



Form Transition: Decarbonization Beyond Settler Modernity

Citation

Matchett, Jennifer. 2021. Form Transition: Decarbonization Beyond Settler Modernity. Master's thesis, Harvard Graduate School of Design.

Permanent link

<https://nrs.harvard.edu/URN-3:HUL.INSTREPOS:37368122>

Terms of Use

This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Other Posted Material, as set forth at <http://nrs.harvard.edu/urn-3:HUL.InstRepos:dash.current.terms-of-use#LAA>

Share Your Story

The Harvard community has made this article openly available.
Please share how this access benefits you. [Submit a story](#).

[Accessibility](#)

Form Transition: Decarbonization Beyond Settler Modernity

By

Jennifer Matchett

Bachelor of Commerce, University of British Columbia, 2012

Submitted in partial fulfillment of the requirements for the degree of

Master in Design Studies
Critical Conservation

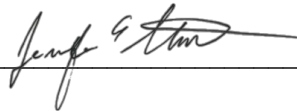
At the Harvard University Graduate School of Design

May, 2021

Copyright © 2021 by Jennifer Matchett

The author hereby grants Harvard University permission to reproduce and distribute copies of this Final Project, in whole or in part for educational purposes.

Signature of the Author _____



Jennifer Matchett
Harvard University Graduate School of Design

Certified by _____



Abby Spinak
Lecturer in Urban Planning and Design
Harvard University Graduate School of Design

Table of Contents

<i>0 Introduction</i>	2
<i>1 Energy Transition</i>	4
<i>2 Home Work</i>	13
2.1 hypothesis	13
2.2 methodology	14
2.3 process	16
2.4 analysis / indigenous epistemologies	22
<i>3 Carbon Form</i>	30
<i>4 Settler Form</i>	36
<i>5 Form Transition</i>	40
<i>6 Speculative Energy Form(s)</i>	43

0 Introduction

Recent discourse about climate change and the spotlight it has put on global energy systems have raised calls for new relationships to energy under a variety of open-ended terms: decarbonization, energy transition, green economy, etc. Following architectural theorist Elise Iturbe [and others], this project understands such calls for energy transition as a deeper contradiction in the structures of global modernity as not just dependent on fossil fuels but in fact shaped by their logic, perpetuated through practices, norms, and institutions in a self-replicating *carbon form*.

Carbon form works to name carbon modernity as form inclusive of the cultural, economic, and political conditions of social life sedimented into a spatial algorithm made possible by a certain source of energy, though not dependent on its continued usage. Thus, as Iturbe writes, “if solar panels are increasing the value of a real estate object, in a precarious neoliberal economy, that is carbon form” – that is, it is not just decarbonization of energy infrastructure but the dismantling of carbon form itself that is needed to break the structural norms of carbon modernity. Drawing on indigenous epistemologies, critical feminist studies, decolonial theory and situated entanglement, this thesis identifies carbon modernity as the persistence of the formal configuration of territory, infrastructure, and neocolonial revenue as the preconditions for carbon form—settler form – and argues that dismantling these cycles of extraction and exploitation require form transition. Form transition must be messier terrain than energy transition, by design. Bound up in form are affective orientations, electrical wires, invisible signals, concretes, silicones, borders, bodies and world-views. A turn to form transition demands experimentation in methodology and praxis that attempt to grapple with the structures and systems and connections that make the form possible.

In response to this, this project contemplates settler form through an (ongoing) multi-year engagement with a collective indigenous initiative tending to climate change planning *at home* in the Yukon Territory, Canada – a landscape where the impacts of climate change and questions of conservation are

taken up in different ways by the First Nation and State bodies that co-govern the territory's lands and resources. Highlighting aspects of methodology, process and results, the project reflects on epistemological frameworks supporting settler form and those needed to transcend it.ⁱ

1 Energy Transition

By 2040, the globe will require 48 percent more energy than it did in 2012 to support continued economic development, $\frac{3}{4}$ of which will come from fossil fuels (Energy Information Agency, 2016).

Energy easily recedes into the background of lived life and evades registration as political form, except in moments of energy transition, when it becomes a civic project to transform the energy system in the face of geopolitical threat or opportunity. Throughout the 20th century, electricity's civic journey has repeatedly affirmed energy's agency in shaping social life (Granovetter & McGuire 1998, Spinak 2020, Yakubovich & McGuire 2005). The particulars of this agency are inseparable from the agency and agenda of the human subjects responsible for that journey and this agency is knowable in the advent of direct current electricity, the modern electrical grid, the birth of the electrical environment (or, cybernetic communications), the proliferation of the electrical device, electrification as an international development priority, and most recently and relevant to this project, global decarbonization (Spinak 2021, Weiner 1961). Amidst the numerous ecological crises that define the planetary condition in this moment, the necessity to bring the world to zero-carbon has emerged at the forefront of *environmental* agendas around the world, raising calls for new relationships to energy under a variety of open-ended terms: decarbonization, energy transition, green economy, etc. The majority of this planet's scientists have articulated the dire consequences of not addressing the emissions problem while pointing out that the solution is not merely a question of technological substitution – energy transition – but likely requires commitment to *cultural* transition (Watts, 2018). Actions taken up by governments, municipalities and corporations across sectors and geographies to meet the Paris climate accord of limiting global warming to 1.5 degrees Celsius officially mark this moment. These commitments call for the death to fossil-fuels and the development of electricity infrastructure for both existing and future transportation networks as well as the primary energy needs of the built and unbuilt environment (Stockton, 2015). They take the form of official declarations: the urban

sustainability plan; the corporate sustainability plan, the *national* climate action solution plan (Checker, 2011). They include things like incentives for renewable energy deployment and building envelope efficiencies, which materially influence all intervention into the built environment and, in turn, the idea of solution to crisis that circulates in the world.

These plans imply solution to *crisis* in binary terms. Good energy is green. Carbon emitting sources are bad. Addressing the problem through this lens focalizes decarbonization on energy inputs (Peters 2020, Ramey 2019, Roberts 2019, Somini 2020). In other words, these plans are energy transition plans, and more explicitly electricity transition plans, given the primary source of energy will come from electrical power sources. Goodbye combustion engine. Decarbonization will be achieved by transitioning the energy feeding our grids and fueling our cars from fossil fuels to renewable energy inputs of all types – solar, wind, geothermal, hydrogen. The rhetoric that accompanies this mode of energy transition links the narrative of public good – via economic salvation and environmental protection – to green energy (Spinak, 2020).

But, which public? Whose version of economy and environmental protection?

“Revisiting early discourse about electricity’s social promise reminds us to look for the values and assumptions latent in climate change adaptation planning, renewable energy subsidies, and green infrastructure, as well as, of course, in proposals to expand more extractive energy infrastructure”
(Spinak, 2020, p.72).

Historians and cultural theorists have thoroughly critiqued energy transitions past and present for structurally maintaining neoliberal economic ideology, for exacerbating racial inequalities and environmental injustices and for reducing all imaginaries around the idea of public good and, more specifically, public infrastructure (Bellamy & Diamanti, 2018). Reading energy systems as inextricably linked to a certain logic of economics and a certain mode of labor politics is a critical *reading of energy* and it

reveals the way policymakers and corporate interests have coded the project of energy transition in the language of public good (Spinak, 2021).

“What is considered ‘need’ and ‘risk’ is a central question in the decision between nuclear power plants, coal-based energy, energy conserving measures or alternative energy sources, just as it is in old-age insurance, social welfare insurance, the determination of poverty lines, and so on. And each of these problems contains implicit decisions in a series of related consequences which ultimately flow into the issue of a different form of social life. Value free or not, the determination and operationalization of consequence, hypothetical conjectures and the like are therefore levers with which fundamental decisions on the social future are carried out” (Beck, 1992, p.174).

What one considers to be an appropriate response to the risks posed by climate change stems from whether one is assessing *symptoms or causes*. Ulrich Beck articulates a historical process that helps clarify how the above-described decarbonization path conforms to a risk assessment logic that will always result in the perpetual reproduction and treatment of symptoms produced by *modern society or carbon society*. In the period of *reflexive modernity* (what Beck calls the second transformation of modernity), *reflexive scientization* altered the idea of risk dramatically, morphing the general public’s relationship to Science and, in turn, truth. This relationship had previously been dependent on *primary scientization* – when Science was treated as the unquestioned provider of solution to the risks faced by humans and society. During this reflexive period, science underwent a transformation and was no longer seen as objective provider of truth but also required subjective evaluation itself. In other words, Science turned in on itself, using its own tools of analysis to question its methods and frameworks. This evolution occurred as Science was called on to respond to the risks produced by its own modern intervention into solving the risks posed to nature, human and society. As result, the technics applied to risk during the primary scientization period produced an ever-expanding universe of risks, for which only the tools of science could produce solution. At this moment of rupture, science was rendered firmly unstable and contradictory, and reality was sublimated “into data that were produced, where facts, the former centerpieces of reality, become nothing but answers to questions

that could have just as well been asked differently, products of rules for gathering and omitting” (Beck, 1992, p. 166).ⁱⁱ

This version of society – *a risk society* – probabilistically deals with data and its population. Society may either tend to the causes that emerged in the period of primary industrialization (and thereafter) or tend to the symptoms created by those causes. The latter approach (our current approach) constitutes a *secondary industrialization* and the limitless expansion of markets and contradictions inherent to this approach. Treating symptoms has prevented the development of methods and frameworks that might support the examination of a root cause. The treatment of symptoms is compatible with an ever-shortening time-gap between the idea of solution and intervention – a real-time approach to life (Beck, 1992).

“The self-origination of the threats of modernization is submerged under the selective consideration and treatment of symptoms. This can be illustrated with the example of the treatment of diseases of civilization, such as diabetes, cancer, or heart disease. These illnesses could be fought where they originate: by reducing the stresses of work or the pollution of the environment, or through a healthy way of life and a nutritious diet. Or the symptoms can be alleviated through chemical preparations. The different schools of fighting illness do not of course exclude one another, but one cannot speak of a cure through the second method. Nonetheless, we have so far generally opted for the medical and chemical solution” (Beck, 1992, p.176).

Thought of in these terms, the climate crisis solicits a form of problem solving that buries its own problem in its logic of solution: input and the forms they precipitate are kept sequestered. An ever-expanding universe of images representing sublime green-futures, fuelled by an unlimited abundance of renewable energy sources unfold. A harmonious landscape projected into the world by the net-zero plan. On and on these representations unfold, another city, company, community pledging carbon neutrality, supported by an ever-expanding universe of green consumer products and the commodification of a lifestyle that claims to be *gentler* on the environment. All the while, the extractive and exploitive landscapes required to realize these green futures multiply. Salt flats in Bolivia, cobalt mining in the Congo, applications for

nickel mining in Canada, darker and darker insights into the supply chains required to realize a globally electrified landscape. For every green *solution* an extractive or exploitative opposite emerges in the world to negate the decarbonization benefits (Kaika 2017, Riofrancos 2020). As these contradictions multiply, the promise of a green energy future withers and is increasingly understood to be the lesser of two evils and in many cases, just as problematic as our current fossil-fuelled reality across all ecological and social metrics (Osbourne, 2019). It's in the contradictions that the logics of modernity are alive and well (Latour, 1993). Costs obscured; externalities manipulated to fit the management plan. In the landscape of decarbonization, carbon offset trading is a good example of how this logic of solution intensifies contradiction.

