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Methodological Reflections on *hereafter.land*:

Mapping Relationalities and Speculative Geographies of Extraction

A thesis submitted in partial satisfaction

of the requirements for the degree Master of Arts in

American Indian Studies

by

Catherine Galbraith

2024

ABSTRACT OF THE THESIS

Methodological Reflections on *hereafter.land*:

Mapping Relationalities and Speculative Geographies of Extraction

by

Catherine Galbraith

Master of Arts in American Indian Studies

University of California, Los Angeles, 2024

Professor Jessica R. Cattelino, Chair

This thesis is a methodological reflection on a years' work on *hereafter.land*, a collaborative webmapping project exploring a speculative ecology of the Malartic Mine. In these reflections, I address the ethical obligations of co-creative research, methods and sources used in developing *hereafter.land*, and how the physical infrastructure of extraction and the digital infrastructure of mapmaking disturb relationalities. I argue that the separation of plant, water, and animal kin so often found in Western spatial science is incompatible with Indigenous epistemologies rooted in relationality. In making *hereafter.land*, my collaborator Vanny and I developed a webmapping method based on our understandings of good relation as Anishinaabe and Chickasaw people,

respectively, that aims to push back against the abstraction necessitated by Western

cartographic tools and conventions.

The thesis of Catherine Galbraith is approved.

Genevieve Gonzalez Carpio

Shannon E. Speed

Jessica R. Cattelino, Committee Chair

University of California, Los Angeles

2024

Dedication

Chokma'shki to my friends, my family, and the land.

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Introduction

This thesis is a methodological reflection on my ongoing research creation project, titled *hereafter.land*, which I work on in collaboration with my friend Van Racine (Beaver House First Nation). Van is a linguist and game developer, currently pursuing their MFA at Concordia University. *hereafter.land* seeks to explore an Indigenous geography that renegotiates the legacies of extractive industry in a distant future. It is an exploration of a future imaginary of the Malartic Mine, one that does not erase the history of colonialism but instead builds worlds of love within the wounds it has left. Our project explores this imaginary in the form of an interactive digital atlas. We are informed in this project by our positionalities as Anishinaabe and Chickasaw people.

The Canadian Malartic Mine is an open pit gold mine owned and operated by the Canadian mining company Agnico Eagle. The deposit was discovered in 1923. The mine, at that point owned by Osisko Mining, opened in 2011.[1] The mine consists of two pits – Barnat and Malartic. The Malartic Pit ceased operations on May 5, 2023. At the time of its closing, the pit was 1.8 kilometers long, 1 kilometer wide, and 360 meters deep. The Barnat Pit is scheduled to end operations in 2039. The Barnat Pit will be 1.7 kilometers long, 750 meters wide, and 380 meters deep. Agnico Eagle has plans to begin a new underground mining operation continuing to extract from the East Gouldie deposit. The Odyssey Mine is a ramp and shaft mine with a depth of 1.8 kilometers. Agnico Eagle plans to reach the peak of their operations in 2029 and close the mine in

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[1] Agnico Eagle. "About Us - CMM AND ODYSSEY MINE." Accessed December 14, 2023. https://canadianmalartic.com/en/about-us/.

2042.[2] The Malartic and Barnat pits are located in the town of Malartic, about thirty minutes west of Val d'Or, Quebec, and two hours east of Beaverhouse First Nation.

In this project we ask: what do Native spaces, deemed worthless beyond extraction, look like after Land Back? How can we restore spaces fundamentally altered by colonialism, while acknowledging that they will never be the same? In this thesis, I will address my approach to conducting research outside of my own territory as an Indigenous person and how we arrived at speculative web mapping as a medium for this project.

This thesis is divided into three sections. The first provides background on *hereafter.land*, situating it within the body of work exploring the same future imaginary and explaining how we arrived at the format of a digital atlas. I describe some of the ethical obligations associated with collaborative research and working outside of my own territory as an Indigenous person, drawing on Kari Chew and Lokosh's theorization of *Chikashsha asilhlha*, or *to ask Chickasaw*. In the following section I discuss Indigenous speculative fiction, apocalypse narratives, and the relegation of Indigenous peoples to the past in dominant narratives. In this section I explain how I approached the envisioning of this landscape and my sources, particularly my use of environmental impact assessments as a key source. In the final section I discuss infrastructure and how it can disturb or facilitate relationalities. I first discuss the physical infrastructure that is necessary for resource extraction on Indigenous lands. I then address Indigenous counter-

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[2] Agnico Eagle. "About Us - CMM AND ODYSSEY MINE."

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mapping movements, the digital infrastructure of mapmaking, and how we subverted Western cartographic conventions in our approach in *hereafter.land.* I argue that the separation of plant, water, and animal relations so often necessitated by traditional Western spatial data visualization conventions is incompatible with Indigenous epistemologies that are rooted in relationality. In *Research Is Ceremony: Indigenous Research Methods*, Shawn Wilson identifies relationality as being at the heart of Indigeneity. He states that relationality does not mean viewing ourselves as being merely in relationships with other beings, rather "we *are* the relationships that we hold and are part of."[3] Through *hereafter.land*, we tried to imagine an Indigenous speculative cartographic method based on the foregrounding of relationality. In its best iterations, this method offers an alternative to settler cartographies and push back against the epistemological violence of abstraction.[4]

Background on the project and reflections on co-creation

      hereafter.land is an interactive webmap exploring a future imaginary of the Malartic Mine near Val-d'Or, Quebec. The goal of the project is to explore speculative landscapes that support human and non-human life within decommissioned mines. We aim to explore what Native spaces, deemed worthless beyond extraction, might look like

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[3] Shawn Wilson. *Research Is Ceremony: Indigenous Research Methods*. Fernwood Publishing, 2008. 80.

[4] By abstraction, I mean making knowledge and beings distinct from the places and systems they are a part of.

after Land Back. Land Back involves the relinquishing of wealth and power by settlers, and a return to collective Indigenous land ownership.[5]

In this section, I describe the work that preceded *hereafter.land*, how I came to be involved with this world, and how we arrived at this format. I then reflect on the co-creative process and the responsibilities that come with working outside of one's own territory as an Indigenous person. I first describe *Orange Pekoe*, Vanny's game which introduces this world. I then discuss the process of developing the webmap and how we decided on a webmap format. Finally, I address the ethics of working in collaboration on pre-existing projects, and outside of my own territory, drawing on Kari Chew and Lo-kosh's theorization of *Chikashsha asilhlha*. I reflect on what it means to study extraction on Indigenous lands without contributing to it.

Orange Pekoe

Vanny has built a 3D environmental Bitsy game, titled *Orange Pekoe*. In *Orange Pekoe,* the player navigates a segment of the urbanized tunnel system of the Malartic pit in 2.5D. The game depicts lush, forested landscapes juxtaposed with the technological fixes required to make these landscapes possible underground. The player encounters human and non-human members of the community as they try to return to their home within the city. The player enacts reciprocity as they interact with the landscape and the other characters, bringing tea and tobacco to non-playable characters. *Orange Pekoe* was featured at the Maoriland Film Festival in early 2024. I was not involved with

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[5] Graeme Reed and Jen Gobby. "Land Back and Climate Action." *Rooted* 1, no. 2 (Summer 2021): 8-9.

the making of *Orange Pekoe* in any way – I only reference it to contextualize our work on *hereafter.land*.

hereafter.land

hereafter.land is an interactive digital atlas which allows the user to explore a speculative ecology of the open section of the Malartic Pit, several centuries from now. While *Orange Pekoe* explores the interior tunnel system and the urban geographies that might take shape within it, in *hereafter.land* we sought to imagine how rocky exterior of the pit could be reclaimed. Drawing on data from environmental impact assessments, and Van's knowledge of their home territory, we have created a map which begins to explore this biome and the relationships that make it up.

When we began the project, we intended to develop an explorable vignette using Unity Engine, a 3D game development software. *hereafter.land* would expand upon the world Vanny created in *Orange Pekoe* and continues to explore in their forthcoming work. Van asked me to join them in this project to assist with planning and design, while they focused primarily on the actual development of the game. Due to timing and re-source constraints, we found ourselves unable to take on such an extensive project us-ing Unity Engine. We decided to instead create a web map exploring the same land-scape in 2D. I ended up taking on the drawing of the map and most of the copywriting, while Van works on the development of the website itself.

My initial instinct when we shifted from a 3D game format to a web map was to organize our atlas into different layers based on the function of different objects or type of kin. I thought plant relatives might be represented in one layer, animal relations and

human infrastructure in others, and these layers able to be switched on and off. As a geography student this was the way I was taught to visualize and organize spatial information. We quickly realized this approach broke apart relationalities and elected to instead take a cue from the user interface of Anna Tsing's *Feral Atlas* by telling granular stories of interactions.[6] Clicking on one element of the map will expand a web of relations, with an accompanying text briefly outlining some of the ways that more-than-human beings make kin with each other and with us.

