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### Advantage

#### The desire for private appropriation of space is a ‘spatial fix’ for global capitalism. Spatial fixes necessitate the outward expansion of capital into newly appropriated space as a temporary solution to resource scarcity. Exporting capitalism into space is not only unsustainable but naturalizes logics of the colonial frontier.

Shamas and Holen’19 |Dr. Victor Shamas, Oslo Metropolitan University, Work Research Institute (AFI), Oslo, Norway. Tomas Holen, Independent scholar, Oslo, Norway. “One giant leap for capitalistkind: private enterprise in outer space” in *palgrave communications* 5, 10 (2019). https://doi.org/10.1057/s41599-019-0218-9|KZaidi

No longer terra nullius, space is now the new terra firma of capitalistkind: its naturalized terroir, its next necessary terrain. The logic of capitalism dictates that capital should seek to expand outwards into the vastness of space, a point recognized by a recent ethnography of NewSpace actors (Valentine, 2016, p. 1050). The operations of capitalistkind serve to resolve a series of (potential) crises of capitalism, revolving around the slow, steady decline of spatial fixes (see e.g., Harvey, 1985, p. 51–66) as they come crashing up against the quickly vanishing blank spaces remaining on earthly maps and declining (terrestrial) opportunities for profitable investment of surplus capital (Dickens and Ormrod, 2007a, p. 49–78). A ‘spatial fix' involves the geographic modulation of capital accumulation, consisting in the outward expansion of capital onto new geographic terrains, or into new spaces, with the aim of filling a gap in the home terrains of capital. Jessop (2006, p. 149) notes that spatial fixes may involve a number of strategies, including the creation of new markets within the capitalist world, engaging in trade with non-capitalist economies, and exporting surplus capital to undeveloped or underdeveloped regions. The first two address the problem of insufficient demand and the latter option creates a productive (or valorizing) outlet for excess capital. Capitalism must regularly discover, develop, and appropriate such new spaces because of its inherent tendency to generate surplus capital, i.e., capital bereft of profitable purpose. In Harvey’s (2006, p. xviii) terms, a spatial fix revolves around ‘geographical expansions and restructuring…as a temporary solution to crises understood…in terms of the overaccumulation of capital'. It is a temporary solution because these newly appropriated spaces will in turn become exhausted of profitable potential and are likely to produce their own stocks of surplus capital; while ‘capital surpluses that otherwise stood to be devalued, could be absorbed through geographical expansions and spatio-temporal displacements' (Harvey, 2006, p. xviii), this outwards drive of capitalism is inherently limitless: there is no end point or final destination for capitalism. Instead, capitalism must continuously propel itself onwards in search of pristine sites of renewed capital accumulation. In this way, Harvey writes, society constantly ‘creates fresh productive powers elsewhere to absorb its overaccumulated capital' (Harvey, 1981, p. 8).

Historically, spatial fixes have played an important role in conserving the capitalist system. As Jessop (2006, p. 149) points out, ‘The export of surplus money capital, surplus commodities, and/or surplus labour-power outside the space(s) where they originate enabled capital to avoid, at least for a period, the threat of devaluation'. But these new spaces for capital are not necessarily limited to physical terrains, as with colonial expansion in the nineteenth century; as Greene and Joseph (2015) note, various digital spaces, such as the Internet, can also be considered as spatial fixes: the Web absorbs overaccumulated capital, heightens consumption of virtual and physical goods, and makes inexpensive, flexible sources of labor available to employers. Greene and Joseph offer the example of online high-speed frequency trading as a digital spatial fix that furthers the ‘annihilation of space by time' first noted by Marx in his Grundrisse (see Marx, 1973, p. 524). Outer space serves at least two purposes in this regard. In the short-to medium-term, it allows for the export of surplus capital into emerging industries, such as satellite imaging and communication. These are significant sites of capital accumulation: global revenues in the worldwide satellite market in 2016 amounted to $260 billion (SIA, 2017, p. 4). Clearly, much of this activity is taking place ‘on the ground'; it is occurring in the ‘terrestrial economy'. But all that capital would have to find some other meaningful or productive outlet were it not for the expansion of capital into space. Second, outer space serves as an arena of technological innovation, which feeds back into the terrestrial economy, helping to avert crisis by pushing capital out of technological stagnation and innovation shortfalls. In short, outer space serves as a spatial fix. It swallows up surplus capital, promising to deliver valuable resources, technological innovations, and communication services to capitalists back on Earth. This places outer space on the same level as traditional colonization, analyzed in Hegel’s Philosophy of Right, which Hegel thought of as a product of the ‘inner dialectic of civil society', which drives the market to ‘push beyond its own limits and seek markets, and so its necessary means of subsistence, in other lands which are either deficient in the goods it has overproduced, or else generally backward in creative industry, etc.' (Hegel, 2008, p. 222). In this regard, SpaceX and related ventures are not so very different from maritime colonialists and the trader-exploiters of the British East India Company. But there is something new at stake. As the Silicon Valley entrepreneur Peter Diamandis has gleefully noted: ‘There are twenty-trillion-dollar checks up there, waiting to be cashed!' (Seaney and Glendenning, 2016). Capitalistkind consists in the naturalization of capitalist consciousness and practice, the (false) universalization of a particular mode of political economy as inherent to the human condition, followed by the projection of this naturalized universality into space—capitalist humanity as a Fukuyamite ‘end of history', the end-point of (earthly) historical unfolding, but the starting point of humanity’s first serious advances in space.

What role, then, for the state? The frontiersmen of NewSpace tend to think of themselves as libertarians, pioneers beyond the domain of state bureaucracy (see Nelson and Block, 2018). ‘The government should leave the design work and ownership of the product to the private sector', the author of a 2017 report, Capitalism in Space, advocates. ‘The private companies know best how to build their own products to maximize performance while lowering cost' (Zimmerman, 2017, p. 27). One ethnographer notes that ‘politically, right-libertarianism prevails' amongst NewSpace entrepreneurs (Valentine, 2016, p. 1047–1048). Just as Donald Rumsfeld dismissed the opponents to the Iraq War as ‘Old Europe', so too are state entities’ interests in space exploration shrugged off as symptoms of ‘Old Space'. Elon Musk, we are told in a recent biography, unlike the sluggish Big State actors of yore, ‘would apply some of the start-up techniques he’d learned in Silicon Valley to run SpaceX lean and fast…As a private company, SpaceX would also avoid the waste and cost overruns associated with government contractors' (Vance, 2015, p. 114). This libertarianism-in-space has found a willing chorus of academic supporters. The legal scholar Virgiliu Pop introduces the notion of the frontier paradigm (combining laissez-faire economics, market competition, and an individualist ethic) into the domain of space law, claiming that this paradigm has ‘proven its worth on our planet' and will ‘most likely…do so in the extraterrestrial realms' as well (Pop, 2009, p. vi). This frontier paradigm is not entirely new: a ‘Columbus mythology', centering on the ‘noble explorer', was continuously evoked in the United States during the Cold War space race (Dickens and Ormrod, 2016, pp. 79, 162–164).