Tar Creek Case

“This reliance on the market to deal with the most threatening problem of our time is incongruous, given the massive market failures of the last decade, in international finance, in dealing with poverty, in promoting development. The salience of carbon markets owes more to corporate lobbying than to any proof of superiority over state-imposed regulations. The most ambitious effort at carbon trading so far, the European Emissions Trading Scheme (ETS), has been a patent failure. A lot of money has changed hands within the ETS, but the scheme has been ineffective for the purposes for which it was set up” (Anthony Giddens, Bello, 2009).

A carbon offset is a mechanism by which an emitting entity (corporation, unregulated institution etc.) is able to reduce their carbon footprint by financially supporting the development of a project that is deemed to positively serve the project of global decarbonization and sustainable development. There are several carbon offset markets operating in the world today. The market most relevant to this project – and Harvard University due to its participation in this market – is the Voluntary Carbon Offset Market. The Voluntary Carbon Offset Market came into being with the Clean Development Mechanism (CDM) during the final week of the 1992 Kyoto negotiations, at the request of the United States. The US proposed the CDM so that “countries not able to meet their emissions reduction targets ‘cost effectively,’ could invest in ‘green technologies’ in the Global South and thus help developing countries to mitigate climate change”

(Böhm & Siddhartha 2009, p. 13). The voluntary market differs from the CDM primarily because it developed outside of the Kyoto process and there is no governmental or inter-governmental oversight. The voluntary markets do not normally aim to meet any binding targets and many actors, including corporations, NGOs and individuals can participate in them (Böhm & Siddhartha 2009, p. 13). It's the voluntary market that we are most familiar with in daily life. For example, one may offset their portion of carbon emitted on a trans-Atlantic flight or make a decision to purchase something from a company based on a carbon neutrality score. Offsets are bought and sold on exchanges managed by un-regulated participants. These markets allow participating entities to achieve carbon neutrality through the purchase of offsets that are defined to be projects which reduce greenhouse gas emissions. Projects include renewable energy and carbon sequestration initiatives, among other things. Carbon neutrality is achieved when entities reduce their category one and two emissions to zero – either through actual on-site reductions or through the purchase of offsets (The Greenhouse Gas Protocol, 2001). Category one and two emissions are defined as those controlled by the emitting entity. These emissions calculations include on-site electricity sources, but not the emissions associated with things like growing the food consumed on-site (presuming that food is produced somewhere off-site). It's worth mentioning that there is a third category of emissions that are deemed too far *outside the emitter's control* and are therefore not part of the carbon neutrality accounting equation. It's also important to note that not all carbon offset projects are created equal. Certain projects provide the emitting entity with greater windfalls for their carbon neutrality score. There's a whole host of criteria which an offset project must meet in order for it to be attractive to the highest bidders – entities who will pay the most for emissions reductions. One of those criteria is the co-benefit, which as defined by the World Resource Institute (the de-facto voice of authority in the techno-sphere of carbon accounting), generate other social, environmental and economic benefits that promote a more complete approach to sustainability (Carbon Offsets & Markets Guidance, 2019). In summary, the voluntary market is designed and governed by the entities who utilize that market to address their category two emissions. These entities

aren't actually reducing those emissions but are able to legitimately claim that those emissions have been neutralized. This response to the climate crisis is rooted in the belief that market toolkits are adequate for remaking a low-carbon society. Unsurprisingly, and in a familiar colonial flavor, the rule book that's been designed for carbon offsets means unregulated carbon emitting institutions are coming into contact with marginalized communities and the landscapes they occupy in search of renewable energy development opportunities that support the carbon neutrality agenda. As discussed, those projects fetch the highest price according to the logics of the co-benefit. To articulate how this plays out in practice, I draw on a case study from Harvard Law School's Climate Solutions Living Lab.

The Lab exists to support Harvard – an unregulated entity – in achieving its climate action goals and sustainability targets. These goals include reaching carbon neutrality by 2026 (Harvard Climate Solutions Living Lab Course and Research Project, 2019). The purpose of the lab is to evaluate high impact offset projects for institutional consideration. Due to these requirements, my previous involvement in the lab was focused on evaluating viable waste streams from the business operations of a Native American tribe in rural Oklahoma: the Quapaw Nation. The waste streams from these operations could theoretically support the development of a waste-to-energy project which would generate renewable energy for the community and simultaneously support its waste management goals. Quapaw Nation is most well-known for the Tar Creek Superfund Site – one of the worst Superfund sites in the United States – located on tribal territory. The site hosts 40 square miles of above-ground fine lead tailings along with extensive below-ground lead contamination left over from federally sanctioned mining operations which fueled war efforts during the first half of the century (Tar Creek Strategic Plan, 2019). Ironically, this meant I was primarily looking at the Nation's central source of both waste and revenue for tribal operations and social services – a resort-scale casino just outside Joplin, Missouri. In summary, I went to Oklahoma, to a Native American reservation, located on one of the worst Superfund sites in the country, to assess whether the business operations of a local tribe could viably support the development of a carbon offset project which could

benefit an institution (like Harvard) in its efforts to achieve its carbon neutrality badge of honor. The Nation's long history of marginalization and its over-60-years spent living on contaminated land made it an ideal co-benefit candidate. According to the logics of carbon neutrality accounting, this site would provide greater sustainability value and social good. The representatives from the Nation which we had the pleasure of working with were enthusiastic about the prospect of having a group of Harvard Law School researchers supporting their efforts to steward their land and their operations in alignment with their values. The development of renewable energy projects to power Nation operations, alongside waste mitigation solutions, deeply aligned with Quapaw values. But whose values are dominant here? And whose values are being prioritized? The idea of corporate carbon neutrality benefits from the construction of a global environmental consciousness which frames climate change as the priority problem. This perception not only obscures the colonial mechanisms that have actualized the problem of climate change, but further obscures those same mechanisms mobilized as solutions (Jasanoff, 2001). These colonial mechanisms prioritize future climate crisis scenarios over current social and environmental crises left over from that long arc of extraction that remains etched on the landscapes and bodies of predominately black and indigenous populations. Simultaneously, these carbon neutrality projects derive greater carbon accounting value from these inferior social and environmental crisis conditions. I argue that this situation produces a sort of value absorption in service to the dominant project. In this case, the values the Quapaw hold about their energy sovereignty (and the climate problem at large) are absorbed by the carbon neutrality apparatus in a scenario which subdues one's inclination to question the nature of the transaction, reinforcing the social, cultural, and economic chasm that separates a marginalized landscape from the emitting entity. Under the logic of *market decarbonization*, the realization of green energy and ecological regeneration projects on marginalized landscapes is a phenomenon that has become almost impossible to question in the contemporary moment. This approach to solution has become one of those natural facts embedded in addressing climate change, and it's precisely this dynamic that underscores the idea of value absorption. In the case of the Quapaw, this

value absorption couldn't be more acute. The immediate crisis of environmental and health devastation which constitutes the Nation's lived reality means a carbon offset intervention in this environment is more valuable in the constructed market that realizes carbon neutrality. It follows that the point of departure for value prioritization and *the idea of crisis* is constructed according to the obviously dominant stakeholder – in this case, Harvard. The market asymmetry arises from the reality that carbon neutrality has become a powerful social currency in today's climate of climate change. Harvard's intervention into this landscape allows it to claim space as both an expert on tribal renewable energy development and as moral savior in the milieu that is a global carbon accounting apparatus and its participants. The way Harvard financially and culturally benefits from this dynamic is a slightly more obscure thing to quantify than the market asymmetry at play in the colonial scenario previously discussed. Regardless of that obscurity, Harvard is able to leverage a relation with the Nation under voluntary carbon market logics in a way which amplifies the value the institution receives through climate action marketing initiatives, the creation of things like a Climate Lab and, more insidiously, through the perpetuation of a myth about carbon neutrality which doesn't actually require the institution to change in any material way. That's the story of marginalization and recolonization and it cements colonial and market logic *into the solution* (Fassin, 2011).

If the premise of decarbonization is an approach to energy transition that maintains a political ecology sedimented during fossil-fueled modernity – these decarbonization plans and their technics need to be troubled to expose the version of economy and modes of sociality they continue *writing into space*.

*How to decarbonize beyond impasse?*ⁱⁱⁱ

2 Home Work

2.1 hypothesis

“A critical theory of energy, like a critical theory of anything, needs to work in the service of emancipating social life from the impediments to being otherwise in relation to energy, of defining a different rhythm to what could come next in light of how we got here, and of unsettling the given that got us into this mess” (Diamanti & Szeman, 2020, p.137).

In the fall of 2019, I developed a hypothesis in a design theory class – experimental infrastructures. It brought me back into orbit with the landscape I was raised in, the Yukon Territory, Canada. In pursuit of energy deployment parameters capable of dismantling certain social forms made possible in a fossil fuel economy, the hypothesis was this:

Indigenous feminist governance intersected with renewable energy deployment would yield a different model for public energy infrastructure perhaps less aligned with what Rosi Braidotti describes to be “a contemporary capitalism fuelled by notions of possessive individualism based on quantitative options” (Braidotti, 2018, p. 341).

More specifically, it proposed this hypothesis at the intersection of the newly elected Assembly of First Nations (AFN) Yukon Regional Chief, Kluane Adamek and the Yukon’s energy landscape. The hypothesis was primarily indebted to theory from *the energy humanities*, and it sought to, as Sheena Wilson writes, work against the “atrophy of imagination” that characterizes the impasse of energy transition (Wilson, 2018, p.376). It provoked a tighter engagement between design pedagogy and the conditions required to transform aspects of social life made possible in a fossil fuel economy via transition to a zero-carbon future. I reached out to Chief Adamek for an informal interview shortly after her return from the 2018 COP24 climate conference in Katowice, Poland where she was representing the Assembly of First Nations in her role as Chair of the Action Committee on Environment and Climate Change. We discussed

her role in Canada's plan to combat climate change and how indigenous perspectives were (and were not) being incorporated into plans and strategies being pursued at the federal level. She discussed the importance of capacity building within indigenous communities, the regional diversity of eco-social priorities, the dynamics of indigenous identity in the age of capital crisis and the hard conversations about the inextricable link between environmental governance and indigenous rights and justice.