The "base map" is a satellite image taken from ArcGIS' Living Atlas, which I vectorized in 32-bit. When I began the project, I intended to use ArcGIS Pro to develop the map. However, I quickly realized that ArcGIS did not have the graphic capabilities I was looking for. I found I did not need a coordinate reference system or the data analysis functions of ArcGIS, as I had no quantitative data. The map is primarily speculative, and it intentionally subverts Western cartographic convention. At this point I decided to switch to a digital painting approach using Adobe Photoshop and Illustrator, and instead

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[6] Anna Tsing and Jesse Bazzul. "A feral atlas for the Anthropocene: An interview with Anna L. Tsing." In *Reimagining Science Education in the Anthropocene*. Springer, 2021, 310.
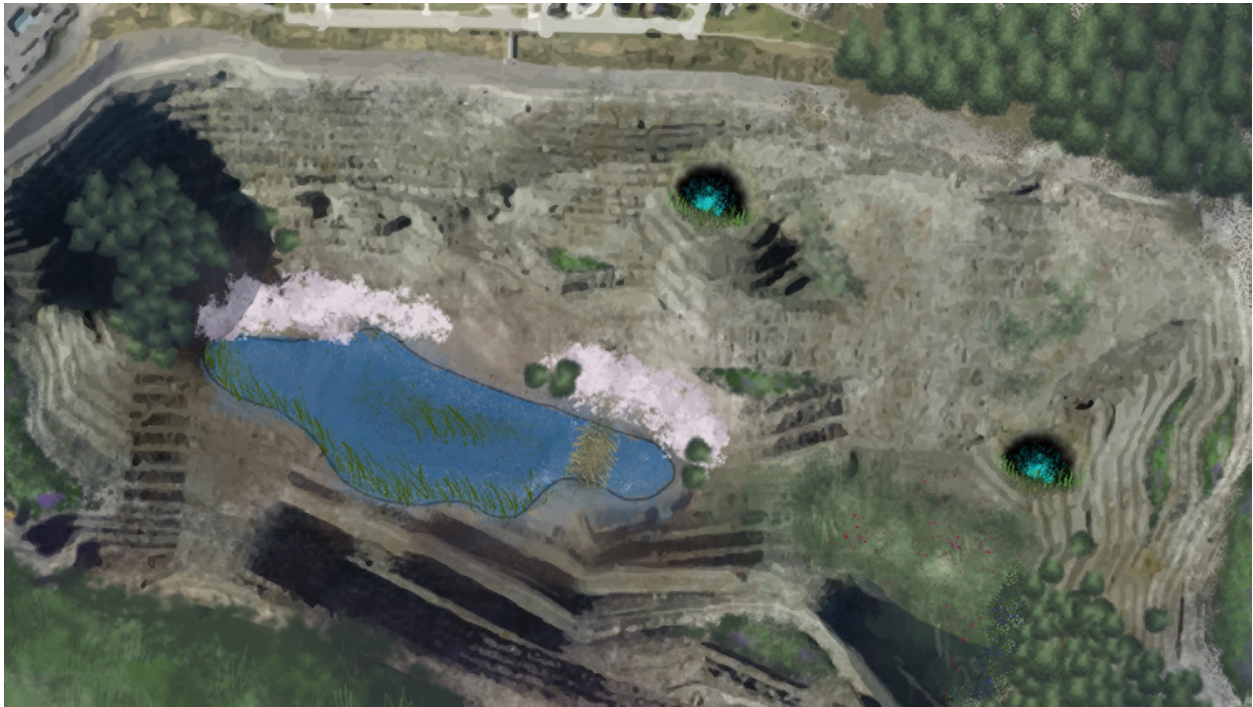
to approach the mapmaking more as an art practice.

Figure 1: hereafter.land map by Catie Galbraith.

By foregoing the use of traditional webmapping or GIS softwares, such as ArcGIS, which might isolate our more-than-human kin into separate layers based on co-lonial understandings of their function, our map is organized in a way that *highlights* re-lationships. Clicking on one area on the map, for instance a beaver dam, will open a network of relationships, such as the waterways which are mediated by their dams, and the manoomin which springs up in these waterways.[7,8] Each connection is accompanied by a short text briefly explaining some of the responsibilities contained within this

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[7] Winona LaDuke. "Wild Rice Moon." *YES! Magazine*, July 1, 2000. https://www.yesmagazine.org/is-sue/food/2000/07/01/wild-rice-moon.

[8] Leanne Betasamosake Simpson. *A Short History of the Blockade: Giant Beavers, Diplomacy, and Re-generation in Nishnaabewin* Edmonton, Alberta, Canada: University of Alberta Press, 2021.

relationship. The map is not comprehensive – it is not possible to map every relation and we cannot know all the relations that might exist. The first version of the map includes four relationships, but each being within the relationship could be highlighted in another relationship. This is communicated explicitly, through the copy of the website.

The first edition of the map will focus on four groups of relations: waterways, beavers, and manoomin; foodways; tree roots and human infrastructure; and small growth and soils. These choices were informed by data found in a 2016 environmental impact assessment of the mine, by what literatures exist on these relationships, and by Van's knowledge of the territory. We plan to continue expanding upon this map, eventually mapping the interior tunnels. We are also interested in using our method to explore other speculative landscapes of extraction.

Ethical obligations of collaboration and working on another's territory

It is easy when studying extraction to contribute to the extractive logics encouraged by the academy. Western scholarship often seeks out and privileges tragedy, incentivizing researchers to extract stories of pain. Communities are often left in the wake of this research no better off than they were before the researcher arrived. As bell hooks says in "Eating the Other: Desire and Resistance," the outsider "leaves her encounters with the Other richer than she was at the onset. We have no idea how the Other leaves her."[9] Eve Tuck (Aleutian) addresses how we can reframe desire in her call for researchers to pause damage-centered work. She offers desire-centered research as a

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[9] bell hooks. "Eating the Other: Desire and Resistance." In *Black Looks: Race and Representation*. Boston: South End Press, 1992, 380.

thirding, which moves beyond the binary of reproduction or resistance. She states that "desire is the song about walking through the storm, a song that recognizes rather than denies that pain doubtlessly lies ahead."[10] Working outside of my own community, I had to be careful to do gentle, generative work that does not deny the impacts of colonization but does not dwell primarily on the damage.

While working on *hereafter.land*, my relationship (or lack thereof) to this land was always at the forefront. I am not Anishinaabe, and I have not had the opportunity to travel to the Malartic Mine. This place was introduced to me by my collaborator. The Malartic Mine is near their home community, Beaver House First Nation. I am a citizen of the Chickasaw Nation. However, for several generations my family has been based in the Midwest. The last Chickasaw speaker in my family passed away in 1955. I have lived most of my life as an uninvited visitor in the Great Lakes. I grew up in Indiana, on Myaamia and Potawatomi lands. When I was 18, I moved to Tiohtià:ke/Mooniyang, or Montreal. It was here, on Kanien'kehà:ka and Anishinaabe territories that I first began to truly reflect on my relationship with land and what it means to be an Indigenous person in diaspora. This is also where I met my collaborator, Van. For the last two years I have lived in Tovaangar, or Los Angeles. While making *hereafter.land* and writing this thesis, I have been living as an uninvited visitor on Tongva land. Thus, I have had to be very careful in my approach to this project to carry myself with cultural integrity as a Chickasaw person and humility as a visitor on Anishinaabe and Tongva territories. While my

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[10] Eve Tuck. 2009. "Suspending Damage: A Letter to Communities." *Harvard Educational Review* 79 (3): 415.

thoughts are inevitably informed by my positionality as a Chickasaw person, I want to be clear that I am not speaking on behalf of my community or any other community. All errors are my own.

In their 2021 article "Chikashshaat Asilhlhat Holissochi (Chickasaws Are Asking and Writing): Enacting Indigenous Protocols in Academic Research and Writing", Kari Chew (Chickasaw) and Joshua Hinson (Chickasaw) introduce *Chikashsha asilhlha* and *Chikashsha holissochi*. *Chikashsha asilhlha*, or 'to ask Chickasaw,' is a Chickasaw protocol for sharing knowledge ethically, based on relational accountability. *Chikashsha asilhlha* requires honoring the house, clan, and nation, remaining visible to community, posing questions only after listening and observing, reciprocating gifts, taking care with knowledge that is given, and showing humility.[11] Reciprocity and accountability are the most important values to carry during the research and writing process. Chew and Hinson are primarily focused on language work by Chickasaw people with Chickasaw people. However, I tried to adhere to these ethical obligations as a Chickasaw person working outside of my own nation.

In these reflections it may seem that I have left out critical information. I try not to speak in detail about the other works that explore this future imaginary: *Orange Pekoe* or Van's forthcoming work. I will not speak about teachings Van shared with me as we made *hereafter.land*. I will not speak for their community, or for my community. Instead, I will speak only to my own perspectives and methodological approaches as an

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[11] Kari Chew and Joshua D. Lokosh Hinson. "Chikashshaat Asilhlhat Holissochi (Chickasaws Are Asking and Writing): Enacting Indigenous Protocols in Academic Research and Writing." Native American and Indigenous Studies 8, no. 2 (2021): 8.

individual. While I do not currently physically reside on Anishinaabe lands, I am a guest on digital and intellectual Anishinaabe territories.

The fact that I only know this place through the virtual has complicated how I think about being in good relation. Throughout the process of drawing the map and putting together these reflections, I found myself feeling untethered. To become so intimate with a virtual place, and a future imaginary of a site I have never visited, left me feeling disconnected from the lands I am from and physically live on. I often found myself coming back to a question posed by Lewis, Pechawis, Arista, and Kite in "Making Kin with the Machines": "how do we as Indigenous people reconcile the fully embodied experience of being on the land with the generally disembodied experience of virtual spaces?"[12] I had to work harder to keep my relations in mind, traveling home several times throughout the process to ground myself.

Returning to the land I grew up on and know most intimately helped me with this reconciliation. I grew up about two miles from the Hanson Aggregates Ardmore Quarry, a limestone quarry in Fort Wayne, Indiana. When I was a teen, I would often visit the quarry's observation deck, which was not much more than a gravel parking lot, behind the now-closed high school my mother went to, and which overlooked the 1,000 foot pit. Jokingly dubbed "the Grand Canyon of Northern Indiana," the quarry opened in 1942 and continues to expand. I had a morbid fascination with the pit – while thinking about it too hard made my stomach turn, I thought it was beautiful. From afar, the quarry pond

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[12] Jason Edward Lewis, Noelani Arista, Archer Pechawis, and Suzanne Kite. "Making Kin with the Machines." *Journal of Design and Science*, July 16, 2018, 3-4.

looked so blue. While I was putting together these reflections, I travelled home to Indiana. In the six years that I have lived away, the quarry has expanded so much that the observation deck was permanently closed. However, through the barbed wire fences around the edge of the pit, you can still watch the quarry operations. Revisiting this site that I love so deeply, despite all its baggage, helped ground me in my relationship with the Malartic Pit.