#### **NewSpace entrepreneurs require spatial fixes as an ‘exit strategy’ from the history of settler colonialism back home. This paradigm necessitates the invisibilization of indigenous ways relating to outer space.**

Bawaka Country’20 |A. Mitchell, S. Wright, S. Suchet-Pearson, K. Lloyd,  
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As Rrawun explains in his words that open this article, it is impera- tive for White people and people everywhere to understand that they have to care for earth and the broader cosmos. This message has not been heard by many who advocate for space colonization, exploration and exploitation by NewSpace entrepreneurs, modernist states, academics and scientific establishments who see what they call ‘outer space’ as a new frontier, source of power and site of capital accumulation (Mac- Donald, 2007). These colonial cosmologies of space assume that there are no people or other beings Indigenous to ‘outer space’, and that there is no life there to harm. They see ‘outer space’ as separate from earth, as a site where the harmful effects of extraction can be externalized (Collis, 2017; Mendenhall, 2018).This enables proponents of space colonization and extraction to justify their projects and to neutralize ethical concerns associated with exploiting ‘outer space’ including the annexation of Indigenous lands and displacement of Indigenous peoples for in- stallations that promote space exploration.

Listening to Guwak, we want to speak back to promoters of space colonization who try to distance themselves from the violence of earth- based colonization and frame their projects as harmless. We show that ‘outer space’ is Sky Country and is part of Yolŋu people’s Country, whose ancestors dwell there today. While we speak with and learn from Guwak, we know too that ‘outer space’ is the ancestral domain of many Indigenous cultures, of diverse Aboriginal nations through Australia, of many First Nations throughout the world, and indeed of many diverse non-Indigenous cultures in every continent as manifested through/as time (Fuller, Norris, & Trudgett, 2014; Krupp, 1999; Watts, 2013). Guided by Guwak’s journey into and as Sky Country, we argue that the further extension of earth-based colonization into space would disrupt Sky Country, forming an extension and intensification of the possessive, colonial-capitalist practices and relationships that have long under- pinned colonialism (Coulthard, 2014; Moreton-Robinson, 2015).

Join us as we respond to Guwak’s call. As we follow Guwak through Sky Country we learn about the role of Rom (Law), order and negotia- tion in Sky Country; the active, animate beings present in Sky Country; the co-becoming of earth, sea and sky; and our ethical obligations to care for and as Sky Country. We hope that in sharing Guwak we encourage broader conversations about Sky Country, and that Guwak’s call helps expose and question some of the broader ideologies of conquest and capitalist expansion that underpins many of the corporate initiatives, nationalist drives, and global agreements concerning Sky Country.

2. Co-becoming Sky Country: Guwak This paper is a more-than-human effort – led by Guwak and Sky Country in its telling and rhythm, shaped by Yolŋu and ŋa€paki (non- Indigenous) authors in its argument, received by and now connected to you in your more-than-human places. We see this as a form of co- becoming. The paper is not an ethnography, which would root its legitimacy and expertise in the detailed revelation of an Indigenous knowledge system. Instead, it reflects a series of conversations between Yolŋu and ŋa€paki collaborators, Country and a songspiral, who are connected to each other in intimate ways. Bawaka Country is a home- land in north eastern Arnhemland, Australia. Its caretakers include four sisters and Yolŋu Elders: Laklak, Ritjilili, Merrkiyawuy and Banbapuy, their daughter Djawundil, and Rrawun, Banbapuy’s son, a custodian of the Guwak songspiral. The Bawaka Collective also includes human ge- ographers Sarah, Kate and Sandie, who have worked in and as Bawaka since 2006 and who, like many ŋ€apaki, were adopted into the family, kinship structure and system of responsibilities. Audra, a global political ecologist, lives on the lands of the Attawandaron (Neutral), Haudeno- saunee and Anishinaabeg peoples on Turtle Island (currently called currently North America). She started working with the group in 2016 after we identified common interests in the effects of colonization on Sky Country. In 2017 Audra met with Ritjilili and Djawundil was part of conversations with the Bawaka Collective, and was also placed in the family. These adoptions are an ongoing Yolŋu strategy to draw ŋa€paki into Yolŋu social, cultural and legal orders, with kinship systems that embed ŋa€paki in intimate and powerful relationships of obligation and responsibility, alongside all human and non-human beings including Yolŋu people, Country, winds, waters, rocks, fire, cigarettes and, indeed, all that co-become on/as/with Country. This is not to make, in any way, non-Yolŋu people into Yolŋu, to absolve them from their own places, identities and complicities, or to erase difference, but rather to hold difference within relationship, extend responsibilities and make non- Yolŋu people both visible to and accountable within Yolŋu Rom (for a fuller discussion of Yolŋu law and relationships including processes of adoption see Gay’wu Group of Women et al., 2019; Bawaka Country incl et al., 2016; Hart, Straka, & Rowe, 2017). For a discussion of the misuse of adoption narratives and settler emplacement see Hunt (2018), Tuck and Yang (2012). Country, including Sky Country, is brought into existence through songspirals. Songspirals bring Yolŋu people and Country into being and they link Yolŋu people to Country. Songspirals are passed down through generations and sung by Yolŋu people to wake Country, to bring into being the lifegiving connections between people and place – people co- becoming as place (Bawaka Country incl et al., 2016). Songspirals have been here forever. They are Rom, the Yolŋu word for Law. Songspirals created Country a long time ago and they keep on creating it. Guwak is the koel bird, who calls through the songspiral, and guides and carries the spirits of those who have passed away on their journey into Sky Country. This songspiral is sung at funerals and important events and has been written into contemporary rock music form by Rrawun and his band East Journey (2018). Guwak has been there forever but still needs to be sung into being, through all of these forms of expression. Rrawun and Banbapuy led the sharing of the Guwak songspiral with the Collective and sanctioned its sharing in this paper.1 The sharing of the Guwak songspiral is possible because Rrawun’s father and mother’s grandmother are from the Maŋgalili nation (see below). Hence Rrawun is in the position of caretaker of Guwak and is sanctioned to share it (Gay’wu Group of Women et al., 2019), as he and his mother, Banbapuy, explain: Yes, [it is ok] to publish [the Guwak song] but only from Rrawun’s side. Need to say it is just his words. It is good because [another academic] worked with Rrawun’s granddad. But he didn’t talk about the bigger thing. This is another form of teaching, of understanding. This is the first time Rrawun has done this himself for Maŋgalili. The manikay [song] is the story behind the land, the universe. (Rrawun and Banbapuy) Rrawun shared Guwak: the story is from his words and does not speak for all Yolŋu. While he shares the words, he does not share all the meanings as that would not be appropriate. This songspiral remains the cultural property of Guwak and the Maŋgalili nation. The words were variously written down by Rrawun, Banbapuy, Sarah, Sandie, Kate and Audra. They were shaped, shared, revised and written into this paper in a co-construction of knowing that unfolded in a number of places be- tween 2014 and 2019. For this reason, you will hear different voices in this paper – not only of each of its more-than-human co-authors – but also the tones and rhythms of multiple, inter-woven conversations. You will also hear certain concepts repeated as new meanings unfold with each iteration, just as they did in our conversations. We follow the specific songspiral as it leads this paper, lending form and order to the words and concepts we share. Since we have made the decision to follow the songspiral to guide our conversations and writing, the structure of this article is not as linear as a traditional Western academic paper. We hope, though, that it will draw you, your places and your kin into these conversations and into the rhythm of the songspiral. 3. Plans to exploit Sky Country

