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From Colonial Terraforming towards a Planet-Based Solidarity: Indigenous Speculations between Planet Earth and Outer Space

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Terraforming has long been one of the most popular concepts in SF and space colonization discourses to think about the necessary territorial changes on other planets to make them habitable for humans. More recently, however, terraforming has made the journey from alien environments back to Earth to reflect on how colonialist-capitalist practices have already changed the planet. Anne Stewart conceptualizes the histories and futures of these practices with the term 'colonial terraforming' – a praxis which describes the transformation of places to make them habitable only for a particular set of people: European colonial settlers. Thus, terraforming not only changes the land but also can be read as an ontological practices that creates the "ecological genre of the human," as Derek Woods puts it in conversation with Sylvia Wynter.

When land provides the "ontological framework for understanding relationships," as Glen Coulthard frames it in *Red Skin, White Masks*, what does it mean for Indigenous onto-epistemologies when the ground is shifting, dispossessed, terraformed? This essay critically engages with this question: translating Coulthard and Leanne Simpson's concept of "place-based solidarity" to a "planet-based solidarity," I read Indigenous futurist texts as decolonial practices of relating to the land, planets, and the cosmos. After a theoretical engagement with terraforming and its entanglements within current speculative projects of colonizing Mars and dominant narratives of astrocapitalism, I read three short stories that are set *against* and *beyond* the extractive logics of colonial modernity: Adam Garnet Jones's "History of the New World," jaye simpson's "The Ark of the Turtle's Back" (both published in *Love After the End*, ed. Joshua Whitehead) and Celu Amberstone's "Refugees" (first published in *So Long Been Dreaming*, ed. Nalo Hopkinson). Each of these stories is set in a different moment of extraterrestrial exodus: while still on Earth, during the journey in space, and after arrival on an alien planet. Through their speculative interventions in discourses of climate disaster, colonialism, and the ongoing dispossession of Indigenous peoples, I argue that these Indigenous futurist narratives imagine a different cosmic order, marked by a generative refusal of the available scripts of relating to the galaxy.

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the site was discovered
during construction of a new venous
highway for stars birthing themselves

out of pyroclastic dust and telepathy
in the time zone of some desperate hour
when all our exits are terraformed
— Liz Howard, "Terra Nova, Terraformed"

In "Terra Nova, Terraformed," Anishinaabe poet Liz Howard poetically engages with terraforming, a concept which emerged in science fiction to speculate about technological changes that would need to be made on other planets to make them habitable for human life. In the poem, however, Howard does not follow the linear trajectory of technologically driven development prevalent in myriad space operas and contemporary techno-utopian space colonization discourses. Rather, she suspends the semantics of "terraforming" in favor of investigating the word's various underlying meanings, both in the present and the future. The "construction of a new venous highway" alludes to the colonization of outer space that leaves in its wake the destruction of Earth, a place—like "all our exits"—already terraformed. Howard reads terraforming as more than a material project of geoengineering; rather, she highlights the concept's entanglements in the histories of colonialism and capitalism, and practices of extraction and accumulation. Anne Stewart calls this legacy and its futures "colonial terraforming," a term that refers to the alterations to (other) planets that create habitable conditions only for a particular group of people: European colonial settlers.

Echoing the colonial transformation of Turtle Island into Canada, the US, and Mexico, which through the establishment of the settler infrastructures of the West forcefully destroyed Indigenous worlds, contemporary discourses of space colonization imagining the terraforming of Mars and other celestial bodies operate within the same logic of manifest destiny. This is a future that "simply reproduces the norms, systems, and myths of oppression and violence of the European colonial order," what Natalie Treviño calls the "cosmic order of coloniality" ("Coloniality" 226). Against the backdrop of a warming planet, the ever-shifting frontier is extended to the galaxy and can be read as a spatio-temporal fix for the devastating effects of climate change. As Julie Klinger reminds us, "the environmental geopolitics of Earth and outer space are inextricably linked by the spatial politics of privilege and sacrifice—among people, places, and institutions" (667). The terraforming of outer space is not a new story, but one that

is accelerated in the 21st century, which marks the New Space Age, the era of private space corporations and their perpetuation of techno-utopian progress narratives.[1] Consequently, Gamilaroi astrophysicist Karlie Alinta Noon et al. argue that "[c]urrent existential threats facing Earth and humanity are being used as justification for colonising upwards and outwards" (239). This imagination of a future without reckoning with the violent colonial past merely constitutes the continuation of "a pathogenic global social order of imagined futures, built upon genocide, ecocide, and total ruination," as it is stated in the *Indigenous Anti-Futurist Manifesto*; the speculatively built futures are "an economic and political reordering to fit a reality resting on pillars of competition, ownership, and control in pursuit of profit and permanent exploitation." Writing about the interrelations between "capitalist/imperialist speculations and decolonial (re) visions of speculative fiction" thus also means to be conscious of the architectures of colonialism, "the ground shifting beneath our feet" (Cornum and Moynagh 9). This is the point of departure for this article: When land provides the "ontological framework for understanding *relationships*," as Glen Coulthard (Yellowknives Dene) frames it in *Red Skin, White Masks*, a shifting ground, a terraformed surface, has consequences for Indigenous futurist imaginaries of space and time. Reading (colonial) terraforming through Indigenous land-based epistemologies leads to the following key questions that I want to think through in this essay: What does it mean for speculative texts which are grounded in place-based knowledge, when the ground is changing, dispossessed, its resources extracted? How are earthly and planetary movements entangled with epistemic and ontological shifts? What does it mean to think contact otherwise, not in terms of conquest but of relation?

