## Plan

#### Plan – The appropriation of outer space through the production of orbital debris by private entities is unjust.

#### Orbital debris is

NASA.gov 21 [NASA – 5/26/21. “Space Debris and Human Spacecraft.” <https://www.nasa.gov/mission_pages/station/news/orbital_debris.html>] Justin

Orbital Debris

Space debris encompasses both natural meteoroid and artificial (human-made) orbital debris. Meteoroids are in orbit about the sun, while most artificial debris is in orbit about the Earth (hence the term “orbital” debris).

Orbital debris is any human-made object in orbit about the Earth that no longer serves a useful function. Such debris includes nonfunctional spacecraft, abandoned launch vehicle stages, mission-related debris, and fragmentation debris.

#### The aff interprets enforcement as an OUF (Orbital Use Fee). Proportionality in relation to the space industry solves best without harming it and any other solution only worsens the threat – models. Only the affirmative can address the underlying incentive problem.

Rao et al 20. Akhil, Matthew Burgess, and Daniel Kaffine \*Department of Economics, Middlebury College, Middlebury \*\*Cooperative Institute for Research in Environmental Sciences, University of Colorado, Environmental Studies Program, and Department of Economics \*\*\*Department of Economics. 2020 [PNAS, “Orbital-use fees could more than quadruple the value of the space industry,” <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7293599/>] Justin

The space industry’s rapid recent growth represents the latest tragedy of the commons. Satellites launched into orbit contribute to—and risk damage from—a growing buildup of space debris and other satellites. Collision risk from this orbital congestion is costly to satellite operators. Technological and managerial solutions—such as active debris removal or end-of-life satellite deorbit guidelines—are currently being explored by regulatory authorities. However, none of these approaches address the underlying incentive problem: satellite operators do not account for costs they impose on each other via collision risk. Here, we show that an internationally harmonized orbital-use fee can correct these incentives and substantially increase the value of the space industry. We construct and analyze a coupled physical–economic model of commercial launches and debris accumulation in low-Earth orbit. Similar to carbon taxes, our model projects an optimal fee that rises at a rate of 14% per year, equal to roughly $235,000 per satellite-year in 2040. The long-run value of the satellite industry would more than quadruple by 2040—increasing from around $600 billion under business as usual to around $3 trillion. In contrast, we project that purely technological solutions are unlikely to fully address the problem of orbital congestion. Indeed, we find debris removal sometimes worsens economic damages from congestion by increasing launch incentives. In other sectors, addressing the tragedy of the commons has often been a game of catch-up with substantial social costs. The infant space industry can avert these costs before they escalate.

In 2017, 466 new satellites were launched—more than double the previous year’s launches and more than 20% of all active satellites in orbit in 2017 (1, 2). Rapid space industry growth is projected to continue, driven largely by commercial satellites (Fig. 1). This growth is driving buildup of debris in low-Earth orbit, currently including over 15,000 objects (3). Collision risk from debris is costly; collisions damage or destroy expensive capital assets that are difficult or impossible to repair. Debris buildup could eventually make some low-Earth orbits economically unviable and other orbits difficult or impossible to access (4). In the worst case—although uncertain and occurring over long time sshorizons—debris growth could become self-sustaining due to collisions between debris objects, a tipping point called Kessler Syndrome (4, 5).

Proposed solutions have so far largely been technological and managerial, aimed at mapping, avoiding, and removing debris (6, 7). These include end-of-life deorbit guidelines and “keep out” zones for active satellites and nets, harpoons, and lasers to deorbit debris (6). However, with open access to orbits, reducing debris and collision risk incentivizes additional satellite launches, which eventually restore the debris and risk. For instance, if firms were willing to tolerate a 0.1% annual risk of satellite loss before a technological improvement in debris removal, they will be willing to launch more satellites until the 0.1% annual risk of satellite loss was restored.

Thus, the core of the space debris problem is incentives, not technology. Since satellite operators are unable to secure exclusive property rights to their orbital paths or recover collision-related costs imposed by others, prospective operators face a choice between launching profitable satellites, thereby imposing current and future collision risk on others, or not launching and leaving those profits to competitors. This is a classic tragedy of the commons problem (1, 3, 8, 9). It can be economically efficiently addressed via incentive-based solutions, such as fees or tradable permits per year in orbit, analogous to carbon taxes or cap and trade (8, 10–12). Incentives should target objects in orbit—rather than launches—because orbiting objects are what directly imposes collision risk on other satellites (13). We quantify the economic benefits of implementing such incentives to correct the underlying open-access problem.

We use a coupled physical–economic model combining rich physical dynamics with satellite economics to quantify the benefits of an internationally harmonized “orbital-use fee” (OUF) relative to a business as usual (BAU) open-access scenario and relative to a scenario with active debris removal. An OUF is a type of Pigouvian tax—a well-known economic instrument for addressing externality problems (14). Our model accounts for the effects of each scenario on satellite launch decisions (Materials and Methods and SI Appendix). While we focus on an OUF for analytical convenience, it is conceptually equivalent to other mechanisms for pricing orbits, such as tradable permits.

Our physical model of satellite and debris evolution in orbit obeys relevant accounting identities and utilizes reduced form approximations of physical processes validated in other works (15, 16). We fit and calibrate the model using data on collision risk and orbital debris from the European Space Agency (ESA) (17) and data on active satellites from the Union of Concerned Scientists (UCS) (2) (Materials and Methods and SI Appendix). The ESA dataset covers 1958 to 2017, and the UCS dataset covers 1957 to 2017. Our physical model assumes runaway debris growth (Kessler Syndrome) cannot occur, which likely leads our model to understate the benefits of OUFs (Materials and Methods). Our economic model assumes that satellites are launched and operated to maximize per satellite private profits, net of any fees, subject to collision risk. We calibrate the model by fitting the BAU scenario (no fees or debris removal) to historical industry data and launch trends (1, 2) (Materials and Methods and SI Appendix).

We project future launch rates to 2040 under the BAU scenario using our fitted model and published projections of future growth of the space economy (18). The projections in ref. 18 were developed by projecting how the industries constituting the space sector—telecommunications, imaging, etc.—would grow from 2017 to 2040 under different assumptions on their individual profitability over time, then aggregating up to obtain projections for the space sector. We then calculate launch rates that would maximize the long-run value of the industry, and we calculate the time series of OUFs that would incentivize these optimal launch rates. The industry value is measured as net present value (NPV)—the long-run value of the entire fleet of satellites in orbit, accounting for both the financial costs of replacing satellites due to natural retirement and collisions as well as the opportunity cost of investing funds in satellites rather than capital markets. For instance, an NPV of $1 trillion in 2020 means the sum total of the stream of net benefits, looking from 2020 into the future and accounting for the timing of the net benefits, is $1 trillion.

Although our models are deliberately simplified for tractability, they are based on previously validated approaches to orbital object modeling (15, 16), and our calibrations allow us to reproduce observed trends and magnitudes in the growth of orbital debris and satellite stocks as well as the calculated collision risk (Fig. 3). Nonetheless, our projections should be interpreted as order of magnitude approximations that can be refined as needed by more detailed models. In these respects, our approach mirrors integrated assessment modeling approaches that have been useful in developing solutions to other natural resource management problems (e.g., ref. 19).

RESULTS

We project that shifting from open access to the optimal series of OUFs in 2020 would increase the NPV of the satellite industry from around $600 billion under BAU to around $3 trillion—a more than 4-fold increase (4.18- to 6.49-fold increases in 95% of parameter sets randomly drawn from their calibrated distributions) (Fig. 2D). Assuming a 5% market rate of return, an increase of $2.5 trillion in NPV would be equivalent to annual benefits of approximately $120 billion in perpetuity. The large immediate increase in NPV that we project in each OUF scenario, relative to BAU (Fig. 2A), comes primarily from the immediate effect of reducing launch activity while the satellite and debris stocks are suboptimally high (SI Appendix).

Based on our calculations (Materials and Methods), the optimal OUF starts at roughly $14,900 per satellite-year in 2020 and escalates at roughly 14% per year (aside from some initial transition dynamics) to around $235,000 per satellite-year in 2040. Rising optimal price paths are common in environmental pricing such as carbon taxes (20), although declining optimal price paths are also possible (21). The rising price path in this case partly reflects the rising value of safer orbits (resulting in rising industry NPV) (Fig. 2A) from the OUF. For comparison, the average annual profits of operating a satellite in 2015 were roughly $2.1 million. The 2020 and 2040 OUF values we describe amount to roughly 0.7 and 11% of average annual profits generated by a satellite in 2015.

Forgone NPV from the satellite industry in 2040—which is the cost of inaction under BAU—escalates from around $300 billion if optimal management begins in 2025 to around $700 billion if optimal management begins in 2035. Without OUFs, losses remain substantial even when active debris removal (implemented in the model as removal of 50% of debris objects in orbit each year) is available. In a best-case analysis where we assume debris removal is costless (i.e., it requires no payments nor additional satellites to implement), debris removal can only recover up to 9.5% of the value lost under open access. (The satellite industry’s willingness to pay for debris removal is not easily calculable in our model [SI Appendix, section 1.9.2].) At worst, debris removal can exacerbate orbital congestion via a rebound-type effect, causing additional losses on the order of 3% of the value already lost from open access (Fig. 4 and SI Appendix). The inability of debris removal to induce efficient orbit use is driven by open-access launching behavior and underscores the importance of policies to correct economic incentives to launch satellites.

DISCUSSION

The costly buildup of debris and satellites in low-Earth orbit is fundamentally a problem of incentives—satellite operators currently lack the incentives to factor into their launch decisions the collision risks their satellites impose on other operators. Our analysis suggests that correcting these incentives, via an OUF, could have substantial economic benefits to the satellite industry, and failing to do so could have substantial and escalating economic costs.

Escalating costs of inaction are a common feature of the tragedy of the commons, evident in several other sectors in which it went unaddressed for lengthy periods (22). For example, tens of billions of dollars in net benefits are lost annually from open-access or poorly managed fisheries globally (23). Similarly, open access to oil fields in the United States at the turn of the century drove recovery rates down to 20 to 25% at competitively drilled sites, compared with 85 to 90% potential recovery under optimal management (24). Open access to roadways—somewhat analogous to orbits—is estimated to create traffic congestion costs in excess of $120 billion/y in the United States alone (25). In contrast, there is still time to get out ahead of the tragedy of the commons in the young space industry.

The international and geopolitically complex nature of the space sector poses challenges to implementing orbital-use pricing systems, but these challenges need not be insurmountable. Theory suggests countries could each collect and spend OUF revenues domestically, without losing economic efficiency, as long as the fee’s magnitude was internationally harmonized (20). Engaging in such negotiations would be in the economic interests of all parties involved (26). An example of such a system is the Vessel Day Scheme (VDS) used by the Parties to the Nauru Agreement (PNA) to manage tuna fisheries. Under the VDS, PNA countries each lease fishing rights within their waters, using a common price floor (27). The European Union’s Emissions Trading System provides an example of an internationally coordinated tradable permit system (28). Notably, each of these pricing programs is built on a preexisting international governance institution (the Nauru Agreement and the European Union).