We started talking about space colonization because the ways it interferes with Sky Country and our relationships with it. The term space colonization can be used to refer not only to plans for the long-term settlement of planets other than earth, but also to space exploration and exploitation. These plans include the exploitation of resources from asteroids, the moon and other space bodies, and the annexation of Indigenous lands and displacement of Indigenous peoples for in- stallations that promote space exploration (including observatories and launch sites). To address these plans, we need to extend our conversa- tions into discussions of space colonization, its processes and imagi- naries, and the economic and legal architecture developing around it.

Critical engagement with the relationality of space is an important point of focus by Indigenous communities, scholars and their supporters (Burarrwanga et al., 2013; Bawaka Country incl et al. 2019; Bhathal, 2006; Johnston, 2010; Cornum, 2015; Hunt 2018; Fuller et al., 2014; Watts, 2013; Todd, 2016), as well as within geography and the social sciences more broadly (Beery, 2012, 2016; Dickens & Ormrod, 2007, 2016; Johnston, 2010; MacDonald, 2007, 2008). Work in Indigenous futurisms for example, powerfully critiques ideas and practices of ‘outer space’ (and indeed futurity in many forms and expressions) that continue to perpetuate conditions of Indigenous invisibility, and extend settler-colonial narratives and fantasies both into space and into the future (Byrd, 2011; Hunt 2018). Many Indigenous people continue to struggle against the devastating impact of space exploration and colo- nization in their Countries, including at Woomera on Kokatha and Pit- jantjatjara Country in Australia and against the proposed telescope at Mauna Kea in Hawai’i, as they seek to protect and nurture their relations with earth and sky, and to assert their rights and sovereignties (Gorman, 2005; Peryer, 2019). These are critiques that we take inspiration from and aim to engage with, from our own place and experience, particularly as we acknowledge the co-becoming of diverse times, the ways that the future is the past, is the present, and the ways these emerge together with and as place and time (Bawaka Country incl et al., 2016, 2019). These scholars point out that space should not be understood as de- tached, or distant, from everyday life. Rather, whether through everyday technological realities such as the use of satellite navigation and communications networks, through the proliferation of stake- holders in space - including New Space actors – or through the ways that realities and imaginings of sky-worlds inform realities and imaginings on earth, ‘outer space’ continues to play a crucial and increasingly central place in life on, as, and beyond, earth.

#### But privatization cannot be isolated from state politics. Instead, nation-states utilize private entities as an arm for militarization concealed under the façade of private autonomy.

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But the entrepreneurial libertarianism of capitalistkind is undermined by the reliance of the entire NewSpace complex on extensive support from the state, ‘a public-private financing model underpinning long-shot start-ups' that in the case of Musk’s three main companies (SpaceX, SolarCity Corp., and Tesla) has been underpinned by $4.9 billion dollars in government subsidies (Hirsch, 2015). In the nascent field of space tourism, Cohen (2017) argues that what began as an almost entirely private venture quickly ground to a halt in the face of insurmountable technical and financial obstacles, only solved by piggybacking on large state-run projects, such as selling trips to the International Space Station, against the objections of NASA scientists. The business model of NewSpace depends on the taxpayer’s dollar while making pretensions to individual selfreliance. The vast majority of present-day clients of private aerospace corporations are government clients, usually military in origin. Furthermore, the bulk of rocket launches in the United States take place on government property, usually operated by the US Air Force or NASA.13

This inward tension between state dependency and capitalist autonomy is itself a product of neoliberalism’s contradictory demand for a minimal, “slim” state, while simultaneously (and in fact) relying on a state reengineered and retooled for the purposes of capital accumulation (Wacquant, 2012). As Lazzarato writes, ‘To be able to be “laissez-faire”, it is necessary to intervene a great deal' (2017, p. 7). Space libertarianism is libertarian in name only: behind every NewSpace venture looms a thick web of government spending programs, regulatory agencies, public infrastructure, and universities bolstered by research grants from the state. SpaceX would not exist were it not for state-sponsored contracts of satellite launches. Similarly, in 2018, the US Defense Advanced Research Projects Agency (DARPA)—the famed origin of the World Wide Web—announced that it would launch a ‘responsive launch competition', meaning essentially the reuse of launch vehicles, representing an attempt by the state to ‘harness growing commercial capabilities' and place them in the service of the state’s interest in ensuring ‘national security' (Foust, 2018b).

