## 1ac – Normal

### Surveillance ADV

#### US and China forces are militarizing space through their private entities and are both striving for space dominance

**Broad 21**; William J. Broad is a science journalist and senior writer at The New York Times; “How Space Became the Next ‘Great Power’ Contest Between the U.S. and China”; <https://www.nytimes.com/2021/01/24/us/politics/trump-biden-pentagon-space-missiles-satellite.html>; Accessed: 1-7-22: Hzaidi

Beijing’s rush for antisatellite arms began 15 years ago. Now, it can threaten the orbital fleets that give the United States military its technological edge. Advanced weapons at China’s military bases can fire warheads that smash satellites and can shoot laser beams that have a potential to blind arrays of delicate sensors. And China’s cyberattacks can, at least in theory, cut off the Pentagon from contact with fleets of satellites that track enemy movements, relay communications among troops and provide information for the precise targeting of smart weapons. Among the most important national security issues now facing President Biden is how to contend with **the threat that China poses to the American military in space** and, by extension, terrestrial forces that rely on the overhead platforms. The Biden administration has yet to indicate what it plans to do with President Donald J. Trump’s legacy in this area: the Space Force, a new branch of the military that has been criticized as an expensive and ill-advised escalation that could lead to a dangerous new arms race. Mr. Trump presented the initiative as his own, and it now suffers from an association with him and remains the brunt of jokes on television. But its creation was also the culmination of strategic choices by his predecessors, Presidents George W. Bush and Barack Obama, to counter an emboldened China that raised bipartisan alarm. “There’s been a dawning realization that **our space systems are quite vulnerable**,” said Greg Grant, a Pentagon official in the Obama administration who helped devise its response to China. “The Biden administration will see more funding — not less — going into space defense and dealing with these threats.” The protective goal is to create an American presence in orbit so resilient that, no matter how deadly the attacks, it will function well enough for the military to project power halfway around the globe in terrestrial reprisals and counterattacks. That could deter Beijing’s strikes in the first place. The hard question is how to achieve that kind of strong deterrence. Lloyd J. Austin III, a retired four-star Army general who was confirmed last week as Mr. Biden’s secretary of defense, told the Senate that he would keep a “laserlike focus” on sharpening the country’s “competitive edge” against China’s increasingly powerful military. Among other things, he called for new American strides in building “space-based platforms” and repeatedly referred to space as a war-fighting domain. “**Space is already an arena of great power competition**,” Mr. Austin said, with China “the most significant threat going forward.” The new administration has shown interest in tapping the innovations of space entrepreneurs as a means of strengthening the military’s hand — what Mr. Austin in his Senate testimony called “partnerships with commercial space entities.” The Obama and Trump administrations both adopted that strategy as a uniquely American way of sharpening the military’s edge. Experts clash on whether the United States is doing too little or too much. Defense hawks had lobbied for decades for the creation of a military Space Corps and called for more spending on weapons. But arms controllers see the Space Force as raising global tensions and giving Beijing an excuse to accelerate its own threatening measures. Some go further and call it a precipitous move that will increase the likelihood of war. In decades past, especially during the “Star Wars” program of the Reagan administration**, conflict in space was often portrayed as shootouts in orbit.** That has changed. With few exceptions, the weapons are no longer seen as circling the planet but as being deployed from secure bases. So, too, the targets are no longer swarms of nuclear warheads but fleets of satellites, whose recurring, predictable paths while orbiting the Earth make them far easier to destroy. A main question is whether the antisatellite moves and countermoves will lower or raise the risks of miscalculation and war. That debate is just beginning. A U.S. Army rocket is launched during an exercise in Kuwait in 2003. A U.S. Army rocket is launched during an exercise in Kuwait in 2003. **Chinese officials noticed how much the U.S. military’s successes were rooted in space dominance.** For years, the Chinese studied — with growing anxiety — the American military, especially its invasions of Afghanistan in 2001 and Iraq in 2003. The battlefield successes were seen as rooted in space dominance. Planners noted that thousands of satellite-guided bombs and cruise missiles had rained down with devastating precision on Taliban forces and Iraqi defenses. While the Pentagon’s edge in orbital assets was clearly a threat to China, planners argued that it might also represent a liability. “They saw how the U.S. projected power,” said Todd Harrison, a space analyst at the Center for Strategic and International Studies, a Washington think tank. “And they saw that it was largely undefended.” China began its antisatellite tests in 2005. It fired two missiles in two years and then made headlines in 2007 by shattering a derelict weather satellite. There was no explosion. The inert warhead simply smashed into the satellite at blinding speed. The successful test reverberated globally because it was the first such act of destruction since the Cold War. The whirling shards, more than 150,000 in all, threatened satellites as well as the International Space Station. Ground controllers raced to move dozens of spacecraft and astronauts out of harm’s way. The Bush administration initially did little. Then, in a show of force meant to send Beijing a message, in 2008, it fired a sophisticated missile to shoot down one of its own satellites. Beijing conducted about a dozen more tests, including ones in which warheads shot much higher, in theory **putting most classes of American spacecraft at risk**. China also sought to diversify its antisatellite force. A warhead could take hours to reach a high orbit, potentially giving American forces time for evasive or retaliatory action. Moreover, the speeding debris from a successful attack might endanger Beijing’s own spacecraft. In tests, **China began firing weak laser beams at satellites and studying other ways to strike at the speed of light.