Taking the ground—both on Earth and on other celestial bodies—as the material and epistemological foundation, I read three Indigenous futurist short stories which subvert the perpetuation of (intergalactic) colonial utopias and speculate towards decolonial visions of the cosmos: Cree, Métis, and Danish author and filmmaker Adam Garnet Jones's "A History of the New World"; Oji-Cree Saulteaux poet jaye simpson's "The Ark of the Turtle's Back" (both published in *Love After the End*, edited by Oji-Cree writer and scholar Joshua Whitehead); and "Refugees" by Cherokee fantasy and science fiction author Celu Amberstone, first published in *So Long Been Dreaming* (ed. Nalo Hopkinson). These stories are grounded in Indigenous land-based epistemologies

[1] There are several different terms and time periods used to demarcate the contemporary corporate Space Age. "Second Space Age" is a widely used term, which inception is often set in 2004 with the launch of the first nongovernment funded spaceship (Ganser and Temmen 289); Craig Henry Jones uses the abbreviation NSE (New Space Economy), which he dates back to the early 2010s; Fred Scharmen refers to "New Space" corporations in his book *Space Forces*; and most recently, Mary-Jane Rubenstein has termed the current epoch the "era of NewSpace" (ix).

and attempt to think contact not through conquest but through what Coulthard and Michi Saagiig Nishnaabeg scholar Leanne Betasamosake Simpson call "place-based solidarity" (249). Each story enables a different entry point into terraforming as each is set in a different moment of extraterrestrial exodus: while still on Earth, during the journey in outer space, and after the settlement of an alien planet. What unites them is not only that the reason for escaping Earth are the devastating changes to the earthly environment, but also that they complicate straightforward notions of what it means to arrive or live on a planet. Cherokee scholar Joseph M. Pierce echoes this sentiment beautifully: "We understand our place in the cosmos as neither its center, nor its margins, but as part of an interconnected set of relationships that emerge across time and space. We are related to the stars and the trees. This is not metaphor. This is not myth" (12). In contrast to the colonial-capitalist logics of extraction, the three short stories of my analysis are grounded in relationality to the land and the more-than-human. Through their speculative engagement with this transtemporal "desperate hour"—to come back to Howard's poem—these stories offer glimpses into a decolonial relationship to the cosmos.

(Colonial) Terraforming: Past, Presents, Futures

The term 'terraforming' entered the lexicon of science fiction through the story "Collision Orbit" by science fiction writer Jack Williamson in 1942 (published under the pen name Will Stewart). As Chris Pak writes in his prolific analysis of the term in sci-fi and space culture, terraforming "involves processes aimed at adapting the environmental parameters of alien planets for habitation by Earthbound life, and it includes methods for modifying a planet's climate, atmosphere, topology, and ecology" (1). More recently, however, the concept has made the journey from alien environments back to Earth.[2] Due to increasing threats of climate disaster in the age of the Anthropocene, terraforming is used to articulate the fact that human acts—to be more precise: colonialist-capitalist structures—have already changed the Earth. The argument goes that "if climate change has been accidental modification," this also "suggests the ability to do the same thing intentionally" (Woods 7). Various strategies are proposed, from capturing CO2 to stratospheric aerosol injection to block out solar rays and reduce global warming. As Derek Woods writes, "terraforming became a means of understanding both what some humans *have* done to the earth system and what some *might* do, going forward, as climate engineering (or *geoengineering*) becomes a serious

[2] While there is indeed more discussion on terraforming today, this history reaches as far back as the 1960s, where scientists such as Carl Sagan argued that terraforming was a real possibility to make nearby planets ready for settlement. For a more elaborate discussion of terraforming in science writing see Woods (2019).

possibility." Despite the speculative nature of these technologies, they already influence the language and policy of climate change documents (such as the Paris Agreement), which are increasingly clinging to the hope for innovation and technological fixes, based in free market solutions and green capitalism.[3] To put it bluntly, geoengineering the entire Earth and its atmosphere sometimes seems more feasible for policy makers and corporations than the implementation of serious structural, political and economic changes on a global scale. Rather than reckoning with the violence and devastating effects that colonial modernity and its practices of extraction and dispossession have brought forth, terraforming is conceptualized as *deus ex machina* for a planet that is moving towards climate apocalypse.