This world within the Malartic Mine is first and foremost my collaborator's. I am deeply grateful to have been asked to collaborate on this project – to be invited into someone's world is a gift. As a guest on these digital territories, I have a duty to make kin and be a good ambassador for the land I come from. Or, in the words of my good friend Ella Martindale (Quw'utsun): "I bring myself to other land relations as a guest, determined to show the land that I am here – and I bring my relations with me."[13]

Speculation, apocalypse, and Indigenous futures

In this section, I discuss literatures on Indigenous futurisms, speculation, and apocalyptic narratives. I focus specifically on the relegation to the past of Indigenous peoples by dominant climate narratives and the emphasis on kinship in the future by Indigenous artists and writers. I then address the sources I used while deciding what the landscape depicted in *hereafter.land* might look like, particularly my use of environmental impact assessments.

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[13] Ella Martindale, Kaitlin Rizarri, John Pierre Craig, Jo Billows, and Jacqueline L. Scott. "Afterword: Begin with a Refusal." In *Working with Theories of Refusal and Decolonization in Higher Education*, 2023, 203.

Despite the genre's colonial origins, speculative and science fiction allows us as Indigenous people "to romance our own sovereignty and imagine worlds in which our agency is centered and active."[14] In his chapter of *Coded Territories: Tracing Indigenous Pathways in New Media Art,* Jason Lewis (Kanaka Maoli) invites readers to imagine themselves (their nations, the lands, etc.) into the future. We are very capable of remembering our histories. However, thinking into the future can be harder. Native peoples are often discursively confined to the past. Lewis instead asks us how we can imagine a future without trauma? Without anger? How do we imagine new futures without forgetting our own histories?[15]

In their chapter in *Otherwise Worlds: Against Settler Colonialism and Anti-Blackness*, Jas M. Morgan (nehiyâw/Métis) describes how Indigenous artists challenge settler imaginaries of Indigenous disappearance and the 'death' of land. Indigenous artists contest these views through imagining their own futures, which weave together technology and tradition. Morgan analyzes the work of artists including Pudlo Pudlat (Inuit), Oviloo Tunnillie (Inuit), and Dayna Danger (Métis/Saulteaux/Polish), who invoke future technologies to expose the impacts of being displaced from one's lands and kinship ways. They argue that the technological traditions proposed by these artists offer guiding principles for imagining futures based in kinship.[16] Morgan states that they understand

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[14] Jason Edward Lewis. "Overclock Our Imagination!: Mapping the Indigenous Future Imaginary." In *The Routedge Companion to Indigenous Art Histories in the United States and Canada*, 2022, 65.

[15] Dana Claxton, Steve Loft, and Melanie Townsend. *Transference, tradition, technology: Native new media exploring visual and digital culture.* Walter Phillips Gallery Editions, 2005.

[16] Jas M. Morgan. "Visual Cultures of Indigenous Futurism." In *Otherwise Worlds*. New York, USA: Duke University Press, 2021, 333.

kinship as being based in a responsibility to foster "good relations within all creation in our intentions and actions."[17] While the author is writing from a nehiyâw/Métis view of kinship, this definition is one that resonates with me. Indigenous artists use speculation to address disconnection from the land and kinship, and as a space to envision futures for themselves.

Ursula K. Le Guin expressed a similar concern in the case of fiction in "The Carrier Bag Theory of Fiction" from *Dancing at the Edge of the World*. She asks why we are drawn to stories which center violence. She argues that for many, they are the most engaging stories in the past.[18] These stories have taken many shapes, from Homer's Odyssey to popular science fiction, relying on themes of intergalactic colonization.[19] Le Guin asks the readers to imagine what a story that regards technology as a carrier bag, rather than as a knife, would be like. This question opens narratives which center reciprocity and community, rather than violence.

Within the genre of climate fiction, there is an emerging popular literature surrounding "eco-apocalypse". This genre, which is identified by Audra Mitchell and Aadita Chaudhury as emerging largely from international relations, the social sciences, and popular journalism, aims to identify the greatest threats to 'humanity' and offer strategies to protect our 'collective' 'future'.[20] However, these conversations are primarily

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[17] Morgan, "Visual Cultures of Indigenous Futurism," 335.

[18] Ursula K. Le Guin, *The Carrier Bag Theory of Fiction*. Ignota Books, 1986.

[19] Ibid.

[20] Audra Mitchell, and Aadita Chaudhary. "Worlding beyond 'the' 'End' of 'the World': White Apocalyptic Visions and BIPOC Futurisms." *International Relations* 34, no. 3 (2020): 310.

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concerned with identifying threats to whiteness and white futures. Their analysis expands upon the work of Potawatomi scholar Kyle Whyte. Whyte contends that dystopian settler narratives of the Anthropocene can relegate Indigenous peoples to the past and erase our perspectives on the connections between climate change and colonialism.[21] He discusses how being unable to access more-than-human relatives is akin to extinction in the eyes of many Indigenous peoples. While more-than-human relatives remain an important part of our governance, living memories, and heritage, it is now much harder to be in direct relation.[22] Western discourses of extinction are "so focused on 'species' that they cannot come to grips with Indigenous peoples' experiences of having their relationships with nonhumans greatly disrupted by colonialism."[23] Settler narratives of climate crisis erase the fact that Indigenous peoples have been living in post-apocalyptic scenarios for more than 500 years. Indigenous thinkers and creators have been actively engaged in world-building since the apocalypse of white domination. Speculative Indigenous worlds grounded in one's own land relations, like those created by Pudlat, Danger, and Vanny, can confound Western perceptions of agency and temporality. Morgan argues that projecting Indigenous life into the future imaginary

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[21] Kyle Whyte. "Indigenous Science (Fiction) for the Anthropocene: Ancestral Dystopias and Fantasies of Climate Change Crises." *Environment and Planning E: Nature and Space* 1, no. 1–2 (March 2018): 227.

[22] Whyte, "Indigenous (Science) Fiction for the Anthropocene," 226.

[23] Audra Mitchell. "Beyond biodiversity and species: Problematizing extinction." *Theory, Culture & Society* 33, no. 5 (2016): 27.

"subvert[s] the death imaginary ascribed to Indigenous bodies within settler colonial discourse"[24]
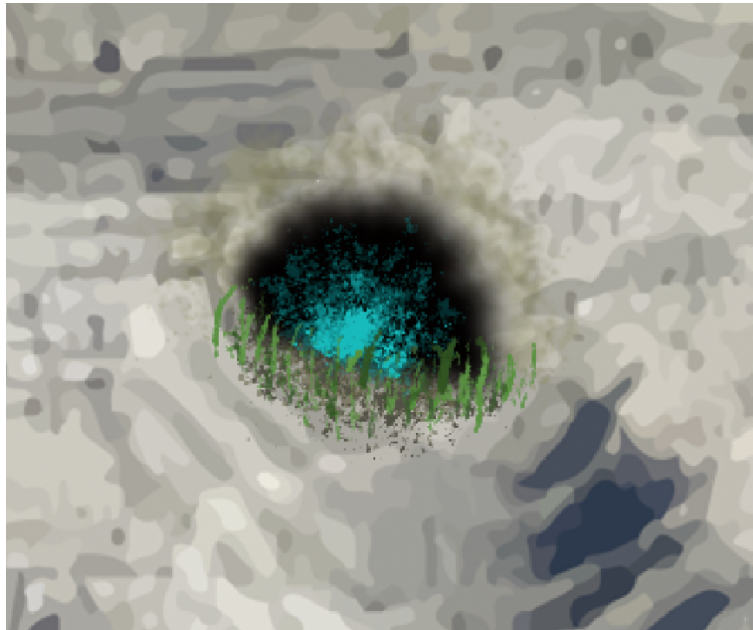

Figure 2: Section of hereafter.land map.

Sources

While making *hereafter.land*, I relied on environmental impact assessments (EIAs) and studies produced by the Canadian Malartic Mine as a primary source. An environmental impact assessment is a document outlining the potential environmental consequences of a proposed infrastructure project. In Canada, EIAs are mandated and conducted by the federal government for projects such as the construction of a mine or extension of a road. Following the creation of an EIA, the public, and in Canada, especially Indigenous groups, are given a window of time to comment on the proposed

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[24] Morgan, "Visual Cultures of Indigenous Futurism," 332.

project. I drew most from a 2016 study, the most recent I could find, made in response

to a proposed expansion of the Malartic Pit and a deviation of Route 117 to the north of

the pit that would result from this expansion. This study was produced by WSP, a pri-

vate consulting company. While this is not technically an EIA because it was produced

by the corporation rather than the government, the report is modeled after an EIA. The

choice to use environmental impact assessments as one of my primary sources was ini-

tially made out of necessity. I was unable to travel to the mine myself to learn from

physically being in place. Studies on the mine are limited, and some of the only public

information I could find about the mine was published by Agnico Eagle. These studies

contain information about the climate, geology, and human and non-human habitats, as

well as risk assessments and mitigation strategies. So, I had to rely primarily on

knowledge about the territory that Van shared with me and the environmental impact

assessments.

      For the first several months of this project, I felt uneasy relying so heavily on

sources produced by Agnico Eagle. Using these sources that were produced to justify

the expansion of the mine's operations did not sit right with me. In addition, it was im-

portant to me to avoid treating the pit as a 'case study.' Case studies are based on the

"disassociation of place from thought."[25] They are meant to inform litigation and policy

far from the time and location of the study, neglecting any engagement with the

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[25]Anja Kanngieser and Zoe Todd. "From environmental case study to environmental Kin study." *History and Theory* 59, no. 3 (2020): 387.

specificity of place.[26] To use these very sterile reports, devoid of any intimacy with the land, felt like I was adopting this way of relating to land myself, especially given the dis-association I was already feeling after spending so much time in virtual places. In reflecting on this discomfort by myself and in conversations with my friends and peers, I have come to terms with our usage of these sources. It is important to note that these sources themselves are speculative – they engage in prophecy using the language of science.[27] In her dissertation, Theresa Arriola (Chamorro) addresses the complicated role that EISs take on in US military planning processes in Saipan. Public commenting periods following the drafting of an EIS are often the only opportunity for residents to voice their concerns.[28] Arriola argues that "Indigenous peoples must therefore continually negotiate the constraints and opportunities provided by EISs in ways that complement their values and visions for the future."[29] It is my hope that my use of environmental impact assessments as a source is a continuation of this tradition. Taking data gathered to facilitate the expansion of extraction but instead using it to envision a gentle future after extraction might push back against the abstraction required to produce these sources.