** However, all the techniques were judged as requiring years and perhaps decades of development. Then came the new idea. Every aspect of American space power was controlled from the ground by powerful computers. If penetrated, the brains of Washington’s space fleets might be degraded or destroyed. Such attacks, compared with every other antisatellite move, were also remarkably inexpensive. In 2005, **China began to incorporate cyberattacks into its military exercises, primarily in first strikes against enemy networks**. Increasingly, its military doctrine called for paralyzing early attacks. In 2008, hackers seized control of a civilian imaging satellite named Terra that orbited low, like the military’s reconnaissance craft. They did so twice — first in June and again in October — roaming control circuits with seeming impunity. Remarkably, in both cases, the hackers achieved all the necessary steps to command the spacecraft but refrained from doing so, apparently to reduce their fingerprints. Space officials were troubled by more than China’s moves and weapons. The modern history of the American military centered on building global alliances. Beijing was rushing ahead as an aggressive loner, and many officers feared that Washington was too hidebound and burdened with the responsibilities of coalition-building and arms-control treaties to react quickly. “The Chinese are starting from scratch,” Paul S. Szymanski, a veteran analyst of space warfare, argued in an Air Force journal. They’re not, he added, “hindered by long space traditions.” In its second term, the Obama administration made public what it called an “offset strategy” to respond to China and other threats by capitalizing on America’s technological edge. Just as the United States had developed, first, a vast nuclear arsenal and, second, smart weapons, this so-called third offset would seek an advantage by speeding the rise of robotics, high-speed arms and other breakthroughs that could empower the armed forces for decades. Unlike earlier offsets, officials said, the objective was to rely less on federal teams than the tech entrepreneurs who were fast transforming the civilian world. “**We must really capture the commercial sector**,” Robert O. Work, a deputy secretary of defense, said in a 2015 speech explaining the new initiative. The advances in space were to be defensive: swarms of small, relatively cheap satellites and fleets of recycled launchers that would overwhelm Beijing with countless targets. For Mr. Obama, innovative leaps were to do for American space forces what Steve Jobs did for terrestrial gadgets, running circles around the calcified ministries of authoritarian states. After decades in which adversaries — from stateless terrorists to those with traditional militaries — sought to exploit narrow advantages over the more powerful United States, the Pentagon was now finding an unconventional edge all its own. The Obama administration was already applying the commercial philosophy to NASA, turning the space agency into a major funder of entrepreneurial strides. **It was pumping billions of dollars into the development of private rockets and capsules meant to carry astronauts into orbit**. The military joined in. The beneficiaries included Elon Musk, the founder of Tesla, and Jeff Bezos, the founder of Amazon. Their space companies — Mr. Musk’s SpaceX and Mr. Bezos’s Blue Origin — sought to turn rocket launchers from throwaways into recyclables, slashing their cost. **Military officials believed that the new system would make it possible to quickly replace satellites in times of war.** The third offset also sought to shrink the size of satellites. Over decades, the big ones had grown into behemoths. Some cost $1 billion or more to design, construct, outfit, launch and keep in service. One type unfurled an antenna nearly as large as a football field. But civilians, inspired by the iPhone revolution, were building spacecraft as small as loaves of bread. Military planners saw smaller, cheaper, more numerous craft as making antisatellite targeting vastly more difficult — in some cases impossible — for an adversary. The initiative aided companies such as **Planet Labs, which sought to build hundreds of tiny Earth-observing satellites**, and Capella Space, which designed small radar-imaging satellites meant to see through clouds. It also bolstered SpaceX, where Mr. Musk envisioned a fleet of thousands of communication satellites. The administration, increasingly worried about Beijing’s strides, also raised its spending on offensive space control — without saying exactly what that meant. Federal investment in the tech entrepreneurs totaled $7.2 billion, most of it during the Obama years, according to a NASA report. It said the funds went to 67 companies. The approach differed from the usual Pentagon method, which dictated terms to contractors. Instead, the private sector led the way.As predicted, the small investments made a big difference.By the end of the Obama administration, SpaceX was firing payloads into space and successfully returning booster rockets to Earth in soft landings.