An OUF could also be built within existing space governance institutions, such as the Outer Space Treaty (29). For example, Article VI states that countries supervise their space industries, which provides a framework for OUFs to be administered nationally. Article II prohibits national appropriation of outer space but does not prohibit private property rights, potentially allowing for tradable orbital permitting.

## ADV

#### The private sector locks in the Kessler Syndrome as a structurally inevitability by 2035. The debris threat isn’t internalized, engineering studies, profit-motive AND inefficient guidelines.

Rao and Rondina 2/16/22 [Akhil Rao and Giacomo Rondina. \*Middlebury College in the Department of Economics. \*\*University of California, San Diego. “Open access to orbit and runaway space debris growth.” <https://arxiv.org/pdf/2202.07442.pdf>] Justin

In this paper we present a dynamic physico-economic model of orbit use under rational expectations with endogenous collision probability and Kessler Syndrome. We show how both economic and physical parameters drive equilibrium short- and long-run orbital-use patterns, derive the marginal external cost of a satellite, explore the multiplicity and stability of openaccess steady states, and examine the relationships between open-access orbit use, optimal orbit use, and Kessler Syndrome. We then calibrate the model to an important region of LEO and estimate the likely times when Kessler Syndrome will occur under different patterns of satellite industry economics. We highlight three messages regarding orbital-use management.

First, under open access too many firms will launch satellites because they won’t internalize the risks they impose on other orbit users. Though profit maximizing satellite owners have incentives to reduce launches as the risk of a collision grows, they do not respond to debris growth or collision risk optimally. This inefficiency is independent of whether Kessler Syndrome is possible or not. Unlike many other bioeconomic commons problems, higher discount rates can induce less (rather than more) open-access overexploitation.

Second, Kessler Syndrome is possible as long as debris objects can collide with each other and generate new fragments, i.e the new fragment formation debris coupling exists. Engineering studies indicate that this coupling does in fact exist. Due to open access, even profit maximizing firms with rational expectations may continue to launch satellites despite recognizing their role in causing Kessler Syndrome and even after the Kessler threshold has been crossed.

Third, under open access Kessler Syndrome is more likely as the excess return on a satellite rises, even if firms will respond to orbital congestion by launching fewer satellites. As launch costs fall and new commercial satellite applications become viable, LEO is thus increasingly and inefficiently likely to experience Kessler Syndrome. While it may seem paradoxical that the very changes which make orbit use profitable can also increase the risk of resource collapse, such dynamics occur frequently in bioeconomic commons problems. Calibrated simulations reveal that space economy growth rates projected by investment banks and industry associations are consistent with Kessler Syndrome occurring as early as 2035. Our results suggest that, absent institutional reform, continued growth of the space economy may trigger Kessler Syndrome in the near future. This can occur even in regions perceived to have relatively high rates of natural renewability, providing new evidence that compliance with the 25-year rule is insufficient to ensure sustainable orbit use.

#### Debris is exponentially increasing and current models underestimate the risk. The aff is our best shot making it try-or-die.

Shen & Blake 2/24/22 [Zili Shen, Internally citing James Blake \* I am a Ph.D. student in Astronomy at Yale University. My research focuses on ultra-diffuse galaxies and their globular cluster populations. Since I came to Yale, I have worked on two "dark-matter-free" galaxies NGC1052-DF2 and DF4 \*\* Department of Physics and Centre for Space Domain Awareness, University of Warwick, Coventry. “How not to bury ourselves under space trash.” astrobites. <https://astrobites.org/2022/02/24/space-sustainability/>] Justin

What’s wrong with having some stuff orbiting the Earth, you might ask? Like my trash analogy, the problem is that they block our way to space. Fragments as small as 10 cm can kill a satellite mission. Unlike my trash analogy, if enough space junk accumulates, they can produce more fragments on their own. Several bands of LEO are already at risk of what’s called a runaway collisional cascade. This happens when space junk collide with each other and fall apart, their fragments going on to seeding more collisions, generating more debris, and restarting the cycle. On the other hand, space debris in high altitude orbits (like GSO) don’t experience much atmospheric drag, and will stay up there for centuries. From this you probably gathered that most of these debris are either abandoned satellites or their fragments. Even though these objects were originally launched by humans, cataloging and tracking them are a huge challenge.

What’s up there?

Since the first manmade satellite was launched in 1957, space agencies have been keeping track of bodies orbiting the Earth. By mass, 98% of those are satellites and rocket bodies, but we know very little about the remaining 2%, millions of small debris. These small debris elude radars and optical telescopes used in ground-based surveys, but they can still cause mission-fatal damage to a satellite. With limited data, NASA and ESA cannot accurately estimate the risk from orbital debris. Their models don’t even agree on the number of expected debris because there is no good observational constraint for very small fragments.

Fig. 2: Number of tracked objects in Low-Earth Orbit (LEO) and Geo-synchronous orbit (GSO). Modified from Fig.2 of the paper.

Fig. 2 shows a breakdown of what we do know about objects in LEO and GSO. In LEO (left panel) , the most numerous objects are debris. These come from fragmentation events, or “break-ups,” most commonly due to propulsion-related subsystems exploding. In other words, when leftover fuel gets heated up in space, it can blow the satellite to pieces. Other sources of debris include intentional anti-satellite tests (in which countries develop technology to destroy each other’s satellites) and a small number of accidental satellite collisions. In GSO (right panel), a large number of objects are “unknown” because GSO is significantly farther away from Earth and has historically received less attention. To quote Dr. Blake, the author of today’s paper, “monitoring the mess of near-Earth space cannot solve the problem entirely, especially while the bulk of the dangerous debris population remains invisible and uncatalogued.” Now that I’ve alerted you to the grave danger we face, how do we make sure that future humanity can still go to space?

What can be done?

Like any environmental problem, the best solution is prevention. To prevent leftover fuel from exploding, satellite operators are now advised to “passivate” the spacecraft at the end of the mission. That means dumping out residual fuel and discharging batteries while they still control the spacecraft. The other safe disposal measures after the mission ends are to have the satellite re-enter the atmosphere or move into unused high-altitude orbits. Even though these prevention measures are the best way forward, they are (un)surprisingly hard to enforce. The authors says, “despite an apparent consensus that [anti-satellite weapon] tests represent irresponsible and reckless behaviour, legally binding and internationally recognised regulations are still lacking.” The level of adherence to the above safety guidelines remain concerningly low. Given that prevention is a “legal quagmire,” we can also try to remove debris that is already up there. Everything from harpoons to nets and tentacles have been used to collect orbital debris, but there’s no one-size-fits-all solution. Imagine how hard it is to capture metal shards tumbling at high speed without creating more debris.

Looking towards the future

Small satellites have flourished in recent years as LEO satellite constellations proved commercially lucrative. These satellites are not only a problem for astronomers but also a huge issue for the existing surveillance infrastructure. Dr. Blake says, “the problem is one that affects all operators in space, truly global in nature… [and] warrants a cross-sector, cross-disciplinary approach.” As astronomers, we can help society keep a watchful eye and ensure that the future of space flight is sustainable. If you want to learn more about space sustainability, Dr. Blake recommends the GNOSIS project.

#### Fragmentation leads to speedy debris – that’s laws of physics.

Aerospace.org n.d. [As an independent, nonprofit corporation operating the only FFRDC for the space enterprise, The Aerospace Corporation performs objective technical analyses and assessments for a variety of government, civil, and commercial customers. “SPACE DEBRIS 101.” AEROSPACE. <https://aerospace.org/article/space-debris-101>] Justin

Can you see space debris coming at you?

It is very unlikely that you would see space debris. Relative to a person in orbit, space debris is moving about ten times faster than a bullet, and the vast majority of debris is as small as or smaller than a bullet. No one can see a bullet coming, let alone an object moving ten times faster.

What is an on-orbit collision like?

It looks more like an explosion of each object, as if they passed through each other and exploded on the other side. A hyper-velocity collision like those at orbital speed doesn’t behave like collisions that we are used to seeing. The objects are moving so fast that they travel through each other faster than the shock waves can travel. The shock waves in the structures of each object then shatter them into fragments of varying sizes and, in the process, give each fragment a boost in a different direction. Each one of these fragments is then in a different orbit than the original object and will move away according to the laws of orbital motion. With thousands of fragments, each moving in slightly different directions, it looks a lot like an explosion.

Do breakups look like the movies?

For dramatic purposes, movies, TV, and commercials tend to show space breakups at a much slower speed than they would happen at in real life. A breakup in space, especially a collision, can involve a lot of energy, and the pieces are flung away at extremely high speeds. Since there is no air to slow the pieces down the fragments would all fly away from one another and rapidly disappear from view. For many breakups, a softball-sized fragment would fly the length of the space station (a little less than a football field) in less than half a second. If you were watching it from nearby, you would see a flash, and the object that broke up would just disappear and be gone. It would be very unlikely for you to see pieces drifting away. Similarly, a low orbit space collision is unlikely to look much like a car crash — the speeds are much too high. The collisions would look like explosions to a nearby observer.

#### Debris threatens catastrophic global warming AND ozone depletion.

Liu et al. 12/14/21 [Liping Liu, Puqi Jia, Yalin Huang, and Jie Han. \*Institute of Global Environmental Change, School of Human Settlements and Civil Engineering, Xi’anJiaotong University, Xi’an, 710049, People’s Republic of China \*\*Department of Environmental Science and Engineering, College of Earth and Environmental Sciences, Lanzhou University, Lanzhou, 730000, People’s Republic of China. \*\*\*Department of Environmental Sciences, Fujian Normal University, Fuzhou, People’s Republic of China. “Dawn of space tourism: It is time to address the environmental impact of anthropogenicdebrisupon above earth.” <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3979481>] Justin

Like the ‘ozone hole’, changes in the upper atmosphere have significant impact on the environment and climate on earth (Laštovička et al. 2006). As early as in 2010, NASA warned that the upper layer of the earth's atmosphere had shrunk abruptly in just four decades, which had abnormally low densities that were about 30% lower than previous contractions on record since 1967 (Derrick 2010). Studies showed that, unlike in the lower atmosphere, carbon dioxide (CO2) acts as a ‘coolant’ in the upper atmosphere on earth, constantly shedding heat via infrared radiation. As carbon dioxide levels build up on earth, it makes its way into the upper atmosphere and magnifies the cooling effect during the ‘solar minimum’ (Derrick 2010; Laštovičkaet al.2006). There are three known sources of carbon dioxide in the thermosphere, namely, from the earth’s surface, emissions from fuel combustion during rocket flights, and the combustion of space debris in the thermosphere. Further, some metals and polymers in the orbit undergo chemical reactions when burning through the atmosphere, depleting ozone and generating carbon oxides and nitrogen oxides in the thermosphere(Staughton 2020) (Fig. 1). Further, metallic debris such as tungsten, beryllium, aluminum may also undergo chemical reactions when they re-enter the atmosphere, and their impact on earth’s atmosphere is also worthy to research (Physics Today 2009). Also, emissions from solid fuels and liquid propellants during rocket launches can cause pollution in the atmospheric environments, of which the depletion of stratospheric ozone is the most studied and concerning issue (Dallas et al. 2020).