Since that summer of 2019, I've worked as a *bit more than a climate policy researcher* with The Assembly of First Nations Yukon Region. It's through this engagement that my contemplation of what I'll later describe to be *settler form* and *form transition* have developed, and my original hypothesis has been disproven and redrawn.

2.2 methodology

"The experimental approach to research is characterized by an interest in learning rather than judging. To treat something as a social experiment is to open to what it is has to teach us, very different from the critical task of assessing the ways in which it is good or bad, strong, or weak, mainstream, or alternative. It recognizes that what we are looking at is on its way to being something else and strategizes about how to participate in that process of becoming. This does not mean that our well-honed critical faculties have no role in our research, but that their expression takes second place to the experimental orientation" (Gibson-Graham, 2008, p. 628).

A research project that attempts to probe the limits of energy transition, while simultaneously tending to the possibility of how alternative epistemological frameworks might alter energy infrastructural deployment in praxis, must be fraught, by design. Certainly, more fraught than a project simply tending to *energy transition* through the previous critiqued lens – which is a position informed by several years of experience financing and developing solar projects in Massachusetts and being confronted every day with the never-ending contradictions that inevitably exist when market mechanisms drive the intervention (Matchett, 2019). Fraught because, if one is serious about intervention that is committed to an *otherwise* that

dismantles the norms of what architectural theorist Elisa Iturbe calls *carbon modernity* – it’s frameworks and methods and models – one must also take seriously the ways their own subjectivity is hard-wired to reproduce those norms and all its forms (Iturbe, 2019). Meaning the methodology must tend to deconstructing the framework for intervention as much as it tends to intervention itself (Haraway, 2016).^{iv}

Because the politics of land and place are central to my original hypothesis, the idea of relation to place has created a productive struggle important to my thinking about methodology. Elizabeth Povinelli uses the concept *here-ish* to describe a mode of situated-ness – where work rooted in a place is translated to discourse beyond its borders (Povinelli, 2016). A process of tracing local threads to global contexts in service to parsing the distinctions between particular modes of human sociality and their effects on environs. Despite not having been in Cambridge, Massachusetts for close to two years now, I am still at Harvard, still compelled to trace threads to a discourse outside of the place I am currently situated in, to the scale of, say, settler form transition or design theory. Due to this and the nature of a thesis project, the most local I can be with the work that gets translated into this writing is slightly-more-than *here-ish*. Slightly more because I was raised in *this place* and my entanglement is not first motivated by research. What binds me to *this place* could never be neatly summarized in a translatable ethical framework, but that doesn’t detract from the ethics present in all the relations that do bind me here. My point in raising this is not to discuss those relations or that binding, it’s to illuminate that those specifics are not required for an academic model that can’t really be seen as distinct from *modernity*. However, the relations exist and are important to this work. Academic research serves a community, of course. However, it’s first and foremost an institutional community that is (usually) very far removed from the landscapes *studied* and almost always demarcated from familial roots. All of this starkly contrasts with indigenous ethics of place that I’ve read about and witnessed – ethics that are never separate from place or family. Where your identity is the land you come from and steward.

This productive struggle offers up many unanswered questions about institutional structure that might always necessitate *a mode of extraction*.

What is an ethical relation to place?

Who determines that?

Can anything produced within the frameworks of the western academy be in respectful relation to a place?

2.3 process

“The margins of the world system are far from backwards: they are sites of novel techniques of exploitation—and of the vanguard of subaltern futurisms” (Riofrancos, 2020).

In this period of prolonged energy impasse, the Yukon becomes of interest beyond its borders specifically because of its mineralogical and ontological particulars. That is, the history of Yukon First Nations claims to land and sovereignty and in turn, the way land and resources have come to be co-governed by the State and Indigenous governments mean the epistemological undercurrents of decarbonization can be probed for the potentials and limits of energy transition beyond the logic of impasse previously discussed. What happened and continues to happen on the land and the rights of people in relation to that land underscores how questions of environmental protection are taken up in different ways by the Indigenous and State bodies that co-govern the lands and resources within the territorial border. These bodies include, the Federal Government, its Territorial outpost, the Yukon Government and 14 First Nations governments dispersed throughout the region who are in some shape or form supported in an advocacy capacity by two centralized bodies: The Council of Yukon First Nations and the Assembly of First Nations Yukon Region.^v The Yukon is a microcosm of the well-known settler-colonial narrative arc, what Lorenzo Veracini calls *a winner-take-all project* (Veracini, 2010). A vast, unchartered wilderness, a resource discovery, a state control mechanism implanted in place, a *civilized* territory born. Canada’s Indian Act of 1876 provided the framework for Canada to deal with *its Indian problem*. The Indian Act was (and is) an act

of control. A project of territorialization and typology. The act officially registered Indians and Indian Bands and outlined the way governance, land use, healthcare and education would be administered to the over 600 First Nations Bands on their respective *Indian Reserves* established by the Act. The Act dictates how reserves and bands operate, it defines the powers of band councils and determines who is and is not recognized as a *status* Indian. The Act has been amended many times due to its controversial content, but one of its central criticisms is that it provides no clear way to settle land claims or implement self-government within the Canadian legal system.

In 1973, a delegation of Yukon First Nations delegates compiled a report for then Prime Minister of Canada, Pierre Elliot Trudeau called, *Together Today for our Children Tomorrow: A Statement of Grievances and an Approach to Settlement by the Yukon Indian People*. The report launched the formal land claims process in the territory.

“We, the Indians of the Yukon, object to being treated like squatters in our own country...We feel the (non-Aboriginal) people of the North owe us a great deal, we would like the Government of Canada to see that we get a fair settlement for the use of the land” Elijah Smith (instrumental in forming the Yukon Native Brotherhood, the Yukon Association of Non-Status Indians, and the Council of Yukon Indians).

The negotiating of the territorial land claims and the tending to the grievances outlined in *Together Today* took place over a 20-year period, and in 1993 the historic Umbrella Final Agreement (UFA) was finalized and signed by The Federal Government, the Territorial Government and what had become the Council for Yukon Indians (today known as the Council for Yukon First Nations (CYFN)). The UFA defines Yukon First Nations rights on Settlement Land, and within their Traditional Territories and provides a framework *within which each of the 14 Yukon First Nations will conclude a final claim settlement agreement* (Umbrella Final Agreement, 1993). Each Nation’s individual final agreement includes the complete UFA text with the addition of specific provisions which apply to the individual First Nation. The UFA outlines the amount of land and financial compensation to be provided to each Nation and calls for the creation of a

number of boards and committees to provide community-based input, recommendations, and decisions to government. The agreements describe how the federal, territorial and First Nations governments interact with each other, define First Nations ownership of and decision-making powers on Settlement Land and specifically address: heritage, fish, wildlife, natural resources, water, forestry, taxation, financial compensation, economic development, and land management. Eleven of the fourteen Yukon First Nations have final agreements and self-government agreements in place with the Federal and Territorial Governments, meaning they are vested with law and decision-making power on their land, and they are structured for and have the power to govern at their direction, as sovereign nations. These Nations have significant say in how lands and resources are governed within their Traditional Territories. The Indian Act no longer applies on these lands. The individual Final Agreements are constitutionally protected (section 35) *modern treaties*, which means they form part of the highest law of Canada. For context, at the time of writing this only four of the 620 other Nations in Canada have self-government agreements in place (Government of Canada).

One of the most important provisions embedded in these final agreements is the requirement for a rigorous land-use planning process to take place in every determined planning region in the territory before any extractive or exploratory activity takes place on that land. In practice, this planning process hasn't been implemented in precisely the way it was envisioned or drawn up, primarily because of the socio-historical importance of mining in the territory and the inextricable links between the government and dominant economic sectors. The UFA is an interesting technology of power to dissect both for its more obvious neocolonial aspects as well as for its emancipatory potentials. It is first a document, written in plain English, it's legibility in the western legal system a precondition for its existence. At the same time, the framework is there for it to be otherwise. For an entirely different approach to governance and law-making to exist at the direction of each respective Nation (Mapping the Way, 2021).

In addition to these unique governance parameters, the Yukon is often referenced as poster child for displaying the real-time effects of climate change (Yukon Climate Change Indicators, 2015). Since satellite observational records began in 1979 it has become clear that Arctic sea ice is melting at a rate of 300 km cubed per year with more than 50% of summer sea ice volume disappearing in the last decade alone. At this rate, it is projected that the Arctic Ocean will become seasonally ice free in 20 years, posing far-reaching effects for the entire planet in the form of rising sea-levels and altered global ocean currents. Sea ice melt is the most apparent global indicator of environmental change, and most relevant to the North's changing climate. These circumstances are already posing devastating effects to the circumpolar North and it's because of this that the North will continue to warm at double the rate compared to the rest of the planet. Over the last 50 years, the Yukon's annual temperature has increased by two degrees Celsius, with winters warming at an increased rate of four degrees Celsius. In addition to this, the territory has lost 22% of its glacial cover and permafrost degradation is already posing significant infrastructural challenge. Climatic changes are also contributing to altered patterns and declines in global wildlife populations which will continue to problematize First Nation's ability to exercise their inherent and constitutionally protected rights and responsibilities (AFN Indigenous Climate Lens, 2019). Impacts of Yukon's changing climate have implications for biodiversity beyond its borders because some migratory species depend on rapidly changing breeding and feeding grounds in the North. As river flows change, temperatures and sediment load change and fish habitats must adapt as a result. Changes in caribou and salmon migration patterns and populations have already been observed in the Yukon. There are no current predictions of what the cumulative impact(s) will be other than to note it will put stress on many species. All this to say, the impacts of a changing climate are material in this region and are felt most acutely by the population most in tune with its ecological cycles – primarily a First Nations population (Yukon Climate Change Indicators, 2015).

I arrived *back home* in the summer of 2019 having committed to a period of climate policy advisory work with the Assembly of First Nations Yukon Regional office. The Assembly of First Nations is a federal advocacy body that was established to support the streamlining of engagement between Canada's indigenous population and the Federal Government, specifically on matters pertaining to the Indian Act. The Yukon Regional Chief is elected by Yukon's 14 Chiefs for a three-year term. Due to the fact that a majority of Yukon's land claims proceedings are settled, the Indian Act no longer needs tending to in this region, making the AFN more of a legacy institution. This is a much different landscape than other regions in Canada where land claims processes aren't settled, where modern treaties don't exist, and where the AFN is still relied upon to lead negotiations with the Federal Government on behalf of Nations on important matters such as the development of safe drinking water infrastructure. These unique and favorable-to-the-Yukon circumstances mean the AFN Yukon Regional office is relatively small and focused on supporting the implementation of terms set out in modern treaties while continuing to advocate for northern issues in Ottawa. Just prior to my boarding the plane from Boston to the Yukon, the regional office submitted a proposal to the Government of Canada for \$250,000. The proposal included the office's priorities for the coming year: support Yukon First Nations with their climate change priorities and work to *decolonize climate policy*.

