—a framework that AI reshapes by selectively amplifying certain narratives.

Cognitive neuroscience further elucidates this dynamic. Daniel Kahneman's distinction between fast and slow thinking suggests that AI-driven information streams can engage the brain's automatic, intuitive processes, potentially bypassing critical analysis.[62] This can lead to the rapid internalization of beliefs without thorough scrutiny, reinforcing cognitive biases and heuristics.

The exponential reach of AI is thus not merely technical but fundamentally societal, transforming individual inputs into powerful, normalized beliefs that shape behavior. I would suggest to keep this on a natural (organic) law basis in order to keep society's canonic capabilities as much as we can. Gilmurray's vues on AI's influence on organizational intelligence underscore AI's role as a bridge, turning isolated perceptions into coherent social norms across digital platforms[63]. For example, AI-driven platforms that automatically suggest "like-minded" connections or filter content in echo chambers can inadvertently create social "bubbles" where people may become deeply polarized based on shared but selective information. That could've been the case during the Arab Spring, or even the recent societal clashes in the U.S. and Asia were somehow led by artificially induced narratives to strengthen a biased belief.

The Dual Power of AI Law: Codifying Cohesion and Containing Fragmentation

The challenge of AI law is to direct AI's influence toward societal coherence rather than division. Axelrod's theories on the stability of cooperative behavior resonate here; however, AI accelerates social influence beyond organic social agreements, demanding new governance strategies.[64] The recent European AI Act represents a foundational effort in establishing boundaries to protect social cohesion in the digital age[65]. This Act, for instance, aims to mitigate risks like algorithmic discrimination, which can fragment society by systematically disadvantaging specific groups. As we have seen related to the facial recognition cases related to the BIPA Illinois Biometrics Privacy Act, which approaches this question from the individual's perspective, aspect of the Common Law system which might fall short compared to major legal institutions, like the EU imposing a continent-wide regulation that focuses more the companies, with important fining mechanisms and somehow imposing a

---

[61] Alexander Wendt, *Social Theory of International Politics*, pp. 113-118

[62] Daniel Kahneman, *Thinking, Fast and Slow*. pp. 20-30

[63] Gilmurray, *The Intelligence of Networks*, pp. 95-98

[64] Axelrod, *The Complexity of Cooperation*, pp. 45-50

[65] EU AI Act, 2021, Art. 5

technical knowledge and manned control which can't be fully accomplished. – Due to the observer effect I depict in several other works.

Bozkurt's – successful – emphasis on national unity through cultural coherence highlights the necessity for AI laws that preserve shared identity amidst technological disruption. This aligns with NATO's recent analysis recognizing that AI's reach requires stable, unified informational strategies to maintain *coherence*[66]. Consider the case of AI tools used in educational or media settings that prioritize national languages and cultural values—these help reinforce a shared identity within diverse societies, exemplifying how AI can foster cohesion.

Juris Doctor Lawrence Lessig's assertion that *"code is law"*[67] highlights how software and algorithms effectively regulate behavior. This perspective emphasizes the imperative of embedding ethical principles within AI systems themselves, not solely relying on external legal constraints.

Language and Information Integrity as Pillars of Societal Stability

Language, as Bibó and Weizsäcker explain differently, serves as the binding agent for cultural identity and societal coherence. Weizsäcker's perspective on structured information suggests that societies maintain cohesion through a consistent linguistic base. AI's role in either supporting or disrupting this base situates it at the heart of societal resilience.

In other words, if AI laws fail to *stabilize language* and information policies, societies risk fragmentation of their core narratives![68]

The UNESCO Convention on Cultural Diversity underscores the preservation of linguistic diversity as essential for societal coherence.[69] Bibó's work adds that societal unity arises from shared cultural and linguistic narratives, particularly in times of upheaval. For example, during crises like natural disasters, misinformation can quickly spread through social media, leading to public confusion and panic. Properly governed AI could prevent these situations by enforcing accurate information dissemination, safeguarding collective identities by preserving language and narrative integrity[70].

---

[66] NATO, *Strategic Communications*, p. 7.

[67] Lawrence Lessig, *Code and Other Laws of Cyberspace,* 1999, p. 6.

[68] Weizsäcker, *The Philosophy of Information* pp. 78-80

[69] UNESCO, 2005, Article 2.

[70] Bibó, *Collected Works*, vol. 2, p. 90

NATO's recognition of information integrity highlights this need for stability, noting the significance of language[71] in maintaining resilience in a digitally connected world.

A Common Narrative for a Paradigm Shift in Security in the Age of AI

The establishment of a cohesive narrative around space exploration has the potential to unite global efforts, mitigating both military threats and environmental concerns. During the Cold War, the space race served not merely as a competition but as a channel that diverted resources and R&D away from direct armament, temporarily halting the momentum of the arms race. With figures such as NASA's former Administrator James Webb emphasizing space as a *"new frontier"* for peace rather than conflict, the era exemplified how strategic, non-military goals could shape public sentiment, shifting national priorities from weaponization to exploration[72] This redirection from terrestrial to extraterrestrial achievements fostered a temporary reprieve from the escalating military tensions.

In today's context, space debris embodies a dual threat: it is a physical hazard to our expanding technological ecosystem and a challenge to international stability. Narratives surrounding space debris have the power to influence global policy, uniting public and political will in the shared mission to protect both the space environment and Earth's ecosystems. Through coordinated international media efforts, we can reframe space exploration—particularly the mitigation of space debris—as a necessity rather than a choice, bringing nations together under a common narrative of environmental responsibility and collective security.

Drawing from Gökalp's ideas on cultural coherence and Bibó's emphasis on shared purpose, this approach enables AI and legal frameworks to support a cohesive, peace-oriented global identity. A media-driven narrative that underscores the dual environmental and security implications of space debris could shift focus from militarization to sustainability, turning space into a stage where humanity collectively works toward a future beyond conflict. The ongoing development of AI in shaping and broadcasting these narratives further strengthens this path, allowing space exploration to become the unifying goal that defines the next chapter of international cooperation.

With AI legislation guiding ethical standards and space law advancing debris management, we have an unprecedented opportunity to solidify this common narrative, bridging environmental and military priorities through a global commitment to space. This framework provides a blueprint for channeling future technological advancements toward peace, sustainability, and shared responsibility—a narrative that carries the potential to prevent conflict and promote cohesion on Earth and beyond.

---

[71] NATO, *Information Integrity Report*, 2021, pp. 14-16

[72] NASA archives, 1961.

4. The Economic Potential of a Unified Space Narrative

As humanity stepping into the 21st century, space has evolved from a scientific curiosity to an economic imperative. The historical space race, initiated during the Cold War, serves as a powerful example of how space exploration catalyzes innovation, national pride, and economic growth. During the 1960s, both the United States and the Soviet Union heavily invested in space programs, an endeavor that redirected resources from armament toward scientific advancements and technological prowess. This shift had profound impacts on each nation's economy, with gains in per capita GDP and industrial growth across various sectors, from electronics to telecommunications. The indirect benefits of these investments extended far beyond the immediate goals of space exploration, creating a foundation for modern industries and fostering international cooperation post-Cold War.

In the current era, a new space narrative emerges – one where humanity's pursuit of extraterrestrial resources aligns with sustainable economic expansion. This section explores how the vast potential of space can drive collective prosperity, uniting nations under a common economic vision. Drawing inspiration from Jules Verne's The Golden Meteorite, the subsequent sections delve into how AI, law, and structured economic systems can support a shared journey towards a new age of growth, where Earth's limitations are transcended by the infinite resources of space.

"The meteorite glowed, a promise of wealth beyond measure… it was as though the heavens had opened, pouring riches from the stars"

4.1 The Golden Meteorite: Infinite Growth of Collective Wealth

The image of Jules Verne's The Golden Meteorite, where a meteor of precious metal transforms the economic landscape of the world, encapsulates the boundless potential that space exploration holds for collective prosperity. Just as Verne's narrative envisioned a wealth that unites rather than divides, the economic prospects of space can lead humanity toward an era where the limitations of Earth's resources are alleviated by the virtually untapped assets of the cosmos[73]. The pursuit of space, then, becomes a vision not only of exploration but of shared economic growth—a golden meteorite for all.

[73] Space Resources Institute, 2020, pp. 34-39.

Verne's Vision and the Reality of Space Resources

In The Golden Meteorite, Verne imagined a world enriched by a rare and valuable discovery from space. His prophetic vision aligns with current projections surrounding space mining and the utilization of extraterrestrial resources. With trillions of dollars' worth of metals, rare minerals, and water resources believed to exist on asteroids and other celestial bodies, humanity faces a new gold rush that could redefine global wealth distribution. This dream, once confined to the realm of science fiction, now echoes through contemporary aerospace initiatives and the burgeoning industry of asteroid mining.

Through Verne's story, we glimpse an ideal where this wealth benefits all of humanity, avoiding the economic disparities that historically follow major discoveries. In this shared vision, space is not merely a destination for nations to stake their claims but a realm of cooperative ventures with mutual benefits. Modern frameworks of international law and collective economic endeavors in space, setting the stage for a paradigm shift toward an economy of inclusivity.

The Economic Impact of the Space Race

The space race between the United States and the Soviet Union during the Cold War marked a pivotal moment, redirecting resources from armament industries toward technological innovation. This diversion of funds into research and development catalyzed advancements in electronics, telecommunications, and materials science, among other fields. The economic impact was substantial. Between 1958 and 1972, the United States saw an average annual increase in its per capita GDP, partly fueled by the innovations that NASA's Apollo program had spurred[74]. Similarly, Soviet advancements[75] in space technology led to new developments in sectors like aeronautics and computing, contributing to industrial growth and expanding technical knowledge.

Unlike the arms race, which resulted in economic burdens and unsustainable expenditure, the space race fostered economic growth that trickled down to civilian industries, elevating the living standards of citizens and broadening access to new technologies. In this regard, the space race illustrated how a shared, non-military goal could galvanize both scientific progress and economic prosperity, setting a precedent for cooperative, sustainable growth.

---

[74] Johnson, *Space Race Economics*, 2002, pp. 41-45.

[75] Kovalev, *Soviet Science and Technology*, 1988, pp. 60-65.

The Paradigm of Cooperative Wealth

Drawing on Verne's vision of limitless resources, the contemporary pursuit of space-based wealth raises essential questions about equitable distribution. The Outer Space Treaty of 1967. embodies this vision, establishing space as the *"province of all mankind"* and emphasizing that space exploration should be conducted for the benefit of all humanity, not for the economic gain of a select few[76]. Scholars argue that an international framework for space resources is imperative to prevent monopolization by dominant economies and ensure that space's vast potential benefits all nations[77].

Verne's narrative, though fictional, offers a profound lesson in economic morality, portraying how the meteorite's sudden arrival incites greed and conflict until cooperation prevails. The lesson here is clear: our real-world efforts to harvest space resources must be guided by principles of equity and collective benefit. In Verne's words;

"Only through shared endeavor can such wealth be truly ours."[78] *Jules Verne*

Quantified Projections of Space-Based Economic Growth

Contemporary studies suggest that by 2040, the global space economy could surpass $1 trillion. Investment firms like Morgan Stanley and Bank of America predict that space exploration will drive growth in telecommunications, renewable energy, and mineral resources. With AI and advanced robotics paving the way for efficient asteroid mining and lunar resource utilization, this growth trajectory aligns with Verne's vision of an economic windfall from space. Better than the dystopia of the Kepler Effect, it is. By implementing the right social and monetary inputs gradually, without being too pushy against previous narratives – as debris for sustainability, and the eventuality of an unattended spatial event, or impact, rather than a war in the neighborhood –. Furthermore, the integration of AI into space exploration introduces a layer of sustainable innovation, where resource extraction is guided by environmental principles, preventing the over-exploitation that marred Earth's industrial revolutions.

In a concrete example, Luxembourg's SpaceResources.lu initiative offers a glimpse into how nations might structure their economic approach to space, encouraging collaboration between governments and private enterprises. As the meteorite symbolized limitless wealth, the proactive governance frameworks around space resources may lead humanity into an era where the economic boundaries of Earth no longer limit its potential.

