# NC

### 1

#### Counterplan: The appropriation of outer space by private entities via Large Satellite Constellations in Lower Earth Orbit is unjust unless states charge private entities orbital use fees for each satellite put into low-Earth Orbit.

#### Solves the case while also boosting the economy. Vergoth 20:

Karin Vergoth {CIRES-NOAA Science Writer}, 20 - ("Solving the space junk problem," CU Boulder Today, 5-26-2020, https://www.colorado.edu/today/2020/05/26/solving-space-junk-problem)//marlborough-wr/

Space is getting crowded. Aging satellites and space debris crowd low-Earth orbit, and launching new satellites adds to the collision risk. The most effective way to solve the space junk problem, according to a new study, is not to capture debris or deorbit old satellites: it’s an international agreement to charge operators “orbital-use fees” for every satellite put into orbit. Orbital use fees would also increase the long-run value of the space industry, said economist Matthew Burgess, a [CIRES Fellow and co-author of the new paper](https://cires.colorado.edu/news/solving-space-junk-problem). By reducing future satellite and debris collision risk, an annual fee rising to about $235,000 per satellite would quadruple the value of the satellite industry by 2040, he and his colleagues concluded in a paper published today in the [Proceedings of the National Academy of Sciences](https://www.pnas.org/content/early/2020/05/20/1921260117). “Space is a common resource, but companies aren’t accounting for the cost their satellites impose on other operators when they decide whether or not to launch,” said Burgess, who is also an assistant professor in environmental studies and an affiliated faculty member in economics at CU Boulder. “We need a policy that lets satellite operators directly factor in the costs their launches impose on other operators.” Currently, an estimated 20,000 objects—including satellites and space debris—are crowding low-Earth orbit. It’s the latest tragedy of the commons, the researchers said: Each operator launches more and more satellites until their private collision risk equals the value of the orbiting satellite. So far, proposed solutions have been primarily technological or managerial, said Akhil Rao, assistant professor of economics at Middlebury College and the paper’s lead author. Technological fixes include removing space debris from orbit with nets, harpoons, or lasers. Deorbiting a satellite at the end of its life is a managerial fix. Ultimately, engineering or managerial solutions like these won’t solve the debris problem because they don’t change the incentives for operators. For example, removing space debris might motivate operators to launch more satellites—further crowding low-Earth orbit, increasing collision risk, and raising costs. “This is an incentive problem more than an engineering problem. What’s key is getting the incentives right,” Rao said. A better approach to the space debris problem, Rao and his colleagues found, is to implement an orbital-use fee—a tax on orbiting satellites. “That’s not the same as a launch fee,” Rao said, “Launch fees by themselves can’t induce operators to deorbit their satellites when necessary, and it's not the launch but the orbiting satellite that causes the damage.” Orbital-use fees could be straight-up fees or tradeable permits, and they could also be orbit-specific, since satellites in different orbits produce varying collision risks. Most important, the fee for each satellite would be calculated to reflect the cost to the industry of putting another satellite into orbit, including projected current and future costs of additional collision risk and space debris production—costs operators don’t currently factor into their launches. “In our model, what matters is that satellite operators are paying the cost of the collision risk imposed on other operators,” said Daniel Kaffine, professor of economics and RASEI Fellow at CU Boulder and co-author on the paper. And those fees would increase over time, to account for the rising value of cleaner orbits. In the researchers’ model, the optimal fee would rise at a rate of 14 percent per year, reaching roughly $235,000 per satellite-year by 2040. For an orbital-use fee approach to work, the researchers found, all countries launching satellites would need to participate—that's about a dozen that launch satellites on their own launch vehicles and more than 30 that own satellites. In addition, each country would need to charge the same fee per unit of collision risk for each satellite that goes into orbit, although each country could collect revenue separately. Countries use similar approaches already in carbon taxes and fisheries management. In this study, Rao and his colleagues compared orbital-use fees to business as usual (that is, open access to space) and to technological fixes such as removing space debris. They found that orbital use fees forced operators to directly weigh the expected lifetime value of their satellites against the cost to industry of putting another satellite into orbit and creating additional risk. In other scenarios, operators still had incentive to race into space, hoping to extract some value before it got too crowded. With orbital-use fees, the long-run value of the satellite industry would increase from around $600 billion under the business-as-usual scenario to around $3 trillion, researchers found. The increase in value comes from reducing collisions and collision-related costs, such as launching replacement satellites. Orbital-use fees could also help satellite operators get ahead of the space junk problem. “In other sectors, addressing the tragedy of the commons has often been a game of catch-up with substantial social costs. But the relatively young space industry can avoid these costs before they escalate,” Burgess said.

### 2

#### CP: The appropriation of outer space by private entities except for American private entities via Large Satellite Constellations in Lower Earth Orbit is unjust.

#### Space regulation scares investors away and spills over to other space activities. Freeland 05:

Steven Freeland (BCom, LLB, LLM, University of New South Wales; Senior Lecturer in International Law, University of Western Sydney, Australia; and a member of the Paris-based International Institute of Space Law). “Up, Up and … Back: The Emergence of Space Tourism and Its Impact on the International Law of Outer Space.” Chicago Journal of International Law: Vol. 6: No. 1, Article 4. 2005. JDN. <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1269&context=cjil>

V. THE NEED FOR CELESTIAL PROPERTY RIGHTS? ¶ The fundamental principle of "non-appropriation" upon which the international law of outer space is based stems from the desire of the international community to ensure that outer space remains an area beyond the jurisdiction of any state(s). Similar ideals emerge from UNCLOS (in relation to the High Seas) as well as the Antarctic Treaty, 42 although in the case of the latter treaty, it was finalised after a number of claims of sovereignty had already been made by various States and therefore was structured to "postpone" rather than prejudice or renounce those previously asserted claims.43 In the case of outer space, its exploitation and use is expressed in Article I of the Outer Space Treaty to be "the province of all mankind," a term whose meaning is not entirely clear but has been interpreted by most commentators as evincing the desire to ensure that any State is free to engage in space activities without reference to any sovereign claims of other States. This freedom is reinforced by other parts of the same Article and is repeated in the Moon Agreement (which also applies to "other celestial bodies within the solar system, other than the earth")." Even though both the scope for space activities and the number of private participants have expanded significantly since these treaties were finalised, it has still been suggested that the nonappropriation principle constitutes "an absolute barrier in the realization of every kind of space activity., 4 ' The amount of capital expenditure required to research, scope, trial, and implement a new space activity is significant. To bring this activity to the point where it can represent a viable "stand alone" commercial venture takes many years and almost limitless funding. From the perspective of a private enterprise contemplating such an activity, it would quite obviously be an important element in its decision to devote resources to this activity that it is able to secure the highest degree of legal rights in order to protect its investment. Security of patent and other intellectual property rights, for example, are vital prerequisites for private enterprise research activity on the ISS, and these rights are specifically addressed by the ISS Agreement between the partners to the project and were applicable to the experiments undertaken by Mark Shuttleworth when he was onboard the ISS.46