That summer was spent getting to know the Yukon Government's Climate Change Secretariat as they worked through their public engagement process for the development of the territory's *official* climate change plan – a plan like those previously critiqued – 30% reduction in emissions by 2030, with 75% of the reductions coming from transportation and the built environment (Our Clean Future, 2020). A proper energy transition plan. That same summer, the Yukon's most northern community, the Vuntut Gwitchin First Nation of Old Crow, had recently declared an official climate state of emergency for its region (Yeendo Diinehdoo Ji'heezrit Nits'oo Ts'o' Nan He'aa Declaration, 2019).

“Gwich’in wealth is measured in our rivers, in our animals and in our lands being healthy” (Chief Dana Tizya-Tramm, Vuntut Gwitchin First Nation, 2019).

Following this declaration, at the AFN Yukon’s General Assembly in July 2019, the Yukon First Nations Chiefs passed a resolution calling on the Assembly of First Nations and the Council of Yukon First Nations to develop *a vision and action plan* for responding to climate change that would *support and enhance the plan being developed by the Territorial Government*.

By the end of the summer, two things were clear. The first was that my original hypothesis required significant tweaking. There is nothing straightforward (nor should there be) about designing (never mind implementing) alternative epistemological frameworks for infrastructure deployment in praxis even in the context of indigenous sovereignty. While the promise for *an otherwise* that the original hypothesis aspired to remained intact, proving that in practice was obviously a different story, which led to the second conclusion: this is a long game. A summer, or the duration of a master’s thesis, is an insufficient amount of time to dismantle the sedimented processes that make policy impenetrable by design, which brings me back to the importance of methodology and the importance of de-constructing the framework for intervention as much as the intervention itself.

In light of these conclusions, our team’s next step was to work on gathering perspectives on climate change that the Territorial process had not been able to gather. We began developing the framework for a climate action gathering that would ensure First Nations perspectives and spirit were central to thinking about this challenge. The thinking for this gathering was informed by the Indigenous Climate Lens being developed by the Assembly of First Nations National climate and environment team along with efforts being made at the UN-level in support of Indigenous solutions to environmental crisis (The Role of Indigenous Peoples in Biodiversity Conservation, 2008). That February 2020, the first ever Yukon First Nations gathering on climate change was held in Whitehorse, Yukon, right before the COVID-19 pandemic erupted across the world.

The gathering brought together youth, elders and leadership representation from all 14 nations. The program framed community-based First Nations projects (including: food security, land-based health initiatives, education, traditional economy etc.) as *climate solutions*. In other words, the problem was framed as a way-of-life problem versus an energy input or technology problem. The takeaways discussed in the room over those few days seemed quite simple. It's how we live. What we value. How we care and don't care or respect the land that constitutes the *problem's core*. There is nothing complicated about translating that. What is obviously more complicated is how to become beings that live those values of care differently. What's more complicated is thinking value transformation beyond this hyper-local indigenous landscape. By the end of the Gathering, 11 of the 14 Chiefs in the region had signed an agreement to develop a Yukon First Nation Climate Vision & Action Plan representative of, a *Yukon First Nation Worldview*. This was significant because it was direction to not just accept what the Territorial Government had produced (however apolitical it seemed to some, and it did seem that way too many) and to chart a completely different approach. An approach perhaps more aligned with the original hypothesis.

2.4 analysis / indigenous epistemologies

“Current climate solution frameworks don't properly account for the fact that many of the climate problems we face today result from an approach to development that did not include indigenous perspectives” (Yukon Regional Chief, Kluane Adamek, 2018).

“It matters which stories tell stories, which concepts think concepts. Mathematically, visually, narratively, it matters which figures, figure figures, which systems systematize systems” (Haraway, 2016).

As a result of this process, and “with particular attention to Nation and language, group diversity, gender balance, experience diversity, and energy balance, a cohort of 14 youth from the Yukon and transboundary BC Nations were selected earlier this year to participate in a 20-month Fellowship journey to

create this plan.” Which aims to be much more than a climate plan, but more a plan for how to live (Yukon First Nation Climate Fellowship). A plan that prioritizes traditional values, teachings, and practices as a way for youth to tackle climate change in their communities.

The plan will be released in 2022. Four years after the official start of the project. Hence the beforementioned necessary critique of timelines. In my opinion, the circumstances that led to the development of this plan (as previously described), as well as the design of the fellowship journey itself, point to something that will be *an otherwise*, in all ways, to the Territorial Government’s plan. I say this because many of the activities that the youth are taking part in are illegible to me and are definitely not easily translated outside these borders.^{vi} In addition to this, these youth are fierce. Equally comfortable in the most modern of settings as they are out on their trap lines or their fish camps. The team members stewarding this process are very aware and highly critical of the way indigenous governance structures have mimicked the colonial model.^{vii} Because of this, every detail of the Fellowship is being scrutinized and reframed through indigenous epistemological frameworks that are specific to *this place*.^{viii} All of this serves to highlight the speculation that what might be most successful about this process, in the end, are the aspects that are illegible to non-indigenous ontologies. In light of this, it’s worth sharing some important theoretical reflection that support an understanding of the problematics that surround the intersection of ecological crisis and indigenous epistemological frameworks in this particular moment, and that raise productive questions going forward.

knowledge

“Reciprocity of thinking requires us to pay attention to who else is speaking alongside us. It also positions us, first and foremost as citizens embedded in dynamic legal orders and systems of relations that require us to work constantly and thoughtfully across the myriad systems of thinking, acting and governance within which we find ourselves enmeshed” (Todd, 2016, p. 19).

Zoe Todd grounds the politics of neocolonialism specific to the production of knowledge by arguing that the Ontological Turn (or post-humanism) misses the indigenous scholarship that has built and maintained the types of knowledge – *insights into more-than-human sentience and agency* – that emerged with *the Turn*. She critiques Bruno Latour for his failure to cite indigenous scholars as interlocutors in thinking climate change as a *common cosmopolitical concern*, arguing that Latour’s conception of Gaia is almost identical to the well-known Inuit concept of Sila, *the breath that circulates into and out of every living thing*, and that the broader public’s understanding of climate change is indebted to a number of Arctic indigenous scholars who are rarely cited in works that rely on dramatically changing Arctic landscapes as representational currency for communicating climate action urgency.

When climate change and the Arctic act as mega-categories, they can quickly erase arctic indigenous peoples and their laws and philosophies from their discourses” (Todd, 2016, p.6).

The tendency to universalize indigenous ideas can be just as violent as non-citation because of the way universalization can “*erase indigenous epistemes and locations*,” which, absent indigenous interlocutors, amounts to an act of appropriation. This condition is the result of a deeper institutional issue that structurally impedes acknowledgement of place-based indigenous scholarship within the academy. Todd narrates these understandings from a *place-thought* position – *where thinking is never separate from the land* that makes that thinking possible. Todd’s position is very specific to her circumstance as an urban Metis woman, from the city of amiskwaciwâskahikan, or what’s known as Edmonton, Alberta, Canada (Todd, 2019, p. 103). Indigenous scholars whose work and more-than-human relational knowledge is of and in service to a place (often their home community) is not the formula of objective knowledge the academy recognizes thus requiring a white mediator.

Jocelyn Joe-Strack, a steering committee member of the Yukon First Nation Climate Action Fellowship articulates this problematic clearly in a recent interview she gave.^{ix} When asked about the way her educational pursuits have conflicted with this *white mediation*, Jocelyn responded:

“I did go into a Ph.D. program and I’m no longer doing it, partially because of my answer to the question about whether I was able to get to a place with my research where it wasn’t just about collecting data. As a consultant, I was developing a land claim for my community – all of our traditional territory. And so concurrently I thought that was a great opportunity to write a Ph.D., but I got hung up during the comprehensives because they asked a question about land claims, but they wanted me to pair it with literature but unfortunately the literature was so sorely underdeveloped, and from a perspective derived out of southern-based academics taking an eagle eye view, observing down and making statements about our relationships and our determination and our devotion to children. And they were writing just about the land and resources and it was just a total clash of worldview. So, they asked me to rewrite a paper because I couldn’t pair the literature because it conflicted with my identity as a daughter of the land claims. And they just didn’t like that and so we kind of reached an impasse, and I chose to leave the program when I was offered a position with Yukon University as a research chair. And Yukon University selected me for that position without a Ph.D. because they honored my knowledge and my devotion to the Yukon and recognized that a Ph.D. would not enable me or prevent me from doing the work in a good way” (Jocelyn Joe-Strack, Champagne & Aishihik First Nation, 2021).

relation

“We should remember that not everyone needs to summon a new analytical framework or needs to renew a commitment to the vitality of so-called things” (TallBear, 2017, p. 193).

Similar to the issues Todd raises, TallBear’s decolonization project (with its many tentacles) animates indigenous practice and narrative in the contemporary moment to push against a reductive tendency to associate indigenous life worlds with the neo-primitive and actually endow those life worlds with the agency that is being afforded to philosophical domains of inquiry labouring to *grasp the nature and*

potential solutions to our human plights. According to TallBear, the neo-primitive critique of indigenous ontology faces a stumbling block with the realization that some of the most novel reasoning for abolishing the Life/Non-Life division is largely repeating what has already been said by indigenous scholars, illustrating the stakes of dismantling the *strictly biological binaries* (Life/Non-Life). While animal studies and the biophysical sciences continue to perpetuate problematic Life/Non-Life divisions, new materialisms, and new animal studies, *seek to repair these life v death* dichotomies that plague genetic research's entanglements with perpetuating indigenous erasure narratives. TallBear argues these projects require indigenous citation. She applauds two thinkers important to the *enchanted materialisms* – Mel Chen and Jane Bennett – while bringing their idea shortcomings into dialogue with indigenous scholars Elizabeth Cook-Lynn and Vine Deloria Jr., who have troubled the notion of a partitioned approach to indigenous studies and have articulated and defended *indigeneity as ontology*. While Chen's re-thinking all *the divides* (*human/animal, dynamism/stasis, subject/object*) and his spectrum of animacy, *relative to a material's agency, awareness, mobility, and liveness*, offer important theoretical framings for dismantling the overarching analytical framework, Vine Deloria Jr.'s *American Indian Metaphysics* is missing in Chen's citations. Ultimately, TallBear argues new materialist thinking is not new, and a failure to recognize that will continue to produce a narrative where indigenous peoples are still not seen as vibrant, vital beings with legitimate metaphysical analytics.

“When we conceive of indigenous peoples as de-animated (the vanishing indigene trope is a constant reaffirmation of this) we assign narrow value to indigenous bodies, histories, and identities” (TallBear, 2017, p. 199).