Infrastructure, making resource, and mapping relationalities

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[26] Kanngieser and Todd, "From Environmental Case Study to Environmental Kin Study," 387.

[27] This idea was shared with me by Amber Chong, during a meeting of a writing group we belong to.

[28] Theresa Arriola. "Securing Nature: Militarism, Indigeneity and the Environment in the Northern Mariana Islands," PhD diss., (University of California, Los Angeles, 2020), 63.

[29] Ibid, 67.

Upon closure of a surface mine such as an open pit, disturbances to the land are dealt with through a process of remediation, reclamation, rehabilitation, and/or restoration.[30] These terms are often vaguely defined and used interchangeably.[31] Each of these practices is concerned with returning a decommissioned mine as close to the 'original ecosystem,' or as close to the original in its function, as possible. In "The legacy of surface mining: Remediation, restoration, reclamation and rehabilitation," Lima et al. note that the remediation, restoration, and reclamation efforts seek to return a landscape to its original state, while rehabilitation efforts seek to transform the landscape in order to produce other resources, such as biomass or aquaculture.[32] When addressing the legacies of surface mining, the language of ecosystem services is omnipresent. Ecosystem services is a term used to refer to the benefits humans receive from ecological processes, such as carbon sequestration, pollinators, or water filtration. The language of ecosystem services markets these processes as benefits that can be sold to incentivize conservation of these ecosystems. Jessica Dempsey argues in "The Financialization of Nature Conservation?" that the adoption of language like ecosystem services represents an attempt to make earth systems science more legible to the financial sector.[33] Dempsey references George Monbiot, a *Guardian* columnist, who states that

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[30] Ana T. Lima, Kristen Mitchell, David W. O'Connell, Jos Verhoeven, and Philippe Van Cappellen. "The legacy of surface mining: Remediation, restoration, reclamation and rehabilitation." *Environmental Science & Policy* 66 (2016): 228.

[31] Lima, "The legacy of surface mining," 228.

[32] Ibid.

[33] Jessica Dempsey. "The Financialization of Nature Conservation?" In *Money and Finance After the Crisis: Critical Thinking for Uncertain Times*. Wiley-Blackwell, 2017, 200.

the language of ecosystem services is "pushing the natural world even further into the system that is eating it alive."[34] The term "ecosystem services" reinforces the extractivist logic that the landscape's value comes from it being perceived as a resource or its ability to provide services. This indicates a continuation of this logic of extraction, even when trying to restore open pit mines.

In "Beyond Wiindigo Infrastructure," Winona LaDuke (Ojibwe) and Deborah Cowen expand LaDuke's theorization of Wiindigo economics to infrastructure. Wiindigo economics refers to a system that destroys itself through overconsumption just because it has the technological capacity to do so. Wiindigo is a cannibal that is created when certain impulses are overindulged. They define Wiindigo infrastructure as the material systems that are necessary to facilitate the violence of Wiindigo economics.[35] LaDuke and Cowen emphasize that "technology can be appropriated and infrastructure re-made," advocating for the development of infrastructure that maintains good relationships and fosters sovereignty for Indigenous communities.[36]

As Zoe Todd (Métis) reminds us, materials pulled from the ground are not inert resources, but our kin, and ought to be treated as such.[37] We have long relationships with our fossil and mineral kin, which have only recently become negative as they were

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[34] George Monbiot. "The Pricing of Everything." 2014. https://www.monbiot.com/2014/07/24/the-pricing-of-everything/. As cited in Dempsey 2017.

[35] Winona LaDuke, and Deborah Cowen. "Beyond wiindigo infrastructure." *South Atlantic Quarterly* 119, no. 2 (2020): 252-253.

[36] Ibid, 260.

[37] Zoe Todd. "Fossil Fuels and Fossil Kin: An Environmental Kin Study of Weaponised Fossil Kin and Alberta's So-Called 'Energy Resources Heritage.'" *Antipode* 0, no. 0 (2022): 3.

weaponized through logics of extraction, resulting in harm to ecosystems and communi-

ties.[38] Indigenous and non-Indigenous peoples maintained good relations with fossil and

mineral kin long before their capabilities as an industrial power source were discovered.

While Indigenous peoples are often considered frontline communities in the fight against

extraction, our economies are deeply complicated by and entangled with fossil and min-

eral kin. When imagining what the Malartic pit might look like generations from now in

hereafter.land, our primary concern was restoring this relationship with our more-than-

human kin, rather than with imagining a 'productive' landscape. Through the copy of the

website, we acknowledge the ongoing, rigorous, and intentional relationships between

humans and more-than-humans that went into building the landscape. While our map

does not deny the legacies of extraction, it intentionally presents a romantic view of

these relationships. Speculative web-mapping as a medium gave us the freedom to

show the romance within these relationships.

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[38] Vinita Srivastava. "Why Pollution Is as Much about Colonialism as Chemicals — Don't Call Me Resilient Transcript EP 11." The Conversation. Accessed November 27, 2022.
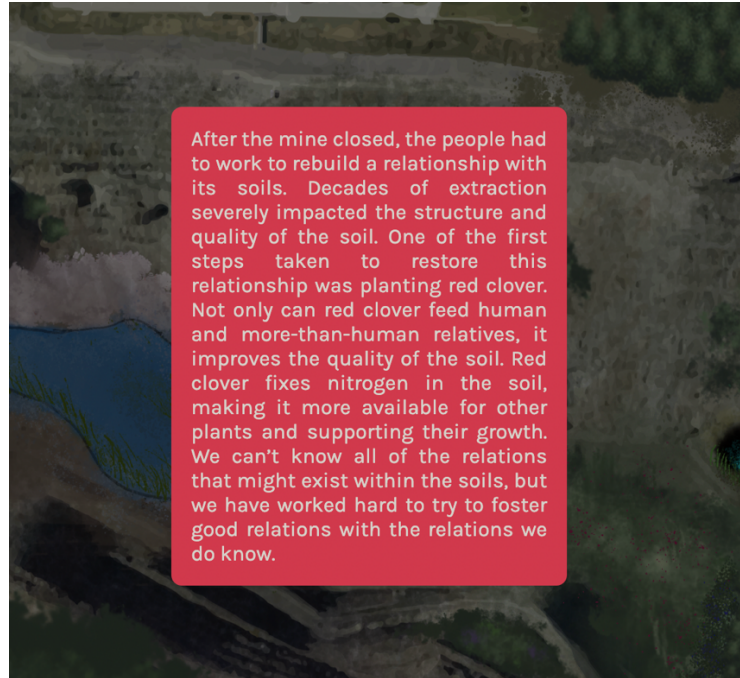
Figure 3: Section of hereafterland.map and copy.

To make our more-than-human kin into a resource requires pulling it out of rela-

tion with the surrounding ecosystem. Robertson refers to this move as 'unbundling' in

"Measurement and alienation: making a world of ecosystem services." Unbundling in-

volves breaking an ecosystem down and analyzing the various 'services' it provides to

find its aggregate value, to make it marketable as a commodity.[39] Robertson argues that

we ought to understand "the recent movements in the struggle over adequate abstrac-

tion from nature as part of the larger process of rendering surplus value from our bodies

and lives."[40]

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[39] Morgan Robertson. "Measurement and Alienation: Making a World of Ecosystem Services." *Transactions of the Institute of British Geographers* 37, no. 3 (July 2012): 394.

[40] Robertson, "Measurement and Alienation," 397.

Efforts to restore a mine to its original state rely on the myth that there is some original, prelapsarian nature to return to.[41] Or, that it is even possible to return to the original state. The relational and ecological harm caused by surface mining can never be undone. However, it's important to avoid pathologizing communities and landscapes. To think about these places as doomed reinforces images of marginalized peoples as "inhabiting irreparable states that are not just unwanted but less than fully human."[42] Murphy (Métis) describes the state of being fundamentally, chemically changed because of colonialism, yet not unrecoverable, as 'alterlife'. We can acknowledge that landscapes are permanently altered by colonialism, but still deserving of love and open to greater change.[43]

Moreover, alter life has an ethical commitment – "to value altered life, to have a loving relation [with it] to think [of as] sacred wasted lands, injured life, life that has [had] to come into existence in relationship to colonialism or white supremacy."[44] Max Liboiron builds upon Murphy's work through "compromise." Alterlife and compromise offer hope for a future, recognizing we are fundamentally changed by colonialism yet still persistent.

Indigenous/counter mapping

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[41] William Cronon. "The trouble with wilderness: or, getting back to the wrong nature." *Environmental History* 1, no. 1 (1996): 7-28.

[42] M Murphy. "Alterlife and Decolonial Chemical Relations." *Cultural Anthropology* 32, no. 4 (2017): 496.

[43] Srivastava, "Why Pollution is as Much about Colonialism as Chemicals."

[44] Ibid.