#### Chinas new FOBS are nuclearizing space sphere which prompts immediate US action

**Stone 21**; Writer and researcher for the Hill; “The return of 'FOBS': China moves the space arms race into the nuclear sphere”; <https://thehill.com/opinion/national-security/578797-the-return-of-fobs-china-moves-the-space-arms-race-into-the-nuclear?rl=1>; Accessed: 1-16-22; Hzaidi

China recently demonstrated a new orbital hypersonic glide vehicle weapons system, to the surprise and alarm of senior leaders in Washington and allied capitals around the world. Their concern is well placed. This specific weapon is designed to be launched into space on a rocket and then race to targets at near-orbital velocity. The hypersonic payload is designed to reenter the atmosphere at high rates of speed, **more than five times the speed of sound**, and then maneuver to targets in ways difficult to intercept with current missile defense technologies. Defenses and tracking sensors against that sort of threat do not presently exist. That’s precisely why it is time for the U.S. Space Force to organize, train and equip to address threats in a warfighting fashion. That means defeating these sorts of capabilities. The deployment method used by the Chinese for their hypersonic glide vehicle is not new. From the 1960s to 1980s, the Soviet Union tested and deployed such a weapon. This system, called a Fractional Orbital Bombardment System (FOBS), was designed to launch thermonuclear warheads on a south-to-north trajectory to take out northern-facing North American Aerospace Defense Command’s (NORAD) ballistic missile early-warning radars. Following the destruction of those radar sites, a Soviet bomber and missile strike force could launch undetected over the North Pole and take out the Strategic Air Command’s missile and bomber bases in a decapitating first strike. This weapon was considered by many in the Department of Defense (DOD) **as an existential threat** to the American homeland and the U.S. nuclear deterrent forces. American leaders demanded a response. One option was to publicly and diplomatically declare the Soviet Union in breach of the recently ratified 1967 Outer Space Treaty, which declared that no nation be allowed to deploy weapons of mass destruction, including nuclear weapons, in orbit around Earth or on celestial bodies such as the moon. The Soviet FOBS system was a clear violation of this treaty. However, rather than take this option, the Johnson administration decided to not invoke the treaty; it believed that attempting to hold the Soviet Union accountable so soon after ratification would jeopardize the treaty and its probable benefits going forward. As a result, then-Defense Secretary Robert McNamara let this option drop and looked toward other means to address the threat. Seeking a means with which to defend the U.S. deterrent forces against a nuclear strike from space, the DOD sought an offensive solution by repurposing existing missiles as a nuclear anti-satellite (ASAT) mission — an effort called Program 437. Missiles tipped with nuclear warheads were stationed at Johnston Island in the Pacific to intercept the overlying FOBS, should circumstances demand action. The crews of Program 437 stood watch until 1975, when President Gerald Ford ordered the mission terminated to pursue a non-nuclear ASAT system to replace it, coupled with a newer missile warning satellite and ground-phased array radar systems. **Today, the United States has no dedicated, active countermeasure to the Chinese FOBS**. Cold War systems were retired years ago. Adversarial actions now demand that the United States consider all options for how the Space Force and other agencies and services of the DOD might address this threat. This is not a case of armed adventurism. It comes down to fundamental responsibilities to deter conflict and defend the American public. China made the first move, and now the U.S. must respond. Cold War lessons learned will be instructive in considering the most effective, sensible path forward. Next steps include: The Biden administration should immediately declare China in breach of the Outer Space Treaty ban on weapons of mass destruction in space, given this system flew beyond the accepted ballistic flight path into a fractional-orbital or orbital flight path. Congress must prioritize funding to rapidly build and deploy both the Next Generation Overhead Persistent Infrared and proliferated low-Earth orbit-based tracking layer satellite systems to gain maximum tracking coverage for missile tracking of fired FOBS from China. The Space Force must begin to take nuclear threats in and from space more seriously. To accomplish this, the chief operating officer’s staff must begin to look at current programs of record that could be leveraged using rapid acquisition authorities to repurpose and rapidly deploy to address and, in the near term, negate this threat to the homeland and deployed, terrestrial forces. This should be conducted swiftly and included in the next president’s budget request. U.S. Space Command must begin to create plans and requirements to address space warfighting and deterrence options up to and including nuclear options that operate in, from and to space as a means of deterring or defeating the Chinese FOBS threat. **China’s recent actions have escalated the space arms race into the nuclear sphere.** American leaders cannot ignore this threat. It manifests a level of danger we have not had to consider since the Cold War. The U.S. must prepare its forces to operate in a nuclear combat environment in, from and to the space domain soon. If the U.S. does not, **it not only will cede its ability to protect and defend critical satellite infrastructure**, but also **will open the American homeland to a catastrophic attack.**

#### We are heading towards a state of privatization of outer space which intensifies US-China tensions and is a huge risk for our national security

**Pfaff 21**; Deb Pfaff is an opinion contributor/writer and researcher for the Hill; “Spacing out: Will we allow the privatization of space to eclipse NASA and NRO?” <https://thehill.com/opinion/national-security/585675-spacing-out-will-we-allow-the-privatization-of-space-to-eclipse-nasa>; Accessed: 1-17-22; Hzaidi

Who owns space? According to the Outer Space Treaty of 1967, no one. Yet, perhaps according to Elon Musk (SpaceX), Jeff Bezos (Blue Origin), and Richard Branson (Virgin Galactic), it’s the billionaire with the deepest pockets. Just ask William Shatner, who boarded a Blue Origin rocket into space in October. One thing is for sure, the private sector has the edge on the government in space technology and capabilities. And if they own space, they own the future. Space used to be distant, ethereal, untouchable — accessible to the average person only through the lens of a filmmaker or a backyard telescope. Now, we experience space every day, perhaps without even realizing it. Use GPS to find a friend’s house and you’re relying on space. Shop for a home on Zillow? Also space. Match with a date on Tinder — you guessed it, space is involved. Rely on the government to fulfill its constitutional obligation to provide for national security? That’s space. Instead of ushering us into “the final frontier,” the government has allowed huge private corporations to edge it out. Not only that, but NASA and the National Reconnaissance Organization (NRO) have even advanced private-sector capabilities through lucrative contracts. Particularly unhelpful was the Space Act of 2015, which gave corporations and individuals ownership over the resources they extract from space. Proponents argue that private companies can reach farther, faster and cheaper than the government, and divvying up the mission is essential for maximizing American interests. But nowhere is the risk for privatization of national security greater than in space — and it already has begun. Although most Americans are awed by the recent triumphs of civilian flight into space, surveys suggest that a small majority of Americans still want the government to remain in control of launching military satellites. This is the purview of the NRO, which is responsible for providing the nation’s space-based intelligence, surveillance and reconnaissance architecture and supporting both strategic and tactical intelligence missions. But that small majority is stratified according to age. In fact, while 65 percent of respondents over the age of 55 think the government alone should launch military satellites, only 44 percent of respondents under age 34 do. The federal government’s benign neglect of the space program, combined with laws that aren’t sophisticated enough to defend the public interest and the private sector’s advanced technical capabilities, have all but assured a private-sector monopoly. The big problem is that the intelligence community hasn’t asked itself: What would space with a strong private-sector presence look like? While foreign adversaries have demonstrated both the intent and capability to wreak havoc on our space assets, the private sector here at home could be an equally dangerous, if somewhat unwitting, threat. Our track record with privatization hasn’t been meritorious — think monopolies, loss of democratic voice, environmental catastrophes, a lack of accountability, and reduced information sharing, to name a few. Now add a billionaire collecting intelligence information on China and you may have … well, a truly galactic disaster in the making. As more and more of the private sector enters the space race, space will be dominated by billionaires looking to advance their interests, rather than the interests of America. Space is a crucial sphere — it represents 25 percent of today’s economy — but it will be virtually out of government reach and in the hands of the wealthy few. (The United States of Amazon, anyone?) What stands between representative democracy and the wholesale privatization of space? Right now, nothing, because America is focused on a foreign threat, and NRO isn’t convincing anyone otherwise. For an organization that stepped out of the shadows over 30 years ago, it has done little to publicly demonstrate its abiding presence and worth. And this persuasion is imperative to understanding the danger posed by a continued explosion of private industry, unmatched by government resourcing.

