

***Čá·hu* – Is Anyone There:
Video Games, Place-Based Knowledge, and the Future Imaginary**

Waylon Wilson

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By: Waylon Wilson

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and the Future Imaginary

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Master of Design (Design)

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originality and quality.

Signed by the final Examining Committee:

_____ Chair

Martin Racine

_____ Examiner

Pippin Barr

_____ Examiner

Rilla Khaled

_____ Supervisor

Jason Edward Lewis

Approved by _____

Martin Racine, Chair of Department or Graduate Program Director

_____ 2021

Annie Gérin, Dean of Faculty

Abstract

Čá·hu – Is Anyone There: Video Games, Place-Based Knowledge, and the Future Imaginary

Waylon Wilson

This thesis builds upon concepts of the ‘future imaginary’ as a methodology to consider how digital media can be designed to strengthen human relationships to place as exemplified in the research-creation development of an original Indigenous, Tuscarora video game. The process of developing the video game is examined to discuss how Tuscarora ways of knowing, as a Nation of the Haudenosaunee Confederacy, inform the game making process and adapt the future imaginary to strategize an accountable methodology to create game design that reflects Indigenous knowledge, practice, and place-based teachings. Based in Tuscarora territory, Niagara Falls, this game and thesis seeks to exemplify to other Indigenous nations an accountable strategy to developing Critical Play video games for Indigenous youth that engage them with intergenerational place-based knowledge that gives special attention to inaccessible traditional territories due to impacts of colonization and provides virtual portals to access these locations. This game and project present a future of wellness for all beings who inhabit Indigenous territories, for Indigenous and non-Indigenous residents alike. The game, *Čá·hu*, is based on Haudenosaunee teachings known as the Thanksgiving Address, which guide the gameplay. Indigenous concepts of humility paired with inspiration from Critical Play are combined to form a method of critical game development that centers Indigenous forms of thinking rather than common Western modes of gameplay and game mechanics.

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Nyà·wẹ to the Tuscarora Nation and beadworkers; youth participants of Skarù·rẹ? Awẹkwehstá·θẹ·?; and my families on Dog Street; without whom, this work would not exist. Nyà·wẹ also to Dr. Jolene Rickard, whose research and mentorship continues to clear the path for Indigenous artists like myself. Most important, nyà·wẹ to Mia, whose infinite support pushed me beyond what I thought was possible.

Dedication

This thesis is dedicated to the ever-coming faces of the Tuscarora Nation.

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Skarù·rẹ? / Tuscarora Glossary

Skarù·rẹ? ¹	Tuscarora or “Hemp Gatherers” or “People of the Shirt” (skaw-roo-rih) ²
Akunęsyẹ·ni?	Haudenosaunee or “People of the Longhouse”, the Confederacy of six nations to which the Skarù·rẹ belong. (ah-goo-nih-shin-nee)
Ękwehẹ·we	Indigenous People or “Real People” (ihk-kweh-hih-weh)
Skarù·rẹ? Kayetá·kreh	Tuscarora Nation Reservation or “Place where Tuscarora Nation people live” (skaw-roo-rih guy-yeh-da-kreh)
Nyuhčirẹ?e	Tuscarora Nation territories; the lands, waters, and airspace of the greater Tuscarora area; located in the Western Door region of Akunęsyẹ·ni? homelands (nyooh-jees-sih-eh)
Nyuhtawẹ?e	Niagara Falls or “Home of the Thunderers” (nyooh-da-wih-eh)
Ę·nẹ? Ú?wneh	Mother Earth (ihn-nih oof-neh)
Awekwehstá·θẹ·?	Youth (aw-wig-gweh-stah-theh)
Čá·hu	A Tuscarora phrase called out to see if anyone is there (jah-hoo)
Čà·wak	The sound of a fish-spear entering the water (jaw-wok or jaws)
Ha? Kanęherathẹčreh	Thanksgiving Address, also known as the “Words Before All Else” (haw gaw-nih-heh-rah-teh-chreh)

¹ I use Skarù·rẹ? and Tuscarora interchangeably throughout the paper. Although my community understands ourselves as Skarù·rẹ?, we also use Tuscarora because that is how others refer to us.

