# 1NC

## Off

### 1

#### Interpretation: Debaters must disclose affirmative frameworks, advocacy text and advantage areas thirty minutes before round

#### Violation: They didn’t – check the screenshot – they explicitly said not disclosing any part which means no i-meets

Graphical user interface, application

Description automatically generated

#### Standards:

#### 1] Clash – not disclosing incentivizes bad affirmatives that rely on surprise tactics to win the round – our interp forces contextual debates instead of generics that barely link if at all.

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#### 2] Reciprocity – They get an infinite amount of time to frontline their aff while we get only four minutes in round – means they’ll be ahead on any debate

#### 3] Shiftiness- Not knowing enough about the affirmative coming into round incentivizes 1ar shiftiness about what the aff is and what their framework/advocacy entails. That means even if we could read generics or find prep, they’d just find ways to recontextualize their obscure advocacy in the 1ar. Shiftiness outweighs on reversibility since the 2N can’t come back from a shift 1ar and read new offs.

#### 4] Academic Integrity – Breaking a new aff means we don’t have enough time to check the citations of your cards nor do we have enough time to go through all of the brackets and modifications to your evidence. 4 minutes is obviously not enough to make a strategy, compile a doc, and go through an entire AC of evidence. Academic Integrity outweighs on Longevity since High School prepares you for college and colleges will expel you for academic dishonesty.

#### 5] Resource Disparities – Their interpretation means only giant prep squads or schools with generations of prep could engage effectively since small school debaters don’t have prep that links to every possible aff from Rawls to Non-T to Wynter to a hyper specific policy aff.

#### Paradigm Issues:

#### 1. Use Competing Interps on New Affs Bad –

#### A. It’s a yes/no question on disclosing a new aff since you can’t disclose half a plantext “States ought to eliminate” means nothing.

#### B. Reasonability changes every round and forces the judge to intervene to determine what is reasonable.

#### 2. No RVIs

#### A. Encourages debaters to read New Affs just to bait the shell and win on the RVI – kills substance

#### B. Discourages checking real abuse since debaters will think they will lose to the RVI

#### 3. Drop the Debater

#### A. Our interp affects their entire 1AC since we couldn’t prepare for any argument – so drop the argument doesn’t make sense.

#### 4. Comes over 1AR Theory

#### A. Their abuse outweighs on Scope since it affected every speech that came after the 1AC while ours only affects the debate after the 1N.

#### B. If we had to be abusive it was because we had no other choice because their abuse was that bad

### 2

#### Settler colonialism is a permeating structure that operates via the promotion of the nation-state – it thrives off of the elimination of indigenous people and their relationship to land – that appropriation turns them into ghosts

Tuck and Yang 12 (Eve Tuck and Wayne Yang; 2012; Decolonization: Indigeneity, Education & Society Vol. 1, No. 1, 2012, pp. 1-40; *“Decolonization is not a metaphor”*; accessed 12/7/21; <https://clas.osu.edu/sites/clas.osu.edu/files/Tuck%20and%20Yang%202012%20Decolonization%20is%20not%20a%20metaphor.pdf>; Eve Tuck is a Unangax̂ scholar in the field of Indigenous studies and educational research. Tuck is the associate professor of critical race and indigenous studies at the Ontario Institute for Studies in Education at the University of Toronto; K. Wayne Yang is Provost of John Muir College and Professor of Ethnic Studies at the University of California, San Diego; pages 5-7) HB \*brackets in original\* \*They use masculine pronouns to describe the settler not through direct association of the settler as a man but rather a dominating subject characterized as hypermasculine\*

Our intention in this descriptive exercise is not be exhaustive, or even inarguable; instead, we wish to emphasize that (a) decolonization will take a different shape in each of these contexts - though they can overlap4 - and that (b) neither external nor internal colonialism adequately describe the form of colonialism which operates in the United States or other nation-states in which the colonizer comes to stay. Settler colonialism operates through internal/external colonial modes simultaneously because there is no spatial separation between metropole and colony. For example, in the United States, many Indigenous peoples have been forcibly removed from their homelands onto reservations, indentured, and abducted into state custody, signaling the form of colonization as simultaneously internal (via boarding schools and other biopolitical modes of control) and external (via uranium mining on Indigenous land in the US Southwest and oil extraction on Indigenous land in Alaska) with a frontier (the US military still nicknames all enemy territory “Indian Country”). The horizons of the settler colonial nation-state are total and require a mode of total appropriation of Indigenous life and land, rather than the selective expropriation of profit-producing fragments. Settler colonialism is different from other forms of colonialism in that settlers come with the intention of making a new home on the land, a homemaking that insists on settler sovereignty over all things in their new domain. Thus, relying solely on postcolonial literatures or theories of coloniality that ignore settler colonialism will not help to envision the shape that decolonization must take in settler colonial contexts. Within settler colonialism, the most important concern is land/water/air/subterranean earth (land, for shorthand, in this article.) Land is what is most valuable, contested, required. This is both because the settlers make Indigenous land their new home and source of capital, and also because the disruption of Indigenous relationships to land represents a profound epistemic, ontological, cosmological violence. This violence is not temporally contained in the arrival of the settler but is reasserted each day of occupation. This is why Patrick Wolfe (1999) emphasizes that settler colonialism is a structure and not an event. In the process of settler colonialism, land is remade into property and human relationships to land are restricted to the relationship of the owner to his property. Epistemological, ontological, and cosmological relationships to land are interred, indeed made pre-modern and backward. Made savage. In order for the settlers to make a place their home, they must destroy and disappear the Indigenous peoples that live there. Indigenous peoples are those who have creation stories, not colonization stories, about how we/they came to be in a particular place - indeed how we/they came to be a place. Our/their relationships to land comprise our/their epistemologies, ontologies, and cosmologies. For the settlers, Indigenous peoples are in the way and, in the destruction of Indigenous peoples, Indigenous communities, and over time and through law and policy, Indigenous peoples’ claims to land under settler regimes, land is recast as property and as a resource. Indigenous peoples must be erased, must be made into ghosts (Tuck and Ree, forthcoming). At the same time, settler colonialism involves the subjugation and forced labor of chattel slaves5 , whose bodies and lives become the property, and who are kept landless. Slavery in settler colonial contexts is distinct from other forms of indenture whereby excess labor is extracted from persons. First, chattels are commodities of labor and therefore it is the slave’s person that is the excess. Second, unlike workers who may aspire to own land, the slave’s very presence on the land is already an excess that must be dis-located. Thus, the slave is a desirable commodity but the person underneath is imprisonable, punishable, and murderable. The violence of keeping/killing the chattel slave makes them deathlike monsters in the settler imagination; they are reconfigured/disfigured as the threat, the razor’s edge of safety and terror. The settler, if known by his actions and how he justifies them, sees himself as holding dominion over the earth and its flora and fauna, as the anthropocentric normal, and as more developed, more human, more deserving than other groups or species. The settler is making a new "home" and that home is rooted in a homesteading worldview where the wild land and wild people were made for his benefit. He can only make his identity as a settler by making the land produce, and produce excessively, because "civilization" is defined as production in excess of the "natural" world (i.e. in excess of the sustainable production already present in the Indigenous world). In order for excess production, he needs excess labor, which he cannot provide himself. The chattel slave serves as that excess labor, labor that can never be paid because payment would have to be in the form of property (land). The settler's wealth is land, or a fungible version of it, and so payment for labor is impossible.6 The settler positions himself as both superior and normal; the settler is natural, whereas the Indigenous inhabitant and the chattel slave are unnatural, even supernatural. Settlers are not immigrants. Immigrants are beholden to the Indigenous laws and epistemologies of the lands they migrate to. Settlers become the law, supplanting Indigenous laws and epistemologies. Therefore, settler nations are not immigrant nations (See also A.J. Barker, 2009). Not unique, the United States, as a settler colonial nation-state, also operates as an empire - utilizing external forms and internal forms of colonization simultaneous to the settler colonial project. This means, and this is perplexing to some, that dispossessed people are brought onto seized Indigenous land through other colonial projects. Other colonial projects include enslavement, as discussed, but also military recruitment, low-wage and high-wage labor recruitment (such as agricultural workers and overseas-trained engineers), and displacement/migration (such as the coerced immigration from nations torn by U.S. wars or devastated by U.S. economic policy). In this set of settler colonial relations, colonial subjects who are displaced by external colonialism, as well as racialized and minoritized by internal colonialism, still occupy and settle stolen Indigenous land. Settlers are diverse, not just of white European descent, and include people of color, even from other colonial contexts. This tightly wound set of conditions and racialized, globalized relations exponentially complicates what is meant by decolonization, and by solidarity, against settler colonial forces. Decolonization in exploitative colonial situations could involve the seizing of imperial wealth by the postcolonial subject. In settler colonial situations, seizing imperial wealth is inextricably tied to settlement and re-invasion. Likewise, the promise of integration and civil rights is predicated on securing a share of a settler-appropriated wealth (as well as expropriated ‘third-world’ wealth). Decolonization in a settler context is fraught because empire, settlement, and internal colony have no spatial separation. Each of these features of settler colonialism in the US context - empire, settlement, and internal colony - make it a site of contradictory decolonial desires7 . Decolonization as metaphor allows people to equivocate these contradictory decolonial desires because it turns decolonization into an empty signifier to be filled by any track towards liberation. In reality, the tracks walk all over land/people in settler contexts. Though the details are not fixed or agreed upon, in our view, decolonization in the settler colonial context must involve the repatriation of land simultaneous to the recognition of how land and relations to land have always already been differently understood and enacted; that is, all of the land, and not just symbolically. This is precisely why decolonization is necessarily unsettling, especially across lines of solidarity. “Decolonization never takes place unnoticed” (Fanon, 1963, p. 36). Settler colonialism and its decolonization implicates and unsettles everyone

#### The aff’s concerns over space debris are a system of environmental stewardship which is entrenched in an ideology of techno-nationalism which seeks to create an exclusive domain for space-faring nations

Stroikos 16 (Dimitrios Stroikos; 2016; The London School of Economics; *“China, India in Space and the Orbit of International Society: Power, Status, and Order on the High Frontier”*; accessed 1/13/21; ask me for the pdf; Dimitrios Stroikos received his PhD in International Relations from the London School of Economics and Political Science and is an Associate Lecturer at the University of York; pages 81-86) pat RC/HB

Moreover, it is necessary to briefly say something about how techno-nationalism as a primary institution interacts with some of the other institutions of international space society. First, in many ways, techno-nationalism is complimentary to sovereign statehood because sovereignty in space is largely embedded in cosmopolitan and solidarist conceptions. This is partly why highly visible space projects define spacefaring hierarchies. Second, and consequently, techno-nationalism is also closely linked to great power status and great power management in the sense that different space capabilities also confer different levels of status and responsibilities in the management of international order in space. Likewise, in relation to diplomacy, highly visible techno-nationalist space feats can also offer a seat at the table of diplomatic initiatives and negotiations. Seen in this light, ‘high-visibility’ projects, such as space programmes are part of ‘recognition games’, which states play in order to acquire the status of a great power (Suzuki, 2008). As Cunningham (2009: 74) notes, ‘to be a superpower, one must be a “spacefaring” nation’. The Space Market Arguably, the economic factor has been one of the most neglected issues in the English School literature. Discussing some of the shortcomings of Bull’s work, Miller (1990: 74) pointed out in 1990, ‘a basic criticism of Bull’s account of international society’ is ‘that it does not include a strong economic component’ dealing with rules regarding trade, navigation, and investment and the common interests that permeate the sphere of economic activities. Since then, some important work has been done to bring together the economic sector and the English School, especially in the context of globalisation (Buzan, 2004; Buzan, 2005; Hurrell, 2007: 194-215). However, the question of how to consider the economic sector within the English School remains rather underdeveloped. According to Buzan, one response is to treat capitalism as a master institution, but he prefers the use of the market as a more neutral term, which has the additional merit of encompassing other practices, such as trade (Buzan, 2004: 193-4, Buzan, 2014a: 136). Consequently, given the growing globalisation and commercialisation of space activities (OECD, 2014: 9-10), there are good reasons for considering the space market as an emerging primary institution of international space society. Significantly, in some ways, since the advent of the Space Age, the space market has followed a parallel trajectory to the market as a distinctive institution at the global level. In particular, although the market was a key primary institution of the Western global international society during much of the Cold War, it has emerged as a sort of a global institution in the post-Cold War era (Buzan, 2014a: 138). Likewise, the space market was initially confined to American-led space activities, beginning as a US government initiative with the Communications Satellite Act in 1962, which led to the creation of the International Telecommunications Satellite Consortium (Intelsat) in 1964 (Moltz, 2014: 94). However, during the early Cold War, commercial activities were largely limited to the field of satellite communications and even commercial transatlantic cooperation in space was determined to a large extent by political and strategic factors and technology transfer considerations (Krige, 2013b). Equally, the idea of the commercialisation of space remained contested not the least because of the opposition of the Soviet Union and communist China to the market in general. This began to change only in the 1980s, when a number of space players emerged, including Europe and Japan, that challenged the US leadership in the fields of satellite manufacturing, launching capability, and other commercial space services. It was also during this period that the Soviet Union and China became less reluctant to get involved with commercial space activities (Krige, 2013a: 16-7). But it was after the end of the Cold War that the globalisation and commercialisation of space activities gradually led to the emergence of a global space market, which points to its inclusion as a primary institution of the international space society. According to a recent report by the Space Foundation (2015: 2), the global space economy grew up by 9 percent in 2014, totalling $330 billion, with commercial space activities accounting for the 76 percent of the global space economy and direct-to-home television services accounting for more than three-quarters of the commercial space sector. Even in the launch field, which has been traditionally reserved to the state largely due to national security and cost considerations, US small private companies have emerged like Space Exploration Technologies Corporation, known as SpaceX, and XCOR Aerospace. As Newlove-Eriksson and Eriksson (2013) argue, the globalisation of space activities has been underpinned by the growing importance of private authority and transnational Public-Private Partnerships (PPPs) and the blurred distinction between the military and civilian uses of space. Therefore, it makes sense to think of the space market as an institution of international space society. Yet, a number of points are worth noting here as they help to highlight the possibilities and limits of this move. First, despite all the attention paid to the privatisation of space travel promoted by space entrepreneurs of the likes of Elon Musk (SpaceX), Jeff Bezos (Blue Origin), and Richard Branson (Virgin Galactic), the privatisation of space should not be overstated. Not only does the degree of privatisation vary across space services and products (Moltz, 2014: 102-12), but governments also remain central actors in the space industry as key sources of initial investment and as customers for several space products and services (Brennan and Vecchi, 2011: 18, OECD, 2014: 17). Second, while it is clear that the argument over whether to have the market or not ended with the collapse of the Soviet Union, the tension between economic nationalism and economic liberalism is far from over, as there are not many states fully open to the forces of the global economy and many states support a form of capitalism that is embedded in economic nationalism. This points to the contested nature of the market as a primary institution in the sense that for many states the challenge of how to relate to the global market and make it more effective remains (Buzan, 2014a: 138). As far as international space society is concerned, it is necessary to note that the contested nature of the space market as an institution is reflected in the continuing dialectics between techno-nationalism and techno-globalism. It is commonplace among scholars to argue that Japan and China are two key examples of states that privilege a techno-nationalist approach to technology and innovation, including space technology. But even the United States has not been immune to techno-nationalist impulses. As Weiss (2014) shows, the enduring lead in high technology that the United States still enjoys is largely explained by the creation of not a liberal, but a hybrid political economy, whereby the national security state is interwoven with the commercial sector. NASA, of course, has been a key institution of the national security state since the beginning of the Space Age. But this has also been manifested in its recent efforts to catalyse the development of a commercial space industry through inviting competitive innovation (Weiss, 2014: 119-20, 27-8). This leads to the third point to make about how to understand the relationship between techno-nationalism and the space market. Because of the enduring influence of the former, it is tempting to see techno-nationalism as containing the space market (at least for the time being). Clearly, at one level, the space market can be understood as complementary to techno-nationalism in the ever-globalising international space society. Yet, at another level, the space market as a solidarist institution is staged as opposed to techno-nationalism. This tension is compounded by the fact that, in many ways, techno-nationalism occupies the crucial place of national sovereignty and territoriality in the sector of space considering that sovereignty in international space society is largely understood in cosmopolitan terms. Fourth, in discussing the market as a primary institution, Beeson and Breslin (2014) suggest that it makes more sense to treat the ‘developmental state’ and ‘regional production structures’ as primary institutions in East Asia rather than focusing on the market. This is an important consideration that serves to highlight how the global political economy is underpinned by significant regional derivations. Following from this, although it is apparent that the space market is a key feature of the social structure of international space society, it is possible to say that there are significant regional derivations. Perhaps the best expression of this is the Chinese and Indian variants of postcolonial techno-nationalism that still shape how the two rising Asian space powers relate to the space market. In light of the above, for now, it seems that there is some sort of hierarchy between techno-nationalism and the space market with the former subsuming the latter, especially with regards to space programmes in a postcolonial context. Certainly, the integration of China and India into the global space economy has accelerated over the last decades, but, as we shall see, techno-nationalism is still prominent in the ways in which the two Asian space powers approach space technology. Moreover, the space market remains contested as an emerging institution due to the ambiguity embedded in space law regarding space activities carried on by private actors. This process is further complicated by the inherent dual-use nature of space technology and the blurring of the distinction between the private and public realms (Newlove-Eriksson and Eriksson 2013). Environmental Stewardship There is now a burgeoning literature that deals with the relationship between international society and global environmentalism and assesses the extent to which environmental stewardship can be seen as a nascent institution of international society. Recent efforts to find ways to mitigate space debris as well as to create a normative framework for the sustainability of space are illustrative of how environmental stewardship is gradually becoming an institution in space. For example, in 2007, COPUOS adopted the ‘Space Debris Mitigation Guidelines’, which were wrought by the international Inter-Agency Debris Coordination Committee (IADC), consisting of experts from thirteen space agencies (United Nations Office for Outer Space Affairs, 2010). Moreover, as discussed earlier, in 2010, COPUOS formed the Working Group on the Long-term Sustainability of Outer Space Activities. Notably, the European Union proposal for a Code of Conduct for Outer Space also includes provisions on space debris control and mitigation (Council of the European Union, 2008: 9; Dickow, 2009: 159). Thus, there are grounds for considering environmental stewardship as an emerging institution of international space society. Indeed, the growing number of governments, private firms, and non-state actors that emphasise the importance of the sustainable utilisation of space suggests that space sustainability has emerged as a key norm. However, what should be noted is that these developments reflect a more pragmatic approach to maintain the space environment sustainable for the effective use of space rather than an expression of cosmopolitan values. Consequently, in the subsequent chapters, rather than examining in detail the engagement of China and India with environmental stewardship as a nascent institution in space, the focus will be on the emerging norm of space sustainability as a key great power responsibility in managing international space order and the implications of this development for China and India as aspiring great powers. Concluding Remarks Although it is clear that there are a number of ways of understanding the international politics of space, it may be worth going beyond standard theoretical approaches to understand how order is maintained in space. Drawing on key English School concepts, this chapter suggests that it is possible to conceptualise space not merely as a system, but also as an international society with a distinct social structure. This exercise of concept development is important both analytically and hermeneutically, given the notion of an exclusive club of space-faring countries. The chapter developed this argument further by highlighting how the nature of outer space as a distinctive sectoral interstate society is manifested in the ways in which its primary institutions are differentiated from such institutions at the global level (space war, space law, cosmopolitan sovereignty, space diplomacy, balance of power, great power management, techno-nationalism, space market, and environmental stewardship) in a historical and comparative context. In doing so, the chapter helps to highlight the constitutive impact of these institutions on the norms that shape the behaviour of the space-faring states.

#### The construction of the end of the world relies on an all lives matter discourse which distorts the perception of events – that ignores the material reality that the global south experiences extinction level events every day which injects the notion of white heroism

Mitchell and Chaudry 20 (Audra Mitchell and Aadita Chaudry; 2020; International Relations, Vol. 34, Issue 3; *“Worlding beyond ‘the’ ‘end’ of ‘the world’: white apocalyptic visions and BIPOC futurisms”*; accessed 1/27/22; <https://journals.sagepub.com/doi/pdf/10.1177/0047117820948936>; Audra Mitchell is a settler scholar living on Haudenosaunee, Anishinaabe, and Attawandaron lands in what is currently called Canada. She holds the Canada Research Chair in Global Political Ecology at the Balsillie School of International Affairs. Audra has published widely on the subjects of extinction, large-scale ecological harms, more-than-human ethics, ecological thought, and violence studies. Audra’s current work focuses on understanding the role of colonization, genocide, land-based gendered and sexual violence and extractivism in driving global patterns of extinction; Aadita Chaudhury is a settler PhD candidate in science and technology studies at York University, in Tkaronto (Toronto) in what is now Canada. She is currently completing her dissertation project on exploring global theory and praxis around managing ecosystem fires and narratives surrounding combustion through the lens of capitalism and colonialism.; pages 311-315) HB

White subjectivities Discourses that predict the imminent ‘end of the world’ are not as universal as they often claim to be. The futures they fear for, seek to protect and work to construct are rooted in a particular set of global social structures and subjectivities: whiteness. Whiteness is not reducible to skin pigmentation, genetics or genealogy. It is a set of cultural, political, economic, normative, and subjective structures derived from Eurocentric societies and propagated through global formations such as colonization and capitalism. These multi-scalar structures work by segregating bodies through the inscription of racial difference, privileging those they recognize or construct as ‘white’4 and unequally distributing harms to those that they do not.5 Whiteness is also a form of property6 that accrues benefits – including material, physical, and other forms of security – and pervasive forms of power, across space, time, and social structures. Due in part to its trans-formation through long-duration, global patterns of violence and conquest, whiteness takes unique forms wherever and whenever it coalesces, so it should not be treated as universal – despite its own internal claims to this status. Most of the leading contributors to mainstream ‘end of the world’ discourses discussed in this article are rooted in Euro-American cultural contexts, and in particular in settler colonial and/or imperial states such as the United States, Canada, Australia, and the United Kingdom. As such, the forms of whiteness they embody are linked to particular histories of settlement, frontier cultures, resource-based imperialisms, genocides of Indigenous communities, histories of slavery, and modes of anti-Blackness. Whiteness is remarkable in its ability to render itself invisible to those who possess and benefit from it. Many, if not most, of the (often liberal humanitarian) authors of ‘end of the world’ discourses seem unaware of its integral influence on their thinking, and would almost certainly be horrified at the thought of their work entrenching racialized injustices. We are not suggesting that these authors espouse explicit, intentional and/or extreme racist ideals, on which much public discussion by white people of racism tends to focus.7 Nor do we wish to homogenize or present as equivalent all of the viewpoints discussed in this paper, which display a range of expressions of whiteness and levels of awareness thereof.8 On the contrary, we work to center broad, everyday, structural ways in which underlying logics of whiteness and white supremacy frame and permeate mainstream paradigms and discourses, including those identified as liberal, humanitarian, or progressive. Even amongst white people who consciously and explicitly disavow racism, unconscious, habitual, normalized, structurally-embedded assumptions circulate, and are reproduced in ways that perpetuate race9 as a global power structure. This includes one of the authors of this paper (Mitchell), who, as a white settler,10 continues to benefit from and participate – and thus ‘invest’11 – in structures of whiteness, and therefore has a continual responsibility to confront them (although total divestment is not possible).12 The ‘habits’ of racism13 are reflected strongly in the way that contemporary ‘end of the world’ narratives frame their protagonists: those attributed with meaningful agency and ethical status in the face of global threats; those whose survival or flourishing is prioritized or treated as a bottom line when tradeoffs are imagined and planned; and, crucially, those deemed capable of and entitled to ‘save the world’ and determine its future. This is expressed in several key features of the genre, including its domination by white thinkers; the forms of subjectivity and agency it embraces; and the ways it contrasts its subjects against BIPOC communities. First, contributors to fast-growing fields like the study of ‘existential risk’ or ‘global catastrophic risk’ are overwhelmingly white. As we will see, almost all of the authors identified by the literature review on which this paper is based, and certainly the most influential thinkers in the field, are white. For example, the seminal collection Global Existential Risk, 14 which claims to offer a comprehensive snapshot of this field, is edited by two white male Europeans (Nick Bostrom and Milan Circovic) and authored by an almost entirely white (and all-male) group of scholars. Likewise, the most senior positions within influential think tanks promoting the study of ‘existential risk’, such as the Future of Humanity Institute, the Cambridge Center for the Study of Existential Risk and Humanprogress.org, are dominated by white men, with few exceptions.15 Another expression of this tendency toward epistemic whiteness is found in the habit, prominent amongst white academics, of citing all or mostly-white scholars, which entrenches a politics of citation16 that privileges whiteness and acknowledges only some intersectionalities as relevant.17 As mentioned above, Mitchell’s (2017)18 work offers an example of this tendency: while it engages critical, feminist, and queer postapocalyptic visions written by white authors, it does not center BIPOC perspectives or knowledge systems. These examples do not simply raise issues of numerical representation, nor can whiteness necessarily be dismantled simply by altering these ratios. More importantly, all-white or majority white spaces create epistemes in which most contributors share cultural backgrounds, assumptions, and biases that are rarely challenged by alternative worldviews, knowledge systems or registers of experience. In such epistemes the perceived boundaries of ‘human thought’ are often elided with those of Euro-centric knowledge. For example, influential American settler journalist David Wallace-Wells19 contends that there exists no framework for grasping climate change besides ‘mythology and theology’. In so doing, he ignores centuries of ongoing, systematic observation and explicit articulations of concern by BIPOC knowledge keepers about climactic change. The bracketing of BIPOC knowledges not only severely limits the rigor of discourses on global crises, but also, as bi-racial organizer and thinker adrienne maree brown20 argues, it produces distorted outcomes. For instance, it smuggles normative judgments that ‘turn Brown bombers into terrorists and white bombers into mentally ill victims’ into apparently ‘objective’ claims. Similarly, the influential work of Black American criminologist Ruth Wilson Gilmore21 demonstrates how white imaginaries of the threat posed by BIPOC bodies has produced the massive global penal complex and the radically unequal distribution of life chances. In short, imaginaries create worlds, so it matters greatly whose are privileged, and whose are excluded. Further, emerging narratives of the ‘end of the world’ explicitly center figures of whiteness as their protagonists – as the survivors of apocalypse, the subjects capable of saving the world from it, and as those most threatened. In these discourses, ‘survivors’ are framed as saviors able to protect and/or regenerate and even improve Western forms of governance and social order by leveraging resilience, scientific prowess, and technological genius. For example, the cover of American settler scientists Tony Barnosky and Elizabeth Hadley’s book Tipping Points for Planet Earth features a stylized male ‘human’ whom they identify as former California governor Jerry Brown (a powerful white settler politician) holding the earth back from rolling over a cliff.22 Similarly, presenting a thought experiment about the planet’s future, Homer-Dixon23 asks his readers to imagine ‘an average male – call him John’ (in fact, the most popular male name globally at the time of writing was Mohammed). This is followed by images of a Caucasian male dressed in safari or hiking gear – both emblematic of symbols colonial conquest24 – tasked with choosing from two forks on a path, as imagined by white American poet Robert Frost. This image of rugged masculine whiteness, embodied in physical strength, colonial prowess, and the ability to dominate difficult landscapes is mirrored in his framing of his former co-workers on oil rigs in the Canadian prairies25 as models of resilience. Similarly, American settler science writer Annalee Newitz26 proposes the Canadian province of Saskatchewan as a ‘model for human survival’, based on her perceptions of the resilience, persistence and collaborative frontier attitudes of its people. Saskatchewan is a notoriously racist part of Canada, in which violence against Indigenous people continues to be integral to its white-dominated culture27 – yet this polity and its culture are held up by Newitz as a model of ‘human’ resilience. By imagining subjects in whom whiteness is elided with resilience and survival, these discourses not only normalize and obscure the modes of violence and oppression through which perceived ‘resilience’ – or, in blunt terms, preferential access to survival – is achieved. They also work to displace the threat of total destruction ‘onto others who are seen as lacking the resourcefulness of the survivor’.28 In addition, many ‘end of the world’ narratives interpellate subjects of white privilege by assuming that readers are not (currently) affected by the harms distributed unequally by global structures of environmental racism. For instance, Barnosky and Hadley29 (italics ours) state, ‘if you are anything like we are, you probably think of pollution as somebody else’s problem. . . you probably don’t live near a tannery, mine dump or any other source of pollution’. For many people of color, living near a source of pollution may be nearly inescapable as a result of structural-material discrimination, including zoning practices and the accessibility of housing.30 Viewing ecological harms as ‘someone else’s problem’ is a privilege afforded to those who have never been forced contemplate the destruction of their communities or worlds.31 At the same time, these authors – along with many others working in the genre – invoke narratives akin to ‘all lives matter’ or ‘colour-blindness’32 that erase unequal distributions of harm and threat. For instance, during their international travels for scientific research and leisure, Barnosky and Hadley (italics ours) describe a dawning awareness that ‘the problems we were writing about. . . were everybody’s problems. . .no one was escaping the impacts. . . including us’. They go on to frame as equivalent flooding in Pakistan that displaced 20million people and killed 2000 with the inconveniences caused by the temporary flooding of the New York subway system in 2012. In addition, they cite evidence of endocrine disruption in American girls caused by pollution, stating that the youngest of the cohort are African American and Latina but that ‘the most dramatic increase is in Caucasian girls’33 (italics ours). In this framing, even though BIPOC children remain most adversely affected, white children are pushed to the foreground and framed as more urgently threatened in relative terms. These comparisons background the disproportionate burden of ecological harm born by BIPOC, and reflect a stark calculus of the relative value of white and BIPOC lives. The ‘all lives matter’ logic employed here constructs ‘a universal human frailty’34 in which responsibility for ecological threats is attributed to ‘humans’ in general, and the assignment of specific culpability is avoided. While Newitz avers that ‘assigning blame [for ecological harm] is less important than figuring out how to. . . survive’,35 we argue that accurately attributing responsibility is crucial to opening up futures in which it is possible to dismantle the structural oppressions that unequally distribute harms and chances for collective survival. Preoccupation with the subjects of whiteness in ‘end of the world’ discourses is also reflected in the framing of BIPOC communities as threats to the survival of ‘humanity’. These fears are perhaps most simply and starkly expressed in anxieties over population decline within predominantly white countries, paired with palpable fear of rising birth rates amongst BIPOC communities. Chillingly, such fears are often connected to the mere biological survival of BIPOC, and the reproductive capacities of Black and Brown bodies – especially those coded as ‘female’, and therefore ‘fertile’ within colonial gender binaries.36 For instance, in his treatise on ‘over’-population, American settler science writer Alan Weisman addresses the ‘problem’ raised by the likely significant increase of survival rates (especially amongst children) as a result of widely-available cures for illnesses such as malaria or HIV. Since, he avers, it would be ‘unconscionable’ to withhold these vaccines, Weisman suggests that malaria and HIV research funding should also promote family planning – that is, control of BIPOC fertility – since ‘there’s no vaccine against extinction’.37 Here, BIPOC survival and reproductivity is literally – even if not strictly intentionally – framed as an incurable disease that could culminate in ‘extinction’. Although some of these discussions examine total growth in human populations globally,38 much of this research focuses on relative population sizes, usually of BIPOCmajority places to those inscribed as white. For instance, British doctor John Guillebaud predicts a ‘birth dearth’ in Europe while likening ‘unremitting population growth’ in other parts of the world to ‘the doctrine of the cancer cell’.39 Although these regions are described in various ways throughout the genre – for instance, as ‘poor’ or ‘developing’, the areas slated for growth are almost always BIPOC-majority. For example, Hungarian demographer Paul Demeny (italics ours) argues that Europe’s population is steadily shrinking ‘while nearby populations explode’.40 Drawing on Demeny’s work, HomerDixon warns of a future 3:1 demographic ratio between North Africa/West Asia and Europe, along with 70% growth in Bangladesh, 140% growth in Kenya, and a doubling of the populations of Iraq, Saudi Arabia, Pakistan, and Nigeria. Directly after sharing these statistics, he appends a list of international news reports referring to, for example, clashes between Indigenous communities in Kenya, riots in Shanghai, and murder rates in Mexico.41 In so doing, he directly juxtaposes BIPOC population growth with stereotypes of violence and ‘incivility’. BIPOC are often represented in these narratives as embodiments of ecological collapse and threat, embedding the assumption that ‘black people don’t care about the environment’,42 and that the global ‘poor’ will always prioritize short-term economic needs above ecological concerns. This belief is reflected in travelogue-style descriptions of ecological devastation, including Barnosky and Hadley’s musings, while on holiday in Utah, that the ancient Puebloan society collapsed because they had run out of water – a situation which they project onto future Sudan, Somalia, and Gaza. In addition, they diagnose the fall of what they call the ‘extinct’ Mayan community to overpopulation and over-exploitation of resources – despite the survivance43 of over 6million Mayan people in their Ancestral lands and other places at the time of writing.44 These descriptions chime with the common refrain on the part of settler states that BIPOC are unable to care properly for their land, even in the absence of conflicting data. This constructed ignorance allows those states to frame BIPOC territories as ‘wasteland’ awaiting annexation or improvement, or as dumping grounds for the externalities of capitalism.45 What’s more, the use of BIPOC communities as cautionary tales for planetary destruction strongly suggests that the redistribution of global power, land ownership, and other forms of agency toward BIPOC structures would result in ecological disaster.

#### The alternative is a refusal of the affirmative – an engagement in the process of decentering settler subjectivities and injecting indigenous knowledge – in this project, refusal constitutes a multi-faceted method towards decolonization

Grande 18 (Sandy Grande; 2018; Routledge Publishing; *“Refusing the University,”* a chapter in the series of essays *“Toward What Justice?: Describing Diverse Dreams of Justice in Education”*; accessed 12/22/21; ask me for the pdf; Sandy Grande is associate professor and Chair of the Education Department at Connecticut College. Her research interfaces critical Indigenous theories with the concerns of education; 58-62) HB

Taking into account the power relations of both capitalism and white supremacy, Indigenous scholars posit refusal as a positive stance that is: less oriented around attaining an affirmative form of recognition… and more about critically revaluating, reconstructing and redeploying culture and tradition in ways that seek to prefigure… a radical alternative to the structural and psycho-affective facets of colonial domination. (Coulthard, 2007, p. 456) In this way, Indigenous refusal both negatively rejects the (false) promise of inclusion and other inducements of the settler state and positively asserts Indigenous sovereignty and peoplehood. In Mohawk Interruptus (2014), Audra Simpson theorizes refusal as distinct from resistance in that it does not take authority as a given. More specifically, at the heart of the text, she theorizes refusal at the “level of method and representation,” exposing the colonialist underpinnings of the “demand to know” as a settler logic. In response, she develops the notion of ethnographic refusal as a stance or space for Indigenous subjects to limit access to what is knowable and to being known, articulating how refusal works “in everyday encounters to enunciate repeatedly to ourselves and to outsiders that ‘this is who we are, this is who you are, these are my rights’” (Simpson, 2007, p. 73). Mignolo (2011) and Quijano (1991) similarly take up refusal in relation to knowledge formation, asserting Indigenous knowledge itself as a form of refusal; a space of epistemic disobedience that is “delinked” from Western, liberal, capitalist understandings of knowledge as production. Gómez-Barris (2012) theorizes the Mapuche hunger strikes as “an extreme bodily performance and political instantiation” of refusal, an act wherein their starving bodies upon the land literally enact what it means to live in a state of permanent war (p. 120). Understood as expressions of sovereignty, such acts of refusal threaten the settler state, carrying dire if not deadly consequences for Indigenous subjects. As noted by Ferguson (2015), “capitalist settler states prefer resistance” because it can be “negotiated or recognized,” but refusal “throws into doubt” the entire system and is therefore more dangerous. While within the university the consequences of academic refusal are much less dire, they still carry a risk. To refuse inclusion offends institutional authorities offering “the gift” of belonging, creating conditions of precarity for the refuser. For example, refusal to participate in the politics of respectability that characterizes institutional governance can result in social isolation, administrative retribution, and struggles with self-worth. Similarly, the refusal to comply with the normative structures of tenure and promotion (e.g., emphasizing quantity over quality; publishing in “mainstream” journals) can and does lead to increased marginalization, exploitation, and job loss.16 And, in a system where Indigenous scholars comprise less than 1% of the professorate, such consequences not only bear hardships for individuals but also whole communities. That said, academic “rewards” and inducements accessed through recognition-based politics can have even deeper consequences. As Jodi Byrd (2011) reminds us, the colonization of Indigenous lands, bodies, and minds will not be ended by “further inclusion or more participation” (Byrd, 2011, p. xxvi). The inspirational work of Black radical and Indigenous scholars compels thinking beyond the limits of academic recognition and about the generative spaces of refusal that not only reject settler logics but also foster possibilities of co-resistance. The prospect of coalition re-raises one of the initial animating questions of this chapter: What kinds of solidarities can be developed among peoples with a shared commitment to working beyond the imperatives of capital and the settler state? Clearly, despite the ubiquitous and often overly facile calls for solidarity, building effective coalitions is deeply challenging, even among insurgent scholars. Within this particular context, tensions between Indigenous sovereignty and decolonial projects and anti-racist, social justice projects, raise a series of suspicions: whether calls for Indigenous sovereignty somehow elide the a priori condition of blackness (the “unsovereign” subject),17 whether anti-racist struggles sufficiently account for Indigenous sovereignty as a land-based struggle elucidated outside regimes of property, and whether theorizations of settler colonialism sufficiently account for the forces and structures of white supremacy, racial slavery, and antiblackness. Rather than posit such tensions as terminally incommensurable, however, I want to suggest a parallel politics of dialectical co-resistance. When Black peoples can still be killed but not murdered; when Indians are still made to disappear; when (Indigenous) land and Black bodies are still destroyed and accumulated for settler profit; it is incumbent upon all those who claim a commitment to refusing the white supremacist, capitalist, settler state, to do the hard work of building “interconnected movements for decolonization” (Coulthard, 2014). The struggle is real. It is both material and psychological, both method and politics, and thus must necessarily straddle the both/and (as opposed to either/or) coordinates of revolutionary change. In terms of process, this means working simultaneously beyond resistance and through the enactment of refusal—as fugitive, abolitionist, and Indigenous, sovereign subjects. Within the context of the university, this means replacing calls for more inclusive and diverse, safe spaces within the university with the development of a network of sovereign, safe houses outside the university. Kelley reminds us of the long history of this struggle, recalling the Institute of the Black World at Atlanta University (1969), the Mississippi Freedom Schools, and the work of Black feminists Patricia Robinson, Donna Middleton, and Patricia Haden as inspirational models. As a contemporary model, he references Harney and Moten’s vision of the undercommons as a space of possibility: a fugitive space wherein the pursuit of knowledge is not perceived as a path toward upward mobility and material wealth but rather as a means toward eradicating oppression in all of its forms (Undercommoning Collective). The ultimate goal, according to Kelley (2016), is to create in the present a future that overthrows the logic of neoliberalism. Scholars within Native studies similarly build upon a long tradition of refusing the university, theorizing from and about sovereignty through land-based models of education. Whereas a fugitive flees and seeks to escape, the Indigenous stands ground or, as Deborah Bird points out, “to get in the way of settler colonization, all the native has to do is stay at home” (as cited in Wolfe, 2006, p. 388). The ultimate goal of Indigenous refusal is Indigenous resurgence; a struggle that includes but is not limited to the return of Indigenous land. Again, while the aims may be different (and in some sense competing), efforts toward the development of parallel projects of co-resistance are possible through vigilant and sustained engagement. The “common ground” here is not necessarily literal but rather conceptual, a corpus of shared ethics and analytics: anti-capitalist, feminist, anti-colonial. Rather than allies, we are accomplices—plotting the death but not murder of the settler university. Toward this end, I offer some additional strategies for refusing the university: First and foremost, we need to commit to collectivity—to staging a refusal of the individualist promise project of the settler state and its attendant institutions. This requires that we engage in a radical and ongoing reflexivity about who we are and how we situate ourselves in the world. This includes but is not limited to a refusal of the cycle of individualized inducements—particularly, the awards, appointments, and grants that require complicity or allegiance to institutions that continue to oppress and dispossess. It is also a call to refuse the perceived imperative to self-promote, to brand one’s work and body. This includes all the personal webpages, incessant Facebook updates, and Twitter feeds featuring our latest accomplishments, publications, grants, rewards, etc. etc. Just. Make. It. Stop. The journey is not about self—which means it is not about promotion and tenure—it is about the disruption and dismantling of those structures and processes that create hierarchies of individual worth and labor. Second, we must commit to reciprocity—the kind that is primarily about being answerable to those communities we claim as our own and those we claim to serve. It is about being answerable to each other and our work. One of the many things lost to the pressures of the publish-or-perish, quantity-over-quality neoliberal regime is the loss of good critique. We have come to confuse support with sycophantic praise and critical evaluation with personal injury. Through the ethic of reciprocity, we need to remind ourselves that accountability to the collective requires a commitment to engage, extend, trouble, speak back to, and intensify our words and deeds. Third, we need to commit to mutuality, which implies reciprocity but is ultimately more encompassing. It is about the development of social relations not contingent upon the imperatives of capital—that refuses exploitation at the same time as it radically asserts connection, particularly to land. Inherent to a land-based ethic is a commitment to slowness and to the arc of inter-generational resurgence and transformation. One of the many ways that the academy recapitulates colonial logics is through the overvaluing of fast, new, young, and individualist voices and the undervaluing of slow, elder, and collective ones. And in such a system, relations and paradigms of connection, mutuality, and collectivity are inevitably undermined. For Indigenous peoples, such begin and end with land, centering questions of what it means to be a good relative. Toward this end, I have been thinking a lot lately about the formation of a new scholarly collective, one that writes and researches under a nom de guerre—like the Black feminist scholars and activists who wrote under and through the Combahee River Collective or the more recent collective of scholars and activists publishing as “the uncertain commons.”18 If furthering the aims of insurgence and resurgence (and not individual recognition) is what we hold paramount, then perhaps one of the most radical refusals we can authorize is to work together as one; to enact a kind of Zapatismo scholarship and a balaclava politics where the work of the collectivity is intentionally structured to obscure and transcend the single voice, body, and life. Together we could write in refusal of liberal, essentialist forms of identity politics, of individualist inducements, of capitalist imperatives, and other productivist logics of accumulation. This is what love as refusal looks like. It is the un-demand, the un-desire to be either of or in the university. It is the radical assertion to be on: land. Decolonial love is land.

#### The role of the ballot should be to center indigenous scholarship – any project of research should begin and end with placing the indigenous demands and resistance at it’s forefront. Our role as settlers specifically obligates us to center our politics in the context of ensuring accountability

Carlson 16 (Elizabeth Carlson; 10/21/16; Settler Colonial Studies; *“Anti-colonial methodologies and practices for settler colonial studies”*; accessed 12/28/21; ask me for the pdf; Elizabeth Carlson is an Assistant Professor at the School of Social Work at Laurentian University; pages 9-10) HB

Relational and epistemic accountability to Indigenous peoples Arlo Kempf says that ‘where anticolonialism is a tool used to invoke resistance for the colonized, it is a tool used to invoke accountability for the colonizer’. 42 Relational accountability should be a cornerstone of settler colonial studies. I believe settler colonial studies and scholars should ethically and overtly place themselves in relationship to the centuries of Indigenous oral, and later academic scholarship that conceptualizes and resists settler colonialism without necessarily using the term: SCT may be revelatory to many settler scholars, but Indigenous people have been speaking for a long time about colonial continuities based on their lived experiences. Some SCTs have sought to connect with these discussions and to foreground Indigenous resistance, survival and agency. Others, however, seem to use SCT as a pathway to explain the colonial encounter without engaging with Indigenous people and experiences – either on the grounds that this structural analysis already conceptually explains Indigenous experience, or because Indigenous resistance is rendered invisible.43 Ethical settler colonial theory (SCT) would recognize the foundational role Indigenous scholarship has in critiques of settler colonialism. It would acknowledge the limitations of settler scholars in articulating settler colonialism without dialogue with Indigenous peoples, and take as its norm making this dialogue evident. In my view, it is critical that we not view settler colonial studies as a new or unique field being established, which would enact a discovery narrative and contribute to Indigenous erasure, but rather take a longer and broader view. Indigenous oral and academic scholars are indeed the originators of this work. This space is not empty. Of course, powerful forces of socialization and discipline impact scholars in the academy. There is much pressure to claim unique space, to establish a name for ourselves, and to make academic discoveries. I am suggesting that settler colonial studies and anti-colonial scholars resist these hegemonic pressures and maintain a higher anti-colonial ethic. As has been argued, ‘the theory itself places ethical demands on us as settlers, including the demand that we actively refuse its potential to re-empower our own academic voices and to marginalize Indigenous resistance’. 44 As settler scholars, we can reposition our work relationally and contextually with humility and accountability. We can centre Indigenous resistance, knowledges, and scholarship in our work, and contextualize our work in Indigenous sovereignty. We can view oral Indigenous scholarship as legitimate scholarly sources. We can acknowledge explicitly and often the Indigenous traditions of resistance and scholarship that have taught us and provided the foundations for our work. If our work has no foundation of Indigenous scholarship and mentorship, I believe our contributions to settler colonial studies are even more deeply problematic.

## On

## framing

### Pain and Pleasure are Intrinsic

#### is/ought fallacy – just because humans want pleasure does not mean it should be the basis for morality

#### This could justify horrific conclusions, which must be grounds to reject it since it challenges assumptions about intrinsic, unconditional badness. No action could be intrinsically bad from this standpoint, even genocide or gruesome torture – this makes debate unsafe by claiming any action is potentially permissible or even obligatory if performing it led to better consequences.

#### Masochist objection – some people like pain which disrupts the pleasure/pain distinction

### Actor Spec

#### Is/Ought fallacy – Just because states use util, doesn’t mean they ought to.

#### No link – States don’t do things like give all their GDP to small countries even though that would maximize happiness

### extinction o/w

#### 1] distracts from indgeinous scholarship which is a settler move to erase the native

#### 2] Anything can cause extinction --- which means its impossible to use this as an ethical thoery which means you vote neg on presumption

#### 3] our framing is a prioir --- our scholarship says that the affs focus on extinction obfucates methods to engage with a decolonial praxis

### sequencing

#### 1] – settler colonialism is a structure, not an event –

### Lbl

## case

### lbl

### dump

#### Outer Space Laws are unclear – private corporations are still capable of escaping due to loopholes in the plan.

**Green and Stark 17** [Christopher and Eda, “Outer Space Treaty and Beyond: Do Existing Space Laws Put an Astronomical Barrier to Private IP Rights in Space?”, JDSUPRA. 8 September 2020 https://www.jdsupra.com/legalnews/outer-space-treaty-beyond-do-existing-44028/] //DebateDrills LC

Our **limited body of space law provides little guidance**. The first international treaty, the “Outer Space Treaty,” was signed by the U.S., Russia, and the U.K. in 1967, quickly followed by the Rescue Agreement. Over the next two decades, three other treaties—the Liability Convention, the Registration Convention, and the Moon Agreement—were also signed by these nations, with most countries following in their footsteps.[3] But after that rapid succession of international treaties, there have since been few others. These five documents form the basis of the international space law we have today, but **none address** the issue of [intellectual property rights in space](https://www.fr.com/fish-litigation/ip-rights-outer-space/). Rather, upon inspection, it appears that **the stated purpose of these treaties may be antithetical to intellectual property protection.**

The “Outer Space Treaty” espouses communal themes in characterizing space as the “province of all mankind,” the “common heritage of mankind” and to the “benefit of all countries.”[4] Unsurprisingly, Article II of the Outer Space Treaty prohibits any appropriation of areas in space, keeping in line with its principle of communal property.[5] On the other hand, **patents are fundamentally territorial and grant monopoly rights for a period of time. Applied to space, it is unclear just what is open for patent protections.**

For example, **can private companies patent orbital patterns of satellites**? Currently, companies may patent the technology or design of satellites that stay in a particular orbit, even if not the orbital pattern itself.[6] The practical implications of this are significant, especially with the advent of satellite constellations. If particular satellite technologies, and, indirectly, their orbital patterns, are patentable, then a significant portion of space may be occupied by one satellite constellation, i.e. one company alone.[7] Does this private apportionment of space run counter to our notions of sharing space? Some argue that **the Outer Space Treaty only bans sovereign appropriation and does not limit private entities from exerting claims**. Others counter that private property rights flow from sovereign property claims, so the former is meaningless without the latter.[8] So the question remains, **can the stated goals of sharing outer space be reconciled with the proprietary nature of patents**?

**Our current corpus of space treaties comes from a period of history when space exploration was undertaken primarily by governments** rather than private actors. The cooperative goals were likely a reaction to the time, as the world was coming out of a charged space race. **The silence of these space treaties on intellectual property rights presents an opportunity for modern-day agreements to provide patent protections for private companies**. Without robust international agreement on patents for space, we may even see less international cooperation as companies refuse to divulge their discoveries.[9] Now, as more and more private companies enter space exploration and carry the torch of innovation, **it is more important than ever to strike a balance between sharing our “common heritage” and providing patent protections that incentivize invention.**[10]

#### No Nuclear Space Conflict -

#### 1] Deterrence

Bowen 18

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

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

#### 2] International norms

Pavur and Martinovic 19

[James, DPhil Researcher at the Cybersecurity Centre for Doctoral Training at Oxford University, and Ivan Martinovic, Professor of Computer Science in the Department of Computer Science at Oxford University, “The Cyber-ASAT: On the Impact of Cyber Weapons in Outer Space”, 2019 11th International Conference on Cyber Conflict: Silent Battle, <https://ccdcoe.org/uploads/2019/06/Art_12_The-Cyber-ASAT.pdf>]

Limited Accessibility Space is difficult. Over 60 years have passed since the first Sputnik launch and only nine countries (ten including the EU) have orbital launch capabilities. Moreover, a launch programme alone does not guarantee the resources and precision required to operate a meaningful ASAT capability. Given this, one possible reason why space wars have not broken out is simply because only the US has ever had the ability to fight one [21, p. 402], [22, pp. 419–420]. Although launch technology may become cheaper and easier, it is unclear to what extent these advances will be distributed among presently non-spacefaring nations. Limited access to orbit necessarily reduces the scenarios which could plausibly escalate to ASAT usage. Only major conflicts between the handful of states with ‘space club’ membership could be considered possible flashpoints. Even then, the fragility of an attacker’sown space assets creates de-escalatory pressures due to the deterrent effect of retaliation. Since the earliest days of the space race, dominant powers have recognized this dynamic and demonstrated an inclination towards de-escalatory space strategies [23]. B. Attributable Norms There also exists a long-standing normative framework favouring the peaceful use of space. The effectiveness of this regime, centred around the Outer Space Treaty (OST), is highly contentious and many have pointed out its serious legal and political shortcomings [24]–[26]. Nevertheless, this status quo framework has somehow supported over six decades of relative peace in orbit. Over these six decades, norms have become deeply ingrained into the way states describe and perceive space weaponization. This de facto codification was dramatically demonstrated in 2005 when the US found itself on the short end of a 160-1 UN vote after opposing a non-binding resolution on space weaponization. Although states have occasionally pushed the boundaries of these norms, this has typically occurred through incremental legal re-interpretation rather than outright opposition [27]. Even the most notable incidents, such as the 2007-2008 US and Chinese ASAT demonstrations, were couched in rhetoric from both the norm violators and defenders, depicting space as a peaceful global commons [27, p. 56]. Altogether, this suggests that states perceive realcosts to breaking this normative tradition and may even moderate their behaviours accordingly. One further factor supporting this norms regime is the high degree of attributability surrounding ASAT weapons. For kinetic ASAT technology, plausible deniability and stealth are essentially impossible. The literally explosive act of launching a rocket cannot evade detection and, if used offensively, retaliation. This imposes high diplomatic costs on ASAT usage and testing, particularly during peacetime. C. Environmental Interdependence A third stabilizing force relates to the orbital debris consequences of ASATs. China’s 2007 ASAT demonstration was the largest debris-generating event in history, as the targeted satellite dissipated into thousands of dangerous debris particles [28, p. 4]. Since debris particles are indiscriminate and unpredictable, they often threaten the attacker’s own space assets [22, p. 420]. This is compounded by Kessler syndrome, a phenomenon whereby orbital debris ‘breeds’ as large pieces of debris collide and disintegrate. As space debris remains in orbit for hundreds of years, the cascade effect of an ASAT attack can constrain the attacker’s long-term use of space [29, pp. 295– 296]. Any state with kinetic ASAT capabilities will likely also operate satellites of its own, and they are necessarily exposed to this collateral damage threat. Space debris thus acts as a strong strategic deterrent to ASAT usage.

#### 3] Ground stations are easier to attack

Cooper et al 17 [Zack Cooper is a fellow with the Asia team at the Center for Strategic and International Studies. Dr. Cooper previously served in the Pentagon and White House, and received his PhD in security studies from Princeton University. Escalation & Deterrence in the Second Space Age. https://csis-prod.s3.amazonaws.com/s3fs-public/publication/171109\_Harrison\_EscalationDeterrenceSecondSpaceAge.pdf]

Rather than attacking the satellites on-orbit, an adversary could achieve similar effects by attacking the ground stations that support them. Ground stations are perhaps more vulnerable to attack, because they are often highly visible, located in foreign countries, and relatively soft targets. For military communications satellites, the data transmitted to and from forward-deployed users is often sent via satellite to a teleport ground station, where it is relayed through another satellite or terrestrial networks to users around the world. To reduce the dependence on ground stations, some military space systems use inter-satellite links to transmit data directly between satellites without passing through an intermediary ground station.

Ground stations are vulnerable to kinetic physical attack by several means. Guided missiles and rockets can be used to attack ground stations from range, while rocket-propelled grenades and small arms fire can be used to disable ground station antennas at close range. Ground stations can also be disrupted by attacking the electrical power grid, water lines, and the high-capacity communications lines that support them. While attacks against ground stations could have large implications, the effects would not be permanent. Unlike satellites, which require years to build and often cannot be repaired once they are launched, ground stations can be repaired in a matter of days or weeks, depending on the level of damage incurred.

#### 4] No impact even if it happens.

Handberg ‘17

Handberg, Roger (2017). Is space war imminent? Exploring the possibility. Comparative Strategy, 36(5), 413–425. doi:10.1080/01495933.2017.1379832 // Phoenix

The assumption made is that space war will be successfully waged in both the heavens and on the Earth itself. This assumption, however, is grounded on several hypotheticals occurring. First, that total devastating strategic surprise can be achieved—the side attacked becomes so damaged and devastated that further resistance is impossible to sustain regardless of national will, since nuclear weapons overhang the entire enterprise. The analogy usually invoked for American audiences is a “Pearl Harbor” type attack. This scenario is premised on equivalent American incompetence and lack of readiness as exhibited in December 1941. One must note that Pearl Harbor ended as a strategic failure for Japan—it led to defeat because the attack mobilized U.S. power without hesitation, given the intense political divisions over whether to enter the worldwide conflicts already raging. The attack was a military failure because Navy carriers were not destroyed along with battleship row along with critical fuel facilities. Similar analogies invoke September 11, 2001 as the prototype for such attacks more recently, but the same caveats apply. Total surprise assumes that all relevant opponent systems and civilian assets are disabled and left vulnerable to follow on attacks. In fact, collapse of U.S. defenses leaves U.S. cities as hostages to the rulers of the heavens, or vice versa if the U.S. moves first. Space war is extremely destabilizing, as will be discussed, since survivability of one's strategic assets becomes problematic.

Second, surprise requires that sufficient offensive space assets be placed in orbit without triggering a response by other states—the scale of such technology deployment is in itself possibly self-defeating given high costs and a likely lack of launch capacity. In addition, much launch capacity is now international rather than national, so maintaining secrecy becomes even more difficult. Space as an operational environment suffers from excessive transparency, meaning any launches can be monitored and tracked by others with strong evidence as to what is being deployed. One must remember that the original satellite launches in the 1950s were accurately tracked by a British grade-school class as a science project. In addition, at least since the early 1960s, remote sensing has increased exponentially the global capability to detect buildup of military assets of differing types, whether in space or on the ground. Commercial remote-sensing capabilities further enhance the capacity to detect militarily relevant actions. For example, commercial imagery is accessed by private parties to monitor the North Korean missile and nuclear weapons programs, in effect expanding the capacity of the world to look in on various states' interior regions, scanning for relevant information, including weapons buildup and launch capabilities. Even construction of physical facilities for production of space assets or for other weaponry can be monitored, making surprise more difficult but not impossible, as demonstrated in earlier monitoring of North Korea and, in 1998, the nuclear tests by both Pakistan and India. That means if the ASAT weapons come from ground locations, there is a high probability that they can be detected but no guarantee exists that detection will in fact occur. The uncertainty will impact calculations of attack success.

Third, the most obvious initial attack of space-based assets will most likely come from cyber attacks, given that such actions do not necessarily require the scale of resources necessary for other modalities such as kinetic weapons, or even lasers or other energy-type weapons. One will have to position the weapons plus the infrastructure to permit rapid recycling of the weapons for the next attack. Firing off interceptors will likely be a one-off, meaning extremely precise targeting will be required if the attack is to be successful. Note that none of these systems require that individuals be placed in Earth orbit, despite the imagery describing such operations in fictional universes.

Deployment requires a large lift capacity for initial deployment plus replenishment of destroyed or inoperative space assets, since a space conflict assumes that assets will be lost either kinetically or be compromised by cyber or energy beams. In any case, the combatants must be able to recover their capabilities lost during the conflict; failure to do would mean defeat or at least stalemate, negating the reason for the attack. That raises a major question when one considers the problem or expectation that space war can be successfully conducted or defended. Operationally Responsive Space (ORS) remains a critical weak point for all potential space-war participants. Loss of space assets occurs routinely during operations, but actual combat losses can be exponential depending on the weaponry used, and replacing those losses becomes the race to the next level after the initial exchange or combat. Unfortunately, ORS remains a major weakness of the United States and likely other states; deploying replacement satellites remains a multiyear process, while launch capabilities are scheduled long in advance. The rise of multiple private-launch competitors may partially alleviate some of the delay but that remains problematic given that the military payloads may be competing with commercial vendors also trying to replace losses. The tradeoff is that. in principle, private-launch vendors may be able to do so more cheaply, but their capacity may be saturated by demand from the civil and commercial sectors, leaving few “uncommitted” launch options for military purposes. Normally this is not an issue, but the available launch options may be third party rather than national-flag carriers, which raises severe security concerns.

Fourth, several other assumptions become essential to make the strategy work, including that such an attack does not render Earth orbit so debris-saturated that further military space operations become impossible to sustain. Also, damage to civilian space assets remains, such that their continuation is possible if undamaged replacements can be quickly reintroduced to restart economically critical operations. Globalization has been fostered through satellite technologies. Their disruption can be devastating for all parties, regardless of who is the winner or the loser. What may occur is the graveyard of the modern economic system. No potential space participants would be immune to the damage, regardless of whether or not they were participants in the actual conflict.

Fifth, there must be no difficulty in separating potential targets from the enemy, allied states, and nonbelligerent states. This creates a situation in which the spread of space technologies globally complicates actions, expanding the range of participants beyond the combatants, much like earlier wars at sea, where there were the combatants' ships, along with those of nonbelligerents, including neutrals whom the combatants struggled to draw into the conflict on their side, or at least to render their services unavailable to the other side. The earliest discussion of space conflict was premised on Cold War analogies, meaning two major combatants, either U.S.–Russia, or U.S–-China, or even a three-way war. Presently, analyses focus on a bilateral conflict with the U.S. opposed to China and Russia. Whether that would occur is obviously unknown, despite political rhetoric about a Eurasia coalition of likeminded states. What it does is multiply the number of potential targets and complicates reactions to neutrals' actions to protect their interests or assets. The distinction between combatants and neutrals or third parties will be possibly blurred beyond separation. The byproduct of a kinetic space conflict is massive amounts of space debris, destroying or damaging most space assets regardless of their state sponsor or nationality. Initial attacks may be focused and precise, but the result is still the same. The debris generated by armed conflict will endure beyond the immediate clash. The obvious alternative is a strictly electronic attack on space assets' operating systems, leaving the satellites in orbit, although without the ability to move them or control possible erratic changes in orbit due to collisions with other space debris.

Other forms space war will take

Reality is more complicated—kinetic action produces debris, the ultimate deterrent to actual space war. Therefore, space war could likely track several distinct phases. The first is cyber attacks, which disable or destroy the working systems of the spacecraft or the ground-support network—in effect, a series of stealth attacks. Civilian satellites are extremely soft targets—defense requires a capacity to detect and analyze any attack on the spacecraft, not available presently for most commercial spacecraft due to cost considerations. Otherwise, one could use nuclear weapons to create electromagnetic pulses (EMP) which can fry unprotected electronics both in space and on the ground, depending on where the weapons are detonated. Interestingly, space war scenarios have some territorial war aspects in that any attacks on space assets will devastate both military and civilian targets without distinction between the war participants and civilians. Similar to unrestricted submarine warfare, all targets in the relevant area will become casualties or otherwise impacted in their operations.

Second, attacks that are conducted against the ground down links and/or communications systems, leaving the spacecraft without guidance or instructions, and also no information is returned to the commanders even if the satellites survive the initial onslaught. These can involve kinetic attacks against specific locations or insertion of special operations forces to render the facility inoperative. For example, antennas can be disabled or destroyed, disrupting operations until new facilities are brought online. Other alternatives could include kinetic weapons launched from space, “rods from God.”20 Air strike packages could include electronic warfare elements capable of scrambling or disrupting operations of such facilities even prior to physical strikes against the targets. Spacecraft not destroyed or disabled in the initial two stages of the attack can be directly attacked by “dazzling” their receivers, with laser impulses destroying the receivers for which there are few replacements without replacing the spacecraft physically.

Third, rapid replacement of inoperative satellites, regardless of the reasons, does not occur, which translates into a race for the third, possibly end, phase of the war, replenishment. Inability to replace losses may mean that none of the combatants are able to dominate in the end, meaning conventional conflict may be the outcome, although issues of global reach may confine conflicts to relatively small areas. In previous conventional conflicts, large-scale forces were moved, albeit slowly, across the globe to the conflict, i.e., Desert Shield morphing into Desert Storm after a nearly six-month buildup.

#### Non-appropriation doesn’t stop mining. Companies justify extractive activities using multiple precedents.

**Wrench 19** (John G. Wrench received his law degree from the Case Western Reserve University School of Law in 2019. During law school, he served as editor in chief of the Case Western Reserve Journal of International Law and was a member of the Federalist Society. John interned in his law school’s First Amendment Litigation Clinic and was a judicial extern to the Honorable Paul E. Davison in the Southern District of New York. John graduated from Pace University in 2015 with a Bachelor of Arts in Philosophy and Religious Studies., 51 Case W. Res. J. Int'l L. 437 (2019) “Non-Appropriation, No Problem: The Outer Space Treaty Is Ready for Asteroid Mining”.)

**The prior appropriation doctrine** serves as a unique example for space law because of how it conceptualizes land ownership. Underlying land is available for use not because it is “unowned,” but because it is owned by a community who has the right to make productive use of it.148 Because the community owns the land, claimants have an obligation to use the land properly and the government is responsible for stewardship.149 This **framing fits neatly with proponents of the idea that outer space is collectively “owned” by the international community**. **Regardless,** stewardship and government ownership do not necessarily displace the potential for productive use. **Parties do not violate the non-appropriation principle simply by extracting**—or as here, diverting—resources from the land. **At no point does extraction equate to a sovereign claim over the land.** In instances where non-productive use or the like violates those principles, property rights disappear. **Furthermore, the OST encourages the idea that outer space is to be used to benefit the broader international community.**150 **The prior appropriation doctrine illustrates that parties can establish** and transfer robust **property rights in resources independent from land-ownership**, while promoting beneficial use. Conclusion The non-appropriation doctrine restricts parties from making sovereign claims over underlying land—the same restriction embedded in each of previous section’s legal regimes. Without violating the nonappropriation principle, those regimes grant parties the right to extract resources from land they do not own, transfer that right, and limit wasteful use. Each system similarly vests an entity with the authority to regulate and enforce those rules. With some tailoring, those rules could graft onto the uniqueness of outer space resource extraction. The property regimes explored in Part II do not provide answers for all claims likely to arise in cases involving outer space resource extraction. One looming issue is that some attempts at resource extraction are bound to straddle the line between use and sovereign claims over land. For example, in instances where parties continually seek extensions on mining permits (to the exclusion of others) or take blatant steps to unreasonably exclude other parties from nearby locations. Those seeking to preserve the line between use and ownership would be wise to police it. Answers to these granular regulatory questions will require some regulatory flexibility, but these issues are only different in scale from those addressed by our existing property regimes. At least one author explicitly criticizes what they describe as attempts to “merely superimpose an earth-based system of rules and regulations on the realm of space.”151 This reasoning is rooted in the observation that Antarctica and the high seas are property regimes “inexorably…linked to the Earth itself,” reflecting the idea that “a landowner has dominion from the depths of the Earth to the stars above.”152 This is a curious observation, as the laws governing the seas and Antarctica conceive of land ownership as separate from nonwasteful use of that land. In fact, **UNCLOS, CRAMRA, and the prior appropriation doctrine all distinguish between land ownership and resource extraction**. Existing property regimes reflect attempts to balance a universal set of competing demands—specifically, issues of cost and benefit. Policy-makers should be encouraged to innovate effective rules for outer space resource extraction, but our legal system reflects fundamentally human issues that are here to stay. Regardless of analogous regimes, the OST’s language reflects a consciousness of these issues. Looking to earth-based property regimes is not merely a “misdirected” or “convoluted” attempt to avoid applying the nonappropriation principle.153 Rather, parties to the OST should adhere to the non-appropriation principle. In its current form, the OST is flexible enough to permit nuanced and useful developments in space law; it does not need to be re-tooled to be amenable to outer space resource extraction. Consequently, **the non-appropriation principle should not be interpreted as a death-knell for resource extraction**, but a functional starting point permitting a robust system of rights and responsibilities.

#### Plan gets circumvented. It gets funneled through public private partnerships with space agencies.

**Davenport 20** (Christian Davenport covers NASA and the space industry for The Washington Post's Financial desk. He joined The Post in 2000 and has served as an editor on the Metro desk and as a reporter covering military affairs. He is the author of "The Space Barons: Elon Musk, Jeff Bezos and the Quest to Colonize the Cosmos". “A dollar can’t buy you a cup of coffee but that’s what NASA intends to pay for some moon rocks”. December 3, 2020.)

**NASA** **announced** Thursday **that several companies had won contracts to mine the moon** and turn over small samples to the space agency for a small fee. In one case, a company called Lunar Outpost bid $1 for the work, a price NASA jumped at after deciding the Colorado-based robotics firm had the technical ability to deliver. “You’d be surprised at what a dollar can buy you in space,” Mike Gold, NASA’s acting associate administrator for international and interagency relations, said in a call with reporters. But the modest financial incentives are not the driver of the program. Nor to a large extent is the actual lunar soil. NASA is asking for only small amounts — between 50 and 500 grams (or 1.8 ounces to about 18 ounces). While there would be scientific benefits to the mission, **it’s** really **a tech**nology **development program, allowing companies to practice extracting resources from the lunar surface** and then selling them. It would also establish a legal precedent that would pave the way for companies to mine celestial bodies in an effort blessed by the U.S. government to help build a sustainable presence on the moon and elsewhere. To do that, **NASA** says it **needs its astronauts**, like the western pioneers, to “live off the land,” **using the resources in space instead of hauling them from Earth**. The moon, for example, has plenty of water in the form of ice. **That’s not only key to sustaining human life, but** the hydrogen and oxygen in water **could also be used as rocket fuel, making the moon a potential gas station in space** that could help explorers reach farther into the solar system. **Asteroids also have significant resources, particularly precious metals that could be used for in-space manufacturing.** While the prospect of large mining and manufacturing facilities in orbit is still many years away, NASA wants to use the mining program as a small step toward that goal. NASA is now trying to return astronauts to the moon under its Artemis program for the first time since 1972. Unlike its predecessor, Apollo, where the astronauts visited the lunar surface for a short while before coming home, the Artemis program would create a permanent presence on and around the moon. “**The ability to extract and utilize space resources is the key to achieving this objective of sustainability**,” Gold said. “We must learn to generate our own water, air and even fuel. Living off the land will enable ambitious exploration activities that will result in awe-inspiring science and unprecedented discoveries.” In 2015, then-President Barack Obama signed a law that allowed private companies the right to own the resources they mined in space. Under the program announced Thursday, NASA said the materials would be transferred from the private companies to NASA. **The effort would not violate the 1967 Outer Space Treaty**, NASA officials have said, which prohibits nations from claiming sovereignty over a celestial body. NASA Administrator Jim Bridenstine previously likened the policy to the rules governing the seas. “We do believe **we can extract and utilize the resources of the moon, just as we can extract and utilize tuna from the ocean**,” he said earlier this year. As part of its lunar exploration mission, NASA has been working to get countries around the world to adopt what it calls the Artemis Accords, a legal framework that would govern behavior in space and on celestial bodies such as the moon. The rules would allow private companies to extract lunar resources and create safety zones to prevent conflict and ensure that countries act transparently about their plans in space, while sharing their scientific discoveries. The mining announcement came during the same week that China landed a spacecraft on the moon, extracted resources and then lifted off from the lunar surface in an effort to return the sample to Earth. Instead of developing and sustaining a big government sample-return mission, **NASA is taking another approach by partnering with the private sector**. “If you step back and think about how really amazing it is that NASA can essentially piggyback on the private-sector space capabilities to perform this mission, it would not have been possible 10 years ago,” said Phil McAlister, the director of NASA’s commercial spaceflight division. **In addition to Lunar Outpost, the other companies chosen for NASA’s** program **are**: **ispace Japan and Europe**, which would each charge $5,000 for the material; **and Masten Space Systems of California**, would charge $15,000. All of the companies would already be on the moon, according to NASA, conducting other missions. McAlister said Lunar Outpost would be ferried to the moon by the lunar lander known as Blue Moon being developed by Jeff Bezos’s Blue Origin. (Bezos owns The Washington Post.) The company later clarified that it was looking at a number of landers to get it to the lunar surface, and not just Blue Origin’s. The ispace companies would fly on a Japanese lander, McAlister said, and Masten, already part of another NASA lunar contract, would use its own Masten XL-1 lander.

#### Space mining is unfeasible – gravity, power, and cost constraints

David Fickling, 12-21-2020, reporter, "We’re Never Going to Mine the Asteroid Belt," Bloomberg, <https://www.bloomberg.com/opinion/articles/2020-12-21/space-mining-on-asteroids-is-never-going-to-happen>, accessed 10/23/21

Where would science fiction be without space mining? From Ellen Ripley in Alien and Dave Lister in Red Dwarf, to Sam Bell in Moon and The Expanse’s Naomi Nagata, the grittier end of interstellar drama would be bereft if it weren’t for overalled engineers and their mineral-processing operations. It’s such an alluring vision that real money has been put toward its realization. Alphabet Inc.’s Larry Page and Eric Schmidt, and Hollywood filmmaker James Cameron (director of the Alien sequel Aliens) all invested in Planetary Resources Inc., which raised venture finance with its mission of mining high-value minerals from asteroids and refining them into metal foams that could be shot back down to Earth. Deep Space Industries Inc., a rival startup, also had bold plans to extract resources from space. Though both companies have now been bought out and their projects put into mothballs, the idea of a space mining industry has refused to die. It’s wonderful that people are shooting for the stars — but those who declined to fund the expansive plans of the nascent space mining industry were right about the fundamentals. Space mining won’t get off the ground in any foreseeable future — and you only have to look at the history of civilization to see why. One factor rules out most space mining at the outset: gravity. On one hand, it guarantees that most of the solar system’s best mineral resources are to be found under our feet. Earth is the largest rocky planet orbiting the sun. As a result, the cornucopia of minerals the globe attracted as it coalesced is as rich as will be found this side of Alpha Centauri. More from So Much for Standing Up for Public Health The Key to Democrats’ Success: Big Government Three Warriors Who Made America’s Enemies So Fearsome Tories Aren’t Buying Boris as Born-Again Environmentalist Gravity poses a more technical problem, too. Escaping Earth’s gravitational field makes transporting the volumes of material needed in a mining operation hugely expensive. On Falcon Heavy, the large rocket being developed by Elon Musk’s SpaceX, transporting a payload to the orbit of Mars comes to as little as $5,357 per kilogram — a drastic reduction in normal launch costs. Still, at those prices just lofting a single half-ton drilling rig to the asteroid belt would use up the annual exploration budget of a small mining company. Power is another issue. The international space station, with 35,000 square feet of solar arrays, generates up to 120 kilowatts of electricity. That drill would need a similar-sized power plant — and most mining companies operate multiple rigs at a time. Power demands rise drastically once you move from exploration drilling to mining and processing. Bringing material back to Earth would raise the costs even more. Japan’s Hayabusa2 satellite spent six years and 16.4 billion yen ($157 million) recovering a single gram of material from the asteroid Ryugu and returning it to Earth earlier this month. What might you want to mine from space? Water is an essential component of most earth-bound mining operations and a potential raw material for hydrogen-oxygen fuel that could be used in space. The discovery in October of ice molecules in craters on the Moon was taken as a major breakthrough. Still, the concentrations of 100 to 412 parts per million are extraordinarily low by terrestrial standards. Copper, which typically costs about $4,500 per metric ton to refine, has an average ore grade of about 6,000 ppm. The more promising commodities are platinum, palladium, gold and a handful of rare related metals. Because of their affinity for iron, these so-called siderophile elements mostly sunk toward the metallic core of our planet early in its formation, and are relatively scarce in the Earth’s crust. Estimates of their abundance on some asteroids, such as the enigmatic Psyche 16 beyond the orbit of Mars, suggest concentrations several times higher than can be found in terrestrial mines. Still, human ingenuity is all about cutting our coat according to our cloth. If such platinum-group metals are going to justify the literally astronomical costs of space mining, they’ll need to count on sustained high prices for the decade or so that would be needed to get such an operation up and running — and that sort of situation is all but unheard-of in the materials industry. Opinion. Data. More Data. Get the most important Bloomberg Opinion pieces in one email. Email Enter your email Sign Up By submitting my information, I agree to the Privacy Policy and Terms of Service and to receive offers and promotions from Bloomberg. When prices of an essential commodity get excessively high, chemists get extraordinarily good at finding ways to avoid using it, scrap merchants improve their recycling rates, and miners discover new deposits that wouldn’t have been viable at lower prices. Even criminals get in on the game. That eventually pushes supply up and demand down, so that prices rebalance — a dynamic we’ve seen play out in the markets for rare earths, lithium and cobalt in recent years. The world mines about three times more platinum than it did in the early 1970s, but prices have barely changed once adjusted for inflation. That might sound a disappointing prospect to those looking for excuses for humanity to colonize space — but really it should be seen as a tribute to our ingenuity. Humanity’s failure to exploit extraterrestrial ore reserves isn’t a sign that we lack imagination. If anything, it’s a sign of the adaptive genius that put us in orbit in the first place.

#### Probability – 0.1% chance of a collision.

Salter 15 – Assistant Professor of Economics & Comparative Economics Research Fellow at Texas Tech University

Alexander W. Salter, Space Debris: A Law and Economics Analysis of the Orbital Commons, Mercatus Working Paper, Mercatus Center at George Mason University, 19 STAN. TECH. L. REV. 221 (2016), <https://law.stanford.edu/wp-content/uploads/2017/11/19-2-2-salter-final_0.pdf>

\*numbers replaced with English words

The probability of a collision is currently **low**. Bradley and Wein estimate that the **maximum probability** in LEO of a collision over the lifetime of a spacecraft remains **below one in one thousand**, conditional on continued compliance with NASA’s deorbiting guidelines.3 However, the possibility of a future “snowballing” effect, whereby debris collides with other objects, further congesting orbit space, remains a significant concern.4 Levin and Carroll estimate the average immediate destruction of wealth created by a collision to be approximately $30 million, with an additional $200 million in damages to all currently existing space assets from the debris created by the initial collision.5 The expected value of destroyed wealth because of collisions, currently small because of the low probability of a collision, can quickly become significant if future collisions result in runaway debris growth.

#### Space is huge---nothing will collide

Albrecht 16 – Chairman of the board of USSpace LLC & fmr. head of the National Space Council

Mark Albrecht, chairman of the board of USSpace LLC, head of the White House National Space Council from 1989 to 1992, and Paul Graziani, CEO and founder of Analytical Graphics, a company that develops software and provides mission assurance through the Commercial Space Operations Center (ComSpOC), Congested space is a serious problem solved by hard work, not hysteria, 2016, https://spacenews.com/op-ed-congested-space-is-a-serious-problem-solved-by-hard-work-not-hysteria/

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

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

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