Maps carry weight – they "demarcate contested territories, represent institutional-ized power, and in many ways, fix the terms of future negotiations."[45] Cartography has historically been used as a tool of empire. Massive surveying projects commissioned by the governments of the United States and Canada were explicitly intended to facilitate colonial expansion, as well as expansion of resource extraction.[46] Indigenous counter-mapping initiatives are projects undertaken by Indigenous peoples to contest dominant spatial narratives, reclaim representations of the land, and assert Indigenous survivance and sovereignty. It's important to note that not all Indigenous maps are counter maps. Indigenous peoples have been producing maps in various forms since time immemorial. Counter maps are made in reaction to the dominant cartographic form. Hunt and Ste-venson define Indigenous counter-mapping as "those processes through which Indige-nous peoples articulate their presence on and right to defend their ancestral lands, terri-tories and resources against state encroachment, an encroachment which always al-ready occurs within the colonial framework and language of mapping, and which always positions Indigenous presence as that which it must counter."[47]

Across counter-mapping projects, there are several recurring concerns. These include increasing visibility, often through replacing settler place names with Indigenous place names, articulating the history of cartography as a tool for imperialism,

[45] Dallas Hunt and Shaun A. Stevenson. "Decolonizing Geographies of Power: Indigenous Digital Coun-ter-Mapping Practices on Turtle Island." *Settler Colonial Studies* 7, no. 3 (July 3, 2017): 374-375.

[46] Mishuana Goeman. *Mark My Words: Native Women Mapping Our Nations*. Minneapolis: University of Minnesota Press, 2013, 16.

[47] Hunt and Stevenson, "Decolonizing Geographies of Power," 376.

reconsidering how spatial data are acquired, and thinking through how to mobilize car-

tography to "advance [Indigenous] territorial, social, and cultural agendas."[48] Some of

the most notable examples of counter-mapping initiatives focus on toponymic reclama-

tion. Settler place names erase the histories of these lands and disrupt relationships be-

tween the people and the territory.[49] Sites such as native-land.ca or the Decolonial Atlas

attempt to provide a comprehensive representation of Indigenous languages, place

names, and traditional territories in Canada and the United States, as well as treaty ter-

ritories. Counter-mapping initiatives often have the objective of data sovereignty for In-

digenous communities. They seek to exercise sovereignty over how data is acquired

and analyzed and who controls access to data. McGurk and Caquard argue that Native-

land.ca's grassroots, crowdsourced approach to data acquisition embraces decolonial

methodologies by rejecting the colonial hierarchies involved in Western knowledge pro-

duction.[50]

 These Indigenous counter-mapping movements are not without their critiques.

Reuben Rose-Redwood et al. argue in "Decolonizing the Map: Recentering Indigenous

Mappings" that we must move beyond counter-mapping, and instead embrace decolo-

nial mapping. They define decolonial mapping as "spatial practices and cartographic

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[48] Thomas McGurk and Sébastien Caquard. "To What Extent Can Online Mapping Be Decolonial? A Journey throughout Indigenous Cartography in Canada." *Canadian Geographies / Géographies Canadiennes* 64, no. 1 (2020): 50.

[49] Chelsea Steinauer-Scudder. "Counter Mapping." Emergence Magazine, February 8, 2018. https://emergencemagazine.org/feature/counter-mapping/.

[50] McGurk and Caquard, "To What Extent can Online Mapping be Decolonial?," 58.

techniques that center on Indigenous relationships and responsibilities to land."[51] They

state that even well-meaning and progressive counter-mapping projects can uninten-

tionally reinforce colonial narratives and perpetuate the erasure of Indigenous histories,

bodies, and lands.[52] For example, just replacing a colonial place name with an Indige-

nous toponym is not enough – when Indigenous content is just plugged into a colonial

cartographic framework it can reinscribe colonial logics.[53] Even the name counter-map-

ping centers colonialism: it defines this movement in oppositional relation to settler colo-

nial mapping. However, Mollett notes that these critiques of counter mapping move-

ments rarely address actual mapping techniques.[54] While well-intentioned, counter-

mapping projects often work towards the goal of making Indigenous peoples and Indige-

nous ways of knowing legible to the state. As Wainwright says, "a counter-map that

turns the tables on colonialism may produce a worlding that still turns within a colonial

form of power."[55]

     While counter-mapping projects are not perfect, they remain an effective form of

decolonial action. Web mapping in particular can serve as a method for communities to

express concerns and land claims without the strict adherence to Western

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[51] Reuben Rose-Redwood, Natchee Blu Barnd, Annita Hetoevėhotohke'e Lucchesi, Sharon Dias, and Wil Patrick. "Decolonizing the Map: Recentering Indigenous Mappings." *Cartographica: The International Journal for Geographic Information and Geovisualization* 55, no. 3 (September 2020): 153.

[52] Rose-Redwood et al, "Decolonizing the Map," 153.

[53] Ibid.

[54] Sharlene Mollett. "Mapping Deception: The Politics of Mapping Miskito and Garifuna Space in Hondu-ras." *Annals of the Association of American Geographers* 103, no. 5 (2013): 1229.

[55] Joel Wainwright. *Decolonizing development: Colonialism, Mayanism, and agriculture in Belize.* Univer-sity of Minnesota, 2003, 272, as cited in Mollett 2013.

methodologies and conventions that other geographic information systems rely upon.[56]

When using a geographic information system like ArcGIS or QGIS, one is limited by the

graphic and data analysis tools that have been built into the software. When it came to

creating a speculative map, I found myself limited by these tools, particularly when it

came to graphics. While web mapping requires a greater understanding of coding lan-

guages and web design principles, it gives the cartographer more freedom. McGurk and

Caquard state that while online mapping is not inherently decolonial, it is still able to be

mobilized by Indigenous communities in service of anticolonial movements.[57] As Hunt

and Stevenson note, counter-mapping projects are limited in their scope by the carto-

graphic and digital tools that are available to the cartographers.[58] Web mapping could

offer the flexibility to make these cartographic tools more compatible with Indigenous

ways of relating to land.

When developing cartographic tools that provide an alternative to dominant spa-

tial data visualization methods and foreground more-than-human agencies, we must be

careful to avoid thinking of ourselves as pioneers. *Terra Forma: A Book of Speculative*

Maps by Fréderique Aït-Touati, Alexandra Arènes, and Axelle Grégoire is a collection of

speculative maps each created using a new tool for data visualization. Each of these

tools seeks to move toward an ecosystem-based visualization of space, departing from

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[56] McGurk and Caquard "To What Extent Can Online Mapping be Decolonial?," 59.

[57] Ibid, 63.

[58] Hunt and Stevenson, "Decolonizing Geographies of Power," 373.

Euclidian geometry and cartographic convention.[59] Yet, even these works can perpetu-

ate the same erasure and relegation to the past of Indigenous peoples, drawing on fron-

tierist logics. In the introduction to *Terra Forma*, the authors valorize the earliest coloniz-

ers, framing them as innocent explorers. They state that they see themselves as "follow-

ing in the footsteps of the Renaissance travelers who set out to map the *terra incognita*

of the New World."[60] References to Indigenous maps or peoples are brief and unspe-

cific. Although this work aims to develop a new cartographic method based on fore-

grounding the agency of more-than-humans, in the process it erases Indigenous peo-

ples and knowledges. Zoe Todd urges us to remember that the people whose insights

into more-than-human agency we are celebrating are often not the people who built the

knowledge systems that these insights are based upon.[61] Rather, Indigenous peoples

are often talked around or minimally cited.[62]

While there is a vast literature on Indigenous countermapping and critical car-

tographies, most of it is concerned with visibility, data acquisition methods, and Indige-

nous narratives, rather than seeking to move beyond the dominant method of spatial

data organization. Very little of this scholarship focuses on the ways that spatial infor-

mation is organized and presented, and how webmapping and GIS infrastructures and

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[59] Frédérique Aït-Touati, Alexandra Arènes, and Axelle Grégoire. *Terra Forma: A Book of Speculative Maps.* Cambridge: MIT Press, 2022, 17.

[60] Ibid, 9.

[61] Zoe Todd. "An Indigenous Feminist's Take On The Ontological Turn: 'Ontology' Is Just Another Word For Colonialism." *Journal of Historical Sociology* 29, no. 1 (2016): 7-8.

[62] Ibid, 8.

conventions are informed by and inadvertently encourage colonial worldviews. In their 2021 book *Pollution is Colonialism*, Max Liboiron (Métis) argued that "the way dominant science understands chemicals often operates from a colonial worldview that privileges separation and discreteness within Nature."[63] While Liboiron works on chemical pollution, Western geographic information science aligns with this worldview. The ways that spatial data are acquired, analyzed, and represented in conventional Western cartography are a result of, and often reinforce, colonial logics of separateness. For example, take the raster data analysis process of supervised classification. Supervised classification is a technique that involves training a geographic information system to classify pixels according to various classes created by the user, by identifying certain pixels as representative of that class. So, if you have a satellite image, and you are looking to identify what percent of that image is composed of a certain plant, to perform a supervised classification you select pixels that represent that plant in different areas of the image. Based on the training data the user has provided, the GIS will then place all pixels that contain the same value in a class. This type of data analysis involves isolating parts of the landscape into different classes, based on imagery that was acquired via satellite. We use it to make discrete our more-than-human relatives, without any need to visit the site we are studying and build relationships with the land.

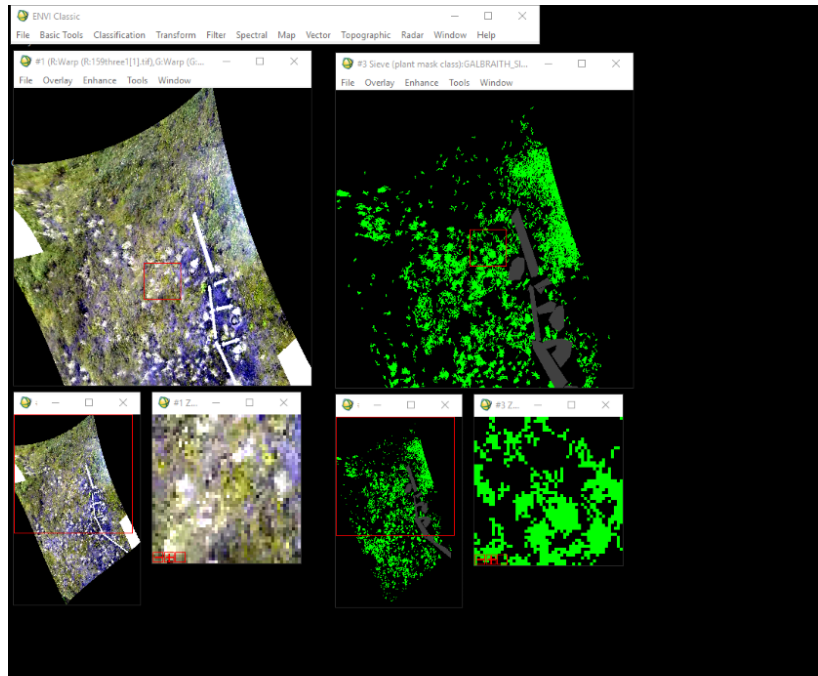[63] Max Liboiron. *Pollution is Colonialism*. Durham: Duke University Press, 2021, 83.