#### Chinese investments are catching up and the US needs private companies to maintain space dominance – Chinese space heg risks extinction. Autry and Kwast 19:

Greg Autry, Steve Kwast {Greg Autry is a clinical professor of space leadership, policy, and business at Arizona State University’s Thunderbird School of Global Management. He served on the 2016 NASA transition team and as the White House liaison at NASA in 2017. He is the chair of the Safety Working Group for the U.S. Federal Aviation Administration’s Commercial Space Transportation Advisory Committee. Steve Kwast is a Lieutenant General and commander of Recruiting, Training, Educating and Development for the Air Force. He is an astronautical engineer and Harvard Fellow in Public Policy., }, 19 - ("America Is Losing the Second Space Race to China," Foreign Policy, 8-22-2019, https://foreignpolicy.com/2019/08/22/america-is-losing-the-second-space-race-to-china/)//marlborough-wr/

The current U.S. space defense strategy is inadequate and on a path to failure. President Donald Trump’s vision for a Space Force is big enough. As he said on [June 18](https://www.whitehouse.gov/briefings-statements/remarks-president-trump-meeting-national-space-council-signing-space-policy-directive-3/), “It is not enough to merely have an American presence in space. We must have American dominance in space.” But the Air Force is not matching this vision. Instead, the leadership is currently focused on incremental improvements to existing equipment and organizational structures. Dominating the vast and dynamic environment of space will require revolutionary capabilities and resources far deeper than traditional Department of Defense thinking can fund, manage, or even conceive of. Success depends on a much more active partnership with the commercial space industry— and its disruptive capabilities. U.S. military space planners are preparing to repeat a conflict they imagined back in the 1980s, which never actually occurred, against a vanished Soviet empire. Meanwhile, China is executing a winning strategy in the world of today. It is burning hard toward domination of the future space markets that will define the next century. They are planning infrastructure in space that will control 21st-century telecommunications, energy, transportation, and manufacturing. In doing so, they will acquire trillion-dollar revenues as well as the deep capabilities that come from continuous operational experience in space. This will deliver space dominance and global hegemony to China’s authoritarian rulers. Despite the fact that many in the policy and intelligence communities understand exactly what China is doing and have been trying to alert leadership, Air Force leadership has convinced the White House to fund only a slightly better satellite command with the same leadership, while sticking a new label onto their outmoded thinking. A U.S. Space Force or Corps with a satellite command will never fulfill Trump’s call to dominate space. Air Force leadership is demonstrating the same hubris that Gen. George Custer used in convincing Congress, over President Ulysses S. Grant’s better experience intuition, that he could overtake the Black Hills with repeating rifles and artillery. That strategy of technological overconfidence inflamed conflict rather than subduing it, and the 7th Cavalry were wiped out at the Battle of the Little Bighorn. The West was actually won by the settlers, ranchers, miners, and railroad barons who were able to convert the wealth of the territory itself into the means of holding it. They laid the groundwork that made the 20th century the American Century and delivered freedom to millions of people in Europe and Asia. Of course, they also trampled the indigenous people of the American West in their wake—but empty space comes with no such bloody cost. The very emptiness and wealth of this new, if not quite final, frontier, however, means that competition for resources and strategic locations in cislunar space (between the Earth and moon) will be intense over the next two decades. The outcome of this competition will determine the fate of humanity in the next century. China’s impending dominance will neutralize U.S. geopolitical power by allowing Beijing to control global information flows from the high ground of space. Imagine a school in Bolivia or a farmer in Kenya choosing between paying for a U.S. satellite internet or image provider or receiving those services for free as a “gift of the Chinese people.” It will be of little concern to global consumers that the news they receive is slanted or that searches for “free speech” link to articles about corruption in Western democracies. Nor will they care if concentration camps in Tibet and the Uighur areas of western China are obscured, or if U.S. military action is presented as tyranny and Chinese expansion is described as peacekeeping or liberation. China’s aggressive investment in space solar power will allow it to provide cheap, clean power to the world, displacing U.S. energy firms while placing a second yoke around the developing world. Significantly, such orbital power stations have dual use potential and, if properly designed, could serve as powerful offensive weapons platforms. China’s first step in this process is to conquer the growing small space launch market. Beijing is providing nominally commercial firms with government-manufactured, mobile intercontinental ballistic missiles they can use to dump launch services on the market below cost. These start-ups are already [undercutting](https://foreignpolicy.com/2019/04/02/beijing-is-taking-the-final-frontier-space-china/) U.S. pricing by 80 percent. Based on its previous success in using dumping to take out U.S. developed industries such as solar power modules and drones, China will quickly move upstream to attack the leading U.S. launch providers and secure a global commercial monopoly. Owning the launch market will give them an unsurmountable advantage against U.S. competitors in satellite internet, imaging, and power. The United States can still build a strategy to win. At this moment, it holds the competitive advantage in every critical space technology and has the finest set of commercial space firms in the world. It has pockets of innovative military thinkers within groups like the [Defense Innovation Unit](https://www.diu.mil/news-events), under Mike Griffin, the Pentagon’s top research and development official. If the United States simply protects the intellectual property its creative minds unleash and defend its truly free markets from strategic mercantilist attack, it will not lose this new space race. The United States has done this before. It beat Germany to the nuclear bomb, it beat the Soviet Union to the nuclear triad, and it won the first space race. None of those victories was achieved by embracing the existing bureaucracy. Each of them depended on the president of the day following the only proven path to victory in a technological domain: establish a small team with a positively disruptive mindset and empower that team to investigate a wide range of new concepts, work with emerging technologies, and test innovative strategies. Today that means giving a dedicated Space Force the freedom to easily partner with commercial firms and leverage the private capital in building sustainable infrastructure that actually reduces the likelihood of conflict while securing a better economic future for the nation and the world.