Extending the idea of colonial terraforming to outer space, then, extrapolates the infrastructural project of (settler) colonialism to the galaxy. Considering the media hype surrounding SpaceX launches and the lack of critical engagement with the building of space ports on Indigenous land or the devastating ecological effects of privatized space corporations,[4] the intersection between colonial imaginaries in the future and colonial-capitalist structures in the very present become impossible to ignore, as "these visions of the future are not critical of their points of imagination, but, rather, enclosed in them" (Treviño, *Cosmos* 15). The speculative financial project of astrocapitalism with its techno-utopian Mars dreams echoes John Rieder's argument that "early science fiction lives and breathes in the atmosphere of colonial history and its discourses" (3). Mars, arguably the most popular planet in the imagination of both sci-fi authors and astrocapitalists—due to its proximity and relative similarity to earthly conditions—acts as the hinge between the colonial terraforming of Earth and outer space. It is the red utopian dot in the night sky, symbolizing the potential to escape the limits of growth on a finite planet and reach for the imagined infinite profits of the galaxy, ranging from space tourism to asteroid mining and multiplanetary

[3] In *The Great Derangement*, Amitav Ghosh for instance analyzes the 2015 Paris Agreement and draws out how the whole text brims over with corporate speech. Ghosh writes: "It is no secret that various billionaires, corporations and 'climate entrepreneurs' played an important part in the Paris negotiations. But even if this were not publicly known, it would be deducible from the diction of the Agreement, which is borrowed directly from free-trade agreements of the neo-liberal era: these clearly are the provenance of its references to 'accelerating, encouraging and enabling innovation' and of many of the terms on which it relies, such as *stakeholder*, *good practices*, *insurance solutions*, *public and private participation*, *technology development*, and so on" (156).

[4] SpaceX's Starbase from which the Starship test flights are conducted is built near the Boca Chica Wildlife Refuge as well as Boca Chica Beach, which is the sacred land of the Carrizo Comecrudo Tribe. Elon Musk's corporate policy not only limits the tribe's access to their traditional lands, but the infrastructure of the space port may also have destroyed important historical artefacts. As *YES! Magazine* reports: "It's more than likely ancient villages were bulldozed and any artifacts or remains uncovered were lost in the fog of construction when the launch center was first built in 2016." For a more detailed discussion about the coloniality of space corporations on Earth in their dispossession of Indigenous land and spirituality, see Alinta Noon et al. (2023) and Smiles (2023).

settlements. Colonial terraforming thus has brought forth the infrastructures of settler states and allows for the continuation of the Euro-Western progress narrative, which is marked by "an unrelenting linear timeline towards a settler future, where Indigenous peoples are the uncivilized past, American white-superiority the present, and Mars colonization and extraterrestrials the future" (Kite 145). The endeavor to make humanity multiplanetary, as SpaceX claims as its mission statement, is the paradigmatic example of a "reactionary technoliberal discourse" (Temmen 480) that builds a future on top of the past and present architectures and epistemes of colonial regimes. In the context of science fiction and speculative narratives, terraforming bridges the temporal and spatial gap between settlements on Turtle Island and on Mars, between the colonial "age of discovery" and techno-utopian futures in outer space.

Be it in the colonial past, the extractive present, or the techno-utopian future: the uniting fact is that terraforming creates worlds, and the world that has been created on planet Earth is the modern world, which through its forceful expansion has destroyed others. Potawatomi scholar Kyle P. Whyte reminds us that the settler state was not built on what was discursively constructed as *terra nullius* but on the ruins of Indigenous lifeworlds. Indigenous people today inhabit the post-apocalyptic cities that are the result of settler colonial projects; early settlers "have already depleted, degraded, or irreversibly damaged the ecosystems, plants, and animals that our ancestors had local living relationships with" (207). Understanding terraforming through the lens of settler colonial dispossession of land thus offers a new way of seeing the material and political structures of power that constantly (re)produce North American settler states. Leanne Simpson echoes this perception in her reflection on a walk through Peterborough, Ontario: "I understood that the landscape I knew as home would be almost unrecognizable to my Ancestors, and I hadn't known previously that I could barely even imagine the worlds that had already been lost" (*As We Have* 2). This understanding is precisely what Stewart means when she conceptualizes "colonial terraforming" as a practice "which makes the planet habitable for European colonial settlers, settler-adjacents, and domesticated nonhumans—one particular constellation of lifeforms—creating, in a very material sense, breathing room for these lifeforms to flourish" (16). Colonial terraforming frames land and place as inanimate objects; the land itself is reshaped "into *terra nullius*, ready for the taking by American settlers" (Kite 145–146).[5]

[5] This idea of a passive nature goes back to Enlightenment philosophy, as Anna Tsing writes in *The Mushroom at the End of the World*: "Ever since the Enlightenment, Western philosophers have shown us a Nature that is grand and universal but also passive and mechanical. Nature was a backdrop and resource for the moral intentionality of Man, which could tame and master Nature. It was left to fabulists, including non-Western and non-civilizational storytellers, to remind us of the lively activities of all beings, human and not human" (Tsing vii).