Figure 4: Example of a supervised classification and resulting sieved image, identifying eriophorum in a satellite image sourced from USGS Earth Explorer.

This technique of breaking up relationships comes from a Western way of understanding the land. Vine Deloria (Yankton Sioux) argues in *Custer Died For Your Sins* that this abstractness is endemic to white culture, and is the reason white culture destroys others.[64] Understanding human and non-human beings in an ecosystem as discrete is harmful because "when a world view is broken into its component disciplines, these disciplines become things unto themselves and life turns into an unrelated group of categories each with its own morality and ethics."[65] Indigenous peoples however

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[64] Vine Deloria. *Custer Died For Your Sins: An Indian Manifesto*. New York: Avon, 1970, 188.

[65] Ibid, 104-105.

have "retained the languages and protocols that enable us to engage in dialogue with our non-human kin."[66]

Anticolonial data organization in hereafter.land

In *hereafter.land*, we tried to make a map using a method informed by our understandings of relationality as Indigenous peoples. We sought to move past Western cartographic conventions, which typically separate elements into layers and organize based on function. We were concerned with relationality – how do you organize spatial information without disturbing relationalities? Take the lake and manoomin (wild rice), for instance. When using Western methods, the lake would typically be a part of the basemap, and the manoomin represented in its own layer, separate from the land and water and other plant and animal kin. Information would typically come from different sources and be contained in different datasets. The basemap is discrete from the toponymic data which is discrete from the topological data which is discrete from the weather data, all the way down. This additional layer could be turned on and off, removing the rice from the map. However, the lake and the manoomin and the toponyms and the people are in a relation that cannot be broken. One does not exist without the other. As Lewis et al. note "relationality is rooted in context."[67] Discretization of elements allows humans and more-than-humans to be removed from their context and pulled out of relation.

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[66] Lewis et. al, "Making Kin with the Machines," 2.

[67] Lewis et. al, "Making Kin with the Machines," 3.

When I discuss discretization, I mean the colonial notion that we are separate from the land and our more-than-human kin, and the environmental destruction that results from this logic.[68] I am not referring to the spatial data preprocessing task. Discretization is an operation that sorts numerical data into broader classes. Say you have a dataset of a thousand items - to attempt to represent each of these intervals on the map would make for a map that is difficult to read. To fix this, the cartographer breaks up these variables into classes at certain intervals, with each class representing a range of values.[69] This type of discretization can decontextualize relations as well.

As opposed to completely rejecting Western cartographic tools, we aimed to repurpose some of the infrastructures of colonial mapping to make them compatible with our understandings of land relations. Utilizing Leaflet, a JavaScript tool for creating web-maps, Van has coded an interactive map. Leaflet functions differently from most web-mapping tools in that it allows you to use any image in any file format, with or without spatial data. Counter-mapping is bound to colonial languages and protocols, in the form of digital cartographic tools and data visualization conventions. This is often by design – as Hunt and Stevenson point out, "if counter-mapping practices are not legible according to dominant vocabularies and reading practices, they may not be effective in the way the counter-cartographers desire."[70] Even digital counter-mapping, despite having

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[68] Liboiron, *Pollution is Colonialism*, 101.

[69] Sergio Ramirez-Gallego, Salvador García, Héctor Mouriño-Talín, David Martínez-Rego, Verónica Bolón-Canedo, Amparo Alonso-Betanzos, José Manuel Benítez, and Francisco Herrera. "Data discretization: taxonomy and big data challenge." *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery* 6, no. 1 (2016): 6.

[70] Hunt and Stevenson, "Decolonizing Geographies of Power," 373.

greater potential as a tactic for resistance, is bound to the colonial languages of Hypertext Markup Language (HTML) and the Domain Name System (DNS). For instance, if a counter mapper creates a web map using Indigenous place names, those Indigenous words ultimately will be translated into the colonial language of HTML to be communicated back to the map user.[71] Web maps, although they give the cartographer more freedom, still share many of the limitations of other cartographic methods. Despite these limitations, we found Leaflet to be a useful tool as we were not limited by the graphic capabilities of other web mapping tools or GISs.

On the backend, each relationship is contained in a layer. However, these layers are not visible to the user. At this stage, four relationships are coded into the map. However, there are many more possible combinations. Different plant and animal relatives are coded into multiple relationships – muskrat, for example, is highlighted in both the foodways and waterways layers. Hovering over certain areas of the map will trigger a sort of darkening effect, shading the rest of the map and leaving the parts of the map coded into that relationship at full brightness. While this relationship is highlighted through this effect, it is never really separated from the rest of the map. Clicking on that area of the map will open a text box with a brief statement that provides more world-building or information about that relationship.

According to Vanessa Watts, when we are not in good relation with our more-than-human kin "it is not only the threat of a lost identity or physical displacement that is risked but our ability to think, act, and govern becomes compromised because this

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[71] Hunt and Stevenson, "Decolonizing Geographies of Power," 383.

relationship is continuously corrupted with foreign impositions of how agency is organized."[72] Sovereignty begins with being in good relation. Breaking up kinship in our representations of the land places us in a bad relationship with the land. Moreover, by organizing objects in a map based on their function or perceived utility to humans, we render our more-than-human kin resources, reinforcing the logic that it is a settler birthright to mine our more-than-human relations.[73]
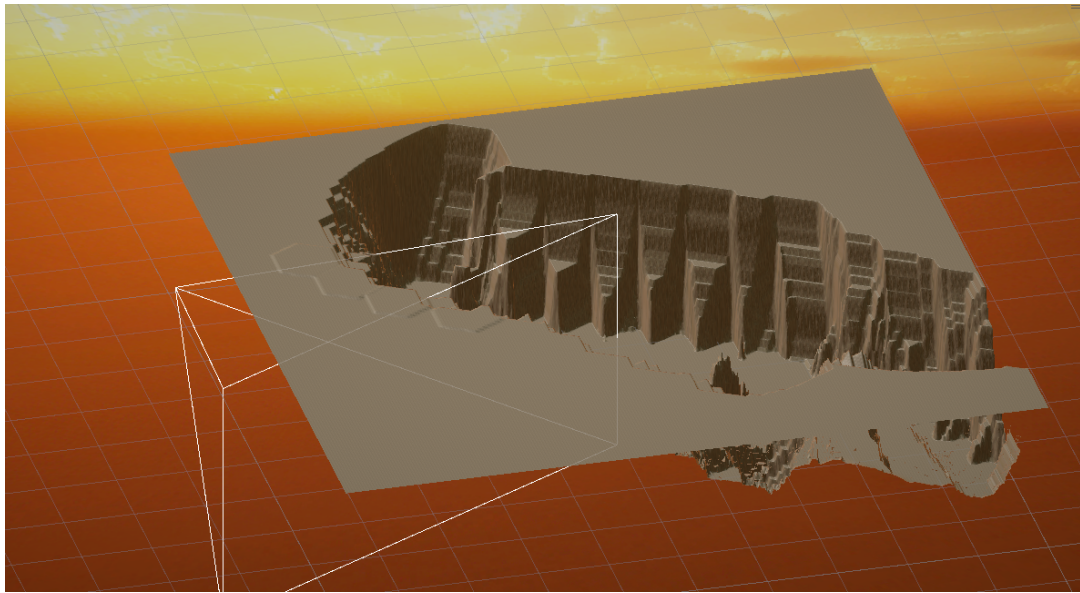

Figure 5: Initial Unity brush tests by Vanny. Image used with permission of creator.

Conclusion

"I dreamt that the land's heart was greater / than its map" [74]

-- Mahmoud Darwish

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[72] Vanessa Watts. "Indigenous Place-Thought & Agency amongst Humans and Non-Humans (First Woman and Sky Woman Go on a European World Tour!)" *Decolonization: Indigeneity, Education & Society* 2 no. 1 (2013), 23.

[73] Zoe Todd. "Fossil Fuels and Fossil Kin," 10-11.

[74] Mahmoud Darwish, "I Have the Wisdom of One Condemned to Death."

Attending to wounds in the landscape through mapping them and imagining futures within them is an act of care. However, the heart of the land is much bigger than what we can represent in this or any map. In this thesis I have reflected upon my role as an Indigenous person studying lands that are not my own, and how to be in relation with land that you have never been to. I have argued that Western cartographic tools and conventions are informed by colonial logics of separation. This is not to say that these tools can't be mobilized by Native peoples in service of an anticolonial agenda. However, we can inadvertently uphold these logics when we limit ourselves to these tools and conventions. In *hereafter.land*, Van and I attempted to make a map that pushes back against discretization by putting relationships first. We can repurpose the physical and digital infrastructure of extraction to help visualize gentle futures.