### 3

#### Starlink is key to global internet access.

John Koetsier {journalist, analyst, author, and speaker}, 20 - ("Elon Musk’s 42,000 StarLink Satellites Could Just Save The World," Forbes, 1-9-2020, https://www.forbes.com/sites/johnkoetsier/2020/01/09/elon-musks-42000-starlink-satellites-could-just-save-the-world/?sh=85866264c2cd)//marlborough-wr/

Elon Musk’s other company, SpaceX, is building Starlink, a global communications constellation that could approach a [staggering 42,000 satellites](https://www.forbes.com/sites/johnkoetsier/2019/12/20/apple-building-satellite-to-iphone-tech-spacex-launching-42000-satellites-2--2--/#5d1ee85668a7). And it could be all that stands between us and a fragmented world living in virtually — and actually — different realities. How? World War II can tell us the answer. In the early 1940s a tyrannical power using fake news, hate speech, military might and hegemonic power controlled most of Europe: the Nazis. They controlled public life, news and local economies. Resistance groups dotted the European mainland, with one lifeline for non-official communication from free countries: radio. As such, radios were [contraband](https://www.theholocaustexplained.org/life-in-nazi-occupied-europe/occupation-case-studies/) and confiscated. One of the activities the allies undertook to support resistance fighters was shipping in radios for communication and outside news. Today, radios aren’t at risk of being confiscated. And as a cloud-delivered service, hijacking the internet happens largely out of public sight, in servers and routers that enable services like Netflix and the BBC and Facebook and Google. It’s called [splinternet](https://en.wikipedia.org/wiki/Splinternet), and it’s the ongoing division of a worldwide interconnected internet into separate and isolatable fiefdoms, each of which can be controlled and managed so that governing powers can control what their populations see. The Great Firewall of China is the most well-known example, but Iran, Syria and Vietnam also control significant portions of the internet for their populations. Russia just [completed technology](https://www.pcmag.com/news/371347/russia-is-about-to-disconnect-from-the-internet-what-that-m) to wall off its internal networks, servers and internet users from the wider internet. And India, in its attempt to control unrest following its anti-Muslim citizenship law, has employed a particularly heavy-handed approach: simply [blocking](https://www.tellerreport.com/news/2019-12-27---india--new-internet-outages--protesters-back-on-the-street-.ryrh4IhQyI.html) the internet entirely. (One unintended result: contractors in India can’t reach their employers in the U.S.) Another country, United Arab Emirates, took a different approach: outlawing all messengers [except one that it built a digital backdoor into: Totok](https://www.forbes.com/sites/johnkoetsier/2019/12/23/top-50-social-app-in-usa-outed-as-spying-tool-for-united-arab-emirates-apple-and-google-delete-it/#5790934b7291). However it happens, it allows governments to control what people see, read and hear from outside sources — and censor what their own people say. Starlink can change all of that. Elon Musk recently revealed [details](https://twitter.com/elonmusk/status/1214548764054216704?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1214548764054216704&ref_url=https%3A%2F%2Fwww.digitaltrends.com%2Fcool-tech%2Felon-musk-reveals-what-youll-need-to-connect-to-his-internet-satellites%2F) about how people will access StarLink. It will be incredibly simple, and it will enable access to the relatively free global internet from anywhere on the planet. What that means is that anyone can access the internet from anywhere. Chinese citizens will be able to access Google and information about Tiananmen Square. Russian citizens will be able to see external analysis of Putin’s financial dealings if even Russia blocks outside sources. Indian protesters can’t be cut off from the internet. Of course, governments will make the Starlink Terminal illegal. But that in itself will be a victory. Censorship works best when it is invisible: when people don’t even know that there is alternate information, other understandings of reality. (Chinese teenage exchange students at a relative’s house last year, for example, had never heard of Tiananmen Square, and refused to believe stories that, they felt, painted China in a negative light.) But when a device to connect to the outside world becomes contraband, the glass walls become opaque. People realize that walls have been erected to prevent them from seeing other opinions. And that is at least one step to maintaining a free, open and accessible internet globally, which should help combat fake news, propaganda and information deprivation aimed at controlling populations. And it’s a step towards making the splinternet harder to achieve. 1,000 satellites will be enough to enable basic service, Musk has said. SpaceX just [launched](https://www.digitaltrends.com/cool-tech/spacex-launches-60-more-starlink-satellites-amid-astronomer-concerns/) a third batch of 60 satellites, and is expected to continue launching that many [every two weeks](https://www.spaceitbridge.com/spacex-starlink-launch-targeted-for-november-11-will-questions-be-answered.htm) through the rest of 2020.

#### Starlink is key to democracy movements. Banias 21

Mj Banias [editor and co-founder of The Debrief], 21 - ("Uncensored Satellite Internet Will Weaken Dictatorships," Debrief, 4-20-2021, accessed 1-13-2022, https://thedebrief.org/uncensored-satellite-internet-will-weaken-dictatorships/)//ML