William Lempert argues that it is precisely this "inanimate view of the universe [...] that has enabled the colonial conquest of place and space through binary distinctions such as human/non-human and nature/culture" (63). The subjects of terraforming (colonial settlers) are reshaping the object of terraforming (the land), which in the view of the settler is empty, devoid of any life. During this process, Indigenous epistemologies and relations to the land are overwritten as the "right to conquer is intimately connected to the right to know" (Tuck and Yang 224). In terraforming narratives, this connection is also aligned with which knowledges are possible in the settler state, who counts as human, and who is allowed to exist—in the past, present, and the future.

Even when considering the case of extraterrestrial planets without any visible sentient beings, pushing the frontier to the galaxy with impunity has far-reaching consequences and is incommensurate with any decolonial practice. As the technology and infrastructure of rockets that take private and public space agencies to outer space depends on the dispossession of Indigenous lands and extraction of resources in the present—such as bauxite mining in the Caribbean (see Sheller 2014)—the solution cannot simply be the dislocation of extractive practices to a seemingly law- and lifeless galaxy, but a reckoning with and rejection of the present conditions of capitalism and colonialism. Terraforming does not begin when the first drills reach the seafloors in the search for oil or when the first nuclear bombs explode on Mars with the hope of creating an atmosphere: It emerges from a colonial mindset that pushes the frontier first westward then upward and outward, always looking for new land and bodies—both racialized and celestial—on the horizon to profit from and colonize. Rather than framing lands and beings as devoid of life or subjectivity in the first place, the question needs to be asked in reverse: What and who is legible and valuable as life in the language of profit and extraction?

No Humans/History Involved: Terraforming and Onto-Epistemology

Colonial terraforming not only alters a territory to create fitting conditions for certain lifeforms to flourish, but it also, as an onto-epistemological practice, shapes certain genres of the human. Understanding terraforming in this way resonates with the work of Sylvia Wynter, who traces how two dominant genres of the human emerged through and during the process of colonization. These dominant genres of Man are overrepresented as human, and all current struggles—including issues of "global warming, severe climate change, the sharply unequal distribution of the earth's resources" as well as "the dynamic overconsumption on the part of the rich techno-industrial North"—are "differing facets of the central ethnoclass Man vs. Human struggle" ("Unsettling" 260–261). The central ethnoclass of Man in the present moment, which Woods in an

engagement with Wynter calls the "ecological genre of the human" (14) and which Kathryn Yusoff has described as the "historiography of Colonial Man to Anthropocene Man" (19), has agency over the earth and, in extension, the planetary and galactic system. Thinking with Woods, Yusoff, and Wynter's ontological frameworks in conversation with Stewart's notion of colonial terraforming renders the space billionaire class as a representation of a genre of the human that "overrepresents himself as geoengineer or terraformer, his hand on the climatic thermostat" (Woods 15). Terraforming discourses in the Anthropocene can be read as "a process of subject formation that depends on constitutive exclusion and threatens a new way of functionalizing earth's peoples and ecosystems as *terra nullius*" (16). The catastrophe of climate change thus is also a catastrophe "of the ways in which the 'genre' of the human has been designated as an excluding and accumulating subject" (Gabrys). This is an argument that extends from climate change on earth to the colonial terraforming of the galaxy: phrases like "for all mankind" only include the dominant genre of the human, the implied "we" of humanity is "used as a referent for the human species as a whole" and "legitimizes all actions as being taken in the collective interest of and for a generic 'mankind'" (Ganser and Gfoellner 40). In the transmission of colonial logics from oceans and continents to the vastness of outer space, the epistemes that brought forth the violent dispossession of settler colonialism and slavery are constantly reproduced.

When colonial terraforming thus is a "negation" (Simpson, *Short History*) of Indigenous human, plant, and animal life, Indigenous futurist encounters with planets—Earth and others—refuse this negation without seeking recognition within dominant imaginaries. Thinking or imagining Indigeneity in outer space and/or in the future thus is not necessarily about mapping a tomorrow in which Indigeneity exists, where it is recognized, or where it even becomes part of a progress narrative. Rather, it is a rejection of the colonial ground on which the thought of the teleological future emerges, as Diné scholar Lou Cornum writes in their prolific article "The Space NDN's Star Map":

> The figure of the space NDN is not an attempt to simply put an indigenous face on the outer space colonizer. Indigenous futurist narratives try to enact contact differently. Not all encounters with the other must end in conquest, genocide or violence. The space NDN seeks new models of interaction. We do not travel to the distant reaches of space in order to plant our flags or act under the assumption that every planet in our sights is a terra nullius waiting for the first human footprint to mark its surface.