Moving forward, we plan to continue building upon this infrastructure and using it to explore other speculative geographies of extraction. However, we must be careful to keep in mind that this project is grounded in a specific place. To use this method to map other places, we have to adjust our thinking and the digital infrastructure itself, otherwise we risk contributing to the separation of place and thought. It is my hope that I can move forward with the lessons I learned making *hereafter.land* to produce good, thoughtful, and generative work.
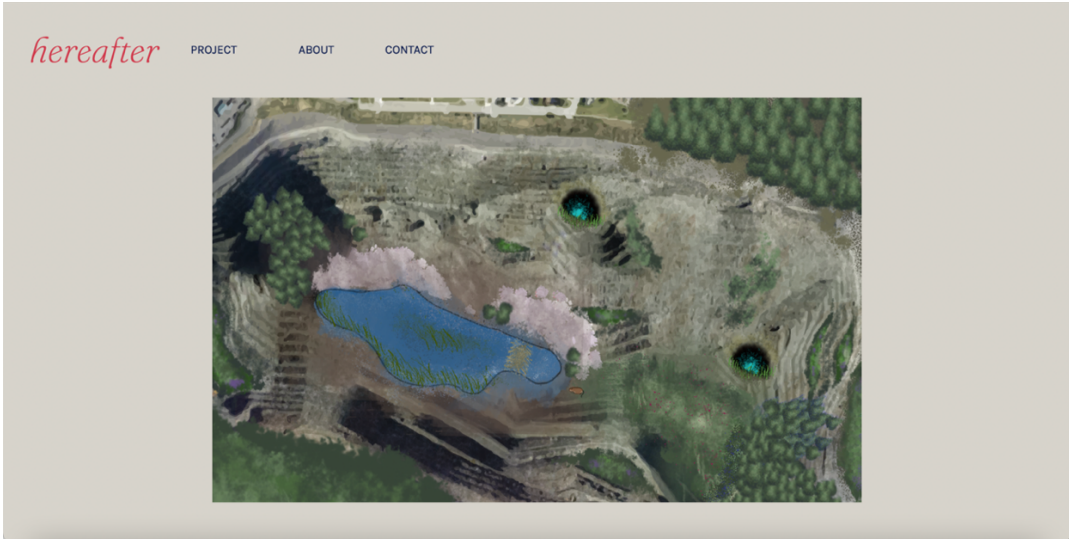
Appendix

This appendix includes screen captures documenting the content of the *hereafter.land* website, as of July 2024. The website was designed and developed by Van Racine, or Vanny. The map illustration and website copy are by Catie Galbraith.
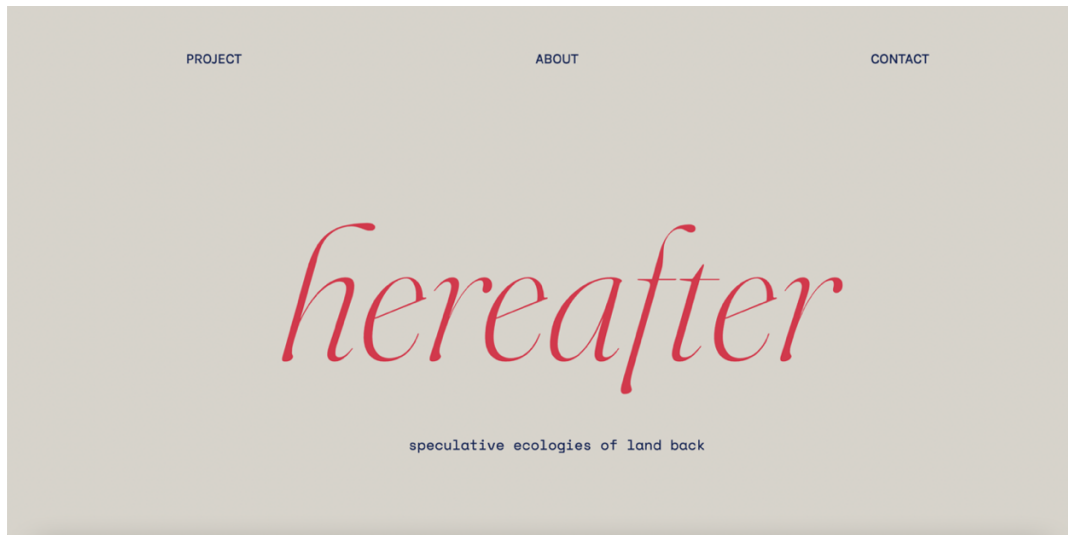
1. *hereafter.land* home screen.
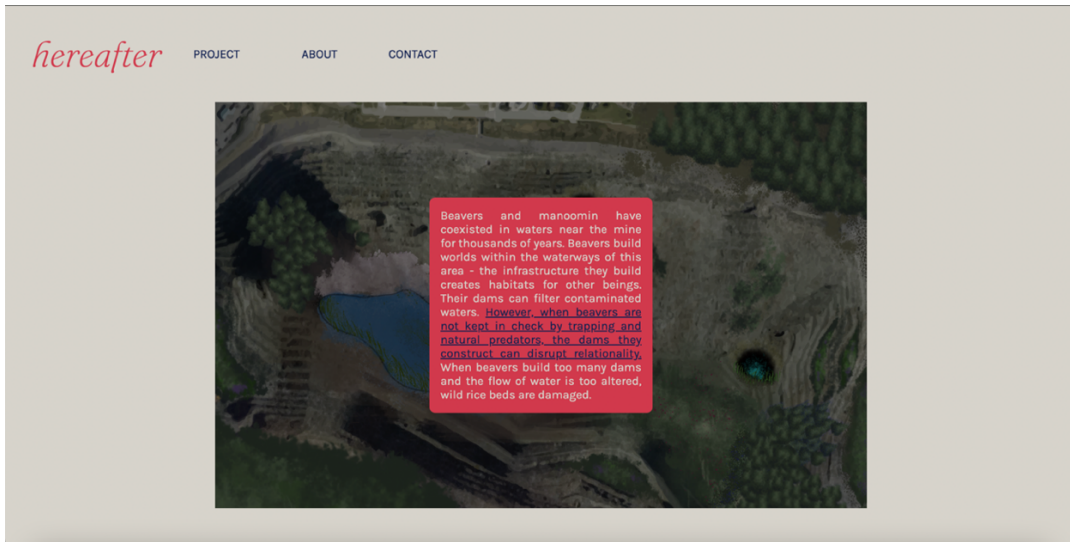

2. Introductory statement and navigation instructions to the map.

3. View of the entire map.

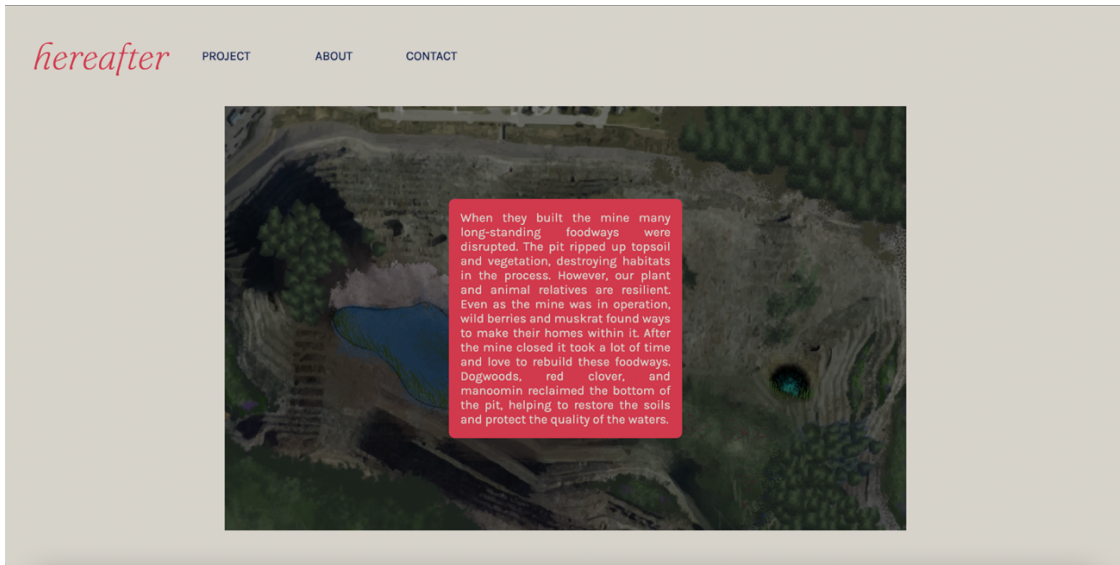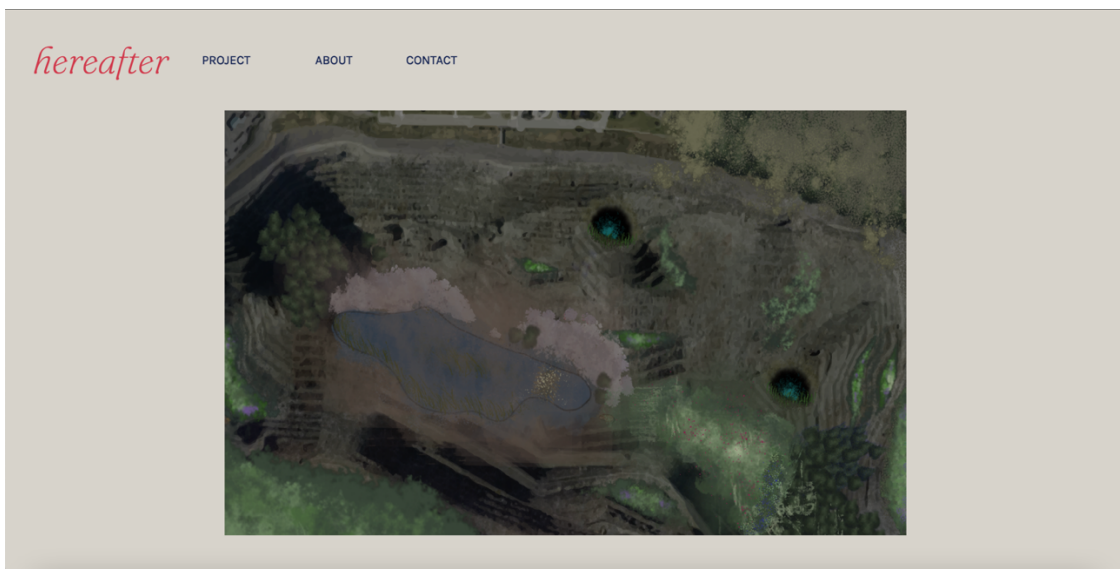4. View when waterways relation is hovered over.