This libertarianism has been steadily growing in the nexus between Silicon Valley, Stanford University, Wall Street, and the Washington political establishment, which tend to place a high value on Randian ‘objectivism' and participate in a long American intellectual heritage of individualistic ‘bootstrapping' and (allegedly) gritty self-reliance. But as Nelson and Block (2018, p. 189–197) recognize, one of the central symbolic operations of capitalistkind resides in concealing its reliance on the state by mobilizing the charm of its entrepreneurial constituents and the spectacle of space. There is a case to be made for the idea that SpaceX and its ilk resemble semi-private corporations like the British East India Company. The latter, “incorporated by royal charter from Her Majesty Queen Elizabeth I in 1600 to trade in silk and spices, and other profitable Indian commodities,” recruited soldiers and built a ‘commercial business [that] quickly became a business of conquest' (Tharoor, 2017). SpaceX, too, is increasingly imbricated with an attempt on the part of a particular state, the United States, to colonize and appropriate resources derived from a particular area, that of outer space; it, too, depends on the infrastructure, contracts, and regulatory environment that thus far only a state seems able to provide. Its private character, like that of the East India Company, is troubled by being deeply embedded in the state. As one commentator has observed of SpaceX, ‘If there’s a consistent charge against Elon Musk and his high-flying companies…it’s that they’re not really examples of independent, innovative market capitalism. Rather, they’re government contractors, dependent on taxpayer money to stay afloat' (cit. Nelson and Block, 2018, p. 189).

#### **Private entities are not neutral, valueless entities, but carry colonial tropes and proclivities from Earth to space. Private appropriation sacrifices indigenous futures while locking in a feedback loop of capitalist violence.**

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Despite regular media reports of technological developments such as the successful testing of reusable rockets (Sheetz, 2017), space coloni- zation, tends to be treated as a fantasy or science fiction plot by global publics (Dickens & Ormrod, 2007). Recent developments in both the private and nationalized space industries, and indeed new collaborations between the two, are rapidly changing this scenario. Since the 1980s, for example, a group of primarily US-based entrepre- neurs, advocates and space scientists, collectively referred to as ‘NewSpace’, have been competing to be the first to exploit outer space for resources. Although the NewSpace community embraces diverse perspectives and subjectivities (Oman-Reagan, 2015), its dominant fig- ures share an understanding of the unbounded resources of the universe and the right of humans to dominate it (Valentine, 2012). The dominant actors in NewSpace enterprises are white, male, Euro-Americans who are amongst the world’s wealthiest individuals, including PayPal and Tesla entrepreneur Elon Musk, founder of Space Exploration Technolo- gies Corporation (SpaceX); entrepreneur Peter Diamandis, who is a principle in mining company Planetary Resources; and Amazon owner Jeff Bezos, who founded spaceflight company Blue Origin. These com- panies pursue various goals, including the development of reusable, cost-effective launch systems (SpaceX, Blue Horizon) and off-Earth mining equipment and techniques (Deep Space Industries, Planetary Resources).2

Although the drive to mine and possibly settle space is fuelled largely by private actors, several states, including the US, China and Qatar, offer increasing support for this industry, including funding infrastructure, research and development (Beery, 2012). Jason Beery (2012) points out that although major space agencies such as NASA have been contracting with private companies for decades, governments increasingly regard commercial projects, such as space ports, as part of their core efforts to promote economic growth, stability and the reproduction of the political-economic system (Beery, 2012:25). In some cases, states are working actively to create legal frameworks to enable or even incen- tivize the exploitation of space. Notably, although not the only example, in late 2015, the Spurring Private Aerospace Competitiveness and Entre- preneurship (SPACE) Act passed by the US Congress granted the exclusive right to US companies to exploit minerals, water and other resources (excluding biological life) found in space on a first-come, first-serve basis. The SPACE Act grants private property rights to US-based com- panies on the presumption that space has no owners or inhabitants.

For many advocates of space exploration and exploitation, extending resource markets into space is a means of gaining exclusive legal control over territory and resources, and, in this context, the term ’colonization’ is used in aspirational tones. For example, one early proponent of commercial space colonization envisions a future in which the “global expansion of European technology and civilization brought about by the terrestrial age of exploration is but a pale foreshadowing” (Lewis, 1996:5). Indeed, many space entrepreneurs and boosters do not flinch at the term ’colonization’ – they actively embrace it, as a beneficial project undertaken for, and in the name of, humanity (UNOOSA 1999). Of course, significant ground-work is required to frame colonization in aspirational terms given the deep violences that have occurred in its name, and so we turn now to four central attitudes deployed by many would-be space colonizers and advocates to highlight some of the foundations of these claims. While relationships with space are in no way monolithic, and indeed dominant Western accounts have their own diverse pre-Enlightenment engagements with the cosmos, as well as complex contemporary relationships, the tropes that we discuss here are strong and pervasive. These tropes act to empower and propel imagi- naries and realties, both on earth and in the sky, that enact colonizing pasts/presents/futures and negate the active agencies, legal orders and sovereignties of First Nations people and of Sky Country, in all its diverse manifestations.

First, many proponents of space colonization speak of space as a terra nullius: an uninhabited wilderness awaiting exploitation. This proposi- tion underpins claims that there are no Indigenous people in space, and no people Indigenous to space. NASA, for example, claims that their goal is to “build new land, not steal it from the natives [sic]” (NASA, 2014). Even scholars who are overtly critical of mainstream space programs and their effects on Indigenous peoples tend to cede this point. For instance, astrobiologist David Grinspoon (2004) argues that, “Mars has no people to be displaced ... we may have the opportunity to explore lands that are truly unoccupied, giving outlet to our need to explore without trampling on others.” Space archaeologist Alice Gorman (2005:88) has written extensively on the links between Australia’s space programme and its consolidation as a settler colonial state (Gorman, 2005). Yet, even in her critique of this colonial project, Gorman con- tends that

...of all landscapes, perhaps space alone can claim to be a true ‘wilderness’. Before 1957, there were no material traces of human activity. And while there may yet be life in the solar system, there has been no human life; no autochthons, no Indigenous inhabitants. Interplanetary space was a real terra nullius.