These otherwise models of interaction reject *terra nullius* narratives and are thus based on fundamentally different conceptions of land. Indigenous futurist stories imagine a complex and non-hierarchical relationship to place and a future that is more than

merely a technologically enhanced version of the present. These decolonial speculations go *against and beyond* the ontological conditions brought forth by colonial modernity. In this sense, Indigenous futurisms enact a delinking from colonial orders, which means that their speculations can be considered "an ontological event when altered material conditions produce not only a different relationship to the planet but a different mode of being human" (Stewart 31). They draw on the intelligence of grounded normativity; because in these stories, the "relationship to the land itself generates the processes, practices, and knowledges that inform our political systems, and through which we practice solidarity" (Coulthard and Simpson 254). Thinking Indigenous resurgence in outer space is aligned with returning to Indigenous epistemologies to conceive of otherwise ways of relating to bodies and lands or, in this case, planets and celestial bodies. As Cornum succinctly argues, it "is the settler who wishes to flatten the relation between place and people by claiming land through ownership. Projecting themselves forward into faraway lands and times, the space NDN reveals the myriad ways of relating to land beyond property" ("Star Map"). Through this relational framework, my aim is to translate Coulthard and Simpson's "place-based solidarity" to what could be termed a planet-based solidarity. The world-building in the Indigenous futurist works that I read is a form of place-making that is grounded in a reciprocal and non-hierarchical relationship to the land, and in extension to the planet. Grounded normativity in outer space and in science fiction narratives means to think contact narratives and world-building differently, in other ways than colonial conceptions of terraforming. Indigenous futurist conceptions of contact—be it contact between humans, contact between humans and the more-than-human, or contact with the land—are based on practices of kinship and solidarity.

Towards a Planet-Based Solidarity

"History of the New World" by Adam Garnet Jones provides entry points into both colonial terraforming discourses and Indigenous land-based epistemologies. In the story, climate change has been ravaging Earth for decades and by the time Em, the narrator of the story was born, "most governments had stopped believing in the possibility of saving the planet and moved on to serious explorations of potentially habitable nearby planets" (Garnet Jones 40). Terraforming here can be read as a spatial fix, as a displacement of "climate anxiety onto other, non-Earth planets" that allows "for the sense that these anxieties are at once remote and solvable" (Persinger 1). Everyone in the story seems sure that this planet *is* the future, a *tabula rasa* on which everything is possible. Em, however, thinking and feeling through the embodied inter-generational knowledge of people exploited through colonization, is skeptical about

this framing, especially about the governmental research reports that are regularly transmitted to Earth:

> From them we learned that, on average, the weather on the New World would be two degrees colder than Earth. We heard that the ocean currents were different, even though the land masses of both planets were near mirror images of one another. Pundits and politicians used vague searching metaphors, telling us over and over again that the planets were "like identical twins. At once the same and altogether different." (Garnet Jones 38)

The colonial New World as it is described here is the mirror image of the New World of the Americas in the past, represented as a new world in outer space in the future (see Cornum, *Skin Worlds* 78). Consequently, this "new" New World is only imaginable through the blueprint of the "old" New World, and thus also steeped in the language and expansionism of settler colonialism. The Neo-Europes, a term coined by Alfred Crosby in *The Columbian Exchange* to describe changes to the flora and fauna of Australia and the Americas resulting from European colonialism, are translated to Neo-Earths in space colonization narratives. As Timothy Sweet argues, "the Euro-forming or 'improvement' of the American environment to bring it into the English economy thus anticipated the idea of terraforming Mars" (280). Consequently, the story's research dumps read like a space-time machine, where the almost "identical twin" planet is framed as a proto-colonial Earth on which humanity can start again. This sentiment becomes even more clear when the research data is replaced by "advertisements showcasing the bounty of the New World. Glittering settlements that shot up overnight in New Miami, emerald oceans teeming with fish that leapt into fishermen's boats" (Garnet Jones 44).[6] The new planet is discursively framed as a "blank page" (43), which erases its history and frames it as a *(plane)terra nullius* to which humans can move on and start again, taking with them the baggage of colonial history and leaving in their wake a burned and broken Earth, emptied of its resources. As Alessandra Marino writes, it is precisely this view of outer space as "pristine or untouched wilderness"—seen through the binary between inside and outside, center and periphery, earth and the cosmos—that frames it "within a colonial cartographic mindset, which admits and allows the possibility of occupation and conquest" (31). Colonial terraforming thus changes first the map then the territory (see Wynter 2006), relentlessly reproducing

[6] The naming of the city as "New Miami" is another trace of the continuation of colonial language. As Amitav Ghosh writes in *The Nutmeg's Curse*, "the adjective 'New' comes to be invested with an extraordinary semantic and symbolic violence. Not only does it create a *tabula rasa*, erasing the past, but it also invests a place with meanings derived from faraway places."

and rebuilding the cartographies and structures from the present. Instead of reckoning with the violent past of dispossession and extraction, the settler's gaze is always directed towards the frontier, looking outward to serve the ever-expanding need for accumulation in a capitalist economy.