#### Specifically, the privatization of space causes increased space wars which could lead to extinction

**Yadav 20**; Writer and researcher for Napal Journals; “Militarisation and Privatisation of Outer Space:A Grave Threat to Humanity”; Accessed: 1-16-22; Hzaidi

The relationship between ecology and humanity is getting blurred and eroded, and concerns have been raised worldwide. Climate change has brought an unprecedented crisis leading to an existential threat to humanity. However, powerful countries like France, Germany, Russia, England and America are not attentive to this concern. In this context, weaponisation and militarisation of space has become a serious issue of present day world. While the Earth is already on the brink of destruction, even the Space is not free from pollution and unholy collusion because of the rapid competition among the advanced countries to weaponise the Space. Further, Anti – Satellite Weapons that are used in Space Wars are illustrated in Figure 3.

[Figure Omitted]

In the early days of space exploration, superpowers represented the only human presence in outer Space. However, this framework is the subject of many recent changes on various fronts as private enterprises are becoming increasingly and decisively crucial in the space industry. Today, concerns are raised about the impact of increased space activity on our diverse cultural heritages. But the advanced countries are not doing enough to preserve the Space. Some countries hope to make Space tourism as part of the everyday adventure, which is a matter of grave concern for humanity. These countries are aiming to build a permanent colony and broadcast the whole thing as a reality T.V. show. How can we allow these countries to decide about the use of space in the interest of a few and at the cost of immense humanity? The following observations on the use of Air Force and Space Power for the 21st century are significant: some Air Force commentary in recent years on the would be virtues of space weaponisation has seemed surprisingly oblivious of the real sensitivities that still attach to the idea of combat operations from Space in many quarters, as well as of the no-less-real political costs and potential consequences for our national interests that could accrue from making space force application a premature goal of U.S. strategy. One such example was the space applications volume of the Air Force Scientific Advisory Board’s widely publicized New World Vistas study of 1995. The study categorically stated that the Air Force should broaden the use of space to include direct force projection against surface, airborne, and space targets (Cohen, 1984). The impact of new developments in international Space has increased privatisation and it may change the legal order for space activities. In the past only the USA and the former USSR were known as the only space powers, but today many other countries like India and China have become space powers. This development has increased the tendency towards commercialisation and privatisation of the Space for profit-making. Such a race for the privatisation of Space for a commercial purpose is a severe threat to humanity. People need to know about this tendency because ultimately, humanity is bound to suffer from this mad race for the space privatisation. Some eminent Indian thinkers and seers have continued to warn humanity about the looming shadow of destruction. The Principal Scientist of National Dairy Research Institute says: Destruction of the old world is ready in front of you. They are preparing the bombs so that they can finish everyone off whilst sitting at home. Whilst sitting at home, they may release the bombs in such a way that the whole world could be destroyed (Veena 2016). The Space exploration was guided by genuine thoughts and interest, but today, the profit-making concept or approach has changed the situation. It is a matter of great concern that the number of users of the Space has increased. More and more governments have started becoming active in space activities for commercialisation and privatization (Chomsky 2003). Unlike in the past, public sector interest has been abandoned. The tendency towards privatisation of Space is more significant in America and European countries. The private launching of Space activities has become a trend in countries like Russia, Ukraine, Kazakhstan, China, India and Pakistan. These countries have private launching capability, and they are engaged in commercial relation of space activities. U.S. President Trump delivered a Presidential Message on the 75th Anniversary of the Trinity Nuclear Test held in New Mexico. Referring to the Manhattan Project which produced the atomic bombs, the message says that it ‘’helped end World War II and launch an unprecedented era of global stability and our nuclear deterrent has also greatly benefitted our Nation and our allies’’ (Masakazu 2020). Europe is also using the Space for private enterprise on a large scale. Thus, space launching has become predominantly commercialised and privatised, for instance; the international telecommunication enterprise has also been privatized (Gagnon 2017). Today, we find private satellite being used by many countries, mostly in Europe and North America. As per the rules, international Space should not be governed by private entities. Space tourist activities should also be banned for preserving the Space and saving humanity. International space law should not be softened, and multilateral treaties should be brought into effective practice to avoid the Space privatisation and commercialization. United Nations too should play a vital role in banning the privatisation of the space. If we do not take the matter seriously, it may be impossible to protect health and environment, including all-pervasive climates (Moorcock 2008). We have already seen the consequences of the degradation of the environment and climate change. Recently, a tiny island country the Bahamas, known officially as the Commonwealth of the Bahamas, faced a severe catastrophic impact of environmental degradation. Other countries too, are facing the same problem.