As low-orbit satellite internet providers, such as Elon Musk’s Starlink, begin testing their services, security analysts [recognize](https://smallwarsjournal.com/jrnl/art/satellite-internet-services-fostering-dictators-dilemma) the potential disruption these systems could cause to authoritarian regimes as people start accessing an open and uncensored internet. In countries like Russia, China, and North Korea, where information dominance and control are essential to the regime’s survival, low-orbit internet [satellites](https://thedebrief.org/old-radioactive-russian-spy-satellites-fall-to-earth-and-more-will-soon-follow/) could pose a significant challenge.¶ “I think that these satellites provide an opportunity for democracies to turn the tables a bit on authoritarian regimes by providing low cost or free access to information via these satellite systems,” Michael Schwille, a senior policy analyst at RAND who has expertise in information warfare, told The Debrief.¶ Countries like Iran, [Russia](https://thedebrief.org/russian-hackers-currently-targeted-in-mysterious-cyberwar/), and [China](https://thedebrief.org/china-has-achieved-total-global-drone-supremacy/) allocate significant resources and energy to control how information disseminates across their respective nations. People, especially dissidents, attempting to access the open internet and communicate across that internet is difficult inside those countries. ¶ These low-orbit internet solutions pose a problem for dictators because state regulators can’t control them, and they can offer internet in the most remote areas of the planet.¶ BACKGROUND: THE UNCENSORED INTERNET¶ Starlink CEO Elon Musk told reporters in 2016 that China and its internet laws were a big concern for his company. ¶ “If they get upset with us, they can blow our satellites up, which wouldn’t be good. China can do that. So probably we shouldn’t broadcast there,” he stated in a 2016 interview. Recently China has [said](https://asiatimes.com/2020/11/china-launching-state-rival-to-elon-musks-spacex/) they will launch their own constellation of 10,000 low-orbit internet satellites called StarNet to rival Starlink. ¶ Russia has already begun contemplating [laws](https://arstechnica.com/science/2021/01/russia-may-fine-citizens-who-use-spacexs-starlink-internet-service/) to make Starlink illegal. The Russian government stated it would fine individual users 10,000 to 30,000 rubles (about $200-$400 USD) and larger entities close to a million (around $12,000 USD) rubles if caught using the service. ¶ Russia’s space chief Dmitry Rogozin, in [August](https://tass.ru/kosmos/9162215) of 2020, said that Starlink is “a rather predatory, clever, powerful, high-technology policy of the USA, which uses Shock and Awe in order to advance, before all, their military interests.” Rogozin publicly stated the more humanitarian aspects of Starlink, in that it would provide internet access to people living in remote areas, “nonsense.”¶ Like Iran and North Korea, other nations, who monitor and censor their internet, have been less vocal concerning satellite internet services. However, there is little reason to believe they would be any less warm to the idea of an open internet.¶ ANALYSIS: WEAPONIZING THE UNCENSORED INTERNET¶ These low-orbit satellites are relatively close to the Earth, and only a few hundred kilometers from the surface, compared to large telecommunications satellites that sit around 35,000 kilometers away. This allows for the terminals to access these near-Earth satellites to be pretty small and portable. A Starlink dish, for example, is about 19 inches in diameter or about the size of an extra-large pizza, and it only weighs a couple of pounds. ¶ According to Schwille, this makes them easy to smuggle, set up, and tear down quickly. These small ‘internet-in-a-box’ systems require no real estate, and they need a simple electrical source to operate.¶ Ultimately, it is feasible for users to quickly bypass any state’s internet controls and gain access to an open web. Moreover, users could place calls over the internet or via chat services, knowing that their conversation is not being tracked or monitored. ¶ “I see that access to information as a powerful tool in a democracies tool kit,” Schwille explained. “For too long, we have been getting hammered by authoritarian-sponsored attacks on U.S. institutions and populations via targeted disinformation campaigns.”¶ The inherent problem with the internet in democratic nations is that most of it is unfiltered. Ideas exist in a reasonably open environment, and misinformation and disinformation can be quickly spread. The open internet can therefore be used against democratic states by their adversaries. For example, Russia was able to easily influence the results of the [2016 U.S. Presidential election](https://www.intelligence.senate.gov/sites/default/files/documents/Report_Volume1.pdf) and the [Brexit campaign](https://www.theguardian.com/commentisfree/2020/jul/21/russian-meddling-brexit-referendum-tories-russia-report-government). Analysts have called this [“democracy’s dilemma.”](https://bostonreview.net/forum-henry-farrell-bruce-schneier-democracys-dilemma) The critical issue is that the very openness of the internet can be weaponized to erode the foundations of democracy.¶ However, Schwille points out that systems like Starlink may be a good way for democratic states to fight back. “What authoritarians fear most is access to unfiltered information,” he told The Debrief.¶ Schwille points to the “[Dictator’s Dilemma](https://www.brookings.edu/wp-content/uploads/2016/06/10_dictators_digital_network.pdf)” and asserts that authoritarian regimes do not want “non-regime narratives” reaching their citizens, nor do they want any communication to occur outside of approved and monitored channels. ¶ Schwille suggests that democracies worldwide could “talk up” these low-orbit satellite internet options and create a global narrative. As that narrative reaches people in authoritarian states, the regimes will be forced to take action, allocating additional time and energy to another battle they may not necessarily have the war chest to fight. Or, they may be forced to be more open with their internet services.¶ Democracies could create messaging to target potential users in authoritarian states, and Schwille envisions a narrative that promotes the concept.¶ “‘Look how the internet will now be provided across all parts of the U.S., from the Appalachian mountains to the Alaskan wilderness. Now all Americans can have cheap access to information, no matter where they live,'” his adlibbed marketing pitch stated. As this message spreads, people all over the world will begin to take notice. ¶ “They could also talk it up throughout the development community. How [internet service] could be provided to sub-Saharan Africa at reduced prices,” Schwille explained. “You plant the idea that this technology can be used anywhere, by anybody. Is there an implied threat there for dictators? I would say yes.” ¶ A low-cost internet service accessible in remote areas would make a very compelling narrative and, as Schwille explains, develop a potent “underlying threat” an authoritarian regime would have to deal with. ¶ Moreover, Western democracies are well known for information warfare. During the Cold War, typewriters and Xerox machines were [smuggled](https://www.csis.org/analysis/going-offensive-us-strategy-combat-russian-information-warfare) into Eastern Europe to help increase the dissemination of uncensored information. ¶ “Smuggling in capabilities to produce, replicate and disseminate information are all well documented,” Schwille expressed. Simply put, these satellite systems are small enough that smuggling hundreds of them across a border would be straightforward. Schwille noted that any such act would escalate tensions with the regime. ¶ “While you could smuggle in these satellite systems and pass them around for use by dissidents, we argue for a more nuanced approach,” he concluded. ¶ The “threat” of these devices entering a regime’s borders and the spreading ‘free internet’ narrative would be enough to help leverage power against an adversary. Oddly enough, it would be warfare based not on active disinformation or deception but on simply providing access to information.