Each government report in the story illustrates the impossibility of truly acknowledging the strangeness of the new planet, every plant and animal is immediately classified and archived in the language of the colonizers. There is apparently "no history except that which the people brought with them" (Garnet Jones 44). This is precisely the cyclical loop of coloniality that reverberates through the past, present, and future. It is not that the New World planet does not have history. Quite the contrary: one day it is discovered that there is a sentient underwater species living on it; but rather it is framed as having no history, the life on it is not legible as sentient life in the limited genres of the human that the colonizers bring with them. This is the epistemological violence of settler colonial projects, which have the aim of "containing, immobilizing, and dehumanizing Indigenous populations in order to control land" (Cornum, *Skin Worlds* 90). When Em argues for the rights of these Indigenous more-than-human beings to their land by articulating that they even developed the capacity for language and entered in conversation with humans, their partner responds: "Yes, and?" The seemingly small careless impunity of this question holds the violence of centuries of colonial logics. In the colonization of lands and peoples there are no humans and no history involved; the dominant genres of the human are brought forth through the negation of their conceptual other (see Wynter 1994).

However, "History of the New World" also provides an example of how a decolonial relationship to a planet could look like. In the story, "the only ones not pinning their hopes on fleeing to some distant planet were NDNs [...] Our people had been rebuilding our languages and cultures for the last three generations, returning to the land as the rest of the world prepared to abandon it" (42). Consequently, Em and their daughter Asêciwan do not leave with the other settlers, but decide to remain on Earth, and when they walk together through the city, they realize that colonial terraforming does not need to be the only way to relate to this (or any other) planet: "It occurred to me that in a year or two the streets would look completely different as plants and animals began to reclaim it. We were sleepwalking through a twilight time, after the unchecked human explosion, and before whatever came next" (58). At the end of the story, Garnet Jones fast forwards to this time that came next, where the colonial terraforming of Earth has been somewhat reversed through a shared effort by plants, the land, and the more-than-human and a new law has been written by the matriarchs, which brings forth "shared responsibilities between the people and all our relations" (60). "History of the

New World" thus is a story set simultaneously against and towards utopia, a utopia that comes from "generative refusal" (Simpson, *As We Have* 35): from the refusal to leave Earth behind and colonize a new planet to make the same mistakes, from a refusal to continue within colonial laws and dispossession, from a refusal of giving up Indigenous traditions and languages. The story invites us to think about what it would mean to live in relation to the land and the more-than-human, against the powerful forces of colonial governments that have already abandoned Earth. It is not possible to undo history, to write from a blank space, but it is possible to imagine a break with the present; it is from this generative refusal where an otherwise future might start to take hold. This is a future that operates beyond the linear *telos* of colonial futurity (Stewart 179). It is not the conquest of another planet that is central, but the re-imagination of the relations with Earth.

Asking a Planet Out

Whereas Em and Asêciwan finally make the decision to stay on Earth, this possibility is foreclosed in jaye simpson's "The Ark of the Turtle's Back." This story provides an interesting entry point into an Indigenous perspective on the speculative colonization of outer space. The story is set about 200 years in the future: Earth is virtually destroyed, there is almost no drinking water left, and an authoritarian government is attempting to terraform Moon as well as Mars. Terraforming Earth, so to speak, is almost done: the planet has been extracted of most of its resources and an international private space sector recruiting racialized workers for the work on the intergalactic settlements has opened up. As Dakib, one of the main characters in this story centered on a queer Indigenous family, predicts when her sister is questioning the need to escape: "Mars has a strong enough atmosphere with arable land. Who do you think is going to do that work?" (simpson 66). As the story progresses, the more dire the situation on Earth gets, the more involuntarily the recruitment becomes. The NIA (short for New Indian Agents) begin "stealing bodies for their mining and 'settlement' camps off planet" (65). Consequently, the only solution for Indigenous people is the secret migration to another planet in the habitable zone of a star; not only to find a place that sustains human life, but also to escape the violence of the Moon and Mars colonies, which rely on Indigenous lives for their mining and settlement camps in the cosmos.

"The Ark of the Turtle's Back" provides the backdrop of climate change as incentive for space colonization, but it also offers two distinct reasons for approaching other planets in outer space: colonial terraforming and grounded normativity. The imperial Moon and Mars Colonies see these respective celestial bodies as *terra nullius*, from which to take everything to secure the continuation of life and structures as they are

known. The racialized working class has to transform everything to make it convenient for the ethnoclass of settlers to arrive; their task literally is to create an atmosphere in which only a certain group of people can flourish. Taking the earthly environment as the blueprint to be recreated on other planets through terraforming means reproducing an ecology that necessarily remains antiblack as well as anti-Indigenous.[7] In the story, such an atmosphere is created on the moon, which is approached by settler colonialists from the beginning as a lifeless piece of matter, but in truth it is the violent colonial terraforming of the celestial body that dispossesses its agency and spirit. This fact is exemplified when one character tries to spiritually reach out to the moon but realizes "that Nokomis Moon had long been hidden since her violent colonization a decade ago" (simpson 71). Colonization thus not only kills the moon's resources but also its spirit.