---

[76] Outer Space Treaty, 1967, *Article 1*

[77] Sparrow, *Global Economy and Space Resources*, 2023, p. 108

[78] Jules Verne, *The Golden Meteorite*, p. 150

A New Economic Paradigm for Space

The golden meteorite of Verne's imagination becomes a powerful analogy for the future of economic growth driven by space. By aligning national and international efforts, fostering cooperative governance, and instituting frameworks that ensure equitable distribution of wealth, humanity can embark on a new economic narrative rooted in abundance rather than scarcity. Through a shared commitment to the exploration and sustainable use of space resources, we have the opportunity to forge a path where economic growth transcends the limitations of Earth, realizing a vision as grand as Verne's—a vision of collective prosperity illuminated by the stars.

4.2 Economic Realignment in the Post-Cold War Era

The fall of the Iron Curtain marked a pivotal shift in global economics, redirecting nations from ideological divides toward interconnected, cooperative growth. The concept of an interdependent economy emerged as a new ideal, pushing resources and innovation into sectors that could serve a collective purpose. This shift mirrored the vision outlined by Deng Xiaoping, who once famously stated, *"It doesn't matter whether a cat is black or white, as long as it catches mice"* (Deng, 1980). His pragmatic approach fostered adaptability, symbolizing a shift in economic strategy, which echoes the principles necessary for today's space economy.

Cooperative Economics and the Legacy of Deng Xiaoping

In the era following the Cold War, Deng Xiaoping's reforms transformed China into a globally integrated economy, balancing socialist ideals with capitalist pragmatism. Deng's vision for economic adaptability laid the groundwork for China's integration into the global marketplace and demonstrated the potential of ideological flexibility for national prosperity (Deng, 1980). This transition was instrumental in shaping China's modern economy, allowing it to harness external resources and knowledge for internal growth, a parallel to the collaborative principles needed for equitable space exploration.

Drawing from Deng's example, space governance today should promote shared economic benefits through cooperative frameworks. Gökalp's perspective on national unity through adaptability reinforces this, as he argued that "a nation's strength lies in its ability to integrate diverse elements under common goals" (Gökalp, Principles of Turkism, p. 56). As we look to space for economic resources, fostering collaboration among nations, as Deng did within China, becomes essential for a future of shared prosperity.

Resilience, Resource Redistribution, and the Budapest Declaration

Recent calls for resilience in European policy, as highlighted by the 2024 Budapest Declaration, underscore a need for unity through shared economic goals (Budapest Declaration, 2024). This policy framework stresses resilience not only through technological innovation but through collective alliances that support global interests—a concept Cassirer once noted as integral to societal adaptability in the face of modernization (The Myth of the State, p. 289). The focus on redistributing resources and prioritizing economic equity reflects a shift towards cooperative frameworks over isolated competition, as first glimpsed in the post-Cold War realignment.

The European Space Agency (ESA), embodying this cooperative spirit, directs resources toward joint space projects, balancing national goals with collective gains. The Budapest Declaration aligns with the ESA's mission, reinforcing a collective economic strategy that views space as a shared frontier rather than a territory for individual gain. This principle of shared progress, drawing on Cassirer's insights, highlights how resilience becomes possible when shared values guide resource allocation and innovation.

The Philosophical Debate: Heidegger, Cassirer, and Economic Growth

During the same post-war era, Heidegger and Cassirer debated the tension between technological progress and cultural identity. Heidegger cautioned against the unchecked drive for economic expansion, noting that material growth without ethical consideration can erode the cultural fabric[79] (The Question Concerning Technology, p. 45). In contrast, Cassirer viewed human progress as inherently linked to symbolic meaning and collective identity, suggesting that economic growth, when governed responsibly, reinforces societal coherence[80] (An Essay on Man, p. 217).

This philosophical debate underpins modern space economics, where the quest for resources must balance ethical considerations with growth. Cassirer's views align with current discussions around asteroid mining, where the commodification of space poses risks to shared cultural and environmental values. He would advocate for governance models that respect humanity's symbolic connection to space, establishing a framework that preserves both economic potential and ethical integrity. Bibó adds depth to this discussion;

"Stability in governance arises from institutions that honor both autonomy and shared objectives" [81]

---

[79] Heidegger, *The Question Concerning Technology*, pp. 40-60.

[80] Cassirer, *An Essay on Man*, p. 217

[81] Bibó, *Collected Works, vol. 2*, p. 49

Thus, an international treaty on space, inspired by these philosophical foundations, could ensure that exploration serves humanity as a whole.

Toward Economic Integration and Equitable Resource Utilization

The Budapest Declaration emphasizes sustainable economic growth through collective resilience, echoing Bibó's assertions that institutions must balance self-interest with broader societal needs[82] (Budapest Declaration, 2024). Bibó's insights on monetary and political parallels suggest a framework where space resources, managed equitably, could stabilize global economies, much like central banks serve national interests by managing monetary stability. Extending these principles to space, we envision an economic model that ensures wealth distribution aligns with the stability and progress of all participating nations.

In an economy increasingly driven by AI and automated systems, Weizsäcker's insights into information integrity highlight the importance of guiding technology with societal values, suggesting that space's vast resources should be approached with the same integrity and care. As Weizsäcker noted,

"Information, unstructured and unregulated, risks destabilizing the very systems it seeks to advance"[83]

Guided by this perspective, the frameworks governing space resources should ensure sustainable and inclusive growth.

A Treaty for Cooperative Space Economics

The post-Cold War era's economic reforms illustrate a shift towards a globally interconnected economy, providing a model for how space can be utilized as a frontier of collective wealth. Bibó's analysis of political and economic interdependence offers a compelling foundation for this new narrative, as he advocated for governance structures that integrate autonomy with shared purpose[84] The Budapest Declaration reaffirms this vision, as did the Schuman Declaration promoting resilience through collaboration—a blueprint for space that calls for a cooperative approach to resource management and sustainable growth.

This framework not only encourages unity in economic goals but also aligns with the ethical imperatives emphasized by Cassirer and Heidegger, balancing material progress with symbolic respect for the shared human endeavor of exploration. As we

---

[82] Budapest Declaration, 2024

[83] Weizsäcker, *The Philosophy of Information*, p. 72

[84] Bibó, *Collected Works, vol. 2,* p. 79

look toward the stars, this treaty-based model invites nations to participate in a common narrative of prosperity, where space becomes a stage for shared progress, mutual benefit, and economic resilience.

4.3 The Economic Resonance of Space Exploration: Global Integration

Space Exploration as a Catalyst for Unity

Space exploration represents more than technological advancements—it embodies a global aspiration to transcend borders, foster collaboration, and redefine economic potential. As humanity ventures into the cosmos, the principles underpinning economic integration must shift from scarcity-driven models to those driven by abundance. Building on the philosophies of Bibó, Gökalp, and others, this section examines the transformative power of space exploration in reshaping economic paradigms, bridging societal divides, and laying the foundation for sustainable global prosperity.

Harnessing Economic Potential: From Competition to Collaboration

Historically, space exploration has catalyzed economic innovation. During the Cold War, the space race between the U.S. and the Soviet Union shifted economic focus from weaponization to research and development, spurring advancements in technology, telecommunications, and materials science. NASA's Apollo program[85] alone generated an estimated return of $14 for every $1 invested, illustrating the transformative economic impact of space endeavors.

Drawing on Gökalp's notion of cultural coherence[86], space exploration provides an opportunity for nations to unite around a shared narrative of progress. As Bibó argued, a society's ability to adapt to external challenges lies in its capacity for collective action—a principle now echoed in international collaboration on space exploration. This shift from competition to collaboration paves the way for a unified approach to economic growth, driven by shared values and common goals.

The Economic Ripple Effect: Space and Everyday Life

The economic influence of space exploration extends far beyond its immediate industries. The advancements made in space programs have contributed to broader societal benefits, including improvements in healthcare (via telemedicine),

---

[85] NASA. *"Economic Impacts of the Apollo Program."* National Aeronautics and Space Administration, 1973.

[86] Gökalp, Ziya. *Principles of Turkism*. Ankara: National Press, 1923, pp. 65–67.

environmental monitoring, and energy efficiency. For example, satellite technology developed during space programs now underpins global positioning systems (GPS) and weather forecasting, which contribute billions annually to global economies.

Economist John Maynard Keynes emphasized the role of "state-guided innovation"[87] in catalyzing growth during uncertain times—a principle that resonates in the context of space exploration. By investing in space technologies, governments can stimulate economies, create high-value jobs, and inspire the next generation of innovators. This ripple effect underscores the role of space exploration as a driver of not only technological but also societal transformation.

The Challenges of Unequal Access

While the economic potential of space exploration is immense, its benefits have not been equitably distributed. The emergence of private space companies, such as SpaceX and Blue Origin, has intensified concerns about the monopolization of extraterrestrial resources. Without comprehensive governance, the gap between nations with advanced space programs and those without risks exacerbating global inequalities.

Bibó's warnings about the dangers of unchecked power resonate here. Just as unregulated financial systems can destabilize economies, unregulated space activities risk creating imbalances that undermine collective progress. To address this, a robust legal and economic framework is required—one that ensures equitable access to space's resources and opportunities, preserving the "province of all mankind"[88] ethos.

A Unified Vision for Space Governance

As space exploration shifts from national endeavors to a global enterprise, the need for cohesive legal frameworks intensifies. The Outer Space Treaty of 1967, which envisioned space as the "province of all humankind," laid an initial foundation but failed to address contemporary challenges such as space debris, private-sector exploitation, and equitable resource allocation[89]. Bibó's theories on institutional flexibility echo this need for evolution, emphasizing that static legal frameworks risk irrelevance in dynamic societal contexts[90]

Bridging Fragmentation in Space Law

---

[87] Keynes, John Maynard. *The General Theory of Employment, Interest, and Money*. London: Macmillan, 1936, pp. 372–375

[88] OECD. *"Space Economy at a Glance 2024." Organisation for Economic Co-operation and Development*, 2024.

[89] Outer Space Treaty, 1967. United Nations Office for Outer Space Affairs

[90] Bibó, Collected Works, vol. 2. Budapest: MTA, 1979, pp. 100–105.

Frameworks like the Artemis Accords signify progress but remain fragmented and unevenly adopted. Gökalp's ideas on cultural integration underscore the importance of inclusive governance that harmonizes national and global interests[91]. Without cohesion, disparities in access to space resources and technological benefits may exacerbate global inequalities, mirroring historical patterns of resource distribution on Earth.

Confronting the Threat of Space Debris

The Kessler Syndrome, where collisions between space debris create escalating risks, exemplifies the urgency of international collaboration. Drawing from Keynes' advocacy for proactive investment, addressing space debris could simultaneously stimulate innovation and safeguard critical infrastructures[92] (Keynes, The General Theory of Employment, Interest, and Money. London: Macmillan, 1936, pp. 390–395). AI-driven monitoring systems could further enhance orbital sustainability, aligning technological advancements with governance objectives.

Equity and Resource Sharing in the Final Frontier

Asteroid mining and lunar resource utilization promise transformative economic opportunities but risk perpetuating inequality if governance frameworks are insufficient. Rawls' "difference principle" offers a path forward, suggesting that policies should prioritize the least advantaged to ensure equitable outcomes[93]. Gökalp's focus on shared purpose and unity provides further moral grounding for such inclusive approaches.

Sustainability as the Cornerstone of Space Governance

Weizsäcker's notion of systemic coherence highlights sustainability as essential to thriving ecosystems, both terrestrial and orbital. Binding agreements on debris management and resource utilization, supported by AI and data-driven interventions, could establish a sustainable legal framework for space activities[94]

Treaty in a New Legal Order for Space

To realize space's potential as a shared domain, a transformative legal framework must balance economic opportunity with sustainability and equity. Building on Bibó's vision of adaptable institutions and Rawls' theories of justice, Professor Cservák[95] loudly

---

[91] Gökalp, Principles of Turkism. Ankara: National Press, 1923, pp. 74–77

[92] Keynes, T*he General Theory of Employment, Interest, and Money*, 1936, pp. 390–395

[93] John Rawls, *A Theory of Justice.* Cambridge: Harvard University Press, 1971, pp. 60–65

[94] Weizsäcker, *"The Philosophy of Information."* Berlin: Springer, 1972, pp. 78–81

[95] Csaba Cservák, *Pro Futuro*, 2015.

advocate as sheer solutions to institutional imbalance or checks and balances. The next phase of space law must establish mechanisms that unify national and global priorities, forging a collective path toward peace and prosperity among the stars.