² All phonetic spellings are based on my interpretation in 2020.

Akunęhsyè·ni? kéha / Haudenosaunee Languages Glossary

Kanien'kehá:ka	Mohawk or “People of the Flint” (gahn-yen-gay-ha-ka)
Onlyota?a:ka	Oneida or “People of the Standing Stone” (o-nee-yo-dah-ah-gah)
Onoñda?gega?	Onondaga or “People of the Hills” (own-own-dah-gay-gah)
Gayogohó:nq?	Cayuga or “People of the Great Swamp” (guy-yo-koh-ho-no)
Onöndowa'ga:'	Seneca or “People of the Great Hill” (o-nun-doh-wah-gah)
Tio'tià:ke	Montréal (jyoh-jya-gay)
Kahnawà:ke	A Mohawk Territory on the southern shore of the St. Lawrence River near Tio'tià:ke (guh-h-nah-wah-gay)

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Introduction

Captivated by the light of the full moon illuminating Nyuhtawé?e (Niagara Falls), my partner and I marveled at the existence of this powerful being within the Tuscarora Nation territory. This moment was broken by a sudden onset of people crowding the banks on both sides of the falls. Huge LED lights snapped on—a mesh of harsh reds, yellows, greens and blues saturated the tumbling water. Without warning, fireworks exploded overhead from both the Canadian and American states, filling the night sky and drowning out the thunderous roar of the river. The array of synthetic lights that punctured the atmosphere mirrored the carnivalesque Canadian cityscape as tourists gaped in awe. My partner and I said to each other that there is something very wrong with this picture, where the beautiful natural existence of our world has to be enhanced with artificial entertainments like LEDs and fireworks.

This was neither an American nor a Canadian holiday; this was a typical evening at Nyuhtawé?e in which my partner and I just happened upon. This moment became a significant influence on my thinking as I began the Master of Design program just one week later. As a citizen of the Skarù·rə? (Tuscarora) Nation, living within my Nation’s territory, I want to experience our land in our way, both as an unmediated experience now and as a ‘future imaginary.’ To that end, I developed a video game called Čá·hu, the name of which can be interpreted as is anyone there. This game empowers our youth by teaching them about place-based knowledge through using digital space to imagine a future where Skarù·rə? peoples have uninhibited rights and access to our lands.

This thesis considers how digital media can be designed to strengthen human relationships to place. The concept of the future imaginary is deployed to reimagine Skarù·rə? traditions as a specific example that can be used by community and others to surmount the digital divide between Indigenous peoples and the access, use, and determination of digital technology.

Čá·hu bridges an intergenerational gap resulting from our peoples’ dispossession of and restricted access to Nyuhtawé?e. Asserting myself as a Skarù·rə? game developer, I demonstrate Indigenous self-determination throughout my game-making process by attempting to deconstruct colonial narratives and interrogate common Western methods of video game production. The game is also deeply invested in historic and specific Skarù·rə? references, rather than a generically Indigenous context. My hope is that this practice-based research game-making process will exemplify to other Indigenous game developers a methodological accountability they can adapt to reflect their ways of knowing.

Čá·hu is anchored in Nyuhtawé?e, within Nyuhčiré?e (Tuscarora Nation territories), which is geographically located in the “western door” region of Akunęsyè·ni? (Haudenosaunee) homelands. Using the format of a 3D walking simulator, the game is designed to illuminate ideas about traditional teachings and the land. The action and gameplay in Čá·hu are based on a teaching that is common to Skarù·rə? and our Akunęsyè·ni? sister nations. This teaching is called the “Thanksgiving Address,” or Ha? Kanęherathéčreh.³ When our people gather, the Ha? Kanęherathéčreh is recited to “bring our minds together as one”⁴ and to demonstrate and remind us to be thankful of the non-hierarchical relationship between ourselves as humans and all other living things.

³ The Tuscarora translation for this phrase is closer to: “the words before all else”

⁴ This is a translation of an aspect of the formal speech

These themes are reflected in events embedded throughout the game. *Čá·hu* immerses players in a Skarù·reʔ-determined digital landscape that invites players to interpret the game's narrative based on the gameplay. As the developer of this game I utilize my experience as a young Skarù·reʔ man still learning our ways of knowing to practice an accountable development methodology that reflects Skarù·reʔ knowledge and values.