Terra nullius, a legal fiction which provided a foundation for the in- vasion and colonization of Australia and other First Nations territories globally, is not defined as a place with no people, rather it is a place that is deemed to have no Law/lore, no protocols and no constitutive re- lationships (Langton, 2001). To speak of Sky Country in this way, then, is an erasure of Indigenous Law, and of many, diverse legal orders, re- lationships and systems that extend to, and include, space. The image of space as an empty wilderness makes it possible for would-be space colonizers to present their plans as victim-free or ethically unproblem- atic.3 It also creates the impression that space is lawless and ungoverned, which opens it up to almost unregulated exploitation untrammeled by ethical concerns. As one international space law scholar argues, there are assumed to be “no known natives to outer space ... [so] there seems to be nothing inherently immoral about a right of first grab” (Reinstein, 1999:79).

#### The fantasy of limitless accumulation to satiate the need for a spatial fix causes extinction.

Robinson’16 “Sadistic Capitalism: Six Urgent Matters for Humanity in Global Crisis” William I. Robinson. Truthout April 12th, 2016 William I. Robinson is professor of sociology, global studies and Latin American studies at the University of California at Santa Barbara. His most recent book is Global Capitalism and the Crisis of Humanity. <https://truthout.org/articles/sadistic-capitalism-six-urgent-matters-for-humanity-in-global-crisis/> web//brooks