If new materialist inquiry is beginning to shape modes of reasoning and the aesthetics of climate change (at least in theoretical domains) and is now framed as catching up with a version of indigenous metaphysics, how could that alter worldview thinking in areas of *life* intervention such as state climate policy, etc.?^x Meaning, does this thinking point to a political arena where metaphysical reasoning takes a more prominent position?

form

“Mindimooyenh’s current research project is neuroplasticity. It has only been in the last part of the 20th century that shaganash have learned that brains can change over the course of an individual’s life. Of course, Mindimooyenh has always known that the brain is a relational organ, that it is constantly building and rebuilding networked pathways, constantly removing or reconnecting synaptic pathways. Brain as ecosystem. Repetitive thoughts and actions wiring and rewiring the brain. You are what you do. Akiwenzii says. Mindimooyenh believes this is the function of ceremony. Ceremony strengthens the prefrontal cortex - the part of the brain responsible for emotional regulation and empathy. Ceremony is not just one big dumping ground of a sharing circle. It is not a performance. It is not even necessarily designed to make you feel better. It is exercise. The repetitive meditative nature. The long hours. Continually bringing wandering distracted minds back into the presence strengthens the prefrontal cortex, releases neurotransmitters like serotonin, dopamine and melatonin, killing anxiety, depression, addictions and insomnia. Exercise that widens the network and tightens the connection. Exercise that produces and reproduces love” (Simpson, 2020, p.105).

Simpson’s *narrative form* – a form that’s cited as a technology of indigenous survivance – concretizes Todd’s and TallBear’s theory (LaDuke & Cowen, 2020). The form represents an “ethical, embodied, and affective dimension of knowing that refuses imperial systems of knowledge that divide fact from fiction, mind from body, and the sacred from survival” (LaDuke & Cowen, 2020, p.245). In *Noopiming*, Simpson employs her Nishnaabeg worldview and narrates from a multi-character-multi-species point of view. An elder. A caribou. A tree. An imaginary giant. A flock of geese. A body of water. Without naming it, Simpson’s narrative gets the reader into close proximity with an ethic of relationality with human/more-than-human that is specific to that place and the knowing that comes with being Nishnaabeg. Simpson’s work is critical to dis-entangling the project of listening to indigenous narratives that tend to more-than-human relationality from the project of appropriating or extracting the knowledge embedded in those narratives. This is a narrative work. This form of narrative is a legitimate form of knowledge in Nishnaabeg practice, which begs the questions: How does one read for argument, questions, methodology or

interlocutors in a narrative form that aims to refuse those logics of inquiry, of knowing? Reading (or listening) to indigenous narrative through a lens of multi-species relationality knowledge inquiry but refraining from interpreting that knowledge based on rules of reason that are incommensurate with its form helps illuminate the way the production of objective knowledge tends to a mode of extraction, or a mode that is incommensurate with what Dwayne Donald calls ethical relationality:

“Ethical relationality is an ecological understanding of human relationality that does not deny difference, but rather seeks to more deeply understand how our different histories and experiences position us in relation to each other. This form of relationality is ethical because it does not overlook or invisibilize the particular historical, cultural, and social contexts from which a particular person understands and experiences living in the world. It puts these considerations at the forefront of engagements across frontiers of difference” (Todd, 2016, p. 18)

Subjectivity and a *situated*-self co-constitute how one might *come to know* the knowledge embedded in this narrative form, a process that eliminates the ability to universalize the lessons and incites a mode of ethical relationality. With regards to the Yukon First Nations Climate Fellowships, these theories and form example help describe why it seems reasonable to assume that an indigenous feminist framework will yield *form* different from what is manifested under the Territorial framework (or, the state/colonial/settler approach). I have no idea *what form* the final product produced by the Yukon First Nations Climate Fellowship will take – what language it will be in, whether or not it will even be written down. All of this feels promising to *the project of decolonizing climate planning*, at least in theory.^{xi} Again, this conclusion feels somewhat obvious. Of course, there are different approaches to living that yield different approaches to tending to the problem(s) of climate change. What isn't so *of course* links back to the original hypothesis. That is, addressing *things* that are incompatible with an indigenous feminist framework (however illegible that framework may currently be to me). The *thing* I'm talking about, of course, is energy infrastructure. The Territorial Government's energy transition plan, *like plans everywhere*, is proceeding full steam ahead.

Plans for electric vehicle charging stations are drawn up. Rebates for homeowners installing solar panels are in effect. Provisions that dictate indigenous ownership on new renewable energy project development that exceeds two megawatts are written. Regardless of which cosmological framework(s) (or analytics of existence) are being applied to the management of land and resources, and by extension the policies enacted for addressing the challenges posed by climate change, the infrastructural is still coded in the language of the *universal* – a universal that was and is never distinct from the frameworks that brought that infrastructure into being but whose mechanics of operation and deployment evade alternative epistemological intervention at this late stage in the development of a *capitalist world ecology*. And so, there remains a hybridity of process that intensifies the problematics of energy impasse. The intensification of *what goes without saying* embedded in energy infrastructure.

Following architectural theorist Elise Iturbe [and others], I've come to understand this perpetuation of *hybridity* as the deep contradiction of *carbon modernity's* infrastructures – as not just dependent on fossil fuels but in fact shaped by the logic of their use, perpetuated through practices, norms, and institutions in a self-replicating *carbon form* (Iturbe, 2019). Because plan dictates form, in the case I've sketched, it's how these infrastructures maintain the intensification of carbon form that becomes important to dissect. In other words, what gets settled into what goes without saying.

Darin Barney describes how what goes without saying infrastructurally is precisely what instills it with its political power:

“Even “natural” things that become infrastructures – rivers, for example – do so by virtue of being constructed socially as such, which means there are choices made, contested, and enforced, which is to say contingency, in their building. They enable movement, circulation, flow, and monitoring of things, in many varieties, across space. By the same token, they also disable or disallow the movement, circulation, and flow of other things, including people. Among the important things that infrastructures circulate are commodities, things that gain value only when they move, circulate, and are exchanged, and for this reason infrastructures are media of political-economic power” (Barney, forthcoming).

3 Carbon Form

“Our current built environment has created spatial configurations that enmesh the cultural, economic, and political aspects of social life within an energy-intensive network of space and form. As a result, we cannot think of the built environment as passively receiving energy from the grid but rather as actively giving form to energy-intensive ways of life, from individual consumption to the dynamics of global capitalism” (Iturbe, 2019).

Iturbe’s Carbon Form theory works to name [carbon] modernity as a kind of Platonic form to which the cultural, economic, and political conditions of social life are materially and conceptually meant to tend. At the design level, this carbon form has been sedimented into a spatial algorithm made possible by a certain source of energy, that it appears to persist beyond its continued usage. The concept “emerged from a dissatisfaction with how architecture addresses environmental questions, and how environmental questions related to energy were always considered after design and almost always through the lens of technology (Iturbe, 2019).

Industrial society brought carbon form to life by capturing dense fossil fuels and building machines that could transform organic materials into mechanical power, resulting in a total restructuring of the social order.

“Modernism was a moment when architects were looking at the world around them and knew there needed to be a total overhaul - cars, traffics, circulation of commodities, workers arriving in the city. The medieval fabric didn’t work. But the modernists benefitted from the fact that the energy transition had already happened and in that sense, they were reacting to a paradigm that was 100 years old, and they made way for it within the space of the city” (Iturbe, 2019).

energy capture paradigms:

(1) hunter/gatherer society, nomads – minimal permanence, few built structures, people moving around to access energy sources

(2) agricultural societies – people became sedentary and dwellings were constructed for food cultivation and more permanent positioning – towns, cities grow → energy mostly biomass

(3) industrial society ← → carbon form – total restructuring of the social order, with mechanized production, geographic displacement, urban density, commodity culture...and now late-liberal capitalism...energy coming from dense fossil fuels, and the birth of machines that can transform that energy)...

With this restructuring emerged a new spatial paradigm to accommodate the generation of fossil-fueled energy systems in urban spaces. At every subsequent turn, improvements in technology and capital opportunity evolved the paradigm, *office towers, apartment buildings, skyscrapers* proliferated and *suburbs, distribution networks and concrete*, were written into the global landscapes. In universal terms, carbon form is the foundation on which contemporary society is grappling with energy transition, and carbon form was made possible by a certain form of energy. Iturbe argues – rightly, in my opinion – that we’ve primarily been iterating on top of carbon form, *designing new shapes*, that don’t fundamentally change the *disposition* of the form which is precisely the critique the carbon form project aims to advance (Easterling, 2014).

As Iturbe says, “if solar panels are increasing the value of a real estate object, in a precarious neoliberal economy, that is carbon form.” It is not just decarbonization of energy infrastructure but the dismantling of this carbon form that is needed to address the *impasse*. Confronting carbon form requires a reckoning with what the designer continue to write into space – the ideologies and logics of modernity embedded in shapes that aren’t so easily grasped, that require different faculties and understandings for parsing them and for thinking against them. A reckoning with the modes of sociality that built these

infrastructures and that in turn reproduce the conditions for that mode of sociality to flourish. These modes undergird the dominant decarbonization pathways, manifested by a capitalist world ecology and a disfigured political arena. Peter Osbourne's theoretical framework for reading the social and ecological dynamics of terrestrial architecture describes the fundamental asymmetry between *terrestrial architecture's* idea of sustainability and a capitalist world ecology which is helpful for understanding what a *precarious neoliberal economy* is and why current approaches to decarbonization support this version of economy. Achille Mbembe's sweeping critique of contemporary political reality produced by *that system*, traces its origins to the project of colonization. These theories help introduce the concept *settler form* as a necessary framework for both understanding and dismantling *carbon form* in the settler-colonial landscape.

“By asking not how capitalism works on nature, but how nature works for capitalism, we can begin to see how capitalism is co-produced by human and extra-human natures in the web of life, and how the ‘law of value’ becomes the law of Cheap Nature, “which is the ongoing, radically expansive, and relentlessly innovative quest to turn work/energy of the biosphere into capital” (Osbourne, 2019, p. 54).

According to Osbourne's theory, Capitalist World Ecology produces:

Systemic inequality. Osbourne derives this from Alf Hornborg's conception of energy value which describes how “all infrastructure founded on an asymmetric exchange of energy between different social categories represents an appropriation of productive potential resulting in unequal exchange. As resources are refined through manufacturing and production, their productive potential is dissipated to the surrounding environment and lost to future work. Hornborg identifies that the productive potential of a given set of resources diminishes as they are converted into a product. This creates an inverse relationship between productive potential and value, the more energy that has been dissipated, the higher the price. Thus, the capitalist drive for surplus value, or profit, produces systemic inequality. Hornborg argues two contradictory tendencies of capitalism: (1) that prices are a cultural construction that do not reflect real material flows; and (2) that prices are real determinants of local material conditions for production, which

means that dissipation of resources through production will be continuously rewarded through high profits with ever more resources to dissipate, generating ecological and social inequities at the same time” (Osbourne, 2019, p. 49).