The title, *Čá·hu* (phonetic pronunciation: jah-hoo), is a Skarù·reʔ phrase one uses to call out to see if anyone is there and listens for a response. The precise meaning of this word depends on the context. For that reason, I choose not to incorporate a direct English translation in the title of my game. While “is anyone there?” may be a correct interpretation in this game’s context, I do not want to create a condition where the Skarù·reʔ word *čá·hu* becomes rigidly translated as such. Perhaps the closest example of an English-equivalent word is the versatility of the exclamation yoo-hoo, where its meaning is derived from the intent of whomever exclaims it: sometimes it is used to get someone’s attention, sometimes it is used to state that the speaker is present.

Part of the richness of the phrase *čá·hu* is that it implies the speaker assumes a state of listening after using it. In the videogame, *čá·hu* is used to call out to other beings inhabiting the land, and if you listen patiently, you may hear them call back to you. The introduction and use of Skarù·reʔ words in the game and thesis are an act of linguistic resurgence toward the precise retention of Skarù·reʔ language and worldview. While immersing readers into this world and destabilizing Settler framing, I also continue to use English translations in the written thesis in an attempt to encourage the reader to learn a bit of the language by making use of the glossary.

Čá·hu bridges the distance between Elders and youth, place-based knowledge, and traditional teachings through the experiences of the iconic Jitterbug figure controlled by the player. The game objective is to show how an environmentally devastated landscape can be transformed into one of wellness. The game is populated with traditional Skarù·reʔ beadwork and the Jitterbug, which moves between material, virtual, and imagined worlds. *Čá·hu*, as the player walks through it, brings attention to our relationships with the land, waterways, airways and the many human and non-human beings that share these spaces with us. In the game development process, I draw on computational media arts scholar and media theorist Jason Edward Lewis’ (Kānaka Maoli/ Samoan) concept of the ‘Future Imaginary’⁵ to help develop the digital landscape and narrative action to illustrate an alternative reality where Nyuhtawéʔe is once again determined by the Indigenous peoples who have always called this place home.

In Chapter 1, I discuss how Indigenous media makers engage with digital technology starting with Indigenous-made media in the 1990s and how these ongoing practices help inform my thinking on the future imaginary and video game development. Chapter 2 discusses the application of the future imaginary as a methodology and outlines my introduction to video games, and how I use each to address the digital divide. Chapter 3 discusses the recent land history of Nyuhčiréʔe (Tuscarora Nation territories) and the evolution of Skarù·reʔ beadwork since the 1800s, leading up to my current work exploring why beadwork and video games are useful in engaging Skarù·reʔ place-based knowledge. In Chapter 4, I walk through *Čá·hu*’s development process and resulting gameplay and break down the details of the game design and the thinking that informed them. I conclude by placing this thesis in line with Akunęhsyè·niʔ teachings as a matter of contextualizing the importance of this work in engaging with Indigenous thought through the creation of digital media.

⁵ Lewis, “Preparations for a Haunting,” *The Participatory Condition*, p230.



Figure 1. A Jitterbug made of glass, plastic, and metal beads, 2019

CHAPTER 1: Literature Review

This thesis and project work exist at the intersection of Indigenous digital media (particularly games and virtual environments), Indigenous relationships to land, and Indigenous ways of thinking about the future.

1.1 Indigenous Digital Media

Indigenous peoples have always taken advantage of advance technology to illustrate our knowledge and embed our ways of knowing for the future. Cowichan/ Syilx artist Laurence Paul Yuxweluptun identified the potential of Virtual Reality (VR) to explore Indigenous knowledge in a digital form. His 1992 creation of the first Indigenous VR work, *Inherent Rights, Vision Rights*, was an intervention into the colonial frameworks that continue to dominate technologies like VR, video games and other digital platforms.⁶ Yuxweluptun's construction of a virtual longhouse in VR is an example of how Indigenous ontologies can be designed into digital spaces.⁷