5. Pop-up received when one clicks on waterways relation.
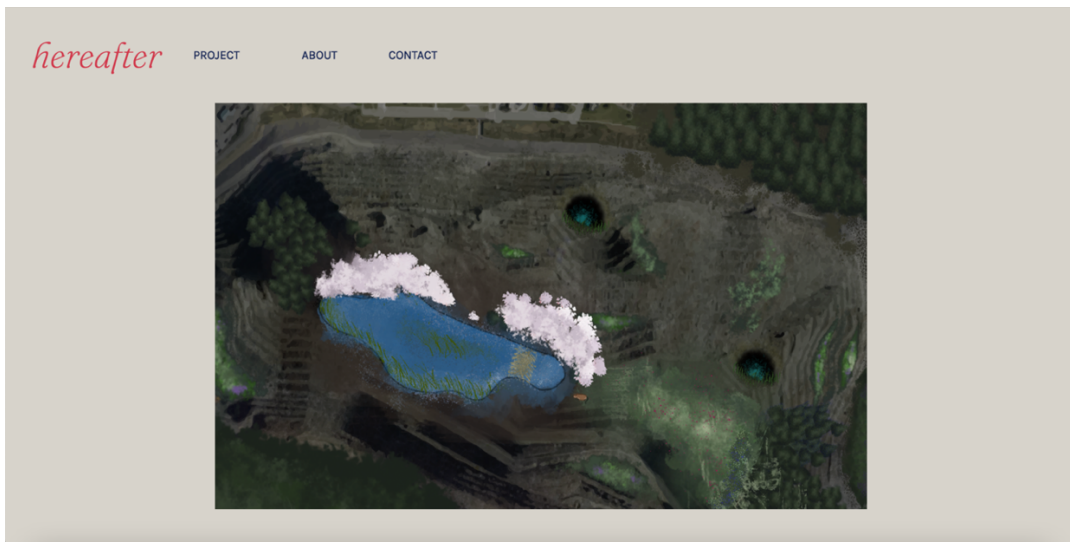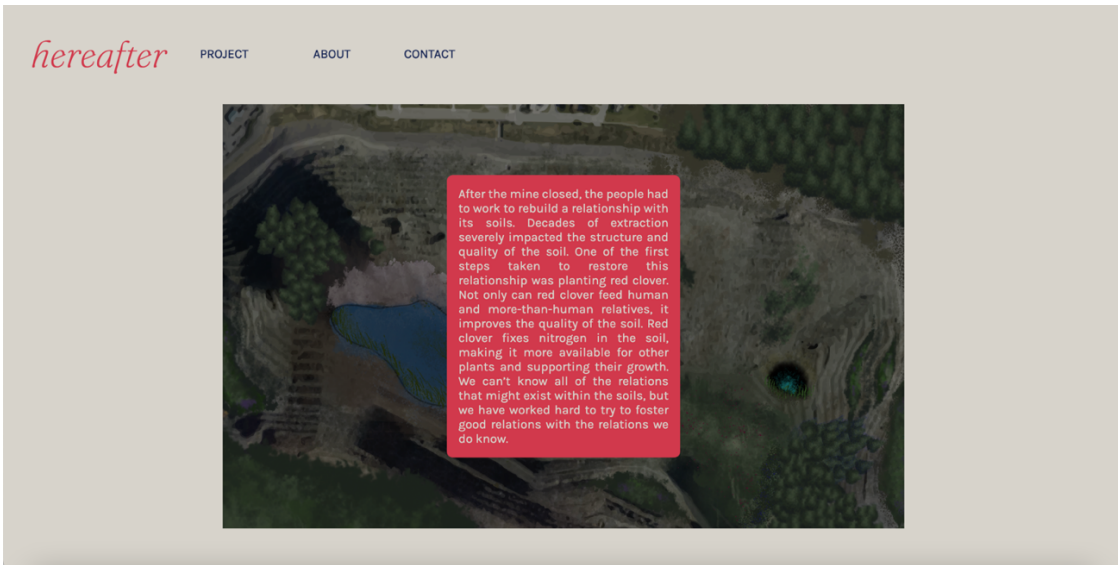

6. View when foodways relation is hovered over.

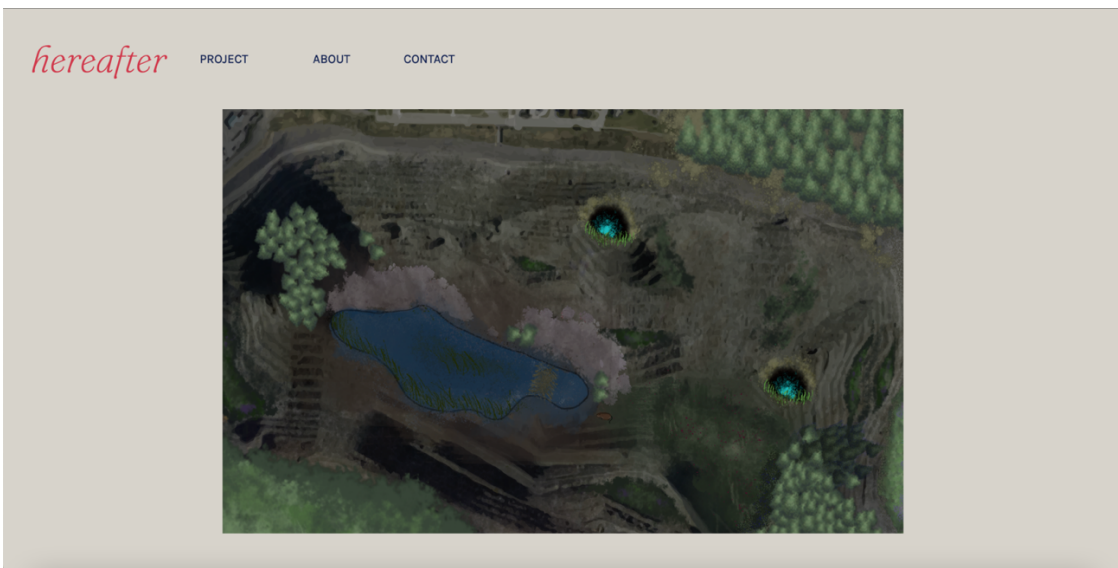7. Pop-up received when one clicks on foodways relation.

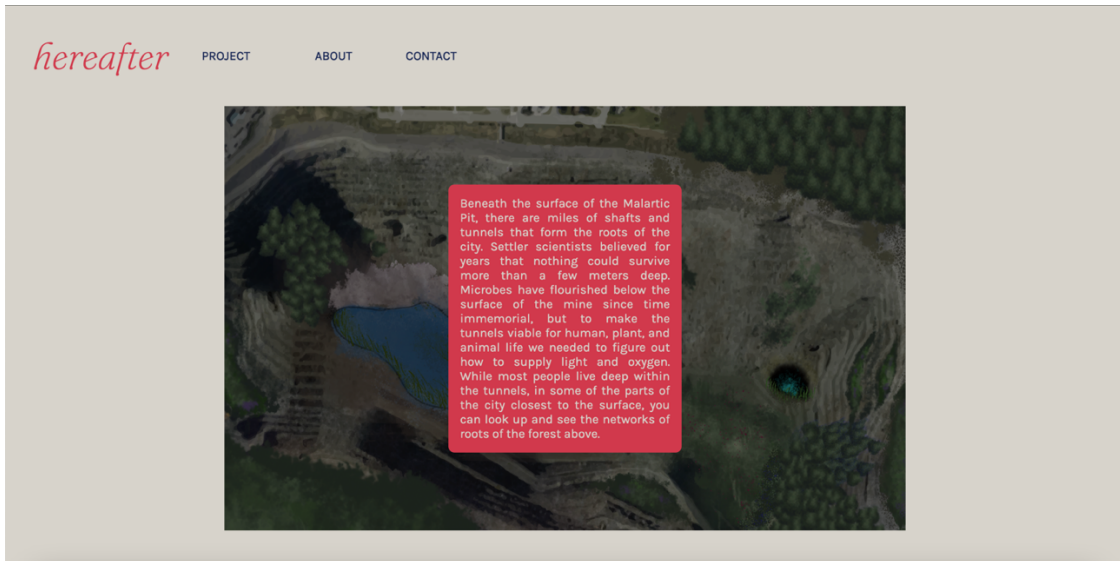8. View when soils and small growth relation is hovered over.

9. Pop-up received when one clicks on soils and small-growth relation.

10. View when roots and tunnels relation is hovered over.

Beneath the surface of the Malartic Pit, there are miles of shafts and tunnels that form the roots of the city. Settler scientists believed for years that nothing could survive more than a few meters deep. Microbes have flourished below the surface of the mine since time immemorial, but to make the tunnels viable for human, plant, and animal life we needed to figure out how to supply light and oxygen. While most people live deep within the tunnels, in some of the parts of the city closest to the surface, you can look up and see the networks of roots of the forest above.

11. Pop-up received when one clicks on roots and tunnels relation.

vanny

Vanny (they/them) is an Anishinaabe game developer and mixed-medium artist based in Tiohtià:ke. They are a member of Beaverhouse FN and hold a BA in Linguistics from McGill University. Their practice centers Indigenous futurism and zaagi'idiwin (love) within cyberspace.

catie

Catie Galbraith (she/they) is a Chickasaw mapmaker and multidisciplinary artist. She grew up on Myaamia lands in northeast Indiana, and is currently based in Tovaangar (Los Angeles), where she is pursuing an MA in American Indian Studies at UCLA. They hold a BA in Geography from McGill University. Her research addresses Indigenous speculative geographies and relationships to extractivism.

12. Page with information about the creators of the project.

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