#### \Ozone depletion causes extinction.

Dogra 6/26/20 [Sarthak, Author at the India Times. “Ozone Layer Depletion Caused Mass Extinction On Earth, **Which May Repeat Say Scientists**.” India Times. <https://www.indiatimes.com/technology/science-and-future/ozone-layer-depletion-mass-extinction-earth-516536.html>] Justin

Around 359 million years ago, there was a mass extinction of terrestrial life forms on Earth, and it all happened due to ozone layer depletion.

Much of the prevailing forest ecosystems and species of fish and tetrapods were killed during the last great mass extinction event.

To date, the event was unexplained for its causes. Now scientists say that the mass extinction was caused by harmful UV-B radiation that entered the Earth due to a reduced ozone layer.

Researchers at the University of Southampton have found out that the mass extinction at the transition of Earth from Devonian to Carboniferous (geological time periods) was “coincident with a major climatic warming.” The warming ended an intense Devonian glacial cycle but with it, caused the reduction of the ozone layer. Scientists analysed the rocks dating back to the time to conclude that, unlike other mass extinctions, volcanic eruptions were not the reason for this mass extinction. Such an extinction mechanism has been “newly discovered” as per the scientists and has serious consequences for Earth in today’s time, with global warming on the rise. Ozone layer experiment The team collected rock samples from the ice-capped and steep mountains of East Greenland as well as from the Andean Mountains above Lake Titicaca in Bolivia. While the former region was located in the southern hemisphere in the Devonian period, the latter was much closer to the Earth’s south pole at the time. The variation thus helped scientists judge what was happening at different locations at the time of the mass extinction. The team then dissolved the rocks in hydrofluoric acid, thus releasing microscopic plant spores, preserved in the cold climate for hundreds of millions of years. When the scientists examined these samples under a microscope, they found bizarre spines on the surface of many of the spores.

This was concluded to be a sign of a damaged DNA because of exposure to UV radiation. Many spores had even developed dark pigmented walls as a protection from the high UV levels.

Ozone layer importance for life

The mass extinction was thus, not caused by any geological event on Earth but due to high UV radiations on the planet, indicating a collapse in the ozone layer for a brief period. In this period, a huge portion of the prevailing life on Earth died to due to exposure to harmful levels of UV radiation.

The study is significant in a crucial aspect. Scientists warn that this is a fundamental aspect of planet Earth. Whenever it becomes too hot, its ozone layer is considerably depleted, allowing harmful UV radiations to enter the Earth’s atmosphere.

Now published in the journal Science Advances, the study concludes “ozone loss during rapid warming is an inherent Earth system process with the unavoidable conclusion that we should be alert for such an eventuality in the future warming world.”

#### Rivalrous orbits create space conflict and turn good satellites.

Samson 22 – Victoria Samson is the Washington office director for the Secure World Foundation, an organization that focuses on space sustainability, and she has over 20 years of experience in military space and security issues. Previously, Ms. Samson was a senior analyst for the Center for Defense Information. She also was a senior policy associate at the Coalition to Reduce Nuclear Dangers, a consortium of arms control groups. Earlier, she was a researcher at Riverside Research Institute, where she worked on war-gaming scenarios for the Missile Defense Agency. 1/17/22. [Bulletin of the Atomic Scientists, “The complicating role of the private sector in space,” DOI: 10.1080/00963402.2021.2014229] Justin

At this exact moment, we are seeing the increasing dominance of commercial actors in space – specifically the rise of mega-constellations, or large numbers of small satellites flying in formation to provide global coverage for a variety of governmental and commercial uses, including both communications and Earth observation. Consequently, the fundamental nature of space is changing, to one of a domain dominated by commercial actors. This change will have major consequences for international stability, both in terms of how it demonstrates that the old governance structure for space is being left behind – and how it highlights Russia’s declining rank in global space powers. Certain orbits may be effectively taken over by a handful of entities, and there will be competition for useful portions of the electromagnetic spectrum. With eyes on the sky everywhere, there will be little or no room for state secrets – for better or worse. This is happening at the same time that Russia’s space identity is floundering, which may further upset the stability of the domain of space.

As of November 2021, there are roughly 4,800 active satellites in orbit around Earth, around 1,850 of which belong to just one entity: SpaceX’s Starlink mega-constellation (Thompson 2021). This change has happened very quickly, as Starlink satellites just began to be launched in May 2019 (O’Callaghan 2019). This is only the first wave of the megaconstellations as well. While it is hard to say exactly how many satellites will be launched as part of this new use of space, there are requests or plans for mega-constellations that could mean well over 100,000 new satellites could potentially be in low Earth orbit. While not all of these satellites will be launched, even a small fraction of that proposed number will fundamentally shift the situation so that the major actors in space will no longer be nation-states (as has been the case to date) but the private sector, changing the timbre of the space domain.

This leads to challenges in discussing space security issues: Space is a shared, international domain; if we cannot include all the stakeholders in the discussions, we will not come to complete solutions to the problems. But first, some background.

A little history

The commercial sector is not new to space. Commercial entities have been active in space for decades now; in fact, it was a dispute over what should be the extent of their role in space that shaped part of the 1967 Outer Space Treaty. Article VI of that treaty notes:

States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities . . .. The activities of nongovernmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. (Outer Space Treaty 1967)

This was a compromise between the United States and the USSR, in which the latter argued that there was no such thing as commercial space. Having language requiring state actors to carry out “authorization and continuing supervision” gave the United States the flexibility it wanted to develop a commercial space sector while ensuring that there would still be national oversight.

A lack of coordination

One way in which the rise of these mega-constellations may complicate international security in space is through concerns about these satellites hampering access to certain orbits. While slots in geosynchronous Earth orbit are set by the International Telecommunication Union, there is no international entity coordinating orbital slots at low Earth orbit. This means that, given the potentially tens of thousands of satellites that could be launched given company plans, certain orbits could be de facto ceded to a handful of entities – in defiance of Article II of the Outer Space Treaty, which says that space “is not subject to national appropriation.” Consequently, this could lead to strife or competition over certain orbits.

It is possible that, given the number of satellites that companies are asking the United States’ Federal Communications Commission for broadcasting rights to, certain orbits may reach their carrying capacities – meaning that they are at the maximum number of satellites that can be operated, as defined by physical and radiofrequency interference aspects. This could lead to disputes over which country has the right to use certain orbits, or, alternatively, resentment when one country’s commercial sector essentially takes over a particular orbit

Competition over parts of the electromagnetic spectrum is another possible path for international security issues to arise from mega-constellations. Satellites are only as good as their ability to receive and communicate information, which requires spectrum; if one or a few entities from one country use up all the readily accessible spectrum for specific capabilities at certain orbits, that could possibly lead to confrontation as well. For the most part, the companies launching mega-constellations are largely based in the West, which can shape the global perception of their effects and intent – although there have been some plans for at least one Chinese company to launch a mega-constellation of potentially 13,000 satellites, and the South Koreans have expressed interest in their own mega-constellation.

#### Triggers space escalation and nuclear war.

Perez 21 – Veronica Delgado-Perez is a Staff Writer at The International Scholar. 12/14/21 – Note, doesn’t say date but most recent cited event is 2021, correct if I’m wrong. [The International Scholar, “Argument | The Commercialization of Space Risks Launching a Militarized Space Race,” <https://www.theintlscholar.com/periodical/12/14/2020/analysis-commercialization-space-risk-international-law-military-space-race>] Justin

With new actors on the game stage, conflicts of interest may arise. There is a risk that each actor adopts a kind of short-term Realist approach to space policy — one which is driven by self-interest in reaping the greatest benefits of extraterrestrial exploration and commercialization while controlling access to others. If unmitigated, states may choose to militarize outer space to gain a strategic edge over competitors and adversaries.

This process has already begun. Under the Trump administration, the Pentagon established the U.S. Space Force as a new branch of the Armed Forces to protect the country and allied interests in space. Already, Delta 4 — one of the U.S. Space Force’s missions — conducts strategic and theater missile warnings, manages weapon systems, and provides information to missile defense forces. The measure shows that for the U.S., outer space is not only a domain of scientific exploration but has the potential to become increasingly securitized.

With the impending expiration of the Strategic Arms Reduction Treaty (START) between the U.S. and Russia on February 5, 2021, a number of security dilemmas could arise. If the world’s two largest nuclear powers do not edge toward extending the treaty, Washington and Moscow risk returning to the era of unrestricted expansion of launch platforms and strategically-deployed nuclear warheads — potentially with the aid of military infrastructure in space.

Although President-elect Biden has expressed his interest in negotiating an extension of New START, how Moscow and Washington might proceed remains an open question. Bilateral progress towards a new arms-control regime would require establishing limits on the number and range of long- and mid-range missiles, establishing measures to limit the expansion of traditional missile deployment to space, and banning the deployment of nuclear weapons and weapons of mass destruction in outer space.

#### Debris triggers miscalculated war.

Robert Farley 22, Now a 1945 Contributing Editor, Dr. Robert Farley is a Senior Lecturer at the Patterson School at the University of Kentucky. Dr. Farley is the author of Grounded: The Case for Abolishing the United States Air Force (University Press of Kentucky, 2014), the Battleship Book (Wildside, 2016), and Patents for Power: Intellectual Property Law and the Diffusion of Military Technology (University of Chicago, 2020). 1/9/22. [19 Fourty Five, “Does A Space War Mean A Nuclear War?,” <https://www.19fortyfive.com/2022/01/does-a-space-war-mean-a-nuclear-war/>] Justin

The recent Russian anti-satellite test didn’t tell the world anything new, but it did reaffirm the peril posed by warfare in space. Debris from explosions could make some earth orbits remarkably risky to use for both civilian and military purposes. But the test also highlighted a less visible danger; attacks on nuclear command and control satellites could rapidly produce an extremely dangerous escalatory situation in a war between nuclear powers. James Acton and Thomas Macdonald drew attention to this problem in a recent article at Inside Defense. As Acton and MacDonald point out, nuclear command and control satellites are the connective tissue of nuclear deterrence, assuring countries that they’re not being attacked and that they’ll be able to respond quickly if they are.

For a long time, these strategic early-warning satellites were akin to a center of gravity in ICBM warfare. Nuclear deterrence requires awareness that an attack is underway. Attacks on the monitoring system could easily be read as an attempt to ~~blind~~ an opponent in preparation for general war, and could themselves incur nuclear retaliation. Thus, the nuclear command and control satellites are critical to the maintenance of nuclear deterrence. They make it possible to distribute an order from the chief of government to the nuclear delivery systems themselves. Consequently, their destruction might lead to hesitation or delay in performing a nuclear launch order.