#### Free internet is crucial to the promotion of democracy. Pirannejad 17:

Ali Pirannejad {Department of Public Administration, University of Tehran, Tehran, Iran; Faculty of Technology, Policy and Management, Delft University of Technology, Delft, Netherlands, }, 17 - ("Can the internet promote democracy? A cross-country study based on dynamic panel data models," Taylor &amp; Francis, 4-1-2017, <https://www.tandfonline.com/doi/abs/10.1080/02681102.2017.1289889?journalCode=titd20)//marlborough-wr/>

In the age of information revolution, information and communication technologies are penetrating all levels of societies and are also influencing the political aspect of each country by providing some facilities such as the Internet and web technologies. Democracy, as a universal value and a political system, is also well known and has an important role in the sublimation of the human societies. This study attempts to examine the effect of Internet extension on democracy promotion by using a panel consisting of 122 countries covering the period from the year 2000 to 2014. In order to estimate the effect, and also to deal with the endogeneity and autocorrelation problems, the dynamic panel data models are employed in the study. The results of estimation models indicate that Internet extension has a significantly positive effect on democracy promotion during the period. In the end, some ideas for further research are presented.

#### Democracy is an impact filter – solves war

Hegre, 14 (Håvard Hegre Department of Peace and Conflict Research, Uppsala University & Peace Research Institute Oslo (PRIO) “Democracy and armed conflict” SAGE) Henge

Although there is scholarly agreement that democracies rarely if ever have fought each other, there is less consensus as to why. The following five sets of explanations are important: First, the normative explanation (Doyle, 1986;Maoz& Russett, 1993) holds that ‘the culture, perceptions, and practices that permit compromise and the peaceful resolution of conflicts without the threat of violence within countries come to apply across national boundaries toward other democratic countries as well’ (Ember, Ember & Russett, 1992: 576). States ‘externalize’ the domestic norms that encourage compromise solutions and reciprocation, and strictly inhibit the complete removal from political life of the loser in political contest. The absence of a monadic democratic peace is troublesome for the normative explanation, in particular since it implies that the probability of conflict between democracies and non-democracies must be higher than that between two non-democracies (Raknerud & Hegre, 1997). Rosato (2003) points to the frequent violation of liberal norms when democracies have decided to go to war – in imperial wars, as well as in frequent US interventions intended to overthrow democratically elected governments (Rosato, 2003: 589–590).11 Another notable caveat noted as early as in Kant (1795/1991), is the incentive to intervene in non-democracies to press for democratization (Peceny, 1999; Gleditsch, Christiansen & Hegre, 2007). A particularly critical view of democratic war behavior is found in Geis, Brock & Mu¨ller (2006). Second, according to the legislative constraints explanation, democratic leaders are constrained by other bodies (such as parliaments) which ensure that the interests of citizens and powerful organizations are taken into account. Debate is public, so information on the real costs of war is likely to enter the decision calculus. Democratic political leaders will be removed from office if they circumvent these constraints.12 Democracies’ ability to signal resolve is a third explanation. Why are states not able to agree to a solution that reflects the distribution of power and the actors’ ‘resolve’, without incurring the costs of war (Fearon, 1995)? One answer is that if crisis escalation is not very costly, both parties have an incentive to exaggerate their power or resolve, mobilize, and back down when the bluff is discovered. Fearon (1994) argues that audience costs – the costs that a leader suffers when backing down – lock leaders into their positions, increasing the costs of bluffing. Democracies have higher audience costs, Fearon argues, and may more credibly commit to policies with little crisis-inducing behavior to signal intentions.13 Making use of various empirical strategies to distinguish the explanations, Schultz (1999) and Prins (2003) find stronger support for the signaling argument than for the constraints explanation. Weeks (2008) builds on this argument by showing that single-party regimes also indicate behavior in line with a signaling argument. Downes & Sechser (2012), Snyder & Borghard (2011), and Trachtenberg (2012), on the other hand, find little empirical evidence for the audience cost argument.14 Fourth, in a mobilization argument Bueno deMesquita et al. (1999, 2003) argue that the democratic re-election pressures on leaders tend to make them more careful to select only wars they are likely to win, and to mobilize more resources for the war efforts they select than do autocratic leaders. This makes democracies unattractive targets, since they are likely to win the wars they fight (Reiter & Stam, 1998).15 Both of these tendencies tend to reduce the probability of war between democracies. One aspect of the effectiveness of democracies in war is their ability to form large alliances in important wars (Doyle, 1986; Raknerud & Hegre, 1997). The empirical analysis in Gartzke & Gleditsch (2004), however, suggests that democracies are less reliable allies. Leeds, Mattes & Vogel (2009), on the other hand, find that countries with democratic institutions are much less likely to abrogate international commitments than autocratic countries in instances where domestic leadership transitions result in leaders with different primary bases of societal support. Fifth, Gartzke (1998) points out that the democratic peace finding might be due to joint interests. Democracies may fail to disagree sufficiently on international policies to be willing to suffer the costs of war. Such joint interests may be due to the fact that most democracies were on the same side during the Cold War (Farber & Gowa, 1995).16 The failure to observe a monadic democratic peace (Gartzke & Weisiger, 2013: 172) and the observation of an ‘autocratic peace’ (Werner, 2000; Peceny, Beer & Sanchez-Terry, 2002) support this argument. 17 An autocratic peace can hardly be explained by constraints inherent in autocratic regimes, but must be due to shared interests. Gartzke (1998, 2000) shows that controlling for joint interests weakens the magnitude and significance of the evidence for a democratic peace.18 Joint interests and joint regime types may be linked through three pathways. First, joint democracy may itself give rise to joint interests, such as an interest in the promotion of democratic regimes or through similar incentives for political leaders to expand the territory they control. The profitability of occupation is less certain for democratic leaders than for autocratic countries, since the benefits of occupation have to be shared between almost as many as those who bear the costs (Rosecrance, 1986). Moreover, in order to extract much from the conquered territory, the people resident there have to be denied the political rights that are held by the citizens of the occupying country. 19 Hence, joint democracy may lead to the mutual acceptance of international borders, removing an important source of war (Huth & Allee, 2002). Relatedly, Schweller (1992) argues that regime type affects how declining powers behave. When challenged by rising powers, realist theory posits that leading powers wage preventive wars to maintain their military hegemony. Preventive wars are less attractive to democratic leaders. If the rising power is another democracy, the historical absence of war between democracies indicates that the threat is minimal. If it is non-democratic, the public is wary of the risks and costs of a war where the danger is not imminent, and the formation of alliances to counterbalance the non-democratic threat is often a preferable strategy.20 Internal conflict The earliest arguments for an internal democratic peace are related to the normative and structural explanations of the interstate variant. Democracy is seen as a system for peaceful resolution of conflicts, as conflicting claims by rival social groups are solved by majority votes or consensual agreements. If individuals are denied the political rights and the economic benefits they believe they are entitled to, they may react with aggression and organize violent political opposition. If conflict results from ‘relative deprivation’ (Davies, 1962; Gurr, 1968), democracies should be more peaceful internally than other regime types. Armed rebellion will not be profitable since democracies both allow discontent to be expressed and have mechanisms to handle it. Another argument holds that democratic institutions alter the risk of internal conflicts by facilitating effective bargaining and reducing commitment problems. Acemoglu & Robinson (2006: 24–25) note that citizens are excluded from de jure power in a nondemocracy. Still, they always enjoy some de facto power that sometimes allows citizens to obtain policy concessions from the elites in the short run. It is uncertain whether these will be maintained, however, since the balance between various social groups is transitory. Citizens, then, should demand that today’s de facto power is translated into de jure power that secures long-term concessions. This demand may be backed by a threat of revolution – a civil war. The elites cannot credibly commit to a promise of policy concessions in the indefinite future, however, as long as de facto power is transitory. Democratic institutions are the solution to this commitment problem (Acemoglu & Robinson, 2006). This explains democratization and shows why democratic institutions reduce the risk of (revolutionary) civil wars. Fearon (1995) likewise argues that bargaining failures and commitment problems are important explanations of war, and Fearon (2004: 288) argues that democratic regimes facilitate bargaining and credible commitments for internal conflicts.21 If either of these accounts is true, fully fledged democracies are less conflict-prone than repressive autocracies. One possible reason for not observing this is that democracies often are faced with opportunistic rebels whose aims do not reflect the interests of broad social groups. For internal conflicts, a parallel to the mobilization argument formulated for interstate conflict would encounter difficulties. Both democracies and non-democracies use military force to counter illegitimate armed opposition, but autocracies may make much more extensive use of repression without losing legitimacy – using violence to silence opponents, censorship, arbitrary imprisonment without trial, etc. Autocracies may indiscriminately target entire population groups to coerce influential individuals (Davenport& Armstrong, 2004; Carey, 2010).22 Autocracies also buy off other parts of the opposition by granting ministerial posts and by the selective channeling of public funds (Fjelde & de Soysa, 2009). The combination of these two methods allows effective divide-andrule strategies. Autocracies also repress the formation of organizations before they can reach the stage of armed insurgencies. Hence, regimes that feature both democratic and autocratic characteristics are partly open yet lack effective means of solving conflicts. In such political systems, repression is difficult since some organization of opposition groups and some opposition expression of discontent are allowed, but mechanisms to act on the expressed discontent are incomplete (cf. Davies, 1962; Boswell & Dixon, 1990; Muller &Weede, 1990; Hegre et al., 2001). Hence, repression is ineffective if ‘grievance’ is not simultaneously being addressed, which is why we observe an inverted-U relationship between democracy and peace.