The "luxury shanty town" in South Africa is a fitting metaphor for global capitalism as a whole. Faced with a stagnant global economy, elites have managed to turn war, structural violence and inequality into opportunities for capital, pleasure and entertainment. It is hard not to conclude that unchecked capitalism has become what I term "sadistic capitalism," in which the suffering and deprivation generated by capitalism become a source of aesthetic pleasure, leisure and entertainment for others. I recently had the opportunity to travel through several countries in Latin America, the Middle East, North Africa, East Asia and throughout North America. I was on sabbatical to research what the global crisis looks like on the ground around the world. Everywhere I went, social polarization and political tensions have reached explosive dimensions. Where is the crisis headed, what are the possible outcomes and what does it tell us about global capitalism and resistance? This crisis is not like earlier structural crises of world capitalism, such as in the 1930s or 1970s. This one is fast becoming systemic. The crisis of humanity shares aspects of earlier structural crises of world capitalism, but there are six novel, interrelated dimensions to the current moment that I highlight here, in broad strokes, as the "big picture" context in which countries and peoples around the world are experiencing a descent into chaos and uncertainty.1) The level of global social polarization and inequality is unprecedented in the face of out-of-control, over-accumulated capital. In January 2016, the development agency Oxfam published a follow-up to its report on global inequality that had been released the previous year. According to the new report, now just 62 billionaires-- down from 80 identified by the agency in its January 2015 report -- control as much wealth as one half of the world's population, and the top 1% owns more wealth than the other 99% combined. Beyond the transnational capitalist class and the upper echelons of the global power bloc, the richest 20 percent of humanity owns some 95 percent of the world's wealth, while the bottom 80 percent has to make do with just 5 percent. This20-80 divide of global society into haves and the have-nots is the new global social apartheid. It is evident not just between rich and poor countries, but within each country, North and South, with the rise of new affluent high-consumption sectors alongside the downward mobility, "precariatization," destabilization and expulsion of majorities. Escalating inequalities fuel capitalism's chronic problem of over-accumulation: The transnational capitalist class cannot find productive outlets to unload the enormous amounts of surplus it has accumulated, leading to stagnation in the world economy. The signs of an impending depression are everywhere. The front page of the February 20 issue of The Economist read, "The World Economy: Out of Ammo?" Extreme levels of social polarization present a challenge to dominant groups. They strive to purchase the loyalty of that 20 percent, while at the same time dividing the 80 percent, co-opting some into a hegemonic bloc and repressing the rest. Alongside the spread of frightening new systems of social control and repression is heightened dissemination through the culture industries and corporate marketing strategies that depoliticize through consumerist fantasies and the manipulation of desire. As "Trumpism" in the United States so well illustrates, another strategy of co-optation is the manipulation of fear and insecurity among the downwardly mobile so that social anxiety is channeled toward scapegoated communities. This psychosocial mechanism of displacing mass anxieties is not new, but it appears to be increasing around the world in the face of the structural destabilization of capitalist globalization. Scapegoated communities are under siege, such as the Rohingya in Myanmar, the Muslim minority in India, the Kurds in Turkey, southern African immigrants in South Africa, and Syrian and Iraqi refugees and other immigrants in Europe .As with its 20th century predecessor, 21st century fascism hinges on such manipulation of social anxiety at a time of acute capitalist crisis. Extreme inequality requires extreme violence and repression that lend to projects of 21st century fascism. 2) The system is fast reaching the ecological limits to its reproduction. We have reached several tipping points in what environmental scientists refer to as nine crucial "planetary boundaries." We have already exceeded these boundaries in three areas-- climate change, the nitrogen cycle and diversity loss. There have been five previous mass extinctions in earth's history. While all these were due to natural causes, for the first time ever, human conduct is intersecting with and fundamentally altering the earth system. We have entered what Paul Crutzen, the Dutch environmental scientist and Nobel Prize winner, termed the Anthropocene-- a new age in which humans have transformed up to half of the world's surface. We are altering the composition of the atmosphere and acidifying the oceans at a rate that undermines the conditions for life. The ecological dimensions of global crisis cannot be understated. "We are deciding, without quite meaning to, which evolutionary pathways will remain open and which will forever be closed," observes Elizabeth Kolbert in her best seller, The Sixth Extinction. "No other creature has ever managed this ... The Sixth Extinction will continue to determine the course of life long after everything people have written and painted and built has been ground into dust." Capitalism cannot be held solely responsible. The human-nature contradiction has deep roots in civilization itself. The ancient Sumerian empires, for example, collapsed after the population over-salinated their crop soil. The Mayan city-state network collapsed about AD 900 due to deforestation. And the former Soviet Union wrecked havoc on the environment. However, given capital's implacable impulse to accumulate profit and its accelerated commodification of nature, it is difficult to imagine that the environmental catastrophe can be resolved within the capitalist system. "Green capitalism" appears as an oxymoron, as sadistic capitalism's attempt to turn the ecological crisis into a profit-making opportunity, along with the conversion of poverty into a tourist attraction. 3) The sheer magnitude of the means of violence is unprecedented, as is the concentrated control over the means of global communications and the production and circulation of knowledge, symbols and images. We have seen the spread of frightening new systems of social control and repression that have brought us into the panoptical surveillance society and the age of thought control. This real-life Orwellian world is in a sense more perturbing than that described by George Orwell in his iconic novel 1984. In that fictional world, people were compelled to give their obedience to the state ("Big Brother") in exchange for a quiet existence with guarantees of employment, housing and other social necessities. Now, however, the corporate and political powers that be force obedience even as the means of survival are denied to the vast majority. Global apartheid involves the creation of "green zones" that are cordoned off in each locale around the world where elites are insulated through new systems of spatial reorganization, social control and policing. "Green zone" refers to the nearly impenetrable area in central Baghdad that US occupation forces established in the wake of the 2003 invasion of Iraq. The command center of the occupation and select Iraqi elite inside that green zone were protected from the violence and chaos that engulfed the country. Urban areas around the world are now green zoned through gentrification, gated communities, surveillance systems, and state and private violence. Inside the world's green zones, privileged strata avail themselves of privatized social services, consumption and entertainment. They can work and communicate through internet and satellite sealed off under the protection of armies of soldiers, police and private security forces. Green zoning takes on distinct forms in each locality. In Palestine, I witnessed such zoning in the form of Israeli military checkpoints, Jewish settler-only roads and the apartheid wall. In Mexico City, the most exclusive residential areas in the upscale Santa Fe District are accessible only by helicopter and private gated roads. In Johannesburg, a surreal drive through the exclusive Sandton City area reveals rows of mansions that appear as military compounds, with private armed towers and electrical and barbed-wire fences. In Cairo, I toured satellite cities ringing the impoverished center and inner suburbs where the country's elite could live out their aspirations and fantasies. They sport gated residential complexes with spotless green lawns, private leisure and shopping centers and English-language international schools under the protection of military checkpoints and private security police. In other cities, green zoning is subtler but no less effective. In Los Angeles, where I live, the freeway system now has an express lane reserved for those that can pay an exorbitant toll. On this lane, the privileged speed by, while the rest remain one lane over, stuck in the city's notorious bumper-to-bumper traffic -- or even worse, in notoriously underfunded and underdeveloped public transportation, where it may take half a day to get to and from work. There is no barrier separating this express lane from the others. However, a near-invisible closed surveillance system monitors every movement. If a vehicle without authorization shifts into the exclusive lane, it is instantly recorded by this surveillance system and a heavy fine is imposed on the driver, under threat of impoundment, while freeway police patrols are ubiquitous. Outside of the global green zones, warfare and police containment have become normalized and sanitized for those not directly at the receiving end of armed aggression. "Militainment" -- portraying and even glamorizing war and violence as entertaining spectacles through Hollywood films and television police shows, computer games and corporate "news" channels -- may be the epitome of sadistic capitalism. It desensitizes, bringing about complacency and indifference. In between the green zones and outright warfare are prison industrial complexes, immigrant and refugee repression and control systems, the criminalization of outcast communities and capitalist schooling. The omnipresent media and cultural apparatuses of the corporate economy, in particular, aim to colonize the mind -- to undermine the ability to think critically and outside the dominant worldview. A neofascist culture emerges through militarism, extreme masculinization, racism and racist mobilizations against scapegoats. 4) We are reaching limits to the extensive expansion of capitalism. Capitalism is like riding a bicycle: When you stop pedaling the bicycle, you fall over. If the capitalist system stops expanding outward, it enters crisis and faces collapse. In each earlier structural crisis, the system went through a new round of extensive expansion-- from waves of colonial conquest in earlier centuries, to the integration in the late 20th and early 21st centuries of the former socialist countries, China, India and other areas that had been marginally outside the system. There are no longer any new territories to integrate into world capitalism. Meanwhile, the privatization of education, health care, utilities, basic services and public land are turning those spaces in global society that were outside of capital's control into "spaces of capital." Even poverty has been turned into a commodity. What is there left to commodify? Where can the system now expand? With the limits to expansion comes a turn toward militarized accumulation-- making wars of endless destruction and reconstruction and expanding the militarization of social and political institutions so as to continue to generate new opportunities for accumulation in the face of stagnation. 5) There is the rise of a vast surplus population inhabiting a "planet of slums," alienated from the productive economy, thrown into the margins and subject to these sophisticated systems of social control and destruction. Global capitalism has no direct use for surplus humanity. But indirectly, it holds wages down everywhere and makes new systems of 21st century slavery possible. These systems include prison labor, the forced recruitment of miners at gunpoint by warlords contracted by global corporations to dig up valuable minerals in the Congo, sweatshops and exploited immigrant communities(including the rising tide of immigrant female caregivers for affluent populations). Furthermore, the global working class is experiencing accelerated "precariatization." The "new precariat" refers to the proletariat that faces capital under today's unstable and precarious labor relations -- informalization, casualization, part-time, temp, immigrant and contract labor. As communities are uprooted everywhere, there is a rising reserve army of immigrant labor. The global working class is becoming divided into citizen and immigrant workers. The latter are particularly attractive to transnational capital, as the lack of citizenship rights makes them particularly vulnerable, and therefore, exploitable. The challenge for dominant groups is how to contain the real and potential rebellion of surplus humanity, the immigrant workforce and the precariat. How can they contain the explosive contradictions of this system? The 21st century megacities become the battlegrounds between mass resistance movements and the new systems of mass repression. Some populations in these cities (and also in abandoned countryside) are at risk of genocide, such as those in Gaza, zones in Somalia and Congo, and swaths of Iraq and Syria. 6) There is a disjuncture between a globalizing economy and a nation-state-based system of political authority. Transnational state apparatuses are incipient and do not wield enough power and authority to organize and stabilize the system, much less to impose regulations on runaway transnational capital. In the wake of the 2008 financial collapse, for instance, the governments of the G-8 and G-20 were unable to impose transnational regulation on the global financial system, despite a series of emergency summits to discuss such regulation.