In contrast to colonial terraforming, the Indigenous exodus from Earth is marked by a different relationship, which is already exemplified by the difficulty of leaving Earth. The characters are angry and sad, because leaving Nimama Aki—Mother Earth in Anishinaabemowin—means leaving a part of the family, a relationship. As one character puts it: "We are the caretakers, and if she dies, we die too" (69). The anger and frustration with leaving Earth is expressed through the language of plants and place-making: "I sway like birch trees during a prairie black cloud storm. I try and ground myself, breathe in and out, on counts of four, until the ringing stops and my chest isn't heaving like angry earth sinking into the oceans" (66). But in order not to be forced to work and die on one of the imperial colonies, the Indigenous family finally makes the exodus with myriad other Indigenous peoples. During the journey to the new planet, the main character becomes hesitant and asks: "How do we build a relationship with this new planet?" (76), and the flight attendant simply smiles and answers: "I would assume like all consensual relationships: we ask them out." The dynamics of a romantic relationship are extended to the more-than-human, to the land, to a planet, and suddenly a consensual, reciprocal relationship becomes imaginable. Outer space and celestial bodies are not seen through the prism of extraction or conquest but with curiosity and kindness. The notion of life in the galaxy is expansive when it is imagined from Indigenous ways of relation, and the story invites readers to speculatively dwell in a different atmosphere than the pervasive coloniality of the weather. The planet that is usually only of interest in terms of its resources here is given agency, it is literally asked out. And while the planet does not respond—the story ends before the arrival—it is the gesture of considering the agency of the planet that marks a decisive departure from colonial terraforming. In contrast to the

[7] Christina Sharpe describes this atmosphere as the weather, the "totality of the environments in which we struggle; the machines in which we live" (111). Sharpe's thinking on the antiblack climate that constitutes the world has tremendously influenced my thinking on the entanglements of ecology, racialization, and colonialism.

aim of extracting resources *from* the planet, simpson invites us to consider a relationship *with* the planet. This constitutes an approach to another celestial body that generatively refuses a *terra nullius* narrative; these new lands are "not empty spaces to be filled but deeply situated social and ecological environments" (Brooks 4). Imagining this planet-based solidarity is an act of imagining otherwise, of imagining through what Pierce calls *speculative relations*, a "creative practice grounded in ethical engagement with the land, humans, and other-than-human beings, and which also opens possibilities for storying ourselves and our communities into the future" (15). Contact does not inevitably need to end in conquest or colonization; it is possible to approach another body of land with respect, care and consent.

Relationality on an Alien Planet

Whereas "History of the New World" is set on Earth and jaye simpson's story openly ends in the void of the journey, Celu Amberstone's "Refugees" is set on Tallav'Wahir, a planet to which Indigenous peoples have been brought by an alien race called the Benefactors because Earth is—so they are told—dying. Thus, the story is set "across the void," as Amberstone writes, but there still is a "soul-link with Earth Mother"; the connection with the previous home is never completely severed. "Refugees" provides various openings into questions of displacement, colonization, and the power of knowledge (see Dillon 2007; Sanchez-Taylor 2017; Perez-Garcia 2021). The question of grounded normativity is especially interesting here, as Qwalshina, the main protagonist through whose diary we encounter the story, writes: "My blood is red, an alien color on this world. But I am lucky because this planet knows my name" (161–2). Amberstone's story destabilizes the essentializing notion that Indigenous peoples are always perfectly attuned to their environment. Rather, "Refugees" is a narrative of what Ojibwe scholar Gerald Vizenor calls survivance, "an active sense of presence over absence, deracination, and oblivion" (1). Life on Tallav'Wahir is harsh, but the Indigenous peoples on the planet try to do more than survive; they are willing to adapt to the planet and build a relationship with it through traditional cultural practices. As Pierce writes, "If to live in good relations is the ethical imperative that guides my actions, then I cannot be the center of things. If I am not the center of things, then I must reach out, I must speculate, towards others, toward the possibilities of enacting good relations" (28). Indigeneity here is understood as a constant practice of relating, which must be actively sought and nourished; a sentiment reverberating in Leanne Simpon's writing on Indigenous resurgence, which she describes as "a set of practices through which the regeneration and reestablishment of Indigenous nations could be achieved" (*As We Have* 16). This set of practices is fundamentally connected to and in

conversation with the land. In a beautiful coincidence, "Refugees" echoes the title of Simpson's book when, at the end of the story—or rather, at the start of a new planetary cycle—Qwalshina hears the people in the village "sing the Awakening songs, as we have always done" (182). Amberstone further illustrates the importance of ceremonies in a conversation between Qwalshina and one of the new arrivants on Tallav'Wahir, who did not want to participate in the ritual for connecting with the new foster planet:

> The blood was given to the Stone so that our foster planet mother could taste you. Now She will know you as one of her own. We all make such offerings; it is one of the ways our Benefactors have taught us to commune with the soul of the land. Such traditions were practiced on Earth once—didn't you know that? (165)

Through including practices of ceremony and making them central in the process of building a relationship to the new planet, Amberstone illustrates that an Indigenous conception of land is not static and tied to only one place. Rather, "this connection can be maintained even after the loss of a particular piece of land" (Sanchez-Taylor 79). Although Qwalshina and her people are displaced peoples, diasporic Natives who were forced to relocate to another planet by the Benefactors, it is still possible to conceptualize them as a people who fight to maintain their cultural practices, traditions, and epistemologies in the face of extinction.[8] It is precisely the "adaptability to the environment" (Perez-Garcia 115) that is the resurgent practice in this story. Informed by grounded normativity, by listening and reaching out to the planet, it becomes possible to survive in this harsh environment.