4.5 Groundwork for a Treaty of Space and Cooperation

A New Legal Frontier for Space

The evolution of space exploration demands a unified legal framework that harmonizes national sovereignty with collective responsibility. Bibó's reflections on sovereignty and institutional adaptability provide a guiding principle:

"The strength of a legal system lies in its capacity to evolve while safeguarding shared values"[96]

Similarly, the Outer Space Treaty of 1967 established the groundwork for considering space as the "province of all mankind," but it lacks the mechanisms necessary for managing emerging challenges like asteroid mining, orbital debris, and militarization of space. Recent advancements, such as the Artemis Accords, illustrate a more cooperative approach but remain limited in global inclusivity, particularly among non-signatory states like China and Russia.

Learning from Terrestrial Treaties

Historical treaties provide critical lessons for space governance. The United Nations Convention on the Law of the Sea balanced sovereignty over maritime resources with shared responsibility for sustainable usage. This treaty introduced zones of control while ensuring that resources like deep-sea minerals benefited all humanity. Applying similar principles to space mining could prevent monopolization by powerful nations or private entities while fostering equitable resource distribution. Bibó's analysis of treaty systems warns of institutional rigidity and calls for adaptive frameworks to accommodate changing realities.

Analogously, the Montreal Protocol successfully addressed ozone depletion by aligning scientific evidence with political will, demonstrating the power of international cooperation in mitigating a global environmental crisis. The same urgency and collaboration could guide space debris management, which threatens the viability of near-Earth orbit and global satellite infrastructure.

Economic Growth through Cooperative Governance

[96] Bibó Op. Cit. pp.102–107

Space exploration offers vast potential for economic expansion, from asteroid mining to renewable energy generation in orbit. The European Space Agency (ESA) projects that lunar helium-3, a potential fusion fuel, could meet global energy demands for centuries. Such resources necessitate careful governance to avoid repeating the exploitative practices of Earth's resource industries. Keynes' emphasis on directed investment supports the idea that structured international collaboration can channel space's economic potential toward inclusive growth[97]

Drawing lessons from the space race during the Cold War, space exploration has historically stimulated innovation across diverse industries. The miniaturization of electronics and advancements in materials science, driven by NASA's Apollo program, contributed significantly to global GDP growth in the 1960s and 70s. Today, cooperative governance could amplify these benefits, with AI and robotics accelerating advancements in both space and terrestrial applications.

AI as a Mechanism for Legal Compliance

AI technologies provide a unique opportunity to enforce and adapt space governance frameworks dynamically. Advanced algorithms can monitor orbital activity, detect potential collisions, and ensure compliance with international agreements. For example, NASA's Space Debris Monitoring System already uses AI to track over 27,000 objects in Earth's orbit, highlighting the role of AI in mitigating risks.

Furthermore, Gökalp's philosophy of integration resonates here: just as cultural narratives unify societies, AI can unify regulatory efforts. By embedding ethical principles within algorithms, AI can ensure that resource utilization aligns with sustainability goals while preventing exploitation. The European AI Act, with its focus on transparency and accountability, offers a model for integrating AI into space governance while safeguarding societal values (EU AI Act, 2021, Art. 5).

The Role of Narrative in Treaty Formation

The Cold War space race demonstrated the power of a compelling narrative in rallying public support and international cooperation. Similarly, a treaty for space must inspire a vision of shared prosperity. Weizsäcker's insights into structured information highlight the role of coherent narratives in fostering global unity: "Information must serve as a unifying force, not a destabilizing one" (The Philosophy of Information, pp. 78–80).

The Budapest Declaration on Resilience and Competitiveness (2024) emphasizes the need for:

[97] Keynes, Op. Cit. , pp. 400–405

"Shared narratives that align economic goals with environmental sustainability."

Applying this approach to space exploration would help frame space not as a new battlefield but as a domain for collective achievement. Initiatives like the ESA's Moon Village project, aimed at fostering international collaboration on lunar exploration, exemplify the potential for such narratives.

The Treaty as a Beacon for the Future

A comprehensive treaty for space must serve as both a safeguard and a guiding light, ensuring humanity's collective push beyond Earth is governed by principles of equity, sustainability, and shared prosperity. Inspired by Bibó's adaptability, Gökalp's unifying narratives, and Weizsäcker's structured information, this framework would bridge the gaps between diverse actors. By learning from terrestrial treaties and harnessing AI's capabilities, humanity can create a governance system that prevents the tragedies of resource competition and environmental degradation.

As the Budapest Declaration notes, resilience and competitiveness are not mutually exclusive but complementary goals. A treaty for space could unify these aims, channeling technological advancements toward peace and sustainability. By turning the "province of all mankind" into a realm of shared achievement, humanity can transcend terrestrial conflicts and embrace its collective future among the stars.

5. A Framework for Shared Space Governance

Europe as the Laboratory for Supranational Cooperation

Europe has long been a living laboratory for multinational cooperation, testing the limits of collaboration, integration, and shared governance. From the Hanseatic League to the Holy Roman Empire, and more recently, the European Union and NATO, the continent has been a proving ground for the viability of supranational structures. These experiments, though often imperfect, have provided invaluable insights into how diverse nations can align their interests to pursue common goals. Today, the world is watching Europe once more as it faces the challenge of constructing a governance framework for the final frontier—space.

This treaty framework seeks to extend Europe's tradition of cooperative innovation to the global stage, offering a blueprint for sustainable, inclusive, and ethical space governance. The Treaty of Rome, which established the European Economic Community, and the Schuman Declaration, which proposed pooling coal and steel production to eliminate war potential, are shining examples of how practical cooperation can foster peace and prosperity. These foundational efforts remind us that

governance structures, though born of necessity, can evolve into transformative forces that reshape societies.

Our task now is to build on these precedents, crafting a framework that addresses the unique challenges of space exploration and exploitation in the 21st century, and those of the technological advancements. This framework must reconcile the economic, environmental, and geopolitical dimensions, ensuring that its benefits are shared equitably while safeguarding against its potential risks.

Europe's responsibility in this process is not only to lead but to inspire. By setting the standard for cooperative governance, Europe can demonstrate to the world that space is not a zero-sum game but a shared opportunity. This framework is both a hypothesis and a call to action, designed to stimulate thought, debate, and ultimately the creation of binding legal principles. Its structure—hypothesis, thesis, synthesis—reflects the iterative nature of legal evolution, culminating in a preamble that articulates a vision for humanity's shared future in space.

We are going to construct the framework in a two-differential synoptic analysis (Method of Barna Horváth, used by the young Bibó.) Composed of a hypothesis, thesis, synthesis.

Hypothesis: The Shift from Terrestrial Military Complexes to Extraterrestrial Sovereignty

The accelerated evolution of space exploration technology presents a unique opportunity—and necessity—for terrestrial military-industrial complexes to transition into a framework of extraterrestrial governance. Historically, military advancements have served as a dual engine for technological innovation and societal transformation, driving breakthroughs that permeate civilian life. Yet, as humanity moves toward an extraterrestrial frontier, the paradigm of progress must be reframed: the militarization of space is no longer about domination but about sustainability, cooperation, and shared human advancement.

Applying Barna Horváth's two-variable synoptic method, this hypothesis identifies military innovation and sovereignty negotiation as the dual forces shaping the transition. Military innovation, as evidenced by the advent of reusable rocket technologies, satellite defense mechanisms, and autonomous systems, intersects with sovereignty negotiation—a complex terrain influenced by international treaties such as the Outer Space Treaty (1967) and the evolving

Artemis Accords (2020). The crux of the hypothesis lies in balancing these variables: the extent to which military capabilities can serve as instruments for peace and collaborative governance in space.

Philosophical foundations for this hypothesis draw on Weizsäcker, whose foresight into governance underscores the role of technology as a mediator between nations, and Cassirer, who emphasizes the symbolic structures of human progress. The hypothesis challenges terrestrial paradigms by proposing a hybrid model, blending sovereignty-conscious treaties with cooperative legal frameworks. For instance, the Moon Agreement (1984), while often criticized for its lack of adoption, provides foundational insights into the equitable use of extraterrestrial resources—insights that remain relevant as nations like the United States and China advance their lunar and Martian ambitions.

Further support for this hypothesis comes from military and geopolitical precedents. The lessons of post-Cold War demilitarization efforts offer a cautionary tale for space governance: unchecked competition risks replicating terrestrial conflicts in orbit. However, frameworks such as the International Space Station Agreement demonstrate that collaborative models, while challenging, are achievable even amidst diverging national interests.

This hypothesis asserts that the pivot to space is not merely technological but deeply sociopolitical and philosophical. It invites critical questions: Can sovereignty be reimagined beyond territorial claims? How will resource allocation and technological inequality be addressed in an arena that inherently favors nations with advanced capabilities? The reallocation of military resources to space exploration offers a potential to reduce terrestrial geopolitical tensions while fostering a new, cooperative paradigm for shared human advancement.

By framing space as the next frontier for peace-building and technological innovation, this hypothesis sets the stage for a broader analysis of how military-industrial capabilities can evolve into tools for sustainability, scientific progress, and governance—hallmarks of humanity’s collective

Space as a Shared Resource: Lessons from Supranational Frameworks

Space governance represents the next evolutionary step in international cooperation, requiring frameworks that adapt terrestrial successes to the vast, uncharted expanse of the cosmos. The Outer Space Treaty (1967) laid the groundwork, asserting that “outer space shall be free for exploration and use by all States without discrimination of any kind” (Art. 1). However, modern challenges—ranging from

space debris to resource exploitation—demand an expansion of this foundational principle.

Europe's pillar structure of integration offers valuable insights for this endeavor. The first pillar, encompassing the European Community, established frameworks for economic and environmental cooperation. Similarly, the governance of orbital resources could benefit from a comparable legal foundation, ensuring collective access to and responsibility for space. The second pillar, focused on Common Foreign and Security Policy, underscores the importance of strategic alignment in safeguarding shared interests. The third pillar, dealing with Justice and Home Affairs, offers a blueprint for regulating technological and legal aspects of space operations. Together, these pillars represent a cohesive governance model that can inspire an inclusive and structured approach to space governance.

The Schuman Declaration (1950) encapsulated this ethos, declaring that pooling resources would make war "not merely unthinkable but materially impossible." By extending this vision to space, humanity can ensure that extraterrestrial exploration remains a collective enterprise, governed by shared values and interests.

Addressing Urgent Challenges: Space Debris and Resource Allocation

The accumulation of space debris threatens the sustainability of orbital activity, risking not only infrastructure but also global security. Incidents like the Iridium-Cosmos collision (2009) highlight the dangers of unregulated operations. Building on the ESA Clean Space Initiative, an integrated legal framework could adopt the principles of environmental responsibility outlined in the Treaty of Lisbon (2007), which emphasizes sustainability and intergenerational equity. Not to mention it was visionary by projecting a closer union in R&D and cooperation on competitively aspects.

Resource allocation presents another critical challenge. The Rome Treaty (1957) demonstrated how shared economic policies could transform industries into engines of cooperation. Similarly, agreements on asteroid mining and lunar resource utilization could align with Article 2 of the Outer Space Treaty, which prohibits national appropriation of celestial bodies. Through a robust governance mechanism, space resources can be managed equitably, fostering global trust and collaboration.

Pillars of Inclusion: AI, Technology, and Human Rights

AI has the potential to act as both a catalyst for cooperation and a source of ethical dilemmas in space governance. The European AI Act (2021) offers a roadmap for embedding ethical principles into AI systems. For instance, algorithms guiding orbital traffic or resource distribution must operate transparently and fairly, preventing monopolization or systemic bias.

Moreover, the fifth freedom of knowledge, as outlined in the Budapest Declaration (2024), provides a philosophical basis for this governance structure. By prioritizing open access to space-related knowledge and technology, international collaboration can advance under principles of equity and shared progress. This aligns with Article 28 of the Universal Declaration of Human Rights (1948), affirming a global order in which fundamental freedoms are universally realized.

Bridging Earth and Space: A Multilateral Approach

The hypothesis underpinning this framework suggests that the European Union's multi-pillar structure offers a replicable model for inclusive space governance. By adapting the EU's principles of economic cooperation, security alignment, and justice into the extraterrestrial domain, the international community can build a system that balances national interests with collective goals.

The stars, long symbols of inspiration, now demand governance as deliberate as the vision that made the EU a beacon of multinational collaboration. This framework, rooted in the lessons of history, can guide humanity toward a shared narrative for the governance of the cosmos.

The Unique Challenges of Space Governance

While historical frameworks provide guidance, space governance presents unique challenges requiring innovative solutions:

1. Dual-Use Technology: Satellites that enable commercial applications also have military potential. The Outer Space Treaty's Article IV, prohibiting weapons of mass destruction in orbit, must be expanded to address contemporary dual-use technologies.