The momentum of Indigenous digital media was boosted in 1994 when 14 Indigenous media makers assembled at the Banff Centre for the Arts for the *Drum Beats to Drum Bytes* gathering to discuss how Indigenous peoples could take advantage of digital technology to express Indigenous knowledge.⁸ Two years later, Cree/ Métis film-maker Loretta Todd picked up the topic of Indigenous works in cyberspace in her 1996 essay "Aboriginal Narratives in Cyberspace." She details examples of how Indigenous media makers are creating space in digital territories for Indigenous peoples. The Cree/ European artist Cheryl L'Hirondelle, who participated in the *Drum Beats to Drum Bytes* gathering, expands on Indigenous artists' digital path-making and observes that collective goals are a common perspective for Indigenous peoples, stating "the highest value of Indigenous work online is giving back to the community rather than being merely about the individual artist's self-expression."⁹ Cree/ French Métis artist Ahasiw Maskegon-Iskwew, in his chapter on globalizing networked Aboriginal art in the 2006 collection of essays *Transference, Tradition, Technology: Native New Media Exploring Visual & Digital Culture*, cited L'Hirondelle's advocacy for 'open source' models as a method of knowledge-sharing in line with Indigenous ways of thinking while at the same time dismantling dominant corporate structures restricting cyber-networks.¹⁰

Taking advantage of cybernetic systems and structures can be a difficult task as many Indigenous peoples are heavily impacted by the digital divide: "the divide between those with access to new technologies and those without."¹¹ As more and more of our Indigenous families become dependent on digital technology in order to participate in the rapidly transforming societies around us, it is evident that the digital divide experienced by Indigenous peoples and

⁶ King, "In/Consequential Relationships," p188.

⁷ Ibid., p189.

⁸ Wemigwans, "A Digital Bundle," p107.

⁹ Ibid.

¹⁰ Maskegon-Iskwew, "Drum Beats to Drum Bytes," in *Transference, Tradition, Technology*, ed. Townsend, Claxton, and Loft, p210

¹¹ McConnaughey, and Lader, "Falling Through the Net II."

lack of technological access must be addressed.¹² The advancement of 21st-century digital technologies calls for 21st-century Indigenous thinking—and in order for that to happen, Indigenous people must have access to those technologies.

1.2 Indigenous Media Before the Digital

Before Contact, the interaction between Indigenous peoples and technology took place in media like pottery, beadwork and wampum. American researcher of digital and Indigenous rhetoric, Angela M. Haas, makes the connection between Indigenous beading practices and digital media creation in the 2008 essay *Wampum as Hypertext: An American Indian Intellectual Tradition of Multimedia*, where she acknowledges the parallel rhetoric each employs to communicate nonlinear information.¹³ Haas argues that beading is a form of coding, and that like coding, beading is a developed skill one can use to exercise Indigenous practices. Skarù·rę? artist and visual historian Dr. Jolene Rickard’s 1992 critical analysis of Akunęhsyè·ni? beadwork practices, with special attention to Skarù·rę? methods, posits that Indigenous knowledge can be learned through practices like beadwork: it teaches one patience and observation along with “the ability to see things as a whole or a multitude of parts. It is important to see how things are connected and what gives them life.”¹⁴ Canadian art historian Dr. Ruth B. Phillips explores the notion of knowledge-building in beadwork practices by digging into the roots that inform these designs as both a survivance strategy and transformation of culture.¹⁵ Her 1998 book, *Trading Identities: The Souvenir in Native North American Art from the Northeast*, details the resistance of Indigenous communities to colonizing forces. Indigenous women strategized cultural commodification in order to navigate these external pressures, gain economic stability, and ultimately practice Indigenous autonomy.¹⁶

1.3 Indigenous Self-Determination

The autonomy of Indigenous self-determination, or sovereignty, which inform Indigenous protocols are defined in a multitude of ways from various perspectives. Dr. Rickard states in a 1995 essay connecting Indigenous artists to sovereignty that “As part of an ongoing strategy for survival, the work of indigenous artists needs to be understood through the clarifying lens of sovereignty and self-determination, not just in terms of assimilation, colonization and identity politics.”¹⁷ Indigenous game designer and scholar