The production of space for exchange value, profit accumulation, and uneven development. The way capitalism shapes geography by producing space for exchange value and the resultant uneven development is derived from Neil Smith. Smith’s theory articulates how capital deployed in the built environment to produce surplus value and then withdrawn to seek higher profits elsewhere will always produce a contradiction in terms. That is, there will always be production of nature/space that is “external to society” (i.e. not a nature/space that society actually needs) and that this nature/space will therefore be understood in terms of “use value” and “exchange value,” where “the production of space for exchange alienates space from society and allows capitalism to use the entire globe to transform its urban, global and national scales unevenly in its own image,” a cycle that will always produce uneven development (Osbourne, 2019, p.50).

The law of cheap nature. The Law of Cheap Nature comes from Jason Moore who contributes to the argument in favor of breaking down the nature/society dualism on the grounds that capital is not something that is separate from nature but is in fact produced by it, if nature is understood to be “the web of life” inclusive of everything then “capitalism is a way of organizing nature.” Capitalism is “not the ecology of the world but a patterned history of power, capital, and nature, dialectically joined.” It’s capital’s “appropriation” of the “Four Cheaps” (natural resources, labour, food, and energy) that does not “produce capital as value; but produces the relations, spaces and work/energy that make value possible.” For Moore, capital is simply a way of organizing nature dependent on these *Four Cheaps* (Osbourne, 2019, p. 54).

The cheapening of nature, according to some, (or the erasure of more-than-human existents according to others) by capital to support the project of accumulation is an economic approach that anchors Osbourne's (and many others') social and ecological critique of battery electric vehicles, which is helpful to understanding the problematics of *decarbonized carbon form* (Osbourne, 2019, p.7).

“In a world set on objectifying everybody and every living thing in the name of profit, the erasure of the political by capital is a real threat. The transformation of the political into business raises the risk of the elimination of the very possibility of politics. Whether human civilization can give rise to any form of political life at all is the problem of the 21st-century” (Mbembe, 2019, p. 116)

According to Mbembe, it's the blurring of the *political and capital machines* that is eroding the human's subject's ability to enact Democratic modes of governance required to address the problematics of this circumstance. The conditions that have led to this blurring include: (1) the move from the human condition to the terrestrial condition, where the process of *re-peopling the earth* has transformed from a process of slave trafficking and settler-colonialism to a new type of *human flow and form(s) of exodus* that have dramatic consequences for the criteria of national belonging – formerly a central feature of the democratic institution. This becomes increasingly complicated as those flows include both human/non-human existents; (2) the re-writing of the human/nature relation that has rendered former humanist conceptions of man (man as unique species) dead, presenting dramatically different consequences for understanding humanity, depending on *who is rendering our new conception of what it means to be human*; (3) *the generalized introduction of tools and calculating or computational machines into all aspects of life*. Humans not only constitute the *self* with the necessary aid of the interface, but the human can be altered (biologically) with the interface. All of this has increasingly important political implications as transformations *take place beneath the surface of our cognition*.

What does it mean when we can no longer distinguish between the human organism and electronic flows?

When algorithmic reason completely replaces what was once understood to be human reason?

The fourth condition is the combined transformation (abstraction) and dominance of capital (*algorithmic, real-time, electronic signalling*) with the ability to modify the human at the genetic level. This phase of capital abstraction has paradoxically resulted in, *a spectacular increase in the fragility and the instability of the markets, coupled with the markets' unlimited powers of destruction.*

This blurring of political/capital requires confrontation, first, with our *mythological conception of democracy* to understand what has become naturalized about the idea of democracy which requires the understanding that social movements and their critiques and celebrations have been written from the perspective of the West, and therefore miss what Mbembe calls democracies *double movement*. That double movement is the double-standard of the law, the fabric of coloniality that necessitated slavery – “colonial power is in no way structured between the legal/illegal structure known to the west, but is unconditionally subject to political imperatives” that warrant the use of *unreserved force* in landscapes outside the legal jurisdiction of the west (Mbembe, 2019, p.26). This common-sense logic of Democracy functions by deadening a western political subject’s awareness to *latent exteriorized violence*. This resultant perpetual state of war is fraught with apocalypse narratives in popular narratives of futurity, though Mbembe concedes that these *obsessions may well be specific to Western metaphysics.*

Iturbe’s account is unique for its insistence that the design envelope *actively gives form to energy intensive ways of life* that, I argue, are never separate from the above described contemporary conditions of capital and democracy. This project takes Iturbe’s project seriously but argues that this persistence of the formal configuration of territory, infrastructure, and the neocolonial revenue rights expresses paradoxically as an analepsis into the preconditions for carbon form—what I call, *settler form.*

4 Settler Form

“The story we tell ourselves about environmental crisis, the story of humanity’s place on earth and its presence within geologic time determines how we understand how we got here, where we might like to be headed, and what we need to do” (Todd, 2017, p.764).

“Settler urbanism imposes a spatial code on the oppressed, reduced to users and consumers”
(Belanger et al., 2021).

Settler form is first and foremost about land. It is what congeals into reasonable rights, responsibilities, and maps at the interface of habituated dispossession. Who makes decisions about land and how those decisions are made – and specific to this project – what the who and the how mean to the project of decarbonization?

When it comes to figuring the cause of climate change, the date marked as the beginning of the geological epoch when humans began writing themselves into the geological strata has significant political consequences, specifically because of its relationship to colonization and land dispossession. How we date the Anthropocene amounts to a discussion of the root cause of settler modernity and supports a reading of contemporary risks through alternative lenses. In 2016, the working group that was formed to determine the moment at which humans morphed geologic time (or, when the Holocene ended and the Anthropocene began) recommended to the International Geologic Congress that the right date for the birth of the Anthropocene was around the middle of the 20th century, since “so many measurable anthropogenic changes began at that moment” (Todd, 2017, p.762). This period in time is more commonly known as the ‘great acceleration’, when “carbon dioxide levels, mass extinctions, the widespread use of petrochemicals (plastics) and plutonium residues coincided with geologic markers” (Todd, 2017, p.762). Problematically, a mid-twentieth century start date reproduces the narrative of universal planetary circumstance – *we* are one, *we* are all in this together, *we* must save the planet. Despite the historic usefulness of the ‘great acceleration’

to understanding “where McDonald's, international tourism, population and ocean acidification bind the whole of humanity together into one horrifying reality” (Todd, 2017, p.766) that start down the ability to interrogate the *colonial logic(s)* that govern the past, present and future through alternative epistemological lenses. Todd makes the case that a 1610 start date is necessary to “open up the geologic implications of the Anthropocene beyond the realm of Western and European epistemology to think with Indigenous knowledges from North America” and to “make the claim that to use a date that coincides with colonialism in the Americas allows us to understand the current state of ecological crisis as inherently invested in a specific ideology defined by proto-capitalist logics based on extraction and accumulation through dispossession” (Todd, 2017, p.764).

Linking the Anthropocene's *beginning* to the project of colonization – the 1610 Orbis Spike – supports an alternative discourse that troubles what Kathryn Yusoff calls a *planetary analytic* or *god's-eye view*, which undermine the politics of extraction that is fundamental to settler form (Yusoff, 2018). Geology specifically works against the project of historicizing the entanglement between geology and disposable non-white bodies and *inert* materials relied on for its mode of operation in the world, preventing a racialized reading. Tending to the violence of *white geology* requires a racialized reading to illuminate the problematic way geology's *extractive grammar* is operationalized as innocent, editing out oppression and dispossession and naturalizing the meaning and materiality of property – *as mineral description, as resource, as land, as human energy*). These *colonial geo-logics*, Yusoff describes, “fail to grapple with the inheritance of violent dispossession of indigenous land or to address the extractive grammars of geology that labor in the instrumentation and instrumentalization of dominant colonial narratives and their subjective, often subjugating registers that are an ongoing praxis of displacement” (Yusoff, 2018, p. 12)

This displacement is written into infrastructure across *Turtle Island*, and the world, “transforming ecologies of the many into systems of circulation and accumulation to serve the few” (Cowen & LaDuke, 2020, p.245)

“For the Ojibwe, history and legends are passed down orally. There are stories of Wiindigo, a giant monster, a cannibal, who killed and ate our people. Colonization was our Wiindigo” (Cowen & LaDuke, 2020, p.243)

The translation of infrastructure into indigenous terms supports an understanding of infrastructure’s settler form by naming its opposite – alimentary infrastructure. Alimentary meaning to nourish. The Ojibwe concept of Wiindigo infrastructure names infrastructure’s entanglement with white supremacy, erasure, extraction and the shaping and maintenance of the contemporary nation state, deepening an understanding of what is reproduced in a system that anchors its economies to a specific of infrastructure. This version of infrastructure is the Canadian Pacific Rail, it’s the pipeline infrastructure linking Canada’s oil sands to markets and it’s a newly established \$180Bn infrastructure bank established to broker deals under Canada’s New Building Plan – the new *spine of the nation* (Cowen & LaDuke, 2020).

“Life and Nonlife and the Human and the Nonhuman are abstractions and distractions from the fact that humans did not create this problem. Rather, a specific mode of human society did, and even there, specific classes and races and regions of humans. After this interruption, the antagonism shifts and the protagonists are neither human and other biological, meteorological, geological forces, nor Life and Nonlife. The antagonism is between various forms of human life-worlds and their different effects on the given-world” (Povinelli, 2016, p.25)

Finally, it’s Elizabeth Povinelli geontopower theory that anchors this conception of settler form. Geontopower, and its associated metaphysics geontology, is defined as “a set of discourses, affects, tactics used in late liberalism to maintain or shape the coming relationship of the distinction between Life and Non-Life” (Povinelli, 2016, p. 4). Geontology directly dialogues *non-life (geos; soullessness)* with *being (ontology)*, to illuminate the demarcation that separates life from *inertness* under a biontological framework (where “life” is

bios; soul). Drawing on this theory, what structurally maintains settler form is the Geontology of liberal regimes of power which erase non-human existents. Because liberal regimes of Geontopower “fail to keep relevant the critical analytics and practices of existence” enacted by Povinelli’s indigenous colleagues, their sovereignty depends on a willingness to “couch their analytics of existence in the form of a cultural belief (animism) and obligation to totemic sites” (Povinelli, 2016, p. 33) In other words, speaking the language of the state and performing rituals according to its logics has been necessary for survival and sovereignty. The critique of State-sanctioned moves to integrate traditional knowledge into environmental programming illuminates this issue empirically. Oftentimes these projects require indigenous communities to describe their traditional knowledge practices in frameworks that are legible to the State’s methods and practice. These terms of acknowledgement are very different from sovereignty based on the acknowledgement of *indigenous beliefs based on the potential truth of their analysis of existence*. In other words, acknowledging indigenous metaphysics as truth. Environmental reasoning grounded in a geontological framework cannot tend to human relations with different analytics of existence or non-human relations. This underscores the *impossibility* of operating within indigenous epistemological frameworks under late liberal power regimes.