### Cyber Security ADV

#### Satellite cyber-attacks are on the rise now and are considered a greater threat than missiles

**Lospinoso 22**; Josh Lospinoso is an opinion writer and researcher for the Hill; “Space race needs better cybersecurity”; <https://thehill.com/opinion/cybersecurity/589542-space-race-needs-better-cybersecurity>; Accessed: 1-16-22; Hzaidi

Things are heating up in space in more ways than one. Reently, Russia conducted an anti-satellite (ASAT) test and launched a missile at one of its old spy satellites. The explosion hurtled debris through space, forcing the crew of the International Space Station to take shelter in a spacecraft for protection. ASAT tests are a growing threat to satellites, but they’re not the only threat. Gen. David Thompson of U.S. Space Force told The Washington Post that Russia and China are launching attacks on U.S. satellites every day — using digital attacks, lasers, and radio frequency jamming. The rise in satellites, rockets and shuttles is creating an expanded attack surface. Just like transportation, energy, and other vital industries, space systems need protection. And while we probably won’t see civilians launching into space anytime soon, Blue Origin and Virgin Galactic are making such travel more feasible by the day. A proposed bill in the U.S. House of Representatives — the Space Infrastructure Act — would designate space as a critical infrastructure sector. It would be a good first step. Given how much equipment is in space and how dependent we are on it, it makes sense to classify it as critical infrastructure. There are more than 6,500 satellites in orbit; a record 1,283 launched in 2020 alone. They are integral to cellular communications, Global Positioning System (GPS) navigation, monitoring weather and climate, managing Internet of Things systems for agriculture, and keeping energy and other critical infrastructure running. And this infrastructure is disconcertingly fragile. Outages have widespread, cascading, and potentially catastrophic consequences. One disabled satellite can affect vast networks on earth, leaving regions without cellular and other services. This makes them attractive targets for malicious attackers. The risk is so great that the director of the Defense Department’s Space Development Agency has cited cyber attacks against satellites as a greater threat than missiles. Attacks have been going on for many years and have recently ramped up. In 2018, hackers infected U.S. computers that control satellites. Iranian hacking groups tried to trick satellite companies into installing malware in 2019. And one report concluded that Russia has been hacking the global navigation satellite system (GNSS) and sending spoofed navigation data to thousands of ships, throwing them off course. While there haven’t been any public reports of direct hacks on satellites, vulnerabilities in ground stations have been exploited to try to alter satellite flight paths, among other aims. There are a number of ways satellites can be attacked. Hackers could compromise ground control systems to take control of space equipment remotely or inject malware into communications between terrestrial computers and satellites. They can spoof, or snoop on communications for espionage purposes, or disrupt signals. Imagine a weather data outage during a hurricane or data glitches that lead to power blackouts or supply chain delays. The economic costs would be vast. A cyber attack on the Global Positioning System alone could cost the U.S. $1 billion a day, according to Brian Scott, director of critical infrastructure cybersecurity for the National Security Council.

#### Private entities are making satellites more vulnerable to attacks

**Verco 21**; Edward Verco is a law graduate who is currently employed as a Contracts Management Associate at Lockheed Martin Australia, and his research areas of interest include regulation in the space and cybersecurity sectors; “SATELLITES ARE CYBER INSECURE: WENEED REGULATION TO AVOID A DISASTER”; Accessed; 1-24-22; Hzaidi

It is evident that the cybersecurity of satellites requires significant improvement. Commercial entities’ manufacturing and the deployment of smallsats present substantial vulnerabilities to cyberattacks. This results from the minimal funds required to develop the satellites and, conversely, the expensive cybersecurity costs. Constellations, such as SpaceX’s Starlink, are deploying thousands of satellites into low Earth orbit. Their overcrowding of this orbit, coalesced with the presence of military satellites, creates conditions for malicious actors to orchestrate disasters, both economic and to loss of life. The difficulty of detecting such intrusions and the evolving possibilities of destruction make compromising a satellite increasingly achievable and attractive to potential malicious actors. Private corporations have traditionally failed to engage with cybersecurity, potentially due to a lack of awareness, coalesced with the cost of adequately securing their satellites against cyberattacks and the absence of regulation.210 It is proposed that greater encryption, such as quantum encryption, will significantly harden satellites against cyberattacks. AES encryption should be implemented in satellites as the most effective alternative while quantum encryption is developed. Other solutions include the advancement of laser-based communication and the increased focus on strong IDS and IPS systems. The regulatory regime governing the cybersecurity of satellites must urgently be upgraded to ensure the enforcement of such measures. The current framework, featuring the OST and Liability Convention, does not adequately protect satellites from current cybersecurity threats. An international multidisciplinary space cybersecurity regime should be developed, which could be implemented by initially engaging the current intergovernmental organisations such as NATO and UNOOSA, which orchestrates the UN COPUOS. Before then, Australia could demonstrate its capability as a global leader in space cybersecurity regulation by establishing its own comprehensive legislative regime. Like COVID-19, compromising a satellite could further significantly strain the global economy and cause loss of life. The potentially detrimental consequences of inadequately securing satellites against cyberattacks should alarm every citizen on Earth. Following the COVID-19 pandemic, the world must acknowledge that it cannot afford another crisis of this scale and, therefore, develop anticipatory mechanisms. We must learn from history and ensure that satellites are adequately cybersecure against potential attacks. It pays to be prepared for the unexpected.