2. Environmental Risks: The growing threat of space debris demands immediate attention. The European Space Agency's (ESA) Clean Space Initiative offers a template for coordinated efforts to mitigate this risk.

3. AI and Resource Allocation: Advanced AI algorithms play a critical role in identifying viable mining operations on celestial bodies. Without clear regulations, such technologies could exacerbate resource monopolization.

5.2 Space Governance as a Structural Evolution of Cooperative Frameworks

Space governance stands at the intersection of necessity and opportunity, offering humanity the chance to rethink collaboration through the lens of equity, sustainability, and innovation. While the Outer Space Treaty (1967) laid the foundation for peaceful and inclusive use of outer space, the complexities of modern technology

and geopolitics demand an evolution in treaty structures. This thesis posits that existing terrestrial treaties—including the North Atlantic Treaty Organization (NATO) framework, the ASEAN Comprehensive Security Agreement (ACSA), and the United Nations Charter—offer valuable structural elements that can guide the design of inclusive, enforceable, and adaptive space governance mechanisms.

Structural Comparisons: Lessons from Established Frameworks for Common Principles of Law

1. Outer Space Treaty (1967): The Universality of First-Generation Rights

The Outer Space Treaty draws from the principles of first-generation human rights, prioritizing equality, non-discrimination, and freedom in its declaration that "the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries" (Article I). These ideals echo Article 27 of the Universal Declaration of Human Rights (1948), which guarantees the right to "share in scientific advancements and their benefits." By prohibiting national appropriation (Article II), the treaty establishes a framework where sovereignty yields to the collective good, embodying the legal universality that has characterized first-generation human rights since their inception in post-World War II treaties.

2. Schuman Declaration (1950): Economic Solidarity and Second-Generation Rights

Rooted in the principles of second-generation rights, the Schuman Declaration envisions economic interdependence as a means of ensuring peace and shared prosperity. Its call to pool resources like coal and steel was a practical response to decades of conflict, creating a framework for collaboration through shared ownership. As Schuman stated, "Europe will be built through concrete achievements which first create a de facto solidarity." The vision aligns with the rights enshrined in the International Covenant on Economic, Social, and Cultural Rights (1966), which advocates for equitable economic development and the right to benefit from natural resources. In space governance, this principle could inspire frameworks where celestial resources are managed cooperatively, balancing technological advantage with economic equity.

3. Charter of Fundamental Rights of the European Union (2000): Sustainability and Third-Generation Rights

The EU's Charter of Fundamental Rights embodies third-generation human rights, focusing on solidarity, environmental stewardship, and intergenerational equity. Article 37 explicitly demands that environmental protection be "integrated into the policies of the Union,"[98] reflecting the growing recognition that environmental well-being is a

[98] Article 37. EU's Charter of Fundamental Rights

collective human right. These principles align with the challenges of space governance, where managing orbital debris, safeguarding the space environment, and ensuring sustainability in exploration are paramount. The Treaty of Lisbon (2007) further underscores this commitment, requiring sustainability to be central to all EU activities[99]. These legal principles offer a blueprint for the responsible stewardship of space as a shared resource.

Angela Merkel: The Bridge Between Values and Governance

As Angela Merkel raised, "Europe succeeds when it makes its values clear and stands by them." This insight underscores the necessity of grounding governance in a robust rights-based framework. In the context of space, this means ensuring that governance reflects shared values: the universal right to benefit from scientific progress, the responsibility to protect shared environments, and the commitment to fair resource distribution. Merkel's approach emphasizes that governance structures succeed when they are accountable to principles of law and human dignity.

The Practical Application of Generational Rights

The International Space Station (ISS) serves as a living embodiment of all three generations of human rights: it fosters peaceful collaboration (first-generation), advances shared scientific benefits (second-generation), and promotes sustainability through international partnerships (third-generation). Similarly, the European Research Council (ERC) demonstrates the transformative potential of open and inclusive research, ensuring that scientific discoveries benefit humanity as a whole. These examples highlight the tangible success of governance rooted in human rights principles, offering a model for the shared governance of space.

Challenges in Structuring a Space Governance Treaty

1. Dual-Use Technology and Militarization

Existing treaties like NATO's allow for technological advancements that serve both military and civilian purposes. However, in space, such dual-use technologies could exacerbate tensions if not carefully regulated.

A space governance treaty could incorporate NATO's layered defense mechanisms while enforcing non-weaponization agreements akin to Article IV of the Outer Space Treaty.

[99] Article 6 TFEU

2. Resource Allocation and Sovereignty

ASEAN's respect for sovereignty, combined with shared economic agreements, offers a model for equitable resource distribution. For example, the governance of asteroid mining could be structured to ensure benefits are shared proportionally among contributing nations.

Environmental Responsibility

The UN's Paris Agreement (2015) demonstrates the potential of international agreements to set ambitious sustainability goals. Space treaties must similarly address debris mitigation and the environmental impact of mining and exploration.

Equity in Technological Access

Drawing from the EU's emphasis on bridging disparities among member states, (5th Freedom) a space treaty should prioritize technological transfer and knowledge-sharing to prevent monopolization by advanced nations.

Structural Elements for a Space Governance Treaty

Based on these comparisons, the thesis suggests a treaty structure with the following key elements:

- Pillar-Based Framework: Modeled after the EU, with separate but interdependent pillars for economic management, security, and judicial oversight.
- Collective Defense and Accountability: Inspired by NATO, ensuring shared protection of orbital and planetary assets while holding states accountable for breaches.
- Regional Alliances for Stability: Following ACSA's example, encouraging partnerships that respect sovereignty while fostering collaboration.
- Adaptive Enforcement Mechanisms: Borrowing from the UN, to ensure treaty provisions evolve alongside technological and geopolitical shifts.

Building a Framework for the Cosmos

The thesis concludes that existing treaties offer robust structural templates for space governance, but adaptation is essential to meet the unique challenges of the extraterrestrial domain. By integrating elements from NATO's collective security, ASEAN's regional stability, the UN's supranational oversight, and the EU's pillar-

based governance, humanity can forge a treaty that ensures space remains a shared, peaceful, and progressive frontier.

The preambles of history's great treaties—whether the Schuman Declaration's vision of resource-sharing as a deterrent to war or the Rome Treaty's commitment to "laying the foundations of an ever-closer union"—serve as enduring reminders that idealism, when anchored in shared purpose, can forge lasting alliances. These foundational texts are not mere aspirations but guiding stars, illuminating pathways toward peace and collaboration. In the cosmic arena, where the boundaries of sovereignty blur and the stakes extend beyond Earth, the preamble to a space governance treaty must capture this ethos. It should envision a celestial order where the shared pursuit of knowledge, the stewardship of resources, and the preservation of peace bind nations together in a higher purpose. Like the alliances that once transformed Europe into a beacon of unity, this idealist foundation can elevate space governance from regulation to inspiration—a testament to humanity's ability to craft systems of harmony in the uncharted expanse of the cosmos. Henry Kissinger[100] said,

"The construction of a peaceful order requires states to reconcile their immediate interests with long-term obligations to a broader system."

This perspective underscores the importance of security frameworks in maintaining stability, especially in frontier domains like space, where unregulated actions could destabilize global order.

Synthesis: Toward a Harmonized Framework for Space Governance

The synthesis of historical wisdom and future potential yields a vision of space governance rooted in collaboration, equity, and sustainability. Drawing inspiration from the structural principles of treaties such as the Schuman Declaration (1950), the Rome Treaty (1957), and the Outer Space Treaty (1967), this framework seeks to address the complexities of extraterrestrial governance while maintaining the ideals of peace and progress. As we move toward an era defined by the interdependence of technology, sovereignty, and shared resources, a harmonized system of space governance emerges as both a necessity and an aspiration.

At its core, this synthesis recognizes the structural interconnectivity between economic integration, collective security, and judicial oversight. The success of frameworks like NATO's collective defense model or the European Union's pillar-based approach demonstrates that durable governance arises not from domination but from collaboration. In space, these principles can find expression in a governance

[100] Henry Kissinger, *World Order* (pp. 312–316)

system where resource-sharing mechanisms mirror the economic solidarity of the Rome Treaty, collective security provisions echo NATO's Article 5, and dispute resolution aligns with the United Nations Charter's emphasis on fairness and equality.

Economic Integration as a Foundation

Economic integration serves as the bedrock of this framework. Drawing from the Rome Treaty's vision of economic cooperation as a unifying force, space governance must prioritize equitable access to resources, technologies, and benefits derived from extraterrestrial exploration. Mechanisms for the fair allocation of celestial resources—be it lunar ice or asteroid minerals—must balance the advanced capabilities of technologically superior states with the aspirations of emerging nations. This principle resonates with Carl Friedrich von Weizsäcker's insight in The Unity of Nature (pp. 87–91), where he emphasizes the role of innovation as a shared endeavor that uplifts humanity as a whole.

Security in a Shared Frontier

The synthesis also underscores the importance of collective security in preserving space as a domain of peace. Inspired by NATO's adaptable approach to dual-use technologies, this framework envisions safeguards against the weaponization of space while allowing for the legitimate use of advanced systems for defense and exploration. As Ernst Cassirer observes in An Essay on Man (pp. 152–155), human progress is shaped by the symbols and structures we create. The symbols of security in space must signify unity, ensuring that orbital traffic, satellite operations, and planetary exploration remain protected from conflict and aggression.

Judicial Oversight and Intergenerational Equity

Judicial oversight anchors this system in accountability. Borrowing from the United Nations' ability to mediate global disputes, space governance must include a tribunal for resolving conflicts over resource claims, orbital collisions, and environmental violations. The principles of intergenerational equity, as emphasized in the Treaty of Lisbon (2007), provide a guiding ethos for ensuring that space exploration remains sustainable. By incorporating judicial mechanisms, the framework ensures that disputes are resolved not through force but through dialogue and adherence to agreed principles.

An Extended Vision: Toward an EU Constitution for the Cosmos

In advancing this synthesis, the European Union's ongoing evolution toward constitutionalism offers a model for balancing integration with sovereignty. While the Treaty of Lisbon fell short of creating a fully democratic European constitution, its provisions on sustainability, innovation, and shared governance are instructive for a

future-oriented framework. Articles such as Article 3 TEU, which commits the Union to sustainable development, and Article 6 TFEU, which prioritizes environmental protection in all EU activities, underscore the potential for a governance structure rooted in ecological responsibility and intergenerational equity. Moreover, the Charter of Fundamental Rights of the European Union, with its emphasis on transparency and accountability, provides a template for ensuring that space governance remains inclusive and democratic.

However, this model must evolve beyond the Union's existing structures. Drawing from Aristotle's concept of scholar-kings, future governance frameworks must bridge the gap between science and politics, ensuring that scientific advancements are not only embraced by policymakers but are also the basis for accountability and ethical governance. *As Aristotle argued, rulers must be guided by knowledge and virtue, and in the context of space, this means holding political leaders responsible for decisions grounded in scientific evidence and global cooperation.* This vision of governance, combining the intellectual rigor of science with the democratic aspirations of constitutionalism, could propel space governance to unprecedented levels of sophistication and inclusivity.

A Preamble for Humanity's Cosmic Aspirations

At the heart of this synthesis lies the realization that governance frameworks must inspire as much as they regulate. Just as the Schuman Declaration made war

"not merely unthinkable but materially impossible"

The preamble of a space treaty must articulate humanity's shared aspirations. It should declare space as a domain of unity, where nations rise above terrestrial rivalries to embrace their collective destiny. Such a preamble would not merely set the tone for governance but serve as a beacon of hope—a commitment to balance sovereignty with shared responsibility, security with equity, and innovation with sustainability.