#### **Independently, privatization sustains racial capitalist land exploitation.**

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Despite their occurring “out there,” many materially impactful activities in orbital space—such as satellite launches, spaceflight, and space-based astronomical observation—produce social and environmental inequalities. Engagements with debris are inextricably linked to the modern market economy, rely upon racial capitalism, and perpetuate transnational environmental inequalities (Pellow 2007; Pulido 2017). The creation and management of debris objects and the placement and operation of their associated industries contributes to global economic, racial, and environmental injustices (Klinger 2019). In turn, these inequalities shape knowledge production and inform imaginations of orbital space and debris. The idealistic imagination of space as a common resource for humankind (UNOOSA 1967) is waylaid by global political economy and racial capitalism such that orbital space and debris cannot be removed from a consideration of the inequalities inherent in terrestrial life (Collis 2017; Pulido 2017). Many outer space activities require access to an upper echelon of capital and power, where stakeholders craft core narratives that shape contemporary engagements with orbital space and debris objects around hegemonic ideologies (Genovese 2017). If we wish to understand orbital debris in their entirety beyond such narratives, we must consider orbital debris in relation to geographies of global power. The reentry of Cosmos 954, a Soviet intelligence satellite that fell over the Great Slave Lake area of the Northern Territories in Canada in 1978, has been well studied (e.g., Parks 2012; Power 2018; Power and Keeling 2018; Rand 2016, 2019) and is a revealing case when it comes to considering inequality and orbital debris. Though no one was directly harmed by the initial impact, the satellite’s nuclear reactor prompted a governmental effort to recover and dispose of the potentially radioactive debris scattered over 30,000 square miles (Parks 2012). Despite official reports claiming that the debris posed no significant risk to humans or nature, Ellen Power’s (2019) interviews with Dene and Métis communities in the vicinity of the crash reveal that they have ensuing fears about lingering satellite debris and radioactivity. This has impacted their traditional use of the land, as “the Dene fish and trap in almost every square mile of this area . . . there is no place where the debris fell which is not used by the Dene” (Erasmus 1980, in Power 2019: 41). One interviewee explained that she still “washed all the berries she picked before she ate them, just in case there might still be debris resting on the plants” (Power 2019: 49). Such anxieties are compounded by an understandable mistrust of Southern authority and a lack of follow-up after the initial cleanup operation (Power 2019). The background contamination of the crash site, caused in part by routine toxic externalization into this region (see Hird 2016), has made it difficult to discern the exact source of increased levels of illness since the crash (Power 2019).

Considering orbital debris in the context of reentry (i.e., not just debris in orbit, but that have been in orbit), reveals how they are defined in relation to place. Though Cosmos 954 fragments were seen as a potential threat to humans and animals by the Canadian government, this risk was downplayed due to the colonially imagined “emptiness” of the Canadian North (Hird 2016; Rand 2019). Official reports and media presented satellite fragments as somewhat “in place” in the Northern Territories—somewhere that “stoically and harmlessly absorbed the nuclear detritus of Cosmos 954” (Rand 2019: 90). Though these reentered debris did not fall in the Pacific Ocean—the usual destination for earthbound orbital objects (De Lucia and Iavicoli 2019)—the Arctic, the deep sea, and outer space are similarly imagined through colonial logics as empty and lifeless (Collis 2017; Klinger in Dunnett et al. 2019; Rand 2016, 2019). The impact of this colonial geographical imagination on the perfunctory American–Canadian cleanup effort was well summarized by a community member who asked, in Chipewyan: “Would the government have done more if the satellite had fallen in the middle of Toronto?” (Knight 1978, in Rand 2019: 90). For these communities, debris are not innocuous or trivial, but deeply out of place and ongoing threats to their lives and land (Power 2019). Responses to Cosmos 954 demonstrate how different actors carry their geographical imaginations into practice, as well as how these imaginations can perpetuate inequalities.

Reentry events also draw attention to other externalities of the space industry (Gorman 2011). The material externalities of orbital objects are not limited to orbital space, and the terrestrial burden of outer space activities is not equally shared. For instance, scholars have noted the unequal geographies of rocket launch sites, which are often placed in areas inhabited by marginalized communities (Gorman 2005; Klinger 2019; Kopack 2019; Redfield 2000). The people and environments in the proximity of launch sites are at risk from toxic and material fallout, and the placement of such operations often follows the strategic, racist geographies of sacrifice zones (Klinger 2019). This refers to the geographical “pattern of environmental injustices in which low-income and minority populations are at greater risk of being exposed to health destroying toxic chemicals” (Lerner 2010: 297), often the toxic fallout of corporate or state activities. For example, the land that surrounds the Baikonur Cosmodrome in Kazakhstan is in ecological crisis following thousands of rocket launches, something that Robert A. Kopack argues “continue[s] [the] historical disposability” (2019: 560) of this landscape and its inhabitants. Additionally, Daniel Sage (in Dunnett et al. 2019) has highlighted the uneven labor geographies of the space industry, in which private commercial endeavors such as SpaceX rely on an increasingly nonunionized, precarious workforce. Understanding the externalities of outer space industries in the context of power and injustice is essential for postulating a departure from hegemonic considerations of orbital debris and their impacts.

#### Thus, I affirm – Private entities ought not appropriate outer space.

#### Private appropriation is a loophole for nation-state appropriation of space. The absence of this system allows for the emergence of new, proto-communist modes of developing space policy.

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But how are we to understand NewSpace? In some ways, NewSpace signals the emergence of capitalism in space. The production of carrier rockets, placement of satellites into orbit around Earth, and the exploration, exploitation, or colonization of outer space (including planets, asteroids, and other celestial objects), will not be the work of humankind as such, a pure species-being (Gattungswesen), but of particular capitalist entrepreneurs who stand in for and represent humanity. Crucially, they will do so in ways modulated by the exigencies of capital accumulation. These enterprising capitalists are forging a new political-economic regime in space, a post-Fordism in space aimed at profit maximization and the apparent minimization of government interference. A new breed of charismatic, starry-eyed entrepreneurs, including Musk’s SpaceX, Richard Branson’s Virgin Galactic, and Amazon billionaire Jeff Bezos’s Blue Origin, to name but a selection, aim at becoming ‘capitalists in space' (Parker, 2009) or space capitalists. Neil Armstrong’s famous statement will have to be reformulated: space will not be the site of ‘one giant leap for mankind', but rather one giant leap for capitalistkind. 5 With the ascendancy of NewSpace, humanity’s future in space will not be ‘ours', benefiting humanity tout court, but will rather be the result of particular capitalists, or capitalistkind,6 toiling to recuperate space and bring its vast domain into the fold of capital accumulation: NewSpace sees outer space as the domain of private enterprise, set to become the ‘first-trillion dollar industry', according to some estimates, and likely to produce the world’s first trillionaires (see, e.g., Honan, 2018)—as opposed to Old Space, a derisive moniker coined by enthusiastic proponents of capitalism-in-space, widely seen to have been the sole preserve of the state and a handful of giant aerospace corporations, including Boeing and Lockheed Martin, in Cold Warera Space Age.