It was only later that the relevance of satellites for conventional warfare became clear. Satellites could reconnoiter enemy positions and, more importantly, provide communications for friendly forces. Indeed, the expansion of the role of satellites in conventional warfare has complicated the prospect of space warfare. States have a clear reason for targeting enemy satellites which support conventional warfare, as those satellites enable the most lethal part of the kill chain, the communications and recon networks that link targets with shooters. Thus, we now have a situation in which space military assets have both nuclear and conventional roles. In a conflict confusion and misperception could rapidly become lethal. If one combatant views an attack against nuclear command and control as a prelude to a general nuclear attack, it might choose to pre-empt.

Nuclear powers have dealt with problems in this general category for a good long while; would a conventional attack against tactical nuclear staging areas represent an escalation, for example? Would the use of ballistic missiles that can carry either conventional or nuclear weapons trigger a nuclear response? Do attacks against air defense networks that have both strategic and tactical responsibilities run the risk of triggering a nuclear response? There’s also the danger that damage to communications networks designated for conventional combat could force traffic onto the nuclear control systems, further confusing the issue.

#### No checks on escalation.

MacDonald 18. Bruce W. MacDonald, professor at the Johns Hopkins University School of Advanced International Studies (SAIS), ("Outer Space; Earthly Escalation? Chinese Perspectives on Space Operations and Escalation," August 2018, *NSI* white paper, <https://nsiteam.com/social/wp-content/uploads/2018/08/SMA-White-Paper_Chinese-Persepectives-on-Space_-Aug-2018.pdf>, accessed 7-14-2019) bm

Challenges across all five phases: Another escalation threat is the inexperience that nations share in the space and cyber domains, unlike in conventional domains of conflict and in the nuclear domain to a lesser extent. This inexperience gives rise to a “sorcerer’s apprentice” problem, placing leaders at risk of making potentially unwise judgment calls without a full grasp of their implications. The space and cyber domains are sufficiently new and dynamic that such decisions are highly likely. Adding to this uncertainty is the ever-growing interdependence of infrastructures within and among advanced countries, making the impact of major attacks against a country’s space and/or cyber infrastructures inherently unknowable. In considering all these factors, it is important to keep in mind that events in space do not happen in isolation. Any space conflict would likely be part of a multidimensional field of play, with space being important because of the effects it has on the earth. Significant instability in space is unlikely to lead to war if there is stability in other domains and in the larger geopolitical relationship between participants, while conflict could easily spread to a stable space domain if war in other domains appeared preferable to the alternative. While any use of nuclear weapons would pose a serious threat of escalation to full-scale nuclear war, any use of space or cyber offense would not pose a comparable escalation threat. That said, a series of reciprocal escalations could easily become unstable. No clear-cut escalation barrier exists in the space and cyber domains, and given the short-term tactical benefits of escalating ahead of an adversary, each additional escalation could create incentives for further escalation that an adversary would not always anticipate. Escalation in space, then, is a slippery slope with few off-ramps.

#### No limited nuclear wars – extinction.

Webber 19 – Dr Philip Webber has written widely on nuclear issues and is Chair of Scientists for Global Responsibility (SGR) – a membership organisation promoting responsible science and technology. We will all end up killing each other and one nuclear blast could do it. 5/18/19. [METRO.UK “We will all end up killing each other and one nuclear blast could do it,” <https://metro.co.uk/2019/05/18/we-will-all-end-up-killing-each-other-and-one-nuclear-blast-could-do-it-9370115/>] Recut Justin

The nuclear armed nations have inadvertently created a global Doomsday machine, built with 15,000 nuclear weapons.

Most (93%) have been built by Russia and in the US, 3,100 of them are ready to fire within hours.

Pre-programmed targets include main cities as well as a range of military and civilian targets across the world primarily in the UK, Europe, US, Russia and China but also in Japan, Australia and South America.

One nuclear blast, one mistake, one cyber attack could trigger it.

But first a reminder about the incredible destructive power of a nuclear weapon. Modern nuclear warheads are typically 20 times larger than either of the two bombs that obliterated Hiroshima and Nagasaki at the end of the Second World War. What just one nuclear warhead can do is unimaginable. We’ve drawn some of the key features to scale against cityscapes in the UK for a Russian SS-18 RS 20V (NATO designation ‘Satan’) 500kT warhead. US submarines deploy a similar weapon – the Trident II Mk5, 475kT warhead. A deafening, terrifying noise will be created, like an intense thunder that lasts for 10 seconds or longer.

After a blinding flash of light bright destroying the retina of anyone looking, and a violent electromagnetic pulse (EMP) knocking out electrical equipment several miles away, a bomb of this size quickly forms an incandescent fireball 850 metres across.

This is about the same height as the world’s tallest building, the Burj Khalifa. Drawn against the London Canary Wharf financial district or the Manchester skyline, the huge fireball dwarfs one Canary Sq. (240m), the South Tower Deansgate (201m) and the Beetham Tower Hilton, (170m). The fireball engulfs both city centres completely, melting glass and steel and forms an intensely radioactive 60m deep crater zone of molten earth and debris. A devastating supersonic blast wave flattens everything within a radius of two to three km, the entire Manchester centre, an area larger than the City of London, with lighter damage out to eight km. Most people in these areas would be killed or very seriously injured.

The fireball quickly rises forming an enormous characteristic mushroom shaped cloud raining highly radioactive particles (fallout). It rises to 60,000 ft (18,000m) – twice the altitude of Everest – and is 15 miles, 24km across.

This is one warhead. There are 10 such warheads on each of Russia’s 46 missiles (460 in total) and 48 on each of eight US Trident submarines (384 in total). In reality, in a nuclear conflict all of these warheads and a further 956 ready-to-fire are likely to be launched.

Whilst this scale of destruction is horrific and hundreds of millions of people would be killed in a few hours from a combination of blast, radiation and huge fires, there are also terrible longer-term effects.

Scientists predict that huge city-wide firestorms combined with very the high-altitude debris clouds would severely reduce sunlight levels and disrupt the world’s climate for a decade causing drought, a prolonged winter, global famine and catastrophic impacts for all life on earth and in the seas due to intense levels of UV with the destruction of the ozone layer.

But even at the level of a few hundred nuclear warheads, the consequences of a nuclear war would be extremely severe across the world far beyond the areas hit directly. A nuclear conflict between India and Pakistan with ‘only’ 100 small warheads would kill hundreds of millions and cause climate damage leading to a global famine. The sheer destructive nature of nuclear explosions combined with long lasting radiation, means that nuclear weapons are of no military use. ‘Enemy’ territory would be unusable for years because of intense radiation – especially when nuclear power stations and reprocessing plants are hit.

Even if your own country is not hit, radiation and climate damage will spread across the globe. No one escapes the consequences.

But the nuclear nations argue that they build and keep nuclear weapons to make sure that they are never used. After all no one would be stupid enough to actually launch a nuclear weapon facing such terrible retaliation? It sounds obvious. If you threaten any attacker with terrible nuclear devastation of course they won’t attack you. That might be true most of the time. It is very unlikely that any country would launch a nuclear attack deliberately. But there are two very major problems. First, a terrorist organisation with a nuclear weapon cannot be deterred in this way. Secondly, there are several ways in which a nuclear war can start by mistake. A report by the prestigious Chatham House in 2014 documents 30 instances between 1962 and 2002 when nuclear weapons came within minutes of being launched due to miscalculation, miscommunication, or technical errors. What prevented their use on many of these occasions was the intervention of individuals who, against military orders, either refused to authorise a nuclear strike or relay information that would have led to launch. Examples include a weather rocket launch mistaken for an attack on Russia, a US satellite misinterpreting sunlight reflecting off clouds as multiple missiles firings, a 42c chip fault creating a false warning of 220 missiles launched at the United States. Such risks are heightened during political crises.

The risk of mistake is very high because, in a hangover from the Cold War, the USA and Russia each keep 900 warheads ready to fire in a few minutes, in a ‘launch on warning’ status, should a warning of nuclear attack come in.

These nuclear weapons form a dangerous nuclear stand-off – rather like two people holding guns to each other’s heads.

With only a few minutes to evaluate a warning of nuclear attack before warheads would strike, one mistake can trigger disaster. A similar nuclear stand-off exists between India and Pakistan.

## FW

#### Standard is maximizing expected well being

#### Death is bad and o/w—ontologically destroys the subject.

Paterson 1 – Department of Philosophy, Providence College, Rhode Island. (Craig, “A Life Not Worth Living?”, Studies in Christian Ethics, <http://sce.sagepub.com>)

Contrary to those accounts, I would argue that it is death per se that is really the objective evil for us, not because it deprives us of a prospective future of overall good judged better than the alter- native of non-being. It cannot be about harm to a former person who has ceased to exist, for no person actually suffers from the sub-sequent non-participation. Rather, death in itself is an evil to us because it ontologically destroys the current existent subject — it is the ultimate in metaphysical lightening strikes.80 The evil of death is truly an ontological evil borne by the person who already exists, independently of calculations about better or worse possible lives. Such an evil need not be consciously experienced in order to be an evil for the kind of being a human person is. Death is an evil because of the change in kind it brings about, a change that is destructive of the type of entity that we essentially are. Anything, whether caused naturally or caused by human intervention (intentional or unintentional) that drastically interferes in the process of maintaining the person in existence is an objective evil for the person. What is crucially at stake here, and is dialectically supportive of the self-evidency of the basic good of human life, is that death is a radical interference with the current life process of the kind of being that we are. In consequence, death itself can be credibly thought of as a ‘primitive evil’ for all persons, regardless of the extent to which they are currently or prospectively capable of participating in a full array of the goods of life.81  In conclusion, concerning willed human actions, it is justifiable to state that any intentional rejection of human life itself cannot therefore be warranted since it is an expression of an ultimate disvalue for the subject, namely, the destruction of the present person; a radical ontological good that we cannot begin to weigh objectively against the travails of life in a rational manner. To deal with the sources of disvalue (pain, suffering, etc.) we should not seek to irrationally destroy the person, the very source and condition of all human possibility.82

#### Extinction outweighs:

#### A] Structural violence- death causes suffering because people can’t get access to resources and basic necessities

#### B] Comes before value-to-life.

Tännsjö 11 (Torbjörn, the Kristian Claëson Professor of Practical Philosophy at Stockholm University, “Shalt Thou Sometimes Murder? On the Ethics of Killing,” <http://people.su.se/~jolso/HS-texter/shaltthou.pdf>) //BS 1-27-2018

\*\*Bracketed to avoid triggers

I suppose it is correct to say that, if Schopenhauer is right, if life is never worth living, then according to utilitarianism we should all [die] commit suicide and put an end to humanity. But this does not mean that, each of us should commit suicide. I commented on this in chapter two when I presented the idea that utilitarianism should be applied, not only to individual actions, but to collective actions as well.¶ It is a well-known fact that people rarely commit suicide. Some even claim that no one who is mentally sound commits suicide. Could that be taken as evidence for the claim that people live lives worth living? That would be rash. Many people are not utilitarians. They may avoid suicide because they believe that it is morally wrong to kill oneself. It is also a possibility that, even if people lead lives not worth living, they believe they do. And even if some may believe that their lives, up to now, have not been worth living, their future lives will be better. They may be mistaken about this. They may hold false expectations about the future.¶ From the point of view of evolutionary biology, it is natural to assume that people should rarely commit suicide. If we set old age to one side, it has poor survival value (of one’s genes) to kill oneself. So it should be expected that it is difficult for ordinary people to kill themselves. But then theories about cognitive dissonance, known from psychology, should warn us that we may come to believe that we live better lives than we do.¶ My strong belief is that most of us live lives worth living. However, I do believe that our lives are close to the point where they stop being worth living. But then it is at least not very far-fetched to think that they may be worth not living, after all. My assessment may be too optimistic.¶ Let us just for the sake of the argument assume that our lives are not worth living, and let us accept that, if this is so, we should all kill ourselves. As I noted above, this does not answer the question what we should do, each one of us. My conjecture is that we should not [die] commit suicide. The explanation is simple. If I [die] kill myself, many people will suffer. Here is a rough explanation of how this will happen: ¶ ... suicide “survivors” confront a complex array of feelings. Various forms of guilt are quite common, such as that arising from (a) the belief that one contributed to the suicidal person's anguish, or (b) the failure to recognize that anguish, or (c) the inability to prevent the suicidal act itself. Suicide also leads to rage, loneliness, and awareness of vulnerability in those left behind. Indeed, the sense that suicide is an essentially selfish act dominates many popular perceptions of suicide. ¶ The fact that all our lives lack meaning, if they do, does not mean that others will follow my example. They will go on with their lives and their false expectations — at least for a while devastated because of my suicide. But then I have an obligation, for their sake, to go on with my life. It is highly likely that, by committing suicide, I create more suffering (in their lives) than I avoid (in my life).