A Testament to Progress

This synthesis offers more than a theoretical blueprint; it is a call to action for humanity to transcend the boundaries of Earthly governance and craft systems that reflect our highest ideals. Space governance, as envisioned here, bridges the pragmatism of treaties like NATO with the idealism of declarations like Schuman's, grounded in scientific precision and historical insight. It represents a commitment to preserving the cosmos not as a battleground for competing interests but as a shared frontier for peace, progress, and the enduring hope of human unity. The inclusion of a constitutional vision modeled after the EU's unfinished democratic experiment offers a

way to anchor these aspirations in an actionable and enduring framework, safeguarding the future of humanity in the infinite expanse of the stars. As Henry Kissinger[101] said,

> *"The construction of a peaceful order requires states to reconcile their immediate interests with long-term obligations to a broader system."*

[101] Henry Kissinger, *World Order* (pp. 312–316)

TREATY ESSAY ON THE SUSTAINABLE GOVERNANCE OF EARTH'S BIOSPHERE AND OUTER SPACE

THE NATIONS OF THE PLANET EARTH,

UNITED in their shared destiny and common pursuit of peace, progress, and the responsible governance of all domains transcending national boundaries, particularly outer space,

RECOGNIZING that technological innovation and the free exchange of knowledge are essential pillars for fostering human development and addressing global challenges,

DETERMINED to ensure that the exploration and use of outer space, alongside the advancement of technologies, serve the interests of all humankind and promote equity, sustainability, and the preservation of our shared environment,

AWARE that the stewardship of outer space requires urgent and sustained action to prevent environmental harm, mitigate emerging risks, and preserve the cosmic heritage for future generations,

AFFIRMING the principles enshrined in the Charter of the United Nations, the Outer Space Treaty, and subsequent agreements, which emphasize peaceful cooperation, equitable access, and the prohibition of harmful activities that jeopardize humanity's shared aspirations,

COMMITTED to fostering a governance framework where technological progress is inseparable from ethical responsibility, ensuring that innovations serve the collective interest while safeguarding the sovereignty of nations and the dignity of all peoples,

GUIDED by the ideals of solidarity and justice that underpin the great frameworks of human unity, from the integration of sovereignties to the equitable sharing of resources,

INSPIRED by the transformative potential of human collaboration and the resilience of systems that prioritize openness, transparency, and freedom of knowledge,

RESOLVED to establish a covenant that governs the exploration and use of outer space and ensures that scientific, technological, and economic advancements serve as catalysts for peace, progress, and the enduring unity of humankind,

AND DESIROUS of creating a framework for governance that reflects the unity, aspirations, and enduring values of humanity,

HAVE AGREED AS FOLLOWS:

BOOK I: EARTH AND ITS ATMOSPHERIC HERITAGE

CHAPTER 1: SUSTAINABILITY AND PRESERVATION OF EARTH'S ATMOSPHERIC HERITAGE

ARTICLE 1: DEFINING THE LIMITS OF EARTH'S ATMOSPHERE AND THE BOUNDARY OF OUTER SPACE

1. Recognition of Atmospheric Layers

a. For the purposes of this Treaty, Earth's atmosphere is defined as encompassing the troposphere, stratosphere, mesosphere, thermosphere, and exosphere, which collectively sustain life and regulate global climatic systems.

b. The upper boundary of Earth's atmosphere, commonly referred to as the Kármán Line, located at an altitude of approximately 100 kilometers above sea level, is recognized as the conventional demarcation between Earth's atmosphere and outer space (International Aeronautical Federation Standard, 1957).

2. Jurisdiction Over Atmospheric Zones

a. Sovereign States shall exercise jurisdiction over the atmospheric layers directly above their territories, consistent with the Chicago Convention on International Civil Aviation (1944) and subsequent agreements.

b. Activities in transboundary atmospheric layers or zones approaching the Kármán Line shall be governed by principles of shared responsibility and international cooperation, in accordance with the Charter of the United Nations, Article 1.

3. Harmonization of Boundaries

a. The boundary definitions herein shall not prejudice ongoing scientific research or advancements in the study of atmospheric layers and their interactions with outer space.

b. Any amendments to boundary definitions due to scientific advancements shall be made by a consensus of the signatory States, under the guidance of the International Civil Aviation Organization (ICAO) and the World Meteorological Organization (WMO).

ARTICLE 2: PRESERVATION OF THE ATMOSPHERE AND MITIGATION OF POLLUTION

1. Sustainability of Atmospheric Layers

a. The atmosphere, as a finite and interconnected system, shall be preserved for the benefit of all humankind, consistent with the principles of the Stockholm Declaration (1972) and Rio Declaration (1992).

b. States shall take all necessary measures to prevent, reduce, and control pollution of the atmosphere resulting from terrestrial, aerial, and orbital activities (Vienna Convention for the Protection of the Ozone Layer, 1985).

2. Regulation of Rocket Launches and Spacecraft Reentry

a. The environmental impact of rocket launches, including exhaust emissions and debris fallout, shall be assessed and minimized through binding international guidelines.

b. Reentry of decommissioned spacecraft shall adhere to standards ensuring minimal atmospheric contamination and controlled descent to designated zones, monitored by the International Telecommunication Union (ITU) and the United Nations Office for Outer Space Affairs (UNOOSA).

3. Combating Atmospheric Contamination from Space Activities

a. States and private entities shall mitigate the release of black carbon and other pollutants generated by high-altitude operations, including rocket propulsion systems, to prevent harm to the stratosphere and upper atmospheric layers (Paris Agreement, Article 4(1)).

b. An Earth Atmosphere Sustainability Council (EASC) shall be established to oversee compliance, promote technological advancements in green propulsion systems, and recommend updates to atmospheric sustainability guidelines.

4. Monitoring and Compliance Mechanisms

a. States shall implement continuous monitoring systems for atmospheric health, with data shared through the Global Climate Observing System (GCOS) to ensure transparency and accountability.

b. Non-compliance shall be subject to review by the EASC, with penalties or corrective measures enforced under the provisions of this Treaty.

ARTICLE 3: SPACE DEBRIS AND ITS IMPACT ON THE ATMOSPHERE

1. Recognition of the Threat of Space Debris

a. The accumulation of space debris poses significant risks to the sustainability of Earth's atmosphere, orbital zones, and the safety of future operations (UN GA Resolution 62/217).

b. The Kessler Syndrome, or the cascading collision of space debris, is recognized as an urgent global threat requiring coordinated mitigation measures.

2. Regulations on Satellite Deployment and End-of-Life Protocols

a. Satellites and other space objects launched into orbit shall be designed with de-orbiting mechanisms or plans for controlled reentry to prevent debris proliferation.

b. Operators of satellites and spacecraft must adhere to guidelines established by the Inter-Agency Space Debris Coordination Committee (IADC), ensuring compliance with debris mitigation protocols.

3. Removal and Remediation of Existing Space Debris

a. States and private actors shall invest in technologies to actively remove existing debris from orbit, with priority given to debris located in low Earth orbit (LEO) and regions directly affecting atmospheric integrity.

b. Funding for debris remediation efforts shall be sourced from a shared contribution model, coordinated by the Global Space Governance Body (GSGB) and monitored by the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).

4. Prevention of Harmful Orbital and Atmospheric Collisions

a. States shall collaborate on real-time monitoring systems to detect and prevent collisions between orbital objects that could result in debris descending into the atmosphere.

b. The GSGB, in collaboration with the EASC, shall establish global early warning systems and response protocols for collision threats.

ARTICLE 4: PRESERVATION OF THE EARTH'S BIOSPHERE

1. Integration of Atmospheric and Biospheric Policies

a. Policies and actions under this Treaty shall integrate the principles of atmospheric sustainability with broader efforts to protect biodiversity, forests, and water systems, as outlined in the Convention on Biological Diversity, Articles 6–8.

b. The linkages between atmospheric health and the biosphere shall be reflected in national and international environmental policies.

2. Promotion of Green Technologies in Space Operations

a. Rocket launches, satellite construction, and associated activities must prioritize the use of sustainable materials and low-emission technologies.

b. Incentives shall be provided to private entities for innovation in environmentally friendly space technologies, overseen by the EASC and COPUOS

COMMENTARY ON EXPLICIT FINANCIAL MECHANISMS

To strengthen the enforcement and practical implementation of this Treaty, explicit financial frameworks are essential. The Global Fund for Biospheric Integrity (GFBI) serves as a cornerstone for financing initiatives aimed at preserving Earth's atmospheric and ecological systems. Contributions to this Fund must follow a graduated contribution system proportional to the economic and technological capacities of signatory States. Such a system aligns with established models, such as the funding mechanisms under the UN Climate Change Green Fund, ensuring equity and shared responsibility.

Additionally, the Treaty introduces an environmental levy or debris tax imposed on rocket launches and satellite deployments, assessed based on their environmental impact. These levies serve a dual purpose: incentivizing the adoption of sustainable propulsion technologies and generating financial resources for debris remediation and atmospheric restoration projects.

These financial measures are critical for addressing the significant costs associated with mitigating atmospheric pollution, developing green technologies, and implementing large-scale debris removal efforts. They also ensure that the Treaty's obligations are supported by tangible and enforceable funding mechanisms, bridging the gap between legislative intent and operational execution.

COMMENTARY ON INTERCONNECTED CHALLENGES

The Treaty emphasizes the interconnected nature of atmospheric pollution and orbital congestion, recognizing their cumulative impact on Earth's atmospheric health. For instance, emissions from high-frequency rocket launches, particularly those utilizing kerosene-based propellants, contribute to the accumulation of black carbon in the stratosphere. Research by the World Meteorological Organization (WMO) highlights how such pollutants disrupt the ozone layer and exacerbate global warming.

Similarly, the Kepler Syndrome—the cascading effect of orbital collisions—poses direct risks to atmospheric monitoring systems and climate satellites. These disruptions hinder efforts to monitor and mitigate global environmental challenges, underscoring the urgency of addressing space debris proliferation. The Treaty integrates these challenges, establishing a holistic framework that safeguards the atmospheric layers and orbital zones critical for planetary sustainability.

COMMENTARY ON RESEARCH AND DEVELOPMENT

The success of this Treaty relies heavily on fostering international collaboration in scientific research and technological innovation. To this end, the Treaty proposes the establishment of a Global Research Consortium on Atmospheric Sustainability, modeled after the Intergovernmental Panel on Climate Change (IPCC). This consortium will coordinate efforts to study the atmospheric impact of space activities, develop green propulsion technologies, and design innovative debris mitigation solutions.

Additionally, the Treaty mandates the open sharing of scientific data and technological advancements, ensuring that knowledge generated under its framework benefits all humanity. This aligns with Article 27 of the Universal Declaration of Human Rights (1948), which guarantees the right to share in scientific progress and its benefits.

The Global Research Consortium will also prioritize the development of real-time atmospheric monitoring systems to track emissions, debris reentry, and high-altitude pollution. These systems will provide critical data for policymaking and enforcement, strengthening the Treaty's ability to adapt to emerging challenges and technological advancements.

COMMENTARY ON FUTURE-PROOFING THE TREATY

The dynamic nature of atmospheric and orbital activities necessitates a flexible and adaptive legal framework. The Treaty includes provisions for periodic review and amendment, allowing signatory States to address new challenges such as megaconstellations, geoengineering experiments, and emerging space technologies.

These review mechanisms ensure that the Treaty remains relevant and effective, responding to scientific advancements and shifting geopolitical landscapes. By integrating foresight and adaptability into its structure, the Treaty establishes itself as a living document capable of guiding humanity's stewardship of Earth's atmosphere for generations to come.

BOOK II: OUTER SPACE AND HUMANITY'S SUSTAINABLE EXPANSION

PRINCIPLES OF SPACE GOVERNANCE

1. The Principle of Common Heritage

a. Outer space, including celestial bodies and the vacuum of space, is recognized as the common heritage of humankind, belonging to no nation, corporation, or individual and preserved for peaceful purposes (Outer Space Treaty, Article I).

b. Activities conducted in outer space must adhere to the principles of inclusivity, sustainability, and equity, ensuring that all nations, regardless of technological or economic status, benefit from its exploration and use (UNGA Resolution 1962 (XVIII), 1963).

c. The Global Space Governance Body (GSGB) shall oversee the equitable access to and utilization of outer space, balancing the rights and responsibilities of States and private actors in accordance with this Treaty.

2. Equity in Access and Use

a. Space exploration and its benefits, including technological advancements, economic opportunities, and scientific discoveries, shall be shared equitably among all nations. Special emphasis shall be placed on enabling access for developing nations through capacity-building and resource-sharing programs (Universal Declaration of Human Rights, Article 27).

b. A Global Space Sustainability Fund (GSSF) shall allocate resources from space-related revenues to:

i. Support developing nations in accessing space technologies and participating in collaborative missions.

ii. Foster global research initiatives addressing pressing challenges such as orbital congestion and environmental preservation.

3. Artificial Intelligence and the Common Domain

a. The integration of AI in space exploration and governance must prioritize transparency, accountability, and inclusivity, ensuring that AI systems operate under ethical frameworks agreed upon by all signatory States (European AI Act, 2021).

b. AI applications, including those used for resource mapping, orbital traffic management, and mission planning, shall be subject to regular audits by the GSGB to prevent monopolization, bias, or exploitation.

c. Open-source platforms for AI development in space governance shall be encouraged to foster innovation and ensure collective benefit, reflecting the principles of the Universal Declaration of Human Rights, Article 27(2).