# CASE

### Hacking

#### No link - Sat attacks don’t cause nuke war

Zarybnisky 18 [Eric J. Zarybnisky, MA in National Security Studies from the Naval War College, PhD in Operations Research from the MIT Sloan School of Management, Lt Col, USAF. Celestial Deterrence: Deterring Aggression in the Global Commons of Space. March 28, 2018. <https://apps.dtic.mil/dtic/tr/fulltext/u2/1062004.pdf>]

PREVENTING AGGRESSION IN SPACE

While deterrence and the Cold War are strongly linked in the public’s mind through the nuclear standoff between the United States and the Soviet Union, the fundamentals of deterrence date back millennia and deterrence remains relevant. Thucydides alludes to the concept of deterrence in his telling of the Peloponnesian War when he describes rivals seeking advantages, such as recruiting allies, to dissuade an adversary from starting or expanding a conflict.6F 6 Aggression in space was successfully avoided during the Cold War because both sides viewed an attack on military satellites as highly escalatory, and such an action would likely result in general nuclear war.7F 7 In today’s more nuanced world, attacking satellites, including military satellites, does not necessarily result in nuclear war. For instance, foreign countries have used highpowered lasers against American intelligence-gathering satellites8F 8 and the United States has been reluctant to respond, let alone retaliate with nuclear weapons. This shift in policy is a result of the broader use of gray zone operations, to which countries struggle to respond while limiting escalation. Beginning with the fundamentals of deterrence illuminates how it applies to prevention of aggression in space

### Space Debris

**Time frame – Kessler effect 200 years away.**

Peter **Stubbe**, PhD in law @ Johann Wolfgang Goethe University Frankfurt, **’17**, State Accountability for Space Debris: A Legal Study of Responsibility for Polluting the Space Environment and Liability for Damage Caused by Space Debris, Koninklijke Brill Publishing, ISBN 978-90-04-31407-8, p. 27-31

The prediction of possible scenarios of the future evolution of the debris p o p ulation involves many uncertainties. Long-term forecasting means the prediction of the evolution of the future debris environment in time periods of decades or even centuries. Predictions are based on models84 that work with certain assumptions, and altering these parameters significantly influences the outcomes of the predictions. Assumptions on the future space traffic and on the initial object environment are particularly critical to the results of modeling efforts.85 A well-known pattern for the evolution of the debris population is the so-called Kessler effect’, which assumes that there is a certain collision probability among space objects because many satellites operate in similar orbital regions. These collisions create fragments, and thus additional objects in the respective orbits, which in turn enhances the risk of further collisions. Consequently, the number of objects and collisions increases exponentially and eventually results in the formation of a self-sustaining debris belt around the Earth. While it has long been assumed that such a process of collisional cascading is likely to occur only in a very long-term perspective (meaning a time 1 n of several hundred years),87 a consensus has evolved in recent years that an uncontrolled growth of the debris population in certain altitudes could become reality much sooner.88 In fact, a recent cooperative study undertaken by various space agencies in the scope of i a d c shows that the current l e o debris population is unstable, even if current mitigation measures are applied. The study concludes:

Even with a 90% implementation of the commonly-adopted mitigation measures [...] the l e o debris population is expected to increase by an average of **30% in the next 200 years.** The population growth is primarily driven by catastrophic collisions between 700 and 1000 km altitudes and such collisions are likely to occur every 5 to 9 years.89

**Space debris is hype---there are thousands of satellites and only 15 debris collisions ever**

Mark **Albrecht 16**, Chairman of the board of USSpace LLC & fmr. head of the National Space Council, “Congested space is a serious problem solved by hard work, not hysteria, 5/9/16, https://spacenews.com/op-ed-congested-space-is-a-serious-problem-solved-by-hard-work-not-hysteria/

There are over a half million pieces of human-made material in orbit around our planet. Some are the size of school buses, some the size of BB gun pellets. They all had a function at some point, but now most are simply space debris littered from 100 to 22,000 miles above the Earth. Yet, all behave perfectly according to the laws of physics. Many in the space community have called the collision hazard caused by space debris a crisis.