Important to note is that Povinelli’s geontology theory emerges from her deep relation to *a place and its indigenous population*, and her description of geontopower (how it functions, what it prevents from emerging and its metaphysical inadequacies) draws from a series of *experiences* faced by Karrabing – an indigenous artist collective from northern Australia that she is a member to. Hyperlocal and situated knowledge allow Povinelli to anchor her theoretical narrative with primarily non-human protagonists of that place - a rock, a fossil, Tjipel (a river), Tjelbak (a fog). Geontologies provides the *scaffolding* for a new model of thought that might resolve environmental reasoning flaws by troubling the classical relationship between biology and philosophy and their mutual entanglement in demarcating *being* from nothing.

Can thinking with settler form help us productively tend to the dismantling of institutional and infrastructural logics that maintain the energy impasse? Particularly in places where land-back politics are suspended?

What does settler form mean beyond this landscape, in places where it's seemingly invisible?

5 Form Transition

“Sometimes more powerful than designing a thing is developing an interplay between things. These are time-released forms for which there can only be dynamic markers and partial control. Making interplay in a material world calls on artistic faculties that exceed language, mathematical construct, scientific proof, bureaucratic consensus, ideology, or political declaration” (Easterling, 2014).

If late-liberalism's energy transition maintains the intimacy between carbon and settler form and design continues to give form to these intimacies, dismantling those forms requires not just energy transition but *form transition* – the process of transitioning to post-settler form or as Iturbe says, *a new plan for how to live*. Form transition must be more fraught than energy transition, by design: as much about minerology as it is about ontology. Bound up in form are affective orientations, electrical wires, invisible signals, concretes, silicones, borders, bodies, and worldviews. Because of that, form transition must consider all these things.

Every detail matters. Where and how and for who matters.^{xii}

[work in progress] thoughts on form transition

form transition requires a close reading of what was originally written into landscapes – *this takes time* and will differ historically and geographically.

form transition must tend to the *local* with an eye to the global – *here-ish*.

form transition invites *the margins of the world system* back into view – not as spaces to be extracted from, but as spaces that hold promise for different, that are different, despite the conditions that condition against them.

form transition acknowledges alternative sociality's that may be less trapped in the loop of replicating carbon form.

form transition should be thought in both directions – what needs to be let go and needs to thrive?

form transition demands experimentation in methodology and praxis.

form transition advocates for what Keller Easterling calls medium design, a praxis of intervention that is not focused on the object but the structures and systems and connections that surround the object and make the object possible. The hard and the *soft* infrastructures.

form transition takes *interplay* seriously (Easterling, 2014).

form transition requires methods for thought, interpretation and intervention that don't replicate the logics of energy transition but depart from different theoretical positions and altered orientations in relation to what is considered possible in a building, a community, a region, a democracy.

form transition calls for much deeper integration across faculty and discipline.

form transition must result in more *just futures*.

form transition must always take seriously the way infrastructure evades critical intervention, and the way it perpetuates universal logics.

form transition will not occur if energy transition thought through the logics of carbon modernity is prioritized, regardless of who is in control.

form transition works to revive a relation between energy infrastructures and what that infrastructure powers.

form transition invites questions like: what are we using energy for?

form transition must balance the short game and the long game – solidarity with the battles taking place on the ground in the *short game* and the theoretical and philosophical transformations characteristic of the *long game*.

form transition might exceed specific faculties of language and imaginaries. So many strange and peculiar and overlooked things need to be examined to grasp possibility of beyond settler form, (including one's own place in that transition, who and what and where one is thinking with).

The medium of form transition will dictate the form.

Form transition must tend to the banal and boring details.

6 Speculative Energy Form(s)

It is not clear what form(s) come next. This project attempted to tend to the *in between* what design can perhaps *more easily* address with different epistemological frameworks than what it cannot. Considering that, I conclude with a speculative proposal for an artistic intervention that interrogates the most banal of *codes* for energy infrastructure in an effort to erode a deeply sedimented *given* that transcends alternative epistemological intervention and amplifies the problematic forms discussed in this thesis.

Proposal Brief

How are electricity infrastructures and the logics that govern them made to matter?

In order to encourage a political ecology that turns users of electricity into eco-literate stakeholders, emergent energy infrastructures need to be figured and kept open and active as a site of interpretation, because you can't have knowledge of systems and materials unless you are interpreting them, or are actively and pedagogically engaged with them – the opposite is settler form: a recessive or withdrawn infrastructure designed to disarticulate social imaginaries and practices from territories of extraction.

This project will reconfigure the model for renewable electricity in a way that both re-imagines the value of art education and links that value to the production of non-fossil fuel energy, in the rural setting. The project will take place in Dawson City, Yukon, where material transition away from diesel electricity generation makes possible much more than a reduced carbon footprint, but alternative value structures and cultural realities. In this way, the project seeks to confront the possibility for change that renewable energy is heralded for by using it to sustain the student body of the Yukon School of Visual Arts. Despite the way in which this rural environment depends on fossil fuels for most all energy needs, the possibility exists for an alternative energy infrastructure that doesn't simply reduce carbon emissions through the generation of clean electrons, but also integrates indigenous sovereignty, artistic imaginations and ecotopian ideals into an

anti-hegemonic cultural paradigm, via the intersection of the art school and the renewable resource.

The project aims to:

1. Create a *new code* for electricity generation (renewable energy) for Canada's only subarctic visual arts school.

2. Center (and problematize)
 - Energy audit parameters
 - Price for renewable electricity
 - Utility/producer relationship
 - Public energy infrastructure
 - *Liberal* logic of green energy
 - Electrification

3. Write a new *value* concept that *re-codes electricity* in alignment with what the art school *makes possible*, [against the backdrop of increasing labor precarity and technological determinism]. The metrics associated with this *new value* concept would be linked to the rate at which the school is compensated for its renewable energy production as well as the design parameters associated with its deployment. In this way, the model of energy rates and design of infrastructure would be critiqued and re-imagined according to *new logics of value* that are commensurate with an ethics of energy infrastructure not at odds with a mode of sociality required to write it into being. This value concept will be communicated via media methods that illuminate the infrastructural constructs we must reimagine in our quest to *take care of each other*.

Analytics for thinking beyond impasse:

unmappable landscapes,

multiple becomings,

conceptually fluid,

porous landscape,

collision / friction / confluence

Final note: Due to the nature of the project, it's perhaps worth stating that the work is in no way against lower-carbon sources of energy. Quite the opposite, this project takes decarbonization as a necessary though thoroughly insufficient project towards repairing / transcending the bleak and malnourished landscape of world-making that is available to us through the legacy of carbon modernity. It strongly contests an approach to decarbonization on the strict terms of non-fossil fuel technology deployment – energy transition versus form transition.

Notes

i I call this *home work* because I was raised in the Yukon.

ii Summary of Ulrich Beck's analysis of risk conditions: By engaging in reflexive critique, the foundations of science have been ruptured/shaken. This has tremendous implications for the practice of science and its relationship to the public sphere. As this occurs, *science becomes more necessary but less and less sufficient for socially binding definitions of truth*. This leads to a de-monopolization of scientific knowledge claims resulting in a *hyper-complex arena of hypothetical knowledge*. No knowledge remains pure from its political entanglements. Paradoxically, scientific practice has contributed to the construction of the *objective constraint*, making it more difficult for institutions to be reflexively dynamic. The reflexivity has mostly led to a proliferation of risks, and a proliferation of necessary scientific responses. Science may only be able to handle its side effects if it's able to intervene in the practical space of its consequences (taking a stake in its *immeasurable number of side effects*). This intervention requires a dynamic theory of scientific rationality, which Beck is calling for, in other words the "install of a break and a steering wheel into the 'non-steering' of the racing techno-scientific development that is setting explosive powers free" (Beck, 1992).

iii See *After Oil* for longer articulation of energy impasse: "We take it as self-evident that we are at an impasse like no other in history. Without signposts, we now must transition to different ways of being in the world, both with each other and in relationship to the environment. In this context, the direction forward is not preordained or written into the problem. While many of us remain optimistic that we can sustain our attachment to oil and the good life that it has come to define in the global West, it is increasingly clear that a continuance of the fossil economy is a form of "cruel optimism" that not only carries forward old risks but also introduces radically new risks into our lives" (Petrocultures, 2016, p.15).

iv Donna Haraway's *thick present* concept was useful to my thinking about a mode of embedding and deconstructing.

v The claims to land and sovereignty in this region deserve significantly more attention than the brief overview provided in this text. Please excuse the brevity.

vi I'm specifically thinking about the focus on language revitalization and ceremony practices that are specific to place/landscape.

vii See stewardship team here: <https://www.yfnclimate.ca/>

viii It's important to note that not all First Nations agree on everything and no part of this project attempts to speak on behalf of anyone. The point is that nothing is universal, there is no universal translation.

ix See full interview here:

https://www.schirn.de/en/magazine/context/2021/magnetic_north/critical_land_perspektiven_zum_klimawandel/

x I'm referring to Rosi Braidotti's Posthuman project that sees indigenous knowledge as fundamental to the *project of thinking* amidst ongoing damage to the geosphere, biosphere, and atmosphere. As a "multi-directional philosophy of relational ethics, foregrounding an ethics of joy and politics of affirmation," posthuman theory entangles a variety of emergent and evolving concepts that support the unlearning of "old habits of thought and forms of masculinist and euro-centric representations."

xi I want to acknowledge that the terms *feminist* and *indigenous* are used because of the way they are acknowledged in the academy (native studies; feminist studies). However, I also want to acknowledge their inadequacies for capturing difference.

xii For theory on reading for difference to clarify the choices we have in the policy realm to support and proliferate *an otherwise*, see J.K Gibson Graham, *Diverse Economies: Performative Practices for Other Worlds*; For strategies to avoid the inevitable exhaustion that arises when we try to figure which types of life will get a say in dictating political reality, and *how confusing political alliances become*, see tactics from Elizabeth Povinelli, *A Requiem to Late Liberalism*; For theory on how the modernist approach (rooted in the nature/culture divide) to thinking past, present, future is shackled by its tools/methods/paradigms and for a *methodology that tends to observe things on-the-ground from varied historical diffractions and points of view, and practical tips for how to read a landscape for survivance methods that challenge linear temporalities and promote methods of noticing toward an altered political awareness and approach to collectivity* see Tsing Anna & Swanson, H., Gan, E., & Bubandt, N., *Arts of Living on a Damaged Planet: Ghosts of the Anthropocene; Monsters of the Anthropocene*.