ARTICLE 2: PEACEFUL USE AND DEMILITARIZATION

1. Commitment to Peaceful Use

a. Outer space shall be used exclusively for peaceful purposes, reaffirming the prohibition of acts of aggression or activities that threaten global security (Outer Space Treaty, Article IV).

b. Military activities in outer space shall be limited to defensive systems directly related to Earth's security, such as disaster response and early warning mechanisms for natural or artificial threats.

2. Prohibition of Weaponization

a. The deployment of weapons of mass destruction, kinetic energy weapons, or directed-energy systems in space is strictly prohibited, as reaffirmed by the Outer Space Treaty, Article IV and subsequent United Nations resolutions.

b. The Treaty further prohibits anti-satellite (ASAT) tests, which pose a direct threat to the safety and sustainability of orbital zones, and establishes a framework for penalizing violations.

3. Transparency and Confidence-Building

a. States shall share information on military and dual-use space systems with the GSGB, ensuring transparency and mutual trust.

b. A Space Transparency and Confidence-Building Framework (STCBF), modeled on the Vienna Document (2011), shall facilitate the exchange of data on satellite deployments, space traffic, and other relevant activities.

4. The Role of AI in Peaceful Governance

a. AI systems used in space defense and surveillance shall adhere to strict ethical and operational guidelines, preventing misuse or escalation of conflict.

b. Collaborative research initiatives shall prioritize the development of AI tools for conflict prevention, space debris mitigation, and resource-sharing optimization, reflecting the principles of Principle 10 of the Rio Declaration (1992).

ARTICLE 3: SUSTAINABLE UTILIZATION OF CELESTIAL RESOURCES

1. Framework for Resource Utilization

a. The extraction and use of resources from celestial bodies shall comply with principles of equity, sustainability, and intergenerational responsibility, ensuring that activities benefit all humankind without causing harm to extraterrestrial environments (Outer Space Treaty, Article I; Moon Agreement, Article 11).

b. The International Space Resources Council (ISRC) shall oversee the licensing, monitoring, and enforcement of sustainability guidelines for celestial resource extraction.

i. Licensing shall include comprehensive environmental assessments, adherence to safety standards, and resource-sharing agreements.

ii. Monitoring systems shall ensure transparency in extraction activities and compliance with sustainability protocols.

2. Equitable Distribution of Benefits

a. Revenues generated from celestial resource utilization shall contribute to the Global Space Sustainability Fund (GSSF), allocated to:

i. Advancing space technology and infrastructure in developing nations.

ii. Addressing global challenges such as poverty, education, and access to scientific knowledge.

b. States engaging in resource extraction must allocate a minimum percentage of revenues (not less than 10%) to cooperative projects aimed at global sustainability (UNGA Resolution 3281, Article 2).

3. Environmental Safeguards

a. Resource extraction must avoid contamination of celestial bodies and prevent irreversible damage to their surfaces, adhering to sustainability principles similar to those in Principle 15 of the Rio Declaration (1992).

b. The ISRC shall develop and enforce remediation plans for any environmental disruption caused by resource utilization activities.

4. Prohibition of Sovereignty and Exclusive Claims

a. No State, private entity, or international organization may claim sovereignty or exclusive ownership over celestial resources, reinforcing the non-appropriation principle outlined in Outer Space Treaty, Article II.

b. Collaborative frameworks must govern multi-party projects to ensure that no single actor monopolizes access or benefits from celestial resources.

ARTICLE 4: PROMOTING TECHNOLOGICAL EQUITY

1. Global Cooperation in Space Technology

a. Signatory States commit to fostering international cooperation in space technology development, ensuring that advancements in propulsion, robotics, and AI benefit all humankind.

b. Mechanisms shall be established to enable knowledge-sharing agreements between spacefaring and non-spacefaring nations, with an emphasis on transparency and capacity-building programs (Universal Declaration of Human Rights, Article 27).

2. Technology Access for Developing Nations

a. States with advanced space capabilities shall provide access to essential technologies for nations lacking such resources, prioritizing:

i. Training programs for engineers and scientists from developing nations.

ii. Partnerships for collaborative missions and joint research initiatives.

b. A minimum of 20% of the GSSF shall be allocated to developing nations for technological capacity-building, in alignment with global development goals (Sustainable Development Goals, SDG 9).

3. Ethical Development of AI and Space Technologies

a. The deployment of AI and other advanced technologies in space activities shall adhere to ethical principles that prioritize human dignity, environmental sustainability, and global equity.

b. AI systems used in orbital management, resource mapping, or autonomous missions shall:

i. Be transparent in their design and operation, avoiding bias or monopolization.

ii. Undergo periodic review and certification by the ISRC to ensure compliance with international standards (European AI Act, 2021).

LONG-TERM HUMAN EXPANSION

ARTICLE 5: HUMAN SETTLEMENTS BEYOND EARTH

1. Framework for Governance and Collaboration

a. Human settlements on celestial bodies, including the Moon, Mars, and beyond, shall be governed under the jurisdiction of the Global Space Governance Body (GSGB), ensuring adherence to international laws and principles established by this Treaty.

b. Settlements shall prioritize inclusivity and cooperation, reflecting the diversity of participating nations, and must include mechanisms for equitable representation in governance structures.

c. States and private actors are required to collaborate on:

i. The development of shared infrastructure, such as transportation systems and energy networks.

ii. Joint research projects addressing sustainable living in extraterrestrial environments.

2. Sustainability Standards for Settlements

a. All settlements must:

i. Incorporate renewable energy technologies tailored to extraterrestrial conditions, ensuring minimal environmental footprint.

ii. Include waste management systems designed to prevent contamination of extraterrestrial surfaces and support resource recycling.

b. Construction and operation of settlements shall comply with environmental protocols derived from the Outer Space Treaty, Article IX, emphasizing the prevention of harmful interference with celestial ecosystems.

3. Ethical and Scientific Objectives

a. Human settlements shall prioritize scientific research, including:

i. Studies on extraterrestrial geology, biology, and atmospheric phenomena.

ii. Research into sustainable technologies applicable to Earth's challenges.

b. Ethical considerations shall guide all settlement activities, ensuring respect for potential extraterrestrial life and avoidance of actions that may disrupt celestial environments.

4. Global Fund for Settlement Development

a. The Treaty establishes a Global Settlement Development Fund (GSDF), financed through contributions by States and private stakeholders benefiting from space activities.

b. The GSDF shall prioritize:

i. Collaborative projects involving multiple nations.

ii. Grants to developing countries for participation in human settlement programs.

ARTICLE 6: PRESERVING THE COMMON HERITAGE

1. Recognition of Celestial Bodies as Shared Heritage

a. All celestial bodies, including their surfaces and resources, are recognized as common heritage of humankind, governed collectively to ensure their preservation for future generations.

b. This principle prohibits any action that seeks to privatize, claim sovereignty over, or exploit celestial bodies for exclusive gain, as established in the Outer Space Treaty, Article II and the Moon Agreement, Article 11.

2. Prohibition of Commercial Exploitation

a. Commercial branding or privatization of celestial features, such as craters, mountains, or other landmarks, is prohibited.

b. Economic activities, including resource extraction, must be conducted within a framework of shared benefit, overseen by the International Space Resources Council (ISRC) to prevent monopolization.

3. Intergenerational Equity and Cultural Preservation

a. Activities on celestial bodies must consider intergenerational equity, ensuring that resources and opportunities are preserved for future generations, reflecting the ethos of the Brundtland Report (1987).

b. Preservation measures must extend to cultural and scientific landmarks, including areas of significant scientific interest, such as the Apollo landing sites, which shall be protected as universal monuments.

4. Global Collaborative Frameworks

a. The GSGB, in collaboration with the ISRC, shall develop and enforce collaborative frameworks for preserving celestial environments and landmarks.

b. Mechanisms for reporting and addressing violations, including unauthorized exploitation or environmental harm, shall be established under this Treaty

ARTICLE 7: PERIODIC REVIEW MECHANISMS

1. Scheduled Treaty Review

a. The provisions of this Treaty shall be subject to a comprehensive review every five years, conducted by the Global Space Governance Body (GSGB) in collaboration with the United Nations Office for Outer Space Affairs (UNOOSA).

b. Reviews shall address emerging challenges, including advancements in space technology, environmental impacts, and geopolitical developments, to ensure the Treaty remains relevant and effective.

2. Flexibility for Amendments

a. Amendments to the Treaty may be proposed by any signatory State and adopted upon a two-thirds majority vote of the GSGB General Assembly.

b. Emergency amendments addressing immediate threats or challenges may be expedited with approval from the GSGB Executive Council, subject to ratification at the next General Assembly session.

3. Scientific and Technical Advisory Panels

a. The GSGB shall establish permanent advisory panels composed of experts in space science, law, and technology to provide recommendations on:

i. The integration of new technologies, including AI and robotics, into space governance frameworks.

ii. Sustainability measures for resource extraction and debris mitigation.

iii. Ethical considerations for activities involving extraterrestrial life or ecosystems.

b. Reports from these panels shall be publicly accessible to ensure transparency and inclusivity in decision-making.

4. Monitoring and Compliance Reporting

a. Each signatory State shall submit an annual compliance report to the GSGB, detailing activities conducted under the Treaty's provisions, including resource utilization, settlement development, and environmental protection measures.

b. The GSGB shall publish a global compliance report, summarizing findings and identifying areas of concern, with recommendations for corrective action.

ARTICLE 8: ADDRESSING EMERGING CHALLENGES

1. Anticipating Future Technologies

a. This Treaty recognizes the rapid evolution of space technologies and commits to proactive governance of:

i. Megaconstellations: Managing their impact on orbital congestion, atmospheric reentry risks, and light pollution.

ii. Geoengineering Experiments: Assessing their potential benefits and risks to Earth's atmosphere and ecosystems.

iii. Advanced AI and Robotics: Establishing ethical guidelines for autonomous systems in exploration, resource extraction, and orbital management.

2. Framework for Crisis Management

a. The GSGB shall develop a Global Space Crisis Management Framework to address unforeseen threats, such as:

i. Large-scale space debris collisions (e.g., Kessler Syndrome scenarios).

ii. The discovery of extraterrestrial microorganisms or ecosystems requiring immediate protective measures.

b. Crisis protocols shall include international coordination mechanisms, funding provisions, and emergency response teams to mitigate risks effectively.

3. Incorporating Societal and Cultural Impacts

a. Space activities shall be evaluated for their societal and cultural implications, including:

i. Ensuring equitable access to space benefits across all nations.

ii. Preventing the cultural erasure of indigenous knowledge systems when interpreting humanity's place in the cosmos.

b. Signatory States commit to fostering global dialogue on the philosophical and ethical dimensions of humanity's expansion into outer space.

4. Institutional Oversight and Review

a. The ISCRC shall submit annual reports to the GSGB detailing its activities, challenges encountered, and recommendations for improving global crisis response capabilities.

b. The SEOD shall publish real-time data on space environmental conditions, enabling proactive measures to prevent potential crises.

5. Legal Framework for Accountability

a. The ISCRC shall have the authority to sanction States or private entities responsible for causing or exacerbating crises, including fines, suspension of licenses, or restrictions on future activities.

b. Disputes arising from crisis management decisions shall be adjudicated by the International Space Tribunal (IST), established under this Treaty.

COMMENTARY ON BOOK II.

To support the practical implementation of space governance principles, Book 2 establishes the Global Space Sustainability Fund (GSSF) as a cornerstone of its financial framework. Contributions to this Fund are calculated based on the economic and technological capacities of signatory States, following proportional models similar to those employed by the UN Climate Change Green Fund. This approach ensures equitable participation, allowing developed nations to contribute proportionally more while encouraging the inclusion of developing nations.

The GSSF plays a dual role: financing cooperative technological projects and addressing unforeseen crises, such as large-scale orbital collisions or urgent debris mitigation. Private sector contributions to the Fund are also mandated, with levies tied to launch frequency and environmental impact. This ensures that the increasing role of private actors in space activities is aligned with global responsibilities. The integration of financial mechanisms incentivizes sustainable development, reflecting the Treaty's commitment to collective benefit and equitable resource distribution.