#### C] Mathematically outweighs.

MacAskill 14 [William, Oxford Philosopher and youngest tenured philosopher in the world, Normative Uncertainty, 2014]

The human race might go extinct from a number of causes: asteroids, supervolcanoes, runaway climate change, pandemics, nuclear war, and the development and use of dangerous new technologies such as synthetic biology, all pose risks (even if very small) to the continued survival of the human race.184 And different moral views give opposing answers to question of whether this would be a good or a bad thing. It might seem obvious that human extinction would be a very bad thing, both because of the loss of potential future lives, and because of the loss of the scientific and artistic progress that we would make in the future. But the issue is at least unclear. The continuation of the human race would be a mixed bag: inevitably, it would involve both upsides and downsides. And if one regards it as much more important to avoid bad things happening than to promote good things happening then one could plausibly regard human extinction as a good thing.For example, one might regard the prevention of bads as being in general more important that the promotion of goods, as defended historically by G. E. Moore,185 and more recently by Thomas Hurka.186 One could weight the prevention of suffering as being much more important that the promotion of happiness. Or one could weight the prevention of objective bads, such as war and genocide, as being much more important than the promotion of objective goods, such as scientific and artistic progress. If the human race continues its future will inevitably involve suffering as well as happiness, and objective bads as well as objective goods. So, if one weights the bads sufficiently heavily against the goods, or if one is sufficiently pessimistic about humanity’s ability to achieve good outcomes, then one will regard human extinction as a good thing.187 However, even if we believe in a moral view according to which human extinction would be a good thing, we still have strong reason to prevent near-term human extinction. To see this, we must note three points. First, we should note that the extinction of the human race is an extremely high stakes moral issue. Humanity could be around for a very long time: if humans survive as long as the median mammal species, we will last another two million years. On this estimate, the number of humans in existence in the The future, given that we don’t go extinct any time soon, would be 2×10^14. So if it is good to bring new people into existence, then it’s very good to prevent human extinction. Second, human extinction is by its nature an irreversible scenario. If we continue to exist, then we always have the option of letting ourselves go extinct in the future (or, perhaps more realistically, of considerably reducing population size). But if we go extinct, then we can’t magically bring ourselves back into existence at a later date. Third, we should expect ourselves to progress, morally, over the next few centuries, as we have progressed in the past. So we should expect that in a few centuries’ time we will have better evidence about how to evaluate human extinction than we currently have. Given these three factors, it would be better to prevent the near-term extinction of the human race, even if we thought that the extinction of the human race would actually be a very good thing. To make this concrete, I’ll give the following simple but illustrative model. Suppose that we have 0.8 credence that it is a bad thing to produce new people, and 0.2 certain that it’s a good thing to produce new people; and the degree to which it is good to produce new people, if it is good, is the same as the degree to which it is bad to produce new people, if it is bad. That is, I’m supposing, for simplicity, that we know that one new life has one unit of value; we just don’t know whether that unit is positive or negative. And let’s use our estimate of 2×10^14 people who would exist in the future, if we avoid near-term human extinction. Given our stipulated credences, the expected benefit of letting the human race go extinct now would be (.8-.2)×(2×10^14) = 1.2×(10^14). Suppose that, if we let the human race continue and did research for 300 years, we would know for certain whether or not additional people are of positive or negative value. If so, then with the credences above we should think it 80% likely that we will find out that it is a bad thing to produce new people, and 20% likely that we will find out that it’s a good thing to produce new people. So there’s an 80% chance of a loss of 3×(10^10) (because of the delay of letting the human race go extinct), the expected value of which is 2.4×(10^10). But there’s also a 20% chance of a gain of 2×(10^14), the expected value of which is 4×(10^13). That is, in expected value terms, the cost of waiting for a few hundred years is vanishingly small compared with the benefit of keeping one’s options open while one gains new information.

## UV

#### Apocalyptic images challenge power structures to create futures of social justice

Jessica Hurley 17, Assistant Professor in the Humanities at the University of Chicago, “Impossible Futures: Fictions of Risk in the Longue Durée”, Duke University Press, https://read.dukeupress.edu/american-literature/article/89/4/761/132823/Impossible-Futures-Fictions-of-Risk-in-the-Longue

If contemporary ecocriticism has a shared premise about environmental risk it is that genre is the key to both perceiving and, possibly, correcting ecological crisis. Frederick Buell’s 2003 From Apocalypse to Way of Life: Environmental Crisis in the American Century has established one of the most central oppositions of this paradigm. As his title suggests, Buell tells the story of a discourse that began in the apocalyptic mode in the 1960s and 70s, when discussions of “the immanent end of nature” most commonly took the form of “prophecy, revelation, climax, and extermination” before turning away from apocalypse when the prophesied ends failed to arrive (112, 78). Buell offers his suggestion for the appropriate literary mode for life lived within a crisis that is both unceasing and inescapable: new voices, “if wise enough….will abandon apocalypse for a sadder realism that looks closely at social and environmental changes in process and recognizes crisis as a place where people dwell” (202-3). In a world of threat, Buell demands a realism that might help us see risks more clearly and aid our survival.¶ Buell’s argument has become a broadly held view in contemporary risk theory and ecocriticism, overlapping fields in the social sciences and humanities that address the foundational question of second modernity: “how do you live when you are at such risk?” (Woodward 2009, 205).1 Such an assertion, however, assumes both that realism is a neutral descriptive practice and that apocalypse is not something that is happening now in places that we might not see, or cannot hear. This essay argues for the continuing importance of apocalyptic narrative forms in representations of environmental risk to disrupt conservative realisms that maintain the status quo. Taking the ecological disaster of nuclear waste as my case study, I examine two fictional treatments of nuclear waste dumps that create different temporal structures within which the colonial history of the United States plays out. The first, a set of Department of Energy documents that use statistical modeling and fictional description to predict a set of realistic futures for the site of the Waste Isolation Pilot Plant in New Mexico (1991), creates a present that is fully knowable and a future that is fully predictable. Such an approach, I suggest, perpetuates the state logics of implausibility that have long undergirded settler colonialism in the United States. In contrast, Leslie Marmon Silko’s contemporaneous novel Almanac of the Dead (1991) uses its apocalyptic form to deconstruct the claims to verisimilitude that undergird state realism, transforming nuclear waste into a prophecy of the end of the United States rather than a means for imagining its continuation. In Almanac of the Dead, the presence of nuclear waste introjects a deep-time perspective into contemporary America, transforming the present into a speculative space where environmental catastrophe produces not only unevenly distributed damage but also revolutionary forms of social justice that insist on a truth that probability modeling cannot contain: that the future will be unimaginably different from the present, while the present, too, might yet be utterly different from the real that we think we know.¶ Nuclear waste is rarely treated in ecocriticism or risk theory, for several reasons: it is too manmade to be ecological; its catastrophes are ongoing, intentionally produced situations rather than sudden disasters; and it does not support the narrative that subtends ecocritical accounts of risk perception in which the nuclear threat gives rise to an awareness of other kinds of threat before reaching the end of its relevance at the end of the Cold War.2 In what follows, I argue that the failure of nuclear waste to fit into the critical frames created by ecocriticism and risk theory to date offers an opportunity to expand those frames and overcome some of their limitations, especially the impulse towards a paranoid, totalizing realism that Peter van Wyck (2005) has described as central to ecocriticism in the risk society. Nuclear waste has durational forms that dwarf the human. It therefore dwells less in the economy of risk as it is currently conceptualized and more in the blown-out realm of deep time. Inhabiting the temporal scale that has recently been christened the Anthropocene, the geological era defined by the impact of human activities on the world’s geology and climate, nuclear waste unsettles any attempt at realist description, unveiling the limits of human imagination at every turn.3 By analyzing risk society through a heuristic of nuclear waste, this essay offers a critique of nuclear colonialism and environmental racism. At the same time, it shows how the apocalyptic mode in deep time allows narratives of environmental harm and danger to move beyond the paranoid logic of risk. In the world of deep time, all that might come to pass will come to pass, sooner or later. The endless maybes of risk become certainties. The impossibilities of our own deaths and the deaths of everything else will come. But so too will other impossibilities: talking macaws and alien visitors; the end of the colonial occupation of North America, perhaps, or a sudden human determination to let the world live. The end of capitalism may yet become more thinkable than the end of the world. Just wait long enough. Stranger things will happen.¶

#### Envisioning existential threats and potential solutions within debate iteratively fractures settler colonialism.

--CHN = Council of the Haida Nation, government of the peoples of the Haida Gwaii, an archipelago claimed by Canada

--FYI about the Haida People / Council of the Haida Nation: used courts, human blockades to prevent logging in the forests of “Haida Gwaii,” other progressive approaches => winning support of Canadian citizens, government officials, and judges, eventually led to the Supreme Court of Canada recognizing their absolute title to their land---along the way explicitly rejected violent action

Joseph J. Z. Weiss 15. Ph.D. candidate, Anthropology, University of Chicago. December 2015. “Unsettling Futures: Haida Future-Making, Politics and Mobility in the Settler Colonial Present.” p.216-232, https://knowledge.uchicago.edu/bitstream/handle/11417/1121/Weiss\_uchicago\_0330D\_13139.pdf?sequence=1&isAllowed=y

