

COMMUNITY • CAREER • PROFESSION • PRACTICE MANAGEMENT • SERVICE

# WASHINGTON LAWYER

THE OFFICIAL PUBLICATION OF THE DISTRICT OF COLUMBIA BAR

MAY/JUNE 2022

**ENTER THE METAVERSE**  
**The New Frontier in Law**

**Space Debris  
& Liability  
Issues**

**Bias Ex Machina**  
*The Trouble With Algorithms*

**DC BAR**

CELEBRATING  
**50**  
YEARS



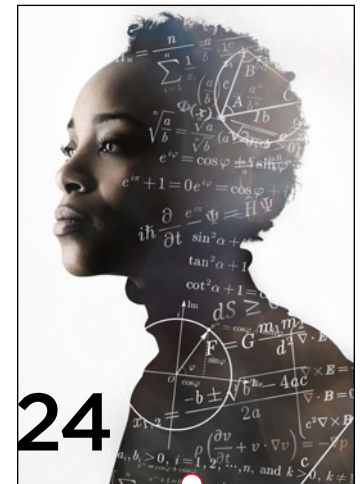
# CONTENTS

MAY/JUNE 2022 | VOLUME 36, NO. 6

THE  
GLOBAL  
OUTLOOK  
ISSUE



- 06 From Our President
- 08 Practice Management
- 09 Calendar of Events
- 10 Toward Well-Being
- FEATURES**
- 12 Business & Law in the Metaverse
- 16 Emerging Liability Issues in Space ✓
- 20 Rule of Law Under Pressure
- 24 Bias Ex Machina: Discrimination by Algorithm
- 30 Going Global With Attorney Heart Health
- Advocacy **32 SPECIAL SECTION**  
Up Close With Bar Members Around the World
- 36 Taking the Stand
- 38 On Further Review
- 39 ABA Delegate's Corner
- 40 The Learning Curve
- 42 Member Spotlight
- 45 Worth Reading
- 46 Attorney Briefs
- 48 Speaking of Ethics
- 50 Disciplinary Summaries
- 54 The Pro Bono Effect
- 56 A Slice of Wry



Cover: ArentFox Schiff Chair Anthony V. Lupo,  
Patrice Gilbert Photography

This page clockwise from top: algorithmic bias photo,  
iStock; Music Canada general counsel Richard Pfohl,  
Jill Caskey; space satellite photo, iStock



# Close Encounters

## SPACE DEBRIS & LIABILITY ISSUES

By Jeremy Conrad

Space is inexpressibly vast, and those capable of launching objects into it relatively few. But the space immediately surrounding planet Earth, in which satellites and research stations are put in orbit, is considerably smaller.

In recent years there has been a rapid increase in the number of objects deposited there, increasingly by private parties. What might happen in the event of an accident in that space remains a largely unresolved question, even as many note the occurrence as a virtual inevitability.

Earlier this year, a space researcher made headlines across the globe when he reported that a rocket weighing 4 metric tons was on course to crash into the far side of the moon on March 4. Originally thought to be part of a SpaceX Falcon 9 booster, the object turned out to be a Chinese rocket launched in 2014. Though the impact created nothing more than a crater, the incident brought greater attention to potential issues surrounding debris in space.

There have been numerous near misses before the moon collision. In December 2021, the Permanent Mission of China to the United Nations filed a note verbale with the UN Committee on the Peaceful Uses of Outer Space complaining that on July 1 and October 21 of that year, the China Space Station had close encounters with Starlink satellites launched by SpaceX.

Invoking the Outer Space Treaty, China requested that the UN secretary-general remind state parties to the agreement that they "bear international responsibility for national activities in outer space," whether they

are carried out by the government or private entities. Responding to criticism over the more than 1,500 satellites his company has put into orbit, SpaceX founder and CEO Elon Musk told the *Financial Times*, "Space is just extremely enormous, and satellites are very tiny."

### DIMINISHING PERSONAL SPACE IN SPACE

"Debris in space and the congestion of space is a tremendously important and growing issue," says Georgetown University law professor David A. Koplow. Furthermore, it isn't just the detritus of the past that is concerning, but also the garbage of the future. "The private sector's large satellite constellations raise the danger that their activity will inhibit later uses because most of these satellites are nonmaneuverable, or have very little maneuvering capability, and many of them are injected into orbits where they will stay decades, even past their useful life," he says.

The former Soviet Union's Sputnik 1 was the first human-made object launched into orbit in 1957. Sputnik fell to earth just months after its launch, the fate ultimately befalling all objects in low earth orbit (LEO). However, as Koplow notes, modern satellites can remain in LEO for decades, far outliving their utility.

There is significantly less activity, and less risk due to lower speeds, in geosynchronous equatorial orbit (GEO), the spot at which orbiting objects retain a more or less fixed position above a location on earth.