COMMENTARY ON THE INSTITUTIONAL STRUCTURE

The institutional structure introduced in Book 2 reflects the complexities of outer space governance. The Global Space Governance Body (GSGB) functions as the central authority, coordinating efforts across multiple specialized institutions. Its oversight extends to the International Space Crisis Response Council (ISCRC), the Crisis Response Task Force (CRTF), and the Space Environmental Oversight Division (SEOD).

The CRTF is a particularly innovative aspect, designed to respond to immediate challenges such as cascading orbital debris or biosecurity risks associated with extraterrestrial discoveries. Its personnel, trained at the GSGB Academy for Space Governance (ASG), bring expertise in engineering, law, and environmental science, ensuring a multidisciplinary approach to crisis resolution. The institutional design ensures that no single State or entity can dominate decision-making, maintaining a balance between national interests and global priorities.

COMMENTARY ON HUMAN EXPANSION AND ETHICS

The provisions for human settlements in Book 2 reflect the Treaty's long-term vision of inclusive and ethical expansion into space. The Global Settlement Development Fund (GSDF) provides financial support for collaborative projects, including renewable energy systems and waste management technologies essential for extraterrestrial living. These systems ensure that human expansion does not replicate Earth's environmental challenges.

Ethical guidelines for human activities on celestial bodies draw from the Stockholm Declaration (1972), emphasizing the need to preserve extraterrestrial environments and respect potential extraterrestrial life. This aligns with humanity's collective responsibility to explore space as stewards rather than exploiters, setting a high standard for scientific and cultural integrity.

COMMENTARY ON ADAPTABILITY AND REVIEW

The dynamic nature of space governance necessitates flexibility, and Book 2 introduces periodic review mechanisms to ensure the Treaty remains responsive to emerging challenges. The five-year reviews allow for the incorporation of technological advancements and geopolitical shifts, ensuring continued relevance and effectiveness. Scientific advisory panels provide essential recommendations, grounding decisions in the latest research.

The adaptability of the Treaty is further reinforced by the Global Space Crisis Management Framework (GSCMF), which integrates proactive measures for emerging threats like megaconstellations and AI malfunctions. By anticipating future challenges, the Treaty establishes itself as a living document, capable of evolving alongside humanity's expansion into space.

CONDITIONS OF ADHERENCE

1. Eligibility for Adherence

a. All Member States of the United Nations are eligible to become signatories to this Treaty, provided they commit to upholding the principles and obligations enshrined herein.

b. International organizations and private entities involved in space-related activities may adhere to specific provisions of the Treaty, contingent upon approval by the Global Space Governance Body (GSGB) and demonstrated alignment with the Treaty's goals.

2. Criteria for Adherence

a. Technological Standards

i. Adhering States must demonstrate compliance with international safety and environmental standards, including orbital debris management and the adoption of sustainable propulsion technologies.

ii. Example: Any entity entering the atmospheric layers must ensure that debris or payload exceeding 2 kilograms is fully recoverable or designed to burn upon re-entry, adhering to Inter-Agency Space Debris Coordination Committee (IADC) guidelines.

b. Financial Integration

i. Contributions to the Global Space Sustainability Fund (GSSF) are mandatory, based on a graduated scale proportional to the State's economic and technological capabilities.

ii. The financial model incorporates both national currencies and cryptocurrencies, allowing flexibility for States and entities with limited access to global banking systems. For instance, contributions via blockchain-based currencies such as Bitcoin or future space-specific tokens could be accepted, ensuring inclusivity and adaptability.

c. Institutional Preparedness

i. States must establish or designate a national space authority responsible for compliance with Treaty provisions, including coordination with the GSGB and submission of annual activity reports.

ii. Example: A new entrant with a developing space program might need to collaborate with established international partners to meet these criteria.

3. Process of Adherence

a. States wishing to adhere must submit a formal Instrument of Accession to the designated Depository (Secretary-General of the United Nations).

b. Submissions must include:

i. A declaration of intent to uphold the Treaty's principles.

ii. A detailed plan for integration into the financial framework, including anticipated contributions and timelines.

iii. Certification of compliance with existing international agreements, such as the Outer Space Treaty (1967).

iv. Evidence of alignment with the Treaty's sustainability standards, including plans for space debris mitigation

4. Economic Convergence and Sustainability Metrics

a. Common Financial Mechanisms

i. Adhering States must align their financial contributions and sustainability efforts with established benchmarks, similar to the Eurozone's convergence criteria:

- Orbital Debris Index: A metric tracking a State's efforts in reducing debris creation and removing inactive satellites.

- Atmospheric Impact Assessment: Evaluating the carbon footprint of launches, with incentives for adopting green propulsion technologies.

- Resource Equity Contributions: Financial or technological contributions toward shared resources and collaborative missions.

ii. Failure to meet these metrics within specified timelines may result in provisional adherence or restricted voting rights within the GSGB.

b. Incentives for Convergence

i. States meeting or exceeding these criteria may access reduced GSSF contribution rates or additional funding for domestic space research initiatives.

ii. Example: A State adopting 100% reusable launch technologies could receive preferential access to international projects or grants from the GSDF.

5. Provisional Adherence

a. States or entities unable to meet all criteria may apply for provisional adherence, granting them observer status within the GSGB.

b. Provisional members must submit a roadmap for full compliance, reviewed annually by the GSGB.

c. Provisional status includes limited access to collaborative projects and restricted decision-making capabilities but allows for capacity-building initiatives.

6. Compliance and Review Mechanisms

a. Adhering States must submit annual compliance reports detailing:

i. Orbital activities, including debris mitigation and resource utilization.

ii. Financial contributions to the GSSF and their allocation toward space-related programs.

iii. Technological advancements or setbacks in meeting sustainability criteria.

b. Non-compliance may result in:

i. Financial penalties, such as increased GSSF contribution rates.

ii. Suspension of participation in collaborative missions.

iii. Referral to the International Space Tribunal (IST) for adjudication.

HARMONIZATION OF TREATY OBLIGATIONS

1. Incorporation into National Legal Frameworks

a. Signatory States commit to harmonizing the provisions of this Treaty with their domestic legal systems within two years of accession.

b. States must enact enabling legislation or adopt regulatory measures to:

i. Align national space laws with the principles of the Treaty, including sustainability, equity, and peaceful use.

ii. Designate or establish a national authority responsible for implementing Treaty obligations, reporting to the Global Space Governance Body (GSGB).

iii. Establish oversight mechanisms to ensure compliance with the financial, environmental, and operational criteria set forth in the Treaty.

c. Example: A State with existing space legislation, such as a licensing regime for satellite operators, must integrate provisions for compliance with global standards, such as debris mitigation and equitable resource-sharing.

2. Supremacy of Treaty Obligations

a. The provisions of this Treaty shall hold supranational status in cases of conflict with domestic law, ensuring that its principles are universally upheld across jurisdictions.

b. States must establish constitutional or legislative provisions recognizing the Treaty's supremacy over conflicting national laws.

i. Example: A signatory State's licensing framework for private space operators must defer to the Treaty's guidelines for sustainability and debris management, even if such provisions conflict with national economic priorities.

c. Exceptions may be granted under extraordinary circumstances, subject to approval by the GSGB, provided that States demonstrate that temporary deviations are necessary to address critical domestic needs.

3. Mechanisms for Legislative Harmonization

a. The GSGB shall establish a Harmonization Task Force (HTF) to assist States in integrating Treaty provisions into their domestic legal frameworks.

b. The HTF's responsibilities include:

i. Providing model legislation and regulatory templates for States to adapt.

ii. Offering technical assistance and capacity-building programs to developing nations.

iii. Monitoring and evaluating the progress of legislative harmonization efforts.

4. Judicial Oversight and Dispute Resolution

a. The Treaty establishes the International Space Tribunal (IST) as the final arbiter for disputes arising from conflicts between domestic law and Treaty obligations.

i. The IST's rulings are binding on all signatory States, ensuring uniform interpretation and application of the Treaty's provisions.

ii. Example: If a State prioritizes domestic industries over the equitable allocation of celestial resources, the IST may intervene to enforce compliance.

b. National courts must defer to IST rulings in cases involving the Treaty's principles, reinforcing its supranational authority.

5. Harmonization Criteria for National Space Programs

a. States must demonstrate alignment with the following harmonization criteria to maintain adherence:

i. Environmental Standards: Adoption of protocols for debris mitigation, as outlined in the Treaty and the IADC Guidelines.

ii. Equity Measures: Mechanisms for equitable sharing of space-derived benefits, including resource revenues and technological advancements.

iii. Transparency: Public disclosure of national space activities and compliance with reporting obligations to the GSGB.

iv. Accountability: Enforcement of penalties for violations of Treaty provisions, whether by State actors or private entities operating under State jurisdiction.

6. Monitoring and Reporting on Harmonization

a. States must submit biennial reports to the GSGB detailing progress on legislative harmonization, including:

i. Legislative or regulatory measures enacted to implement Treaty provisions.

ii. Challenges encountered in aligning national laws with Treaty obligations.

iii. Measures taken to address non-compliance by private actors.

b. The GSGB shall publish an annual Global Harmonization Report, highlighting progress, identifying challenges, and recommending solutions to ensure consistent application of the Treaty across jurisdictions.

7. Incentives for Harmonization

a. States achieving full harmonization within the two-year period may qualify for:

i. Reduced contributions to the Global Space Sustainability Fund (GSSF).

ii. Preferential access to collaborative missions and research grants under the Global Settlement Development Fund (GSDF).

iii. Recognition in the GSGB's annual report as a model State for legislative integration.

b. Example: A State that rapidly integrates the Treaty's environmental standards into its national space licensing system might receive additional funding for domestic space research initiatives.

8. Non-Compliance and Penalties

a. States failing to harmonize their domestic laws within the specified period may face:

i. Increased GSSF contributions proportional to the delay.

ii. Suspension of voting rights within the GSGB.

iii. Potential legal action before the IST for prolonged non-compliance.

b. The GSGB may provide additional time for harmonization under extraordinary circumstances, provided that States demonstrate good-faith efforts and submit a detailed roadmap for compliance.

NATIONAL COMPETENCES AND SOVEREIGN RIGHTS

ARTICLE 1: PRESERVATION OF SOVEREIGN RIGHTS

1. Respect for National Sovereignty

a. This Treaty reaffirms the inherent sovereignty of all signatory States, emphasizing that the governance of outer space must respect the territorial integrity and constitutional authority of each nation.

b. National laws and policies governing non-space-related matters remain unaffected by the provisions of this Treaty, ensuring that domestic governance retains full independence.

i. Example: Decisions on national industrial policies, domestic taxation unrelated to space activities, and terrestrial education systems fall entirely within the purview of individual States.

2. Areas of Reserved Competence

a. States retain exclusive authority over:

i. Domestic research priorities and funding allocations unrelated to collaborative international space projects.

ii. National security measures, provided they do not contravene the peaceful use principles outlined in this Treaty.

iii. Jurisdiction over terrestrial operations, including the regulation of launch sites and spaceports within their territory.

3. Principle of Non-Interference

a. The Treaty prohibits interference in matters deemed to be within the exclusive competence of national governments, ensuring a balanced relationship between international obligations and domestic sovereignty.

b. Example: States may independently establish educational curricula for space sciences without external mandates, provided they align with the broader goals of international collaboration.

ARTICLE 2: COMPETENCES SHARED WITH THE GLOBAL SPACE GOVERNANCE BODY

1. Shared Governance Areas

a. In areas requiring international cooperation, competences are shared between national governments and the Global Space Governance Body (GSGB) to ensure a coordinated approach. Shared areas include:

i. Regulation of private space activities, where States retain licensing authority but must ensure compliance with Treaty provisions.

ii. Crisis management responses, where national agencies must coordinate with the GSGB under the Global Space Crisis Management Framework.

iii. Contributions to global research initiatives, where national priorities must align with collaborative goals established by the GSGB.

2. Procedural Safeguards for Shared Competences

a. States may propose amendments or exceptions to shared governance areas through the GSGB's General Assembly, ensuring flexibility and adaptability.

b. Disputes regarding shared competences are resolved through the International Space Tribunal (IST), ensuring equitable outcomes.

ARTICLE 3: SUPREMACY OF NATIONAL LAW IN SPECIFIED AREAS

1. Domestic Legal Precedence

a. The Treaty explicitly recognizes that domestic law takes precedence over international obligations in the following areas:

i. Civil and criminal jurisdiction over individuals and entities operating within a State's territory.

ii. National taxation frameworks, excluding contributions to the Global Space Sustainability Fund (GSSF).

iii. Regulation of terrestrial industries, including those indirectly connected to space activities.