Popular culture has embraced the risks of collisions in space in films like Gravity. Some participants have dramatized the issue by producing graphics of Earth and its satellites, which make our planet look like a fuzzy marble, almost obscured by a dense cloud of white pellets meant to conceptualize space congestion.

Unfortunately, for the sake of a good visual, satellites are depicted as if they were hundreds of miles wide, like the state of Pennsylvania (for the record, there are no space objects the size of Pennsylvania in orbit). Unfortunately, this is the rule, not the exception, and almost all of these articles, movies, graphics, and simulations are **exaggerated and misleading**. Space debris and collision risk is real, but it **certainly** is **not a crisis.**

So what are the facts?

On the positive side, space is **empty** and it is **vast**. At the altitude of the International Space Station, **one half a degree** of Earth longitude is almost **40 miles long**. That same one half a degree at geostationary orbit, some 22,000 miles up is over 230 miles long. Generally, we don’t intentionally put satellites closer together than one-half degree. That means at geostationary orbit, they are no closer than 11 times as far as the eye can see on flat ground or on the sea: That’s the horizon over the horizon 10 times over. In addition, other than minute forces like solar winds and sparse bits of atmosphere that still exist 500 miles up, **nothing gets in the way of orbiting objects** and **they behave quite predictably**. The location of the smallest spacecraft can be predicated within a 1,000 feet, 24 hours in advance.

Since we first started placing objects into space there have been 11 known low Earth orbit collisions, and three known collisions at geostationary orbit. Think of it: 135 space shuttle flights, all of the Apollo, Gemini and Mercury flights, **hundreds** of telecommunications satellites, **1,300 functioning satellites** on orbit today, **half a million** total objects in space larger than a marble, and **fewer than 15 known collisions**. **Why** do people **worry?**

#### MAD checks space escalation – nuclear response and debris

Bowen 18 [Bleddyn Bowen, Lecturer in International Relations at the University of Leicester. The Art of Space Deterrence. February 20, 2018. https://www.europeanleadershipnetwork.org/commentary/the-art-of-space-deterrence/]

Fourth, the ubiquity of space infrastructure and the fragility of the space environment may create a degree of existential deterrence. As space is so useful to modern economies and military forces, a large-scale disruption of space infrastructure may be so intuitively escalatory to decision-makers that there may be a natural caution against a wholesale assault on a state’s entire space capabilities because the consequences of doing so approach the mentalities of total war, or nuclear responses if a society begins tearing itself apart because of the collapse of optimised energy grids and just-in-time supply chains. In addition, the problem of space debris and the political-legal hurdles to conducting debris clean-up operations mean that even a handful of explosive events in space can render a region of Earth orbit unusable for everyone. This could caution a country like China from excessive kinetic intercept missions because its own military and economy is increasingly reliant on outer space, but perhaps not a country like North Korea which does not rely on space. The usefulness, sensitivity, and fragility of space may have some existential deterrent effect. China’s catastrophic anti-satellite weapons test in 2007 is a valuable lesson for all on the potentially devastating effect of kinetic warfare in orbit.

### Asteroid Detection

#### Ground-based observatories already can’t see because of the sun, no impact to asteroid collision, and turn – satellites are key for asteroid detection. Blumberg 19:

Nick Blumberg { Public Insight Journalist Nick Blumberg (Phoenix) has served as an Associate Producer for KJZZ’s Here and Now, a news and public affairs talk show covering the Phoenix area. He grew up on the far North Side of Chicago, and has been a news junkie as long as he can remember. He moved to Arizona to attend the Walter Cronkite School of Journalism at Arizona State University, graduating magna cum laude. He was part of the Murrow and PRNDI-award winning team at KJZZ that covered Arizona’s controversial SB 1070 anti-immigration law throughout 2010.}, 19 - ("How Satellites Can Detect and Protect Earth From Asteroids," WTTW News, 9-10-2019, https://news.wttw.com/2019/09/10/how-satellites-can-detect-and-protect-earth-asteroids)//marlborough-wr/

This week, scientists from NASA, the European Space Agency and other institutions will gather at a conference in Italy, where they’ll be looking at a bold proposal to use two spacecraft to deflect an asteroid. That planetary defense plan is one of many worldwide efforts to ensure that Earth remains safe from collisions. While ground-based observatories have done great work in detecting asteroids, Adler Planetarium astronomer Mark Hammergren says they’re stymied by the bright light of the sun and that an infrared satellite orbiting Earth would be a more valuable sentry. “Out in space there’s no atmosphere, so you can look closer to the sun,” Hammergren said. “You can find what we think is an almost entirely unknown population of hazardous asteroids orbiting closer to the sun than us and every once in a while crossing our path.” Why infrared? Hammergren says it’s because darker asteroids are harder to detect visually. “If you have … a dark car sitting in the summer sun, it gets hotter than the white car next to you. The darker car – or darker asteroid – will emit more infrared light, so they appear brighter.” While Hammergren thinks a satellite to detect asteroids is valuable, he also advises people not to worry too much about Armageddon scenarios. “We have found virtually all of the large asteroids that could cause mass extinctions on Earth and not a single one of them is going to hit the Earth for at least a thousand years in the future,” Hammergren said. “It’s probably one of the greatest unsung victories that NASA and maybe even civilization has accomplished.”