Assembly of First Nations Indigenous Climate Lens. (2019). Assembly of First Nations, Retrieved April 2020 from <https://www.afn.ca/wp-content/uploads/2020/04/Plenary-AFN-Framing-a-Climate-Lens-PPT.pdf>

Barney, Darin. (forthcoming). *Do Infrastructures Have Politics?*

Beck, Ulrich, & Ritter, M. (1992). *Risk Society: Towards a New Modernity*. London; Thousand Oaks, Calif.: Sage Publications.

Belanger, Pierre. (2020). No Design on Stolen Land: Dismantling Design's Dehumanising White Supremacy. *Architectural Design*, 90(1), 120-127.

Bellamy, B.R, & Diamanti, J. (2018). Materialism and the Critique of Energy. *Mediations (Chicago, IL)*, 31(2), 1-16.

Bello, Walden. (2009). "Carbon Markets: A Fatal Illusion." *Upsetting the Offset: The Political Economy of Carbon Markets*. London, UK: Mayfly Books.

Böhm, Steffen and Siddhartha Dabhi. (2009). *The Political Economy of Carbon Markets*. London, UK: Mayfly Books.

Braidotti, Rosi, & Hlavajova, Maria. (2018). *Posthuman Glossary*. London, UK: Bloomsbury Publishing Plc.

Carbon Offsets & Markets Guidance. (2019). Second Nature, Retrieved 6 April 2019 from <https://secondnature.org/publications/carbon-markets-offsets-guidance/>

Checker, Melissa. (2011). Wiped Out by the "Greenwave": Environmental Gentrification and the Paradoxical Politics of Urban Sustainability. *City & Society*, 23(2), 210-229.

Davis, Heather, & Todd, Z. (2017). "On the Importance of a Date, or Decolonizing the Anthropocene." *ACME: An International Journal for Critical Geographies*, 16(4): 761-780. Retrieved from: <https://www.acme-journal.org/index.php/acme/article/view/1539>

Diamanti, Jeff. (forthcoming, 2021). *Climate and Capital in the Age of Petroleum: Locating Terminal Landscapes*. London: Bloomsbury Publishing Plc.

Diamanti, Jeff, and Imre Szeman. (2020). "9 Principles for a Critical Theory of Energy." *Polygraph Journal* 28. https://polygraphjournal.files.wordpress.com/2020/08/polygraph-28_diamanti-and-szeman-article.pdf

Easterling, Keller. (2014). *Extrastatecraft: The Power of Infrastructure Space*. Brooklyn: Verso.

Fassin, D. (2011). *Humanitarian Reason: A Moral History of the Present*. (R. Gomme, Trans.). Berkeley, Calif.; London: University of California Press. Introduction 13.

Gibson-Graham, J.K. (2008). Diverse economies: Performative practices for 'other worlds'. *Progress in Human Geography*, 32(5), 613-632.

Granovetter, Mark, & McGuire, Patrick. (1998). The Making of an Industry: Electricity in the United States. *The Sociological Review (Keele)*, 46(1_suppl), 147-173.

Guattari, Félix. (2000). *The Three Ecologies*. Translated by Pindar, I., & Sutton, P. New Brunswick, NJ: The Athlone Press.

Han, B., & Butler, E. (2017). *Psychopolitics: Neoliberalism and New Technologies of Power*. (Verso futures). London; Brooklyn, NY: Verso.

Haraway, Donna J. (2016). *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press.

Harvard Climate Solutions Living Lab Course and Research Project. (2019). Harvard University, Retrieved 1 May 2019 from <https://green.harvard.edu/climate-solutions-living-lab-course-and-research-project>

Iturbe, Elisa. "Architecture and the Death of Carbon Modernity," ArchDaily (December 21, 2019) <https://www.archdaily.com/930495/architecture-and-the-death-of-carbon-modernity>

Jasanoff, S. (2001). Image and Imagination: The Formation of Global Environmental Consciousness. In C. A. Miller & P. N. Edwards, *Changing the atmosphere: expert knowledge and environmental governance* (pp. 309–337). Cambridge, Mass: MIT Press.

Kaika, Maria. (2017). 'Don't call me resilient again!' The New Urban Agenda as immunology ... or ... what happens when communities refuse to be vaccinated with 'smart cities' and indicators. *Environment and Urbanization*, 29(1), 89-102.

Kimmerer, Robin Wall. (2014). Returning the Gift. *Minding Nature* 7 (2): 1-24

LaDuke, Winona, & Cowen, D. (2020). Beyond Wiindigo Infrastructure. *The South Atlantic Quarterly*, 119(2): 243-268.

Latour, Bruno, & Porter, C. (1993). *We Have Never Been Modern*. Cambridge, Mass.: Harvard University Press.

Marder, Michael. (2020). For the Earth That Has Never Been. *Stasis*, 9(1).

<https://doi.org/10.33280/2310-3817-2020-9-1-60-75>

Matchett, Jenni. "Rejecting Solar Capitalism." *Energy Culture: Art and Theory on Oil and Beyond*, edited by Jeff Diamanti and Imre Szeman. West Virginia University Press, 2019.

May, John. (2019). *Signal. Image. Architecture*. New York, NY: Columbia Books on Architecture and the City.

Mbembe, Achille. (2019). *Necropolitics*. Durham, NC: Duke University Press.

Mitchell, Timothy. (2011). *Carbon democracy: Political Power in the Age of Oil*. London; New York: Verso.

Park, K-Sue. (2016). Money, Mortgages, and the Conquest of America. *Law & Social Inquiry* 41 (4): 1006-1035.

Peters, Adele, "Starbucks is now aiming to become 'resource-positive'—though it won't say by when", Fast Company (January 21, 2020) <https://www.fastcompany.com/90452938/starbucks-is-now-aiming-to-become-resource-positive-though-it-wont-say-by-when>

Plaiss, Adam. (2016). From Natural Monopoly to Public Utility: Technological Determinism and the Political Economy of Infrastructure in Progressive-Era America. *Technology and Culture*, 57(4), 806-830.

Povinelli, Elizabeth A. (2016). *Geontologies: A Requiem to Late Liberalism*. Durham, NC: Duke University Press.

Ramey, Joanna G, "Jeff Bezos Details Amazon's Net-Zero Carbon Emissions 2040 Goal", Fortune (September 19, 2019) <https://fortune.com/2019/09/19/jeff-bezos-details-amazons-net-zero-carbon-emissions-2040-goals-climate-change/>

Riofrancos, Thea, "Seize and Resist: The Global Supply Chain is Up for Grabs", The Baffler (November 2020) <https://thebaffler.com/salvos/seize-and-resist-riofrancos>

Roberts, David, "Microsoft's astonishing climate change goals, explained", Vox (July 30, 2020) <https://www.vox.com/energy-and-environment/2020/7/30/21336777/microsoft-climate-change-goals-negative-emissions-technologies>

Simpson, Leanne B. (2020). *Noopiming*. Toronto, ON: House of Anansi Press.

Somini Sengupta, "China, in Pointed Message to U.S., Tightens Its Climate Targets", New York Times (September 22, 2020) <https://www.nytimes.com/2020/09/22/climate/china-emissions.html>

Spinak, Abby. (2020). "Not Quite So Freely as Air: Electrical Statecraft in North America." *Technology and Culture*, 61(1), 71-108.

Spinak, Abby. (forthcoming, 2021). *Democracy Electric*.

Stockton, Nick, "At Paris Climate Talks, Negotiators Agree to Save the World", *Wired* (December 12, 2015) <https://www.wired.com/2015/12/at-paris-climate-talks-negotiators-agree-to-save-the-world/>

TallBear, Kim. (2017). *Beyond the Life/Not-Life Binary*. In *Cryopolitics* (p. 179). Cambridge, MA: The MIT Press.

The Greenhouse Gas Protocol. (2001). World Resource Institute, Retrieved 6 April 2019 from <https://www.wri.org/publication/greenhouse-gas-protocol>

The Role of Indigenous Peoples in Biodiversity Conservation: The Natural but Often Forgotten Partners. (2008). The World Bank, Retrieved April 2020 from <https://www.scribd.com/document/395642719/RoleofIndigenousPeoplesinBiodiversityConservation-pdf>

Todd, Zoe. (2016). An Indigenous Feminist's Take on the Ontological Turn: 'Ontology' is Just Another Word for Colonialism." *Journal of Historical Sociology* 29 (1): 4-22.

Tsing, A, Swanson, H., Gan, E., & Bubandt, N. (2017). *Arts of Living on a Damaged Planet. Ghosts of the Anthropocene; Monsters of the Anthropocene*. Minneapolis, MN: University of Minnesota Press.

Umbrella Final Agreement. (1993). Council of Yukon First Nations, Retrieved April 2020 from <https://cyfn.ca/ufo/>

University of Alberta. Department of English Film Studies, issuing body. (2016). *After Oil*. Edmonton, Alberta: Petrocultures Research Group.

Veracini, Lorenzo. (2010). *Settler Colonialism: A Theoretical Overview*. London, UK: Palgrave Macmillan.

Watts, Jonathan, "We Have 12 Years to Limit Climate Change Catastrophe, Warns UN", *The Guardian* (October 8, 2018) <https://www.theguardian.com/environment/2018/oct/08/globalwarming-must-not-exceed-15c-warns-landmark-un-report>

Wiener, N. (1961). *Cybernetics: Or Control and Communication in the Animal and the Machine* (2d ed.). New York: M.I.T. Press.

Wilson, Sheena. "Energy Imaginaries: Feminist and Decolonial Futures." *Materialism and the Critique of Energy*, edited by Brent Bellamy and Jeff Diamanti. MCM Publishing, 2018, p. 377-411.

Yakubovich, Valery, Granovetter, Mark, & McGuire, Patrick. (2005). Electric Charges: The Social Construction of Rate Systems. *Theory and Society*, 34(5/6), 579-612.

Yeendo Diinehdoo Ji'heezrit Nits'oo Ts'o' Nan He'aa Declaration. (2019). Vuntut Gwitchin First Nation, Retrieved April 2020 from <http://www.vgfn.ca/pdf/CC%202019%20Declaration.pdf>

Yukon Climate Change Indicators and Key Findings. (2015). Yukon Government, Retrieved April 2020 from https://www.yukonu.ca/sites/default/files/inline-files/Indicator_Report_Final_web.pdf

Yukon First Nation Self Government: Mapping the Way. <https://mappingtheway.ca/>

Yusoff, Kathryn. (2018). *A Billion Black Anthropocenes or None*. Minneapolis, MN: University of Minnesota Press.