Whereas in colonial terraforming narratives, planets are modified to resemble Earth, Amberstone offers a decolonial entry point into the practice of learning to live on and with another celestial body. It is not only the environment that is changed, but there is a "respect for land in the foster planet," as Perez-Garcia puts it, and the practices of solidarity with the land are conceptualized as a reciprocal relationship. The truth is: Tallav'Wahir cannot be changed or controlled through a predictable input-output relationship. The planet has agency and humans need to learn to live in tune with its seasons and moods. This is formally articulated in Qwalshina's diary entries, which are not structured by dates but by the Moon and Sun cycles of Tallav'Wahir. "Refugees" is grounded in planetary movements, its inhabitants gradually learn to live with an angry

[8] It is worth noting that the situation on Tallav'Wahir bears resemblance to a reservation-like structure, with a hierarchical relationship between its inhabitants and the Benefactors, who wield significant biopolitical power over them. For a detailed discussion of this power imbalance and the concept of diasporic Indigeneity on an off-planet reservation see Dillon (2007) and Sanchez-Tayler (2017).

planet in motion, which behaves differently than their homeland, the earth. By "knowing through and acting with these physical processes" (Stewart 17), the inhabitants on Tallav'Wahir attempt to be in conversation and "commune with the soul of the land" (Amberstone 165). Amberstone exemplifies this felt and ceremonial relationship, when she writes about the pain that both planet and inhabitants went through when the earth was struck by a disaster. Because of the disaster, Tallav'Wahir started trembling—which is the language of the planet—but the "land ceased to tremble by the time the ceremonies ended" (Amberstone 162). In contrast to colonial terraforming, which is unidirectional, geared towards the extraction and dispossession of land, Amberstone invites readers to see the reciprocal relationships between humans, the more-than-human, and the land when conceptualized through Indigenous land-based epistemologies. Consequently, "Refugees" is an Indigenous futurist story that shares "a sense of the need to listen to the demands of the planet as a guide to new ontological orders that create decolonized conditions for the work of becoming human" (178), as Stewarts puts it so aptly in *Angry Planet*. Through reciprocal relationships with a planet, through allowing conversations with both the lands of Earth and Tallav'Wahir, a new understanding of what it means to be human emerges, of what it means to resist the colonizing forces of the Benefactors, and to relate to the land and the more-than-human.

Conclusions: Beyond Settler Time and Space

As long as practices of settler colonial land dispossession continue to function unabated on Earth, the self-determination of Indigenous peoples, their epistemologies, their relationships are constrained. This does not change in a techno-utopian future, when Indigeneity is merely added to the list of people flying in spaceships. Consequently, Indigenous futurist stories do not just try to imagine Native people in space, but they tear down the logics that conceptualize Earth outside from the cosmos, that only look towards the next frontier, the next terra nullius to extract and colonially terraform. Reading and refusing the present through Indigenous futurisms thus can shift the ground of thought and act as a vessel towards an otherwise from which to imagine Earth, outer space, and all the relations in between anew. Anne Stewart echoes this when she writes that when we "change the way we understand the *being of* the planet," then we can "change our way of *being on* the planet" (15). This is the crucial change in perspective that Indigenous futurist stories invite: lands, planets, celestial bodies are not seen as places devoid of life, mere objects that can be changed according to the will of humans. Rather, contact enables communication and relations with the land and with all possible forms of life living on it, which might not even be legible in the colonial grammars of what constitutes life.

Moreover, the short stories by Garnet Jones, simpson, and Amberstone do not erase colonial history to map out a beautiful future. Rather, they are aware of the colonial ground from which they emerge but write utopian horizons *despite* these structures and in doing so act as vessels that gesture towards the possibility of *otherwise worlds*. The authors take us through some of the complexities of reordering the world and the cosmos, and they complicate variables that remain unquestioned in so many techno-utopian Western SF texts. What does it mean to leave Earth? Who is able to leave, who will stay, and whose knowledge is applied and taken to the future? How can you form a relationship with life-forms that are not legible as life in the language of colonialism? What does it mean to think contact otherwise? By posing these questions, by prying open the semantics and violent practices of terraforming, these stories "reclaim representational space and physical places, forging new, yet to be manifested, channels in the fabric of Indigenous space-time as creative modes of sovereignty" (Topash-Caldwell 54). Consequently, these decolonial speculations "are capable of an oppositional production of the planetary" (Cornum and Moynagh 16); they transform settler time and space and create a different cosmic order, marked by a generative refusal of the available scripts of relating to the galaxy.

Competing Interests

The author has no competing interests to declare.

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