#### **Hackers have and will gain control of more satellites especially the ones deployed by private entities which could be devastate the economy**

**Akoto 20**; William Akoto is an assistant professor of international politics at Fordham University; “Hackers could shut down satellites — or turn them into weapons”; <https://theconversation.com/hackers-could-shut-down-satellites-or-turn-them-into-weapons-130932>; Accessed: 1-17-22; Hzaidi

Last month, SpaceX became the operator of the world’s largest active satellite constellation. As of the end of January, the company had 242 satellites orbiting the planet with plans to launch 42,000 over the next decade. This is part of its ambitious project to provide internet access across the globe. The race to put satellites in space is on, with Amazon, U.K.-based OneWeb and other companies chomping at the bit to place thousands of satellites in orbit in the coming months. These new satellites have the potential to revolutionize many aspects of everyday life -- from bringing internet access to remote corners of the globe to monitoring the environment and improving global navigation systems. Amid all the fanfare, a critical danger has flown under the radar: the lack of cybersecurity standards and regulations for commercial satellites, in the U.S. and internationally. As a scholar who studies cyber conflict, I’m keenly aware that this, coupled with satellites’ complex supply chains and layers of stakeholders, leaves them highly vulnerable to cyberattacks. If hackers were to take control of these satellites, the consequences could be dire. On the mundane end of scale, hackers could simply shut satellites down, denying access to their services. Hackers could also jam or spoof the signals from satellites, creating havoc for critical infrastructure. This includes electric grids, water networks and transportation systems. Some of these new satellites have thrusters that allow them to speed up, slow down and change direction in space. If hackers took control of these steerable satellites, the consequences could be catastrophic. Hackers could alter the satellites’ orbits and crash them into other satellites or even the International Space Station. Makers of these satellites, **particularly small CubeSats, use off-the-shelf technology to keep costs low.** The wide availability of these components means hackers can analyze them for vulnerabilities. In addition, many of the components draw on open-source technology. The danger here is that hackers could insert back doors and other vulnerabilities into satellites’ software. The highly technical nature of these satellites also means multiple manufacturers are involved in building the various components. The process of getting these satellites into space is also complicated, involving multiple companies. Even once they are in space, the organizations that own the satellites often outsource their day-to-day management to other companies. With each additional vendor, the vulnerabilities increase as hackers have multiple opportunities to infiltrate the system. Hacking some of these CubeSats may be as simple as waiting for one of them to pass overhead and then sending malicious commands using specialized ground antennas. Hacking more sophisticated satellites might not be that hard either. Satellites are typically controlled from ground stations. These stations run computers with software vulnerabilities that can be exploited by hackers. If hackers were to infiltrate these computers, they could send malicious commands to the satellites. This scenario played out in 1998 when hackers took control of the U.S.-German ROSAT X-Ray satellite. They did it by hacking into computers at the Goddard Space Flight Center in Maryland. The hackers then instructed the satellite to aim its solar panels directly at the sun. This effectively fried its batteries and rendered the satellite useless. The defunct satellite eventually crashed back to Earth in 2011. Hackers could also hold satellites for ransom, as happened in 1999 when hackers took control of the U.K.‘s SkyNet satellites. Over the years, the threat of cyberattacks on satellites has gotten more dire. In 2008, hackers, possibly from China, reportedly took full control of two NASA satellites, one for about two minutes and the other for about nine minutes. In 2018, another group of Chinese state-backed hackers reportedly launched a sophisticated hacking campaign aimed at satellite operators and defense contractors. Iranian hacking groups have also attempted similar attacks. Although the U.S. Department of Defense and National Security Agency have made some efforts to address space cybersecurity, the pace has been slow. There are currently no cybersecurity standards for satellites and no governing body to regulate and ensure their cybersecurity. Even if common standards could be developed, there are no mechanisms in place to enforce them. This means responsibility for satellite cybersecurity falls to the individual companies that build and operate them.

#### Economic crisis leads to great power war

**Sandaram 19** [Jomo Kwame Sundaram, a former economics professor, was United Nations Assistant Secretary-General for Economic Development, and received the Wassily Leontief Prize for Advancing the Frontiers of Economic Thought, and Vladimir Popov is a Research Director at the Dialogue of Civilizations Research Institute in Berlin, “Economic Crisis Can Trigger World War,” Feb 12, 2019, http://www.ipsnews.net/2019/02/economic-crisis-can-trigger-world-war/]

Economic recovery efforts since the 2008-2009 global financial crisis have mainly depended on unconventional monetary policies. As fears rise of yet another international financial crisis, there are growing concerns about the increased possibility of large-scale military conflict. More worryingly, in the current political landscape, prolonged economic crisis, combined with rising economic inequality, chauvinistic ethno-populism as well as aggressive jingoist rhetoric, including threats, could easily spin out of control and ‘morph’ into military conflict, and worse, world war. Crisis responses limited The 2008-2009 global financial crisis almost ‘bankrupted’ governments and caused systemic collapse. Policymakers managed to pull the world economy from the brink, but soon switched from counter-cyclical fiscal efforts to unconventional monetary measures, primarily ‘quantitative easing’ and very low, if not negative real interest rates. But while these monetary interventions averted realization of the worst fears at the time by turning the US economy around, they did little to address underlying economic weaknesses, largely due to the ascendance of finance in recent decades at the expense of the real economy. Since then, despite promising to do so, policymakers have not seriously pursued, let alone achieved, such needed reforms. Instead, ostensible structural reformers have taken advantage of the crisis to pursue largely irrelevant efforts to further ‘casualize’ labour markets. This lack of structural reform has meant that the unprecedented liquidity central banks injected into economies has not been well allocated to stimulate resurgence of the real economy. From bust to bubble Instead, easy credit raised asset prices to levels even higher than those prevailing before 2008. US house prices are now 8% more than at the peak of the property bubble in 2006, while its price-to-earnings ratio in late 2018 was even higher than in 2008 and in 1929, when the Wall Street Crash precipitated the Great Depression. As monetary tightening checks asset price bubbles, another economic crisis — possibly more severe than the last, as the economy has become less responsive to such blunt monetary interventions — is considered likely. A decade of such unconventional monetary policies, with very low interest rates, has greatly depleted their ability to revive the economy. The implications beyond the economy of such developments and policy responses are already being seen. Prolonged economic distress has worsened public antipathy towards the culturally alien — not only abroad, but also within. Thus, another round of economic stress is deemed likely to foment unrest, conflict, even war as it is blamed on the foreign.