The fixed nature of orbits in GEO means the area is more amenable to regulation, with "slots" assigned under agreement by the International Telecommunication Union (ITU), an organization founded in 1865 to promote cooperation among international telegraphy networks of the day.

About 95 percent of human-made objects in space are found in LEO, including the Hubble Space Telescope and the International Space Station



(ISS). American LEO satellites are licensed and regulated through the U.S. Federal Communications Commission (FCC), but tracking and regulating the location of these objects is challenging. Objects at these altitudes travel at high rates of speed (an average of 17,000 miles per hour), with collisions typically occurring at more than 22,000 miles per hour, making a brush with even the smallest objects potentially devastating.

This risk of a collision has been exacerbated by the exponential increase in objects sent into space. Between 1957 and the early 2010s, fewer than 100 satellites were launched each year. Today, more than 1,000 new satellites are placed into orbit annually, and the number is expected to continue growing. As of January 1, 2022, there are 4,852 active satellites and nearly 3,000 defunct ones orbiting Earth, according to a database maintained by the Union of Concerned Scientists.

Alongside operational and inactive satellites are a host of other human-made objects scattered across Earth's lower and upper orbits, including discarded rocket parts, scrap from accidents, and other debris. The U.S. Space Surveillance Network tracks around 22,000 objects larger than 4 inches, but there are also more than a half million additional objects between 0.4 and 4 inches in diameter circling the planet.

The ISS, the most heavily shielded spacecraft ever constructed, is capable of withstanding impact from objects smaller than 0.4 inches in diameter and able to execute collision avoidance maneuvers to prevent impact with larger debris. During its two decades orbiting Earth, the ISS has moved to avoid space junk at least 30 times.

A host of propositions have been advanced to collect and, in some cases, recycle space debris. Startup companies and nation states are developing debris collection and removal projects involving nets, magnets, lassos, and a giant claw, though all remain untested. The latter is the subject of a €120 million project by the European Space Agency (ESA) called ClearSpace-1, an enormous claw scheduled for launch in 2025 to grab a 220-pound piece of debris from a 2013 ESA rocket launch. The claw will then drag the debris into the atmosphere, where both objects will burn up.

## STAR WARS OVER DEBRIS

The legal space surrounding liability for interstellar accidents is largely unexplored, particularly where private actors are concerned. The dominance of nation states and their militaries has meant that diplomatic tools and processes were both appropriate and effective in addressing emergent issues, but the few examples we have of damage resulting from satellite mismanagement illustrate both the advantages and disadvantages of this approach.

"Fortunately, there have been so few incidents that we don't have very many examples of a state paying money because it is responsible for the actions of private parties," Koplw says. "The closest we've gotten to this is the crash of a Russian satellite into Canada . . . this was a Russian government satellite, not a private actor, so it doesn't test the hardest part of the legal regime. But it had a nuclear reactor, so when it crashed it caused damage over a large area and required extensive cleanup."

The Soviet Union's Cosmos 954 satellite malfunctioned during its 1977 launch, reentering the atmosphere a year later. Debris from the satellite, including radioactive material from its onboard nuclear reactor, was spread across northwest Canada. Under the terms of the Convention on International Liability for Damage Caused by Space Objects, states are

liable for damages (to people and property) caused by an object launched into space. Canada billed the Soviet Union Can\$6 million for the cleanup. Russia, after some delay, eventually paid a total of about Can\$3 million.

Incidents have also taken place in orbit. In January 2007, China conducted its first successful test of a ground-based anti-satellite weapon (ASAT), destroying one of its own weather satellites. Although the act caused international concern, no other nation's property was damaged, so no claim for compensation was ever made. However, the incident also resulted in a debris field of nearly 1,000 trackable pieces, which will present a continuing threat to navigation.

China isn't the only nation responsible for ASAT testing debris. A Russian ASAT test in November 2021 destroyed Cosmos 1408, a defunct satellite that had been in orbit since 1982. The detonation created a debris field of 1,500 objects and forced the ISS crew to take shelter multiple times as the station passed through the field.



Georgetown Law

**DAVID A. KOPLW**  
Georgetown University Law Center

Both Chinese and Russian ASAT incidents resulted in international outcry over the military nature of the exercises, but no fines or other penalties were imposed. The creation of debris fields, while irresponsible, is neither directly forbidden nor penalized under current regulations. Following the Russian ASAT incident, Pentagon Press Secretary John Kirby said that the United States has been "very clear that we would like to see norms for space so that it can be used responsibly by all spacefaring nations."

But the United States has also been responsible for incidents that potentially implicate the interests of other nations. USA-193, an American military reconnaissance satellite, was launched into space in December 2006 and lost contact within hours of deployment due to a malfunction. In January 2008, a report indicated that the school-bus-size craft was in a deteriorating orbit and doomed to crash into earth within weeks. The satellite's components included the hazardous materials hydrazine and beryllium, posing a significant threat of discharging them upon reentry.