#### No risk of extinction from asteroids---the probability of one hitting earth is extremely slim and countries developing prevention methods now

Inigo Monzon, IBT Correspondent, 9-2-2019, "Scientist Reveals Truth About Earth’s Chances Of Surviving An Asteroid Impact", International Business Times, 9-2-2019, https://www.ibtimes.com/scientist-reveals-truth-about-earths-chances-surviving-asteroid-impact-2820951, hec)

Dr. Lewiss Dartnell, a professor of science communication, believes that humans have a very good chance of enduring an asteroid impact. Despite what happened to the dinosaurs 66 million years ago, Dartnell thinks that humans are not in danger of going extinct due to an asteroid strike. The professor noted that in order to wipe out all life on Earth, an asteroid has to be hundreds or even thousands of kilometers long. Although NASA has already detected and identified asteroids that are certainly big enough to kill planets, the agency noted that none of these are currently on a collision course with Earth. “The Earth is not going to be destroyed by an asteroid,” Dartnell told Mashable India. “Alright, so a different question might be, could all life on Earth be driven to extinction by asteroids?” “Again, the answer would be that no,” he continued. “There’s no asteroid big enough that on a collision with the Earth could do that.” Dartnell, however, believes that there asteroids out there that can easily take out cities. Despite this, he still believes that chances of city-killers hitting Earth are very slim. One of the currently known asteroids that are capable of destroying entire cities is Apophis. Scientists once thought that his asteroid, which measures about 1,214 feet long, was in danger of colliding with Earth in the next decade. However, after follow-up observations, space agencies ruled out a possible collision between Apophis and Earth in the near future. “If we were very, very unlucky, and they strike over a major city, then they could destroy the city,” Dartnell said. “But the chances of that happening are very unlikely.” “Asteroid Apophis is one of the asteroids that we are tracking and we know that it is not going to impact for the next few decades and will continue on trail,” the professor added. Aside from the asteroid’s slim chances, space agencies from various countries are hatching their own plans to save Earth from getting hit by a massive space boulder.

### Ozone

#### Continued private space development is the only way to make sustainable energy feasible and solve ozone depletion – empirics prove. Autry 19:

Greg Autry {the director of the Southern California Commercial Spaceflight Initiative at the University of Southern California, vice president at the National Space Society, and chair of the International Space Development Conference, }, 19 - ("Space Research Can Save the Planet—Again," Foreign Policy, 7-20-2019, <https://foreignpolicy.com/2019/07/20/space-research-can-save-the-planet-again-climate-change-environment/)//marlborough-wr/>

Today conservationists and other critics are more likely to see space programs as militaristic splurges that squander billions of dollars better applied to solving problems on Earth. These well-meaning complaints are misguided, however. Earth’s problems—most urgently, climate change—can be solved only from space. That’s where the tools and data already being used to tackle these issues were forged and where the solutions of the future will be too. Space research has already been critical in averting one major environmental disaster. It was NASA satellite data that revealed a frightening and growing hole in the ozone layer over the South Pole, galvanizing public concern that, in 1987, produced the Montreal Protocol: the first international agreement addressing a global environmental problem. Since then, thanks to worldwide restrictions on damaging chlorofluorocarbons, the ozone situation has stabilized, and a full planetary recovery is expected. As this case showed, space can provide the vital information needed to understand a problem—and a surprising range of ways to solve it. Climate change is a poster child for the critical role of space data. Trekking across the globe to measure ice sheets with drills and gauge sea temperatures from the sides of ships is an expensive, slow, and insufficient way to assay the state of the planet. Satellites operated by NASA, the U.S. National Oceanic and Atmospheric Administration, and an increasing number of commercial firms provide a plethora of multispectral imaging and radar measurements of developments such as coral reef degradation, harmful plankton blooms, and polar bears negotiating thinning ice. Much of the technology involved in observing the Earth today was initially developed for probes sent to explore other planets in our solar system. Indeed, understanding the evolution of other planets’ climates is essential for modeling possible outcomes on Earth. NASA probes revealed how, roughly 4 billion years ago, a runaway greenhouse gas syndrome turned Venus into a hot, hellish, and uninhabitable planet of acid rain. Orbiters, landers, and rovers continue to unravel the processes that transformed a once warm and wet Mars into a frigid, dry dust ball—and scientists even to conceive of future scenarios that might terraform it back into a livable planet. Discovering other worlds’ history and imagining their future offers important visions for climate change mitigation strategies on Earth, such as mining helium from the moon itself for future clean energy. Spinoff technologies from space research, from GPS to semiconductor solar cells, are already helping to reduce emissions; the efficiency gains of GPS-guided navigation shrink fuel expenditures on sea, land, and air by between 15 and 21 percent—a greater reduction than better engines or fuel changes have so far provided. Modern solar photovoltaic power also owes its existence to space. The first real customer for solar energy was the U.S. space program; applications such as the giant solar wings that power the International Space Station have continually driven improvements in solar cell performance, and NASA first demonstrated the value of the sun for powering communities on Earth by using solar in its own facilities. Promisingly, space-based solar power stations could overcome the inconvenient truth that wind and solar will never get us anywhere near zero emissions because their output is inherently intermittent and there is, so far, no environmentally acceptable way to store their power at a global scale, even for one night. Orbital solar power stations, on the other hand, would continually face the sun, beaming clean power back through targeted radiation to Earth day or night, regardless of weather. They would also be free from clouds and atmospheric interference and therefore operate with many times the efficiency of current solar technology. Moving solar power generation away from Earth—already possible but held back by the current steep costs of lifting the materials into space—would preserve land and cultural resources from the blight of huge panel farms and save landfills from the growing problem of discarded old solar panels. Sustainable energy advocates in the U.S. military and the Chinese government are actively pursuing space-based solar power, but just making solar cells damages the environment due to the caustic chemicals employed. Space technology offers the possibility of freeing the Earth’s fragile biosphere and culturally important sites from the otherwise unavoidable damage caused by manufacturing and mining. The U.S. start-up Made in Space is currently taking the first steps toward manufacturing in orbit. The company’s fiber-optic cable, produced by machinery on the International Space Station, is orders of magnitude more efficient than anything made on Earth, where the heavy gravity creates tiny flaws in the material. Made in Space and others are eventually planning to build large structures, such as solar power stations, in space. As these technologies develop, they will augment each other, bringing costs down dramatically; space manufacturing, for instance, slashes the cost of solar installations in space. Eventually, firms will be able to supply endeavors in space with materials from the moon and asteroids, avoiding the cost and environmental impact of lifting them into orbit. Mining the solar system comes with its own potential impacts, but extracting resources from distant and lifeless worlds is clearly preferable to the continued degradation of the Earth.