### Solvency

#### Plan Text: A public trust doctrine ought to be established in outer space as a means of preventing space wars, cyber-attacks, and private appropriation

#### The PTD is the only system legal framework to manage space initiatives and to limit private appropriation of space-- private property regimes fall short of workings

**Babcock 19**; Hope M. Babcock is a Professor of Law and Director at the Institute for Public Representation Environmental Law Clinic at Georgetown University; “The Public Trust Doctrine, Outer Space, and the Global Commons Time to Call Home ET”; <https://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=3219&context=facpub>; Accessed: 1-19-22; Hzaidi

The future is now with regard to the development of outer space and its resources—it is no longer a question of whether humans will engage in these activities, but how soon they will. Technically advanced countries and private commercial enterprises are probing outer space and preparing for landing on an asteroid or the moon to extract their resources.535 Speculators are selling deeds to the moon’s surface and preparing to exploit the tourism potential that space offers.536 But, the legal framework for managing these initiatives is almost nonexistent.537 International treaties came into being before all this activity began in earnest and national laws that might apply are stunted by jurisdictional quandaries like the absence of national boundaries in outer space.538 Thus, there is an urgency to figure out how to control what happens in outer space before its resources are irreparably damaged or permanently monopolized by powerful countries and individuals. In the absence of regulation, much of the current debate centers on what property regime should be applied in outer space.539 The assumption is that by only allowing private property rights in space, countries and commercial enterprises will undertake the risks and costs of space development.540 However, unless international space law changes, it may prevent this from happening. If it changes, strong management controls will be necessary to prevent destruction or over-consumption of celestial resources, as well as monopolization and competitive behavior by participants, which could lead to hostilities and inequities. This Article examines various private property regimes, including those of less than full fee ownership, to see if any would avoid the conflict with the international prohibition on appropriation of outer space and its resources. It concludes that none will because each retains the right to exclude and each is insensitive to the treaties’ equity concerns. In contrast, considering outer space to be common is consistent with international space law in both respects. Hypothesizing that private property in outer space may yet prevail, this Article investigates different private property management approaches, such as the right of first possession, lotteries, and tradable development rights, to see if any would be cost effective, easy to implement and equitable, and would also prevent over-consumption, monopolization or the slide into rivalrous behavior. The Article concludes that each comes up short in some respect. Social norms as a management tool for property held in common, although compliant with international law, are also not up to the task. Instead, although ancient, the PTD, with its malleability, easy and cost-effective implementation and enforcement, non-consumption principle, and consistency with the goals that animate international space treaties, seems best suited to the task of protecting the public’s interests in the global commons that is outer space as it has done for centuries in Earth-bound commons. But, as its principal terrestrial use has been to protect trust resources from development, the doctrine needs some modification to encourage development of celestial resources. Hence, this Article suggests that modifying the PTD to allow the application of private property management tools, like tradable development rights, will not only allow development, but also will assure that when it happens, it will not be just profitable for a few, but will also be sustainable and equitable.

#### OST proves that exemptions of this regulation would destroy creditability which prevents war in space and insures sustainable development

Hickman and Dolman 2; John Hickman and Everett Dolman associate professors in the Department of Government and International Studies; “Resurrecting the Space Age: A State–Centered Commentary on the Outer Space Regime”; Accessed: 1-29-22; Hzaidi

Thus a state party need merely announce its intention to withdraw and then wait one year. Withdrawal of a single state party to the treaty, however, would not necessarily terminate the treaty between the other state parties. Yet, the decision of an important state not to be bound by a regime–creating treaty obviously endangers the entire treaty. The decision of the United States or China to withdraw from the OST would have far greater implications for the survival of the international space regime than the same decision by Bangladesh, Burkina Faso, or Papua New Guinea—the equality of states under international law remains nothing more than a useful fiction. For the OST to remain good international law, it must be accepted as such by the major space faring states of the 21st Century: the United States, Russia, the European Union, Japan, and China. One defection from the regime by a member of this group would no doubt lead to its effective collapse, as the remaining space faring states are unlikely to use the kind of coercion necessary to enforce the regime. A more likely response to such a defection is a scramble to make similar claims to sovereignty, based on historical precedent and effective occupation. Similar rushes to stake claims for territory sovereignty in other celestial bodies might follow.

#### China is overly dependent on their private entities which means they will be disincentivized to initiate conflict

**Fernandez 21**; Ray Fernandez is a writer and researcher for ScreenRant; “China Opens Space and Unleashes The Power Of Its Private Sector”; <https://screenrant.com/chinese-companies-boost-space-development/>; Accessed: 1-24-22; Hzaidi

In a new move to boost space development, China has opened up space to private companies. China's space program is heavily linked with the military and wrapped up in secrecy. However, recent Chinese space accomplishments, rovers on the Moon and Mars, new satellites and new space stations were primarily developed by government efforts. The U.S. brought in the private sector as a strategy to boost its space program and develop expensive and ambitious new projects. Now China is doing the same. The last time China used national private companies to increase development was when it declared Artificial Intelligence a national priority. Fast forward a few years, Chinese AI dominates globally. At the 7th China (International) Commercial Aerospace Forum, national private companies presented many new and ambitious projects, including spaceplanes, space resources, a massive constellation of satellites and more. One of the companies at the event was the space giant China Aerospace Science and Industry Corp. (CASIC). The Ministry of Science and Technology, China National Space Administration, and other government arms sponsored and supervised the event. CASIC is not the only private company developing space planes in China. The China Aerospace Science and Technology Corp. and iSpace also presented their plans for space planes and space crafts. iSpace has designed two missions to the Moon, which they assure will be the first commercial missions to the natural satellite. China is getting some inspiration from U.S. companies. Local companies in China are looking into space tourism with suborbital and orbital flights. And Deep Blue Aerospace is developing a reusable launcher that looks very much like the Heavy Falcon of SpaceX. The event's main themes were IoT space networks, multi-purpose satellite constellations, space resources (mining) and taking the Chinese space sector to a new level with private participation. While the U.S. has its eye on Chinese military space vehicles, it may have overlooked and underestimated the impact that the Chinese private sector will have. Hundreds of new companies have responded to the government's call to "start a new journey for commercial aerospace" in China. It is only a matter of time until their full power and capabilities are unleashed into space.

### Framing

#### Pleasure and pain are intrinsically valuable. People consistently regard pleasure and pain as good reasons for action, despite the fact that pleasure doesn’t seem to be instrumentally valuable for anything.

**Moen 16** [(Ole Martin Moen, Research Fellow in Philosophy at University of Oslo) “An Argument for Hedonism,” Journal of Value Inquiry (Springer), 50 (2) 2016: 267–281, <https://link.springer.com/article/10.1007/s10790-015-9506-9>] TDI

Let us start by observing, empirically, that **a widely shared judgment about intrinsic value and disvalue is that pleasure is intrinsically valuable and pain is intrinsically disvaluable.** **On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues.** This inclusion makes intuitive sense, moreover, for **there is something undeniably good about the way pleasure feels and something undeniably bad about the way pain feels, and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have.** “Pleasure” and “pain” are here understood inclusively, as encompassing anything hedonically positive and anything hedonically negative.2 **The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values.** If you tell me that you are heading for the convenience store, **I might ask: “What for?” This is a reasonable question, for when you go to the convenience store you usually do so**, not merely for the sake of going to the convenience store, but **for the sake of achieving something further that you deem to be valuable.** You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?” This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: “Well, I want it for the pleasure of drinking it.” **If I then proceed by asking “But what is the pleasure of drinking the soda good for?” the discussion is likely to reach an awkward end. The reason is that the pleasure is not good for anything further; it is simply that for which going to the convenience store and buying the soda is good.**3 As Aristotle observes**: “We never ask [a man] what his end is in being pleased, because we assume that pleasure is choice worthy in itself.**”4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” We take for granted that if something is painful, we have a sufficient explanation of why it is bad. If we are onto something in our everyday reasoning about values, it seems that **pleasure and pain are both places where we reach the end of the line in matters of value.**

#### Moral uncertainty means preventing extinction should be our highest priority.

**Bostrom 12** [(Nick Bostrom, Faculty of Philosophy & Oxford Martin School University of Oxford) “Existential Risk Prevention as Global Priority.” Global Policy, 2012] TDI

These reflections on moral uncertainty suggest an alternative, complementary way of looking at existential risk; they also suggest a new way of thinking about the ideal of sustainability. Let me elaborate.¶ Our present understanding of axiology might well be confused. We may not now know — at least not in concrete detail — what outcomes would count as a big win for humanity; we might not even yet be able to imagine the best ends of our journey. If we are indeed profoundly uncertain about our ultimate aims, then we should recognize that there is a great option value in preserving — and ideally improving — our ability to recognize value and to steer the future accordingly. Ensuring that there will be a future version of humanity with great powers and a propensity to use them wisely is plausibly the best way available to us to increase the probability that the future will contain a lot of value. To do this, we must prevent any existential catastrophe.

## Extra

#### Space wars are increasingly dangerous now more than ever and countries like Russia and India are draw into conflict

**Robitzski 19**; Dan Robitzki is a senior reporter for Futurism, where he likes to cover AI, tech ethics, and medicine; “HAS A SPACE WAR BETWEEN US, CHINA, RUSSIA ALREADY STARTED?” ; <https://futurism.com/the-byte/space-war-usa-china-russia>; Accessed: 1-15-22; Hzaidi

**America, Russia, China, and now India, all have the capability to fight a war in outer space, and may have already started to do so.** While there’s been no declaration of World War III or anything of the like, major spacefaring nations have all been increasingly aggressive with military and surveillance operations in space, according to MIT Technology Review. These strategic moves toe the line of what could be considered **aggression or an act of war**. MIT Tech Review describes accounts of U.S. satellites spying on other nations, Russian hackers interfering with satellite communications, and China engaging in what looked like drills for anti-satellite strikes — all occurrences that are becoming normal in an increasingly-militarized and crowded space. “It’s happening all the time at this low level, Todd Harrison, the head of aerospace security at the think tank CSIS, told MIT Tech Review. “It’s more gray-zone aggression. Countries are pushing the limits of accepted behavior and challenging norms. They’re staying below the threshold of conflict.” As other countries ramp up their space military capabilities, America has actually fallen behind — a fact that could change if Trump gets his desired Space Force. “Today, we are not adequately prepared for such a conflict, and our **lack of preparation undermines deterrence and makes conflict in space more likely**,” Harrison told MIT Tech Review.