To prevent the release of toxic substances into the atmosphere, the U.S. Navy launched a missile that intercepted the satellite over the Pacific. The chemicals were dispersed before entry into the atmosphere, and the debris was in low enough orbit that it had all reentered the atmosphere and burned up by the end of 2009. Once again, no claims were made for the incident, though advance statements by the United States indicated that it would pay for any damages that arose from USA-193, pursuant to the international space liability treaty.

The United States has been fined for at least one satellite crash that damaged a foreign country. When Skylab, the first U.S. space station launched by NASA, reentered the atmosphere in 1979, it scattered debris across the Indian Ocean and western Australia. The Australian Shire of Esperance fined NASA \$400 for littering, perhaps as a gag, writing off the fine months later, but an American radio host did eventually pay the fine in 2009 on the organization's behalf.

### TO GO WHERE NO TORT HAS GONE BEFORE

None of these incidents clearly establish the efficacy of the rules and processes relating to national liability for private actors in space, leaving the world uncertain about whether a serious incident involving large-scale damage to property or life would be resolved in an orderly, satisfactory manner. The Russian response to the Cosmos 954 incident suggests that diplomatic pressure will ensure compensation but not timely payment of the full amount.

The Chinese and Russian ASAT incidents demonstrate how the current treaties relating to actors in space may be too focused on the immediate harm to other nation states to adequately prevent long-term damage to the interests of others. The collision of debris with the moon's surface further illustrates how the actions of both private and government parties can alter or damage environments in outer space that have no recourse under the current treaties.

On the other hand, the eventual payment of damages by Russia, as well as the intention to compensate for any damages incurred by the reentry of USA-193, are hopeful signs that diplomacy is an effective regulator. While not monetary in nature, the diplomatic responses to actions by China have had a significant impact on discourse surrounding activity in space and may, in the end, effectively curtail actions that are potentially harmful though not technically forbidden.

Dr. Henry R. Hertzfeld, a research professor of space policy and international affairs at George Washington University, points out the significant hurdles in attempting to establish an international legal regime covering space activity. Any meaningful regulation would have to accommodate, at a minimum, the needs of all current spacefaring nations, he says.

"The treaties are not self-enforcing, and each nation has different cultures and different societies and different norms. Even in passing national laws that deal with their obligations under treaties, nations will take different approaches," he says.

The regulation of international aviation presents a potentially workable

model, but Hertzfeld has his reservations about applying a similar approach to space. "First of all, the times are different. We all know the politics of international travel and diplomacy are not the easiest to deal with right now, but even if they were, how do you enforce those rules?" he asks.

The International Civil Aviation Organization (ICAO), a UN specialized agency supporting the diplomacy and cooperation of states in air transport, sets standards and recommended practices, but it is not a regulatory agency. ICAO standards never supersede the primacy of national regulatory and enforcement requirements. This recourse to territorial sovereignty is unavailable in space. However, objects that states put into space remain owned territorially, and nations are both internationally responsible and liable for those objects.


Besides the ICAO, Hertzfeld says that the ITU presents another successful model for dealing with space assets, but it, too, has limitations. "Effectively developing a new regulatory framework for responsible space activity is an ongoing discussion with no clear near-term solution in sight," Hertzfeld says.

National regulation of space activity has its own limitations because any U.S. law would only apply to U.S. nationals in space, but Koplow says the United States may be closer to domestic legislation than ever before that could ultimately be influential in the development of rules that apply to all nations.

National policy regarding space has been designed to encourage private entry into the marketplace, but private parties currently need permission from the ITU if they are seeking a GEO slot, from the FCC for the radio frequencies their satellite will use, and from the National Oceanic and Atmospheric Administration for a license. "Right now, a satellite operator needs permission from three agencies. That's a cumbersome mechanism, and many people agree that this needs to be streamlined," Koplow says.

While untrammelled competition might sound appealing to some entrepreneurs, Koplow points out that the private sector thrives on order and predictability, which might provide another impetus for clear regulation. "A stable legal regime that private operators can count on for a long-term return on investment provides some scope for national and international regulation, but we'll need to tread very lightly because the private sector is such a dynamic industry. Whatever rules you make today might be rendered obsolete by tomorrow's new technology," he says.

In the interim, the stakes are getting higher. Space increasingly represents a significant national financial interest, and the number of private parties launching objects into orbit continues to expand. This increased competition, and the resulting rise in collision risk, made space crowding one of the World Economic Forum's top concerns in its 2022 Global Risks Report.

"Limited governance tools increase the likelihood of space activity escalating geopolitical tensions, and recent weapons tests in space underscore such risks," the report stated. "Increased space activity could also lead to unknown environmental impacts or raise costs for public goods such as weather monitoring or climate change surveillance." 

Reach D.C. Bar staff writer Jeremy Conrad at [jconrad@dcbbar.org](mailto:jconrad@dcbbar.org).

GW Elliott School of International Affairs



**DR. HENRY R. HERTZFELD**  
George Washington University Elliott School  
of International Affairs