Conclusion: “What’s next? Just guess.” Signs of the Future One of the more recent additions to the socio-landscape of Old Massett, which I noticed on a return visit in 2014, was a series of blue signs that had appeared in many of the lawns on reserve and a good few uptown. The sign was a good two feet high and emblazoned with capitalized text: UNITED AGAINST ENBRIDGE. Below the text was a picture of a salmon. The salmon and the first word, “UNITED,” were in stark, attention-grabbing white, while the other text was in black. The signs, I later discovered, were distributed for five dollars each by the “Friends of Wild Salmon,” a coalition of northern British Columbia residents – including both First Nations and non-First Nations members – working together to oppose the Enbridge Gateway Pipeline Project.1 Perhaps appropriately, then, I noticed the sign on the lawns of both Haida and non-Haida, in Old Massett, (New) Masset, and out by Towtown. The signs may have been new, but their message is one that should have become familiar to us at this point: The people of Haida Gwaii oppose “Enbridge;” that is, The Enbridge Northern Gateway Pipelines Project. The project, first proposed in the mid-2000s, seeks to construct two pipelines to transport crude oil and condensate from northern Alberta to Kitimat on the coast of British Columbia.2 The oil would then be transported via “super-tanker” from the coast, through the Hecate Straight that passes between the west coast and the islands of Haida Gwaii before being exported to other nations (particularly China). Enbridge has received heavy support for the project from Canada’s current Conservative government, headed by Prime Minister Stephen Harper, and in 2013 the Enbridge Joint-Review Panel – despite the words of hippies and Haida alike, alongside fierce opposition from all over the northwest coast - approved the pipelines, albeit with 209 required conditions.3 As a partnership between Canadian federal and corporate interests, the Enbridge Pipelines Project promises a future horizon of economic prosperity, one that unequivocally justifies any environmental risk in the present. On Haida Gwaii, Enbridge presages a rather different future, one in which the unpredictable waters of the Hecade Straight all but guarantee a tanker spill. Such a spill would devastate the waters and lands of the islands and the neighbouring coastline of British Columbia, destroying the fish and poisoning the plants that currently draw on ocean waters and the animals that feed thereon. Neither eagles nor ravens could survive, living as they do on a diet that consists primarily of marine life, a fact which all but guarantees the disappearance of Eagles and Ravens, the Haida people whose lifeways as such are so fundamentally tied to the islands of Haida Gwaii. Haida Gwaii could no longer be home. A song recorded in protest again Enbridge by Aboriginal artist Kinnie Starr and animated as a music video by Haidawood, a team of Haida and non-Haida stop-motion artists and animators, makes this threat explicit, asking in its opening lines “Who will save these waters, save them for our great granddaughters, save them for our great grand-daughter’s sons, […] save them before all is dead and gone?”4 This nightmare future, this future that is no future, is one that looms large over the whole of this dissertation. It is familiar because it is a reiteration of the horror of ecological cataclysm that the CHN formed itself in opposition against, that the “hippies” risk metonymically bringing about by taking from the lands and waters without respect. But it is also familiar because in a broader sense it is the future that settler colonialism attempted to give to Native peoples; indeed, to render as their already given destiny. This is the future of indigenous erasure, of ultimate disappearance, of a closed temporality which can only end in “all dead and gone.” As I have also hopefully shown in each of my chapters, however, the future of “no future” is never taken as inevitable or already determined by Haida people. The work of future-making instead always acts to ward off the nightmare future of Haida erasure, always puts in its place instead multiple possible futures in which Haida people continue. Take the blue signs on the lawns of the Masset(t)s, Old and New, implicitly answering Kinnie Starr’s question with the bold declaration that the islands (will) stand “UNITED” against Enbridge. But the social significances of these futures are never encompassed solely by the ways in which they respond to the threat of nightmare futures. As we saw in Chapter 3, for instance, the production of a future of Haida and non-Haida unity is considerably more complicated than the declaration of shared solidarity, speaking back to a particular history of Haida and settler relations and fantasy schemas, looking forward towards finding productive ways in which non-Haida can be integrated into Haida systems of sociality and responsibility. To speak of a future united against Enbridge is thus necessarily to speak of many other things, just as it is the case when speaking of a future of Haida return, a future of care-full leadership, or a future of traditional authority. Larger social worlds unfold out of the constitution of particular futures. This is why, more than anything, I want to make clear in the final, concluding chapter of this dissertation that the political (if not the existential) significance of Haida future-making does not lie simply in the specific ways in which individual futures respond to particular dilemmas of the settler colonial present. Rather, what is most crucial about future-making as a way of thinking out from within the temporal brackets of settler colonialism’s deferred erasure is simply the fact of future-making itself. What matters the most is the capacity to say, as Haida rapper Ja$e ElNino does in a guest appearance in Starr’s song, “Now expect the best from the northwest/ What’s next? Just guess.” ElNino asserts the openness of the future, challenging his listeners to even attempt to predict the field of possibilities still to come. This does not mean, though, that this openness is unmoored. Quite the opposite, ElNino asks us to “expect the best of the northwest,” in response to the threat of Enbridge and, I think, more generally. In this spirit, in what follows I highlight the significance of location to indigenous futurity, exploring how Old Massett, its neighbouring communities along Masset Inlet, and the lands and waters of Haida Gwaii act as locations around which the very openness of Haida futures can be articulated. My discussion will be largely synthetic, reading together my previous chapters to attempt to arrive at a few conclusions for this dissertation at a whole. I begin with a discussion of Haida Gwaii, once again, as “home,” asking what it means to consider the islands as a Haida homeland (and one that requires “care” as such) in the light of the futures I have sketched out. I then draw on this to pose a few suggestions for the political anthropology of indigenous peoples and its abiding contemporary concern with sovereign rights and territoriality. Finally, I conclude by drawing out the multiple meanings of my titular phrase, “unsettling futures,” in the context of Haida futuremaking. Homeland Haida Gwaii is in at least some sense at the center of each of the futures I have discussed in this dissertation. It is the home to which Haida are expected (and expect) to return, the “cornucopia” of off-the-grid fantasy, the ongoing historical space of complex social and material relations that these fantasies elide, the perpetually at risk ecological landscape which demands (and authorizes) the CHN’s care and respect. And, as we have seen, these various futures for the islands are not isolated from one another. Quite the opposite, futures proliferate in response to each other. The potential for non-Haida homing necessitates strategic forms of future-oriented social integration to bring these new arrivals into respectful relations with the Haida world, the nightmare non-future of ecological collapse is warded off by the attempt to constitute care-full futures under Haida control. What all these Haida futures have in common – at least as they relate to the islands - is that they work to preserve Haida Gwaii, and the community of Old Massett in particular, as spaces in which Haida futures remain possible. This fact, as I have already begun to suggest in Chapter 2, might help us to resolve some of James Clifford’s dilemmas in relation to indigenous mobility. As I pointed towards then, the notion that “place” is significant to indigenous peoples – politically, socially, affectively, culturally – has become one of the essential components of how “indigeneity” is understood as a global phenomenon and a strategic identity from which rights claims can be advanced. Take Article 25 of the Universal Declaration of the Rights of Indigenous Peoples: Indigenous peoples have the right to maintain and strengthen their *distinctive spiritual relationship* with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard (Assembly 2007:10, emphasis mine). But what precisely does it mean to have a “distinctive, spiritual relationship” to a place, and who determines what might constitute that relationship? Here one of the perils of Povinelli’s “cunning of recognition,” as indigenous rights to territory become conflated with - and evaluated against - essentialized settler notions of Native ecological spirituality and/or emplacedness (cf: Raibmon 2005; Nadasdy 2003). If indigeneity thereby takes on the significance of being “rooted” in a particular place, of having certain identifiably “distinctive” cultural relationships to that place that others might lack, then the fact of indigenous mobility would indeed pose a profound dilemma for the category of indigeneity on the one hand and the capacity to make claims to territorial rights *qua* one’s indigeneity on the other. But there is a remarkable temporal shallowness to all this. To give a representative example, the Australian state criteria for what constitutes “cultural rights to territory” that Povinelli interrogates function solely in the past and the present, mandating that Aboriginal people show continuity of occupation and of the cultural practices associated with “Aboriginal occupation” in the mind of the court in order to be recognized as possessing a rightful claim to their home territories (Povinelli 2002). Erased in this is the possibility that a territory could be the site of departure and return, that it could have a future horizon that is flexible, subject to transformation alongside the transformations of the people(s) who call it home, without thereby necessarily losing its integrity as a rightful space of indigenous occupation. Such a possibility is not controversial for my Haida interlocutors. Rather, it has the status of an already-given certainty, community common sense - though there is without doubt much social work that goes into the production of that certainty. What makes indigenous mobility fraught, then, might have rather more to do with the constitution of settler polities than it does with the actual practices of indigenous peoples. Consider the various ways in which we have already seen colonial authorities attempt to control Haida movement, from the forced expulsions of 19th century Victoria to the removal of Haida children from the islands for residential schools less than a century later. Consider too the manufacture of the reserves themselves, the fixing of two Haida “Bands” with their own federally determined territories, beyond which Haida people could claim no rights over land, waters, or resources (cf: Harris 2002). This is a logic of containment, of isolation. In leaving their assigned spaces, Native peoples were assumed by colonial authorities to be leaving the space of their Nativeness behind, assimilating into settler society on its terms. Indeed, this was the motivating logic of the residential schools program, which took as its premise the idea that “Indians” could always “backslide” into “savage customs” as long as they remained in their homes and with their families. Aboriginal children thus had to be brought somewhere else to learn how to join “civilized,” that is, white Christian, society (Miller 1996). Reserves could thus be rendered as the last bastions of a “weird and waning race,” to quote Scott, their inhabitants temporally foreclosed and spatially fixed. The notion that indigenous people could move without ceasing to be (or ceasing to fight for their rights to self-determination and Title to their lands) unsettles this narrative, just as does the intertwined possibility of indigenous futurity. The relationship to Haida Gwaii that we’ve seen sketched out by the Haida futures explored in this dissertation does not preclude the possibility of “distinctive spiritual relationships” between Haida and their home territories. Quite the opposite, the ineffable quality of homing alone suggests that many of my interlocutors feel a connection to their home that goes beyond the kinds of practices that are only possible on the islands, their beauty or their history. Indeed, when considered as home, when considered as a site that requires care, there is little doubt that Haida Gwaii can encompass a wide range of phenomenological, affective, social, and cultural ways of relating to its lands and waters by Haida people (and their neighbours, at times for good, at times for ill). But it is not these relations as such that encompass the totality of Haida Gwaii’s significance. Rather, what is of greatest concern to my interlocutors is the continuing future possibility that relations like that *could be* formed, that people *could continue* to be called home to Haida Gwaii once they’ve fully explored the world off-island, that the qualities that precisely *make* Haida Gwaii home *could* be preserved. This is what it means, I think, to “take care” of Haida Gwaii, to allow it to continue as a homeland for uncounted future generations. Though they certainly emphasize the need for Haida Gwaii to be maintained as a location for Haida futurity, this does not mean that the futures we have seen expend all the possible ways in which such future forms of Haida social, material, ecological, and relational life could be formed. Recall Ja$e ElNino’s challenge of a future so open that its possible contents can only be guessed at. What Haida future-making demonstrates is that there are a set of potentialities which are worth protecting so that Haida people can continue to access them, to come home to them, even as continuing forms of mobility and political processes can also shape and reshape Haida social and cultural life on and off the islands. Homeland is not a regimented place where Haida people *must* always live in order to be authentically Haida. Rather, it is a location where they should always be able to, in their own (necessarily multiple, often contested, sometimes even contradictory) terms. Sovereignty At the same time, there is an inescapably political dimension to the attempt to render Haida Gwaii as the homeland of a still open Haida future. The assertion of the (located) openness of the future does not necessarily make it so. As I noted in the first part of this dissertation, the flow of Haida departures and returns unfold in the broader context of the settler, capitalist state; indeed, they are made necessary in part by the current absence of economic opportunity on island, just as the arrival of potentially threatening strangers is a result of their privileged position in the very capitalist economy they seek to escape. Constituting futures in which Haida people have the freedom to engage with that economy (and settler society more generally) as they see fit while retaining the capacity to come home (complicated as that process might be) also reiterates the inescapability of some form of engagement with that socio-economy. Likewise, the notion of Haida Gwaii as Haida homeland cannot be separated from current Haida struggles to assert their rights to the lands and waters of Haida Gwaii, the resources found therein, and their sovereign capacity to govern themselves and the islands in the ways they find appropriate. This is, recall, the very crux of the CHN’s own commitment to the assurance of futurity, as it is only by positioning itself as the rightful, sovereign government of the Haida Nation and its homeland of Haida Gwaii that it can adequately care for the islands and protect them from external threat. And the continuing advance of the Enbridge project despite fierce opposition from CHN, the Old Massett Village Council, their Haida constituents, and the non-Haida actors with whom they are “united against Enbridge” (and this alongside protest all over the northwest coast) gives the nightmare futures of environmental collapse – pushed through by corporate interests and Canadian politicians - a frightening immanence. The assertion of the openness of the future is made, in short, in (and against) a context in which closures remain endemic. And yet, something has changed in this landscape from the initial erasures of Native futurity we drew out in the first chapter. In the narratives of colonial actors like Duncan Campbell Scott, it was absolutely clear that “Indians” were disappearing because their social worlds were being superseded by more “civilized” ways of living and being, ones that these Native subjects would also, inevitably, in the end, adopt (or failing that, perish outright). There was a future. It was simply a settler one. But the nightmare futures of that my Haida interlocutors ward against in their own future-making reach beyond Haida life alone. Environmental collapse, most dramatically, threatens the sustainability of all life; toxins in the land and the waters threaten human lives regardless of their relative indigeneity, race, or gender (e.g. Choy 2011; Crate 2011). Put another way, the impetus for non-Haida (and non-First Nations subjects more generally) to be “united against Enbridge” with their indigenous neighbours comes in no small part because an oil spill also profoundly threatens the lives and livelihoods of non-Aboriginal coastal residents, a fact which Masa Takei, among others, made clear in Chapter 3. Nor is the anxiety that young people might abandon their small town to pursue economic and educational advantage in an urban context limited to reserve communities. Instead, the compulsions of capitalist economic life compel such migrations throughout the globe. The nightmare futures that Haida people constitute alternative futures to ward against are not just future of indigenous erasure under settler colonialism. They are erasures of settler society itself. There is thus an extraordinary political claim embedded in Haida future-making, a claim which gains its power precisely *because* Haida future-making as we have seen it does not (perhaps cannot) escape from the larger field of settler-colonial determination. Instead, in Haida future-making we find the implicit assertion that Haida people can make futures that address the dilemmas of Haida *and* settler life alike, ones that can at least “navigate,” to borrow Appadurai’s phrasing, towards possible futures that do not end in absolute erasure. If Povinelli and Byrd are correct and settler liberal governance makes itself possible and legitimate through a perpetual deferral of the problems of the present, then part of the power of Haida future-making is to expose the threatening non-futures that might emerge out of this bracketed present, to expose as lie the liberal promise of a good life always yet to come and to attempt to constitute alternatives. It is no coincidence that we find this in the midst of a struggle over sovereignty. And this not just in the sense of the Council of the Haida Nation’s ongoing assertion of its sovereign right to govern the lands and waters of Haida Gwaii on behalf of all Haida people, as we saw in Chapter 5. Rather, as Joanne Barker has argued, over the course of the latter half of the twentieth century sovereignty has emerged as a: particularly valued term within indigenous scholarship and social movements and through the media of cultural production. It [is] a term around which analyses of indigenous histories and cultures were organized and whereby indigenous activists articulate their agendas for social change (Barker 2005:18). Through the assertion of sovereignty, indigenous political leaders, activists and scholars refute “the dominant notion that indigenous people [are] merely one among many ‘minority groups’ under the administration of state social service and welfare programs.” Instead, “sovereignty defines indigenous people with concrete rights to self-government, territorial integrity, and cultural autonomy under international law” (18). The trouble is, of course, that indigenous claims to sovereignty are always made within the context of colonial nation-states, ones whose own legitimacy is put at considerably risk both by the prospect of self-determining indigenous Nations (re)-emerging within their boundaries and the troubling of their own historical narratives of sovereign rights (cf: Comaroff and Comaroff 2003b). (One of these narratives, which reinterpreted indigenous lands as *terra nullius* and thus open to occupation, we’ve encountered already in Chapter 3). Thus, while sovereignty might indeed “define” indigenous peoples with concrete rights to territorial Title and self-determination, in theory equal under international law to the states who also lay claim to their territories, that definition does not in and of itself make possible the *practice* of this sovereignty. In this regard settler states such as Canada have shifted in their response to First Peoples’ sovereignty claims from outright rejection to a set of policies of selective recognition,5 but even the latter still positions Native nations as being subject to the authority and oversight (if not the structural forms) of the state. This means, as we have seen in Chapter 5, that indigenous governments such as the Council of the Haida Nation are in a precarious position, attempting to constitute their own sovereign authority without access to many of the conventional means of sovereignty in Western political thought – e.g., the monopoly on legitimate violence (Weber 1946), decisive authority to make and enact law (Schmitt 2005), or exclusive territorial control (Brown 2010; cf: Hobbes 1994). Alongside this precarity is the equally anxious question of whether or not sovereignty is even an appropriate analytical to center indigenous rights around precisely because it is historically a Western concept, one that had been drawn on to dispossess indigenous peoples over the course of settler colonial history (Barker 2005:18–19). (Indeed, the very next essay in Barker’s edited volume, by Mohawk scholar Taiake Alfred, categorically rejects sovereignty as an inappropriate tool for indigenous political assertions for these reasons and, also, because it draws attention away from developing and furthering “genuinely” Aboriginal political modes of thought (Alfred 2005; cf: Alfred 2009). The fact that sovereignty remains such a preeminent concept in the struggle for indigenous rights even though it is both epistemologically problematic and politically constrained has meant that there has been a recent push in both anthropology and indigenous studies to “widen” the definition of sovereignty, so that it might encompass multiple forms of indigenous social, political and legal practice outside of the conventional purview of “sovereign power” (e.g. Cattelino 2008; Richland 2011; Simpson 2000; Simpson 2014). Or, as Joanne Barker puts it: There is no fixed meaning for what *sovereignty* is – what it means by definition, what it implies in public debate, or how it has been conceptualized in international, nation, or indigenous law. Sovereignty – and its related histories, perspectives, and identities – is embedded within the specific social relations in which it is invoked and given meaning. How and when it emerges and functions are determined by the “located” political agendas and cultural perspectives of those who rearticulate it into public debate or political document to do a specific work of opposition, invitation, or accommodation. It is no more possible to stabilize what *sovereignty* means and how it matters to those who invoke it than it is to forget the historical and cultural embeddedness of indigenous peoples’ multiple and contradictory political perspectives and agendas for empowerment, decolonization, and social justice (Barker 2005:21, emphasis original). The opening up of sovereignty as flexible, multiple, and subject to all manner of diverse rearticulations carries particular weight (and, perhaps, ambiguity) since, as a historical concept in Western political theory, sovereignty was overwhelmingly concerned with closure. As Wendy Brown argues in her Walled States, Waning Sovereignty, the classic vision of sovereign power rests in the capacity to divide the inside from the outside, to make borders around a people – a “nation” – and separate that people from those outside it. Thus Schmitt’s “friend-enemy” distinction, for instance, or even John Locke’s consistent preoccupation with fences as a way of marking the existence of territory (Brown 2010; cf: Schmitt 1996; Locke 1988). The historical conditions of indigenous sovereignty claims in the context of settler colonialism make such absolute closures impossible for indigenous peoples. We might add, though, that their persistent presence also challenges the closure of the settler nation-state. Indeed, this is part of Brown’s point. The very fact that we see ever more spectacular performances of sovereign power on the part of contemporary nation-states – e.g., the titular “walls” that are being constructed along the borders of an increasing number of states - is a sign of the very insecurity of their political authority (Brown 2010).6 The conditions of settler colonial sovereignty, in other words, may be rather more “open,” and thus closer to those of indigenous “nation-within-nations,” then they may at first appear. If this means, in turn, that the future of settler political life is becoming as uncertain as the future for indigenous life has always been since the advent of settlement, then this means only what we have already begun to see: the dilemmas that Haida people confront in their future-making practices are also the dilemmas facing settler society. Take Chapter 4, in which the absence of any “one” definitive governing entity compels the constitution of an aspirational framework of accountability which could, were it realized, render navigable Haida relations to the many governments that claim their loyalties. As I hinted at there, such dilemmas are not restricted to the Haida sociopolitical world; rather, they may in fact be endemic to contemporary democratic societies and the multiple forms of governance (licit and otherwise) that emerge therein. In suggesting that there are Haida ways of refiguring a shared Haida-settler set of contemporary problematics, we might think of Haida future-making as simultaneously an instantiation of the multiple, flexible and always contingently located practices of sovereignty to which Barker points and a different way of thinking about indigenous political potentiality. In the former sense, Haida future-making is without doubt concerned with carving out spaces in which Haida existence can continue, expand, and change without losing the capacity to reproduce itself as, precisely, Haida existence. Thus the processes of homecoming we explored in Chapter 2, or Chapter 5’s explicitly political attempts to establish control over the islands for future generations. If the absence of indigenous sovereignty is the absence of the capacity of an indigenous people to (self)-determine their own futures, then the constitution of Haida futures can be seen exactly as sovereign work, whether in the overt sense of the Council of the Haida Nation’s assertions or the somewhat more implicit mode of Alice Stevens’ proposed mass adoptions. Significant here, though, is the fact that these acts of future-making carry meanings beyond their status as “responses” to the social and political dilemmas of contemporary Haida life. Thus Alice Stevens’ adoptions bring “hippie” children into the framework of Haida kinship relations, in one sense neutralizing their potential threat, but also constituting a complex new network of social relations between Haida and non-Haida whose potential significances go well beyond the protection of Haida territory and resources; thus the Council of the Haida Nation emerges as a “state-like” governing entity through its authorizing promise to “take care” of the islands, but in so doing takes on a series of new roles in Haida political life whose full consequences remain to be seen. If it is a sovereign action to envision an opening of possible futures for Haida people, then this very openness might also exceed the boundaries of sovereignty as a problematic for indigenous people even as it responds to them. Which is also, perhaps, why Haida futures seem so consistently to sketch out social, ecological, and political fields that encompass non-Haida; more, that are futures for Canada as well as for the Haida people living within the nation-state’s borders. Or, at least, futures that have the capacity to be so. What would it mean to figure an indigenous sovereignty that speaks beyond itself, one that promises to invert the order of settler domination through reconfiguring the shared futures of indigenous and settler peoples? This would not be a sovereignty premised on territorial closure, or even absolute political autonomy. It would, however, decisively overturn any settler colonial anticipations of the inevitable erasure of Native peoples. Quite the opposite, it would position indigenous practices of anticipation, aspiration, certainty, and anxiety at the forefront of contemporary modes of political imagination. Unsettling Futures A question remains, however. Could such a refiguring of the temporal and political horizon of settler and indigenous relationships remain possible even if the futures that indigenous people work to constitute remain unrealized in the settler colonial present? Or, put another way, we must always be careful not to conflate a capacity *to* form new futures for settler nation-states with the actual materializations of these futures. The Haida futures that I have discussed, even as they promise possible ways of navigating – of restructuring, even – the settler-Haida present, remain firmly bound by the colonial constraints of this present. But perhaps the stakes here have never been about overthrowing the Canadian colonial order outright. Rather, what I hope this dissertation has shown is that Haida future-making has the capacity to *unsettle* the settler colonial present, to challenge its received categories and demonstrate how, slowly, gradually, Haida people are reconfiguring its terms through the work of producing the future. Certainly, the sheer fact of Haida futurity should put to the lie any further notion that Haida people exist only to replicate their past or live only in the deferral of their eventual disappearance. The future is alive and well in Old Massett, although this does not meant that it is not also a site of profound anxieties. In working to ward off those anxieties through the juxtaposition of nightmare futures against their more desirable alternatives, then, Haida people unsettle the epistemological foundations of the forms of settler colonialism and liberalism against which Byrd and Povinelli write. At the same time (if you’ll pardon the pun), I think we can see the social work that futuremaking does iteratively, as a gradual reshaping of the actual conditions of Canadian society. Here I borrow Judith Butler’s suggestion, following Foucault, that the regulatory norms of society function only through their consistent and unstable reiteration (and materialization) in everyday social life.7 From this perspective, the ways in which Haida people work within and even reiterate the constraints and demands of Canadian settler mainstream society can also slowly and strategically *shift* those very constraints and demands, materializing a HaidaCanadian future that might in fact be quite different from the present even as it does not ever fully “escape” from its dilemmas. Perhaps the most unsettling potential of all here lies simply in the ways in which Haida people incorporate the conditions of the settler colonial present as being paths towards Haida futures. Not vanished, or vanquished. Ongoing.

#### Framing settler colonialism through a totalizing lens makes indigenous liberation impossible by setting the terms of victory as all-or-nothing—pessimism actively reifies settler dominance – this is a straight turn to fatalism.

Busbridge 18 [Research Fellow at the Centre for Dialogue, La Trobe University (Rachel, “Israel-Palestine and the Settler Colonial ‘Turn’: From Interpretation to Decolonization,” Theory, Culture & Society Vol 35, Issue 1, 2018.]

**The prescription for decolonisation**—that is, **a normative project committed to the** liberation of the colonised and the overturning of colonial relationships of power (Kohn & McBride, 2011: 3)—is indeed **one of the** most counterhegemonic implications **of the settler colonial paradigm** as applied to IsraelPalestine, **potentially shifting it from a diagnostic frame to a prognostic one which offers a ‘proposed solution to the problem, or at least a plan of attack’** (Benford & Snow, 2000: 616). **What**, however, **does the settler colonial paradigm offer by way of** envisioning decolonisation? As Veracini (2007) notes, while settler colonial studies scholars have sought to address the lack of attention paid to the experiences of Indigenous peoples in conventional historiographical accounts of decolonisation (which have mostly focused on settler independence and the loosening of ties to the ‘motherland’), **there is** nevertheless **a ‘**narrative deficit’ when it comes to imagining settler decolonisation. While Veracini (2007) relates this deficit to a matter of conceptualisation, it is apparent that the structural perspective **of the paradigm** in many ways closes down possibilitiesof imagining the type of social **and** political transformation **to which the** notion of decolonisation aspires. In this regard, there is a worrying tendency (**if not** tautological discrepancy) **in settler colonial studies, where the** only solution to settler colonialism is decolonisation**—which a faithful adherence to the paradigm** renders largely unachievable**, if not** impossible**.**

To understand why this is the case, it is necessary to return to Wolfe’s (2013a: 257) account of settler colonialism as guided by a ‘zero-sum logic whereby settler societies, for all their internal complexities, uniformly require the elimination of Native alternatives’. The **structuralism** of this account has immense power as a means of mapping forms of injustice and indignity as well as strategies of resistance and **refusal**, and Wolfe is careful to show how transmutations of the logic of elimination are complex, variable, discontinuous and uneven. **Yet, in** seeking to elucidate the logic of elimination as the overarching historical force guiding settler-native relations there is an operational weakness in the theory, whereby such a logic is simply there, omnipresent and manifest even when (and perhaps especially when) it appears not to be; the settler colonial studies scholar need only read it into a situation or context**. It** thushurtles from the past to the present into the future, never to be fully extinguished until the native is, or until history itself ends**. There is thus a** powerful ontological (if not metaphysical) dimension to Wolfe’s account, **where there is such thing as a ‘**settler will’ thatinherently desires the elimination of the native **and the distinction between the settler and native** can only ever be categorical**, founded as it is on the ‘primal binarism of the frontier’** (2013a: 258). It is here that the differences between earlier settler colonial scholarship on Israel-Palestine and the recent settler colonial turn come into clearest view. While Jamal Hilal’s (1976) Marxist account of the conflict, for instance, engaged Palestinians and Jewish Israelis in terms of their relations to the means of production, Wolfe’s account brings its own ontology: the bourgeoisie/proletariat distinction becomes that of settler/native, and the class struggle the struggle between **settler**, who **seeks to** destroy and replace the native**, and native**, who can only ever push back. Indeed, **if the settler colonial paradigm views history in** similar **teleological terms** to the Marxist framework, **it** does not offer **the same hopeful vision of** a liberated future. After all, **settler colonialism has** only one story to tell—‘either total victory or total failure’ (Veracini, 2007).

Veracini’s attempt to disaggregate different forms of settler decolonisation is revealing of the difficulties that come along with this zero-sum perspective. It is significant to note that beyond settler evacuation (which may decolonise territory, he cautions, but not necessarily relationships) the picture he paints is a relatively bleak one. For Veracini (2011: 5), claims for decolonisation from Indigenous peoples in settler societies can take two broad forms: an ‘anticolonial rhetoric expressing a demand for indigenous sovereign independence and self-determination… and an “ultra”-colonial one that seeks a reconstituted partnership with the [settler state] and advocates a return to a relatively more respectful middle ground and “treaty” conditions’. While both, he suggests, are tempting strategies in the struggle for change, though ‘ultimately ineffective against settler colonial structures of domination’ (2011: 5), it is the latter strategy that invites Veracini’s most scathing assessment. As he writes,

under settler colonial conditions the independent polity is the settler polity and sanctioning the equal rights of indigenous peoples has historically been used as a powerful weapon in the denial of indigenous entitlement and in the enactment of various forms of coercive assimilation. This decolonisation actually enhances the subjection of indigenous peoples… it is at best irrelevant and at worst detrimental to indigenous peoples in settler societies (2011: 6-7).

The ‘primal binarism of the frontier’ plays a particularly ambivalent role in Veracini’s (2011: 6) formulation, where the categorical distinction between settler and native obstructs the ‘possibility o**f a genuinely decolonised relationship’** (by virtue of its lopsidedness) **yet is** a necessary political strategy to guard against the absorption of Indigenous people into the settler fold, which would represent settler colonialism’s final victory. **The battle here is between a ‘settler colonialism [that] is designed to produce a fundamental discontinuity as its “logic of elimination” runs its course until it actually extinguishes the settler colonial relation’ and an anti-colonial struggle that ‘**must aim to keep the settler-indigenous relationship going’ (2011: 7). In other words, **the categorical distinction produced by the frontier** must be maintained in order to struggle against its effects. Given the lack of options presented to Indigenous peoples by Veracini (2014: 315), his conclusion that settler decolonisation demands a ‘radical, post-settler colonial passage’ is perhaps not surprising – although he has ‘no suggestion as to how this may be achieved and [is] pessimistic about its feasibility’.

Scholars have long reckoned with the ambivalence of the settler colonial situation, which is simultaneously colonial and postcolonial, colonising and decolonising (Curthoys, 1999: 288). **Given the generally dreadful** Fourth World **circumstances facing many Indigenous peoples** in settler societies, **it** could be argued that **there is good reason for** such pessimism. The settler colonial paradigm, in this sense, offers an important caution against celebratory narratives of progress. Wolfe (1994), it must be recalled, wrote the original articulation of his thesis precisely against the idea of ‘historical rupture’ that dominated in Australia post-Mabo, and was thus as much a scholarly intervention as it was a political challenge to the idea of Australia having broken with its colonial past. Nonetheless**, the** fatalism **of the settler colonial paradigm**—whereby decolonisation is by and large put beyond the realms of possibility—**has** seen it **come** under considerable critique for reifying settler colonialism as a **transhistorical meta-structure where colonial relations of domination are** inevitable (Macoun & Strakosch, 2013: 435; Snelgrove et al., 2014: 9). Not only does Wolfe’s **ontology** erase contingency**,** heterogeneity **and (crucially) agency** (Merlan, 1997; Rowse, 2014), **but its polarised framework** effectively ‘puts politics to death’ (Svirsky, 2014: 327). In response to such critiques, Wolfe (2013a: 213) suggests that ‘the repudiation of binarism’ may just represent a ‘settler perspective’. However, as Elizabeth Povinelli (1997: 22) has astutely shown, it is in this regard that **the** totalising logic **of** Wolfe’s **structure of invasion** rests on a disciplinary gesture where ‘any discussion which does not insist on the polarity of the [settler] colonial project’ is assimilationist, worse still, genocidal in effect if not intent. Any attempt to ‘explore the dialogical or hybrid nature of colonial subjectivity’—which would entail working beyond the bounds of absolute polarity—is disciplined as complicit in the settler colonial project itself, leaving ‘the only nonassimilationist position one that adheres strictly and solely to a critique of [settler] state discourse’. This gesture not only disallows the possibility of counter-publics and strategic alliances (even limited ones), but also comes dangerously close to ‘resistance as acquiescence’ insofar as the settler colonial studies scholar may malign the structures set in play by settler colonialism, but only from a safe distance unsullied by the messiness of ambivalences and contradictions of settler and Native subjectivities and relations. Opposition is thus left as our only option**, but**, as we know from critical anti-colonial and postcolonial scholarship, **opposition** in itself **is** not decolonisation.