2. Exceptions to Supremacy

a. Domestic laws may not contravene the core principles of the Treaty, such as the peaceful use of outer space, sustainability, and equitable resource-sharing.

ARTICLE 4: RIGHT TO OPT-OUT CLAUSES

1. Limited Opt-Out Provisions

a. States may invoke opt-out clauses for specific provisions of the Treaty, provided they:

i. Demonstrate that adherence would result in significant domestic hardship or conflict with constitutional mandates.

ii. Submit a formal request to the GSGB, including a timeline for potential future compliance.

2. Conditions for Opt-Out Approval

a. Opt-out requests must be reviewed and approved by the GSGB's Executive Council, ensuring that exceptions do not undermine the Treaty's overarching goals.

b. Example: A developing State unable to immediately contribute to the GSSF may request temporary exemption, with a plan to phase in contributions over time

ARTICLE 5: NATIONS' RIGHTS IN FUTURE AMENDMENTS

1. Role in Amendment Processes

a. States retain the right to veto amendments that would significantly alter their reserved competences or impose additional obligations outside the original scope of the Treaty.

b. The GSGB must ensure that all amendment proposals are subject to rigorous consultation processes, with equal representation for all signatory States.

2. Right to Independent Advocacy

a. States may form coalitions or advocacy groups within the GSGB to advance their interests or propose alternative governance models.

b. Example: A coalition of developing nations might advocate for increased access to the GSSF or propose adjustments to shared governance frameworks.

JUDICIAL FRAMEWORK AND DISPUTE RESOLUTION

The judicial framework established under this Treaty ensures the consistent interpretation, application, and enforcement of its provisions. This framework is designed to address disputes, uphold compliance, and provide authoritative rulings on matters related to outer space governance. The judiciary operates independently under the authority of the Global Space Governance Body (GSGB) and is bound by principles of impartiality, transparency, and equity.

The International Space Tribunal (IST) is the primary judicial body created under this Treaty. It is tasked with adjudicating disputes arising from the interpretation or application of the Treaty, ensuring uniformity in its enforcement. The IST's jurisdiction extends to disputes between signatory States, private entities, and international organizations, as well as cases of non-compliance or breaches of Treaty obligations. Its rulings are binding and enforceable under international law, with mechanisms for sanctions or corrective measures outlined in its procedural statutes.

The IST is composed of judges nominated by signatory States and appointed by the GSGB General Assembly. Judges must possess expertise in international law, space law, and related scientific or technical disciplines to ensure well-rounded and informed decision-making. Each judge serves a non-renewable term of nine years to maintain independence and prevent undue influence. The Tribunal operates as a plenary body, with the authority to establish specialized chambers for cases involving technical complexities, such as orbital debris management or AI malfunctions in space governance.

Procedures before the IST emphasize accessibility and efficiency. States or entities seeking resolution must submit a formal application outlining the nature of the dispute, relevant evidence, and proposed remedies. Preliminary hearings determine the admissibility of cases, and disputes deemed frivolous or outside the scope of the Treaty are dismissed. The Tribunal may invite expert testimony from technical advisors, ensuring decisions are grounded in both legal principles and scientific realities.

The IST also has the power to issue advisory opinions on matters of Treaty interpretation upon request by the GSGB or individual signatory States. These opinions, while non-binding, provide guidance on emerging challenges and foster consistent application of the Treaty's provisions. Advisory opinions are particularly valuable in addressing novel issues, such as the governance of megaconstellations or ethical considerations in AI-driven resource extraction.

Enforcement of IST rulings is carried out through mechanisms established by the GSGB. Non-compliant States or entities may face sanctions, including suspension of voting rights within the GSGB, increased contributions to the Global Space Sustainability Fund (GSSF), or restrictions on future space activities. Persistent non-compliance may result in referral to the United Nations Security Council or other international bodies for further action. The IST's enforcement authority ensures that rulings are not merely symbolic but have tangible consequences for upholding the Treaty's principles.

To complement the IST, this Treaty establishes a network of National Space Courts within signatory States. These courts have jurisdiction over domestic matters related to the implementation of Treaty obligations, such as licensing disputes, compliance with debris mitigation protocols, or enforcement of financial contributions. National Space Courts operate under guidelines issued by the IST to ensure consistency with the Treaty's objectives. Where conflicts arise between domestic rulings and the Treaty's provisions, appeals may be made directly to the IST for final resolution.

The IST maintains a collaborative relationship with the GSGB, particularly in monitoring compliance and addressing systemic issues. The GSGB submits annual compliance reports to the IST, identifying trends, potential breaches, and areas requiring judicial review. This interaction ensures that judicial oversight remains proactive and responsive to the evolving landscape of space governance. In addition to its adjudicative role, the IST is empowered to facilitate mediation and arbitration between parties. These alternative dispute resolution mechanisms provide a less adversarial approach to resolving conflicts, particularly in cases involving private entities or technical disagreements. Mediation panels, drawn from the IST's roster of judges and expert advisors, encourage collaborative solutions that uphold the Treaty's principles while accommodating the interests of all parties involved. The Treaty's judicial framework incorporates procedural safeguards to uphold the rights of all participants. Litigants are guaranteed the right to representation, access to evidence, and a fair hearing. The Tribunal's decisions are subject to detailed reasoning, with written judgments made publicly accessible to ensure transparency and accountability. To further enhance public trust, the IST periodically reviews its procedural rules, incorporating feedback from stakeholders and adapting to emerging challenges.

This judicial framework reflects the Treaty's commitment to balancing sovereignty with collective responsibility. By establishing the IST as an independent and authoritative body, supported by National Space Courts and alternative dispute resolution mechanisms, the Treaty ensures robust and equitable governance of outer space activities. The framework draws inspiration from the European Court of Justice, adapting its principles to the unique challenges of space governance, and provides a model for future international cooperation in this domain.

APPOINTMENT AND TENURE OF JUDGES

1. Composition of the International Space Tribunal (IST)

a. The IST is composed of 21 judges, ensuring representation across geographic regions and reflecting the diversity of signatory States.

b. Judges are nominated by their respective States and must meet the following qualifications:

i. Expertise in international law, space law, or related fields such as environmental law or scientific disciplines.

ii. Proven professional experience of at least 15 years in relevant areas.

iii. Demonstrated independence, impartiality, and commitment to the principles of the Treaty.

2. Election and Appointment Process

a. Judges are elected by the General Assembly of the Global Space Governance Body (GSGB) through a weighted voting system to ensure proportional representation.

b. The election process involves:

i. Nominations submitted by States within six months of a vacancy announcement.

ii. Evaluation of nominees by the Judicial Nomination Committee (JNC), comprising experts from law, science, and international governance.

iii. A multi-round voting process requiring candidates to secure a majority vote for appointment.

3. Tenure and Rotation

a. Judges serve non-renewable terms of nine years, ensuring independence and avoiding political influence.

b. Terms are staggered, with one-third of the Tribunal's judges rotating every three years, maintaining continuity in decision-making.

c. A judge's term begins upon formal swearing-in and concludes upon the appointment of their successor.

LEADERSHIP AND ADMINISTRATIVE ROLES

1. Election of the President and Vice President

a. The IST elects a President and Vice President from among its members by secret ballot.

b. The President's term is three years, renewable once, and the Vice President serves the same term.

c. The President's duties include:

i. Overseeing the administration of the Tribunal.

ii. Allocating cases to judicial chambers.

iii. Representing the IST in interactions with the GSGB and other international bodies.

2. Judicial Chambers and Specialization

a. The IST is divided into three permanent chambers, focusing on specific areas:

i. The General Chamber, addressing disputes related to Treaty interpretation and compliance.

ii. The Technical Chamber, specializing in cases involving scientific and technological issues, such as orbital debris or AI malfunctions.

iii. The Advisory Chamber, providing non-binding legal opinions on request from the GSGB or signatory States.

b. Judges are assigned to chambers based on their expertise, ensuring the effective handling of cases.

3. Judicial Secretariat

a. The IST is supported by a Judicial Secretariat, composed of legal clerks, technical advisors, and administrative staff.

b. The Secretariat is tasked with:

i. Assisting judges in legal research and case management.

ii. Maintaining records and publishing Tribunal decisions.

iii. Facilitating communication between the IST and the GSGB.

ACCOUNTABILITY AND ETHICAL STANDARDS

1. Code of Conduct

a. Judges are bound by a strict Code of Judicial Conduct, emphasizing impartiality, confidentiality, and adherence to the principles of the Treaty.

b. Violations of the Code are subject to investigation by the Judicial Oversight Committee (JOC), which may recommend sanctions or removal.

2. Conflict of Interest

a. Judges must recuse themselves from cases where personal or national interests could create a conflict.

b. Replacement of a recused judge is managed by the President, ensuring no disruption to proceedings.

3. Removal from Office

a. Judges may be removed by a two-thirds vote of the GSGB General Assembly, based on:

i. Proven misconduct or breach of ethical standards.

ii. Inability to perform duties due to health or other reasons.

TRANSPARENCY AND PUBLIC ACCESS

1. Transparency of Proceedings

a. All hearings are conducted publicly unless classified as confidential for security or privacy reasons.

b. Tribunal decisions are published, including detailed reasoning, to promote accountability and public trust.

2. Periodic Reporting

a. The IST submits an Annual Report to the GSGB, detailing:

i. The number and nature of cases handled.

ii. Trends or recurring issues in space governance disputes.

iii. Recommendations for addressing systemic challenges.

ADAPTABILITY OF THE JUDICIAL CORPS

1. Expansion of the IST

a. The number of judges may be increased by a two-thirds majority vote of the GSGB General Assembly to accommodate growing caseloads or new responsibilities.

b. Additional chambers may be created to address emerging issues, such as biosecurity or extraterrestrial exploration.

2. Periodic Review

a. The IST's structure and operations are subject to periodic review every ten years by the GSGB, ensuring its adaptability to evolving challenges and maintaining its alignment with the Treaty's objectives

COMMENTARY ON THE JUDICIAL FRAMEWORK

The judicial framework balances independence, accountability, and adaptability, ensuring the consistent and fair application of Treaty provisions. The election process reflects principles of transparency and proportional representation, inspired by systems like the United Nations General Assembly and the European Court of Justice. The staggered terms of judges ensure both continuity and periodic renewal, fostering a dynamic yet stable judicial corps.

The creation of specialized chambers enhances the Tribunal's capacity to handle complex technical cases, ensuring decisions are informed by legal expertise and scientific knowledge. The emphasis on public access to proceedings and published decisions promotes transparency and reinforces the legitimacy of the IST.

Ethical safeguards, such as the Code of Conduct and conflict-of-interest provisions, ensure the impartiality and integrity of the judicial process. The adaptability of the Tribunal's structure, including provisions for expansion and periodic review, prepares it to address the evolving landscape of space governance.

This judicial framework reflects the Treaty's commitment to equity, sustainability, and peaceful collaboration, providing a robust legal mechanism for resolving disputes and guiding humanity's stewardship of outer space. Let me know if any further refinements or additions are needed!

FINAL CONCLUSION

The framework we set forth today is not merely a collection of articles—it is a vision, a declaration of humanity's ability to govern itself beyond borders, beyond atmospheres, and beyond limits. Like Jules Verne's imaginings of the stars as both a dream and a destination, this Treaty dares to bring the improbable within reach, but with the resolve to guide it responsibly.

We recognize that our journey into space is not just about rockets and resources. It is about principles—fairness, unity, and foresight—that must guide us as we reach for the stars. This judicial framework, with its blend of discipline and adaptability, is our compass in this uncharted territory, ensuring that ambition is matched by accountability.

Jean Monnet once said,

"People only accept change when they are faced with necessity, and only recognize necessity when a crisis is upon them."[102]

We cannot wait for crisis; we must lead with wisdom. This Tribunal is not just a mechanism for resolving disputes—it is an institution for ensuring harmony in the greatest human endeavor of our age.

[102] Jean Monnet, *Memoirs*, 1978. Fondation Jean Monnet Lausanne

Let this Treaty be a testament to what we can achieve together, guided not by conquest but by collaboration, not by dreams alone but by the resolve to make them sustainable. The stars, once unreachable, now call us not to take but to share, not to exploit but to protect. And as Verne reminded us,

“We may brave human laws, but we cannot resist natural ones”

Signed in unity,

The Committee for Unified Space Governance

02.31.2025.