Under Donald Trump’s presidency, the adherents of NewSpace have found a ready political partner. The commercialization of outer space was already well under way with Obama’s 2010 National Space Policy, which emphasized ‘promoting and supporting a competitive U. S. commercial space sector', which was ‘considered vital to…continued progress in space' (Tronchetti, 2013, p. 67–68). But the Trump administration has aggressively pursued the deregulation of outer space in the service of profit margins. Wilbur Ross, President Trump’s Secretary of Commerce, has eagerly supported the private space industry by pushing the dismantling of regulatory frameworks. As Ross emphatically stated, ‘The rate of regulatory change must accelerate until it can match the rate of technological change!' (Foust, 2018a). Trump has proposed privatizing the provision of supplies to the International Space Station (ISS) while re-establishing the Cold War-era National Space Council, which includes members from Lockheed Martin, Boeing, ULA, and a series of NewSpace actors, such as SpaceX and Blue Origin. Ross was visibly enthusiastic about SpaceX’s Falcon Heavy launch in February 2018 and seemed to embrace Musk’s marketing ploy. ‘It was really quite an amazing thing', Ross said. ‘At the end of it, you have that little red Tesla hurdling [sic] off to an orbit around the sun and the moon' (Bryan, 2018). That same month, Ross spoke before the National Space Council, commenting appreciatively that ‘space is already a $330 billion industry' that was set to become a ‘multitrillion-dollar one in coming decades'. He noted that private corporations needed ‘all the help we can give them' and said it was ‘time to unshackle business activity in space' (Department of Commerce, 2018). Secretary Ross’s remarks followed on the heels of the American Space Commerce Free Enterprise Act, a U.S. House of Representatives bill introduced in 2017, which, in a remarkable volteface, unilaterally declared that ‘space is not a global commons', a crucial departure from ratified international treaties that paved the way for private property rights and the exploitation of precious resources in outer space. In case anyone had missed this little-noticed policy démarche, tucked away in the midst of an obscure piece of legislation, one of Trump’s supporters, the executive director of the National Space Council, Scott Pace, publicly reiterated that ‘outer space is not…the “common heritage of mankind”, not “res communis”, nor is it a public good' (Pace, 2017). Instead, outer space was quickly being recast as a private good or a space for private property. As the United States became ‘ “open for business” in space' (Smith, 2017), in the words of one Republican congressman, space itself was being opened up to the interests of private enterprise.

The Outer Space Treaty of 1967 established space as terra nullius. One of the treaty’s premises is that no celestial body can be claimed as the property of any particular state, so that ‘outer space…is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means'.7 While this does not prevent nations from extracting resources from celestial bodies, there is a clear requirement that these activities benefit all of Earth’s inhabitants (Tronchetti, 2013, p. 14; Lyall and Larsen, 2009), paving the way for kind of communism in space which precludes the proclivities of capitalistkind. As noted, however, the Outer Space Treaty’s assertion of space as a commons has come under pressure in recent years, at first in the form of so many quasi-comical ventures, bordering on fraudulent shams, with a flourishing online trade in ‘lunar property'— ‘Everybody Is Saying It…Nothing Could Be Greater Than To Own Your Own Crater!'8 —including the production of seemingly authentic land deeds that remain practically unenforceable and contravened by treaty obligations anyway. More recently, its status as commons has been denied by President Trump and leading US Republicans. Communism in space was a possibility only so long as space was materially inaccessible to capitalistkind: as space becomes a probable site of profitable ventures, the Outer Space Treaty’s proto-communism must falter and fade away.

#### The ROJ is to promote relational modes of thinking of outer space policy. You should prioritize the production of speculative futures that decenter hegemonic narratives of space policy.

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In looking to more expansive considerations of orbital debris, it is imperative to recognize that alternative imaginations of the place of outer space and its relations are not new. In this article, we have largely engaged with limited Euro-Western literatures to investigate hegemonic narratives. If we are looking for insight into how to conceive of human–space relationships and considerations of the more-than-human, how might we learn from non-hegemonic ways of knowing such as Indigenous ontologies, which have articulated their own long-standing frameworks for human–environment relations (Todd 2016)? To engage with the topic of outer space or orbital debris, and propose alternative imaginings of these environments, objects, and relations without acknowledging ways of knowing that already have expertise in engaging in relational ways of thinking would be a form of ontological colonization (Todd 2016). We think it is essential not only to theorize how dominant geographical knowledge production normalizes colonial thought, but also to encourage orbital scholars and stakeholders to practically make room for non-hegemonic knowledges (De Leeuw and Hunt 2018). Dominant considerations of orbital debris are largely attentive to the interests of the global elite. Diverse geographical imaginations not encumbered by the human–nature divides of colonial capitalist thought can provide different understandings of orbital space and debris (Watts 2013). Critical scholarship has looked not only at ways in which environmental relations can be conceived outside of dominant ontologies, but has also framed human interactions in orbital space within narratives of colonial violence, sovereignty, environmental ethics, and questions of who the future of outer space is for (Bawaka Country et al. 2020; Cornum 2015; OmanReagan 2017). Domains of speculative science fiction literature4 such as Afrofuturism or Indigenous Futurism have considered the forms future human activity in outer space might take from non-hegemonic, anticolonial, or anticapitalist perspectives (Yaszek 2006). Considering speculative futures allows not only reflection on what lies ahead—what may happen, who will benefit or be harmed—but also the examination of present inequalities and decisions that will affect potential futures. We thus encourage a critical decentering (see Roy 2016) of discussions of orbital debris, so that the narration of speculative futures, of humankind’s actions in orbital space, and of the differentiated impact of these actions, may be diversified. Making room for non–Euro-Western geographical imaginations of orbital space would allow for a more complete interrogation of how orbital debris interrelate with global systems of capitalist and colonial logics of consumption and extraction, and how orbital space matters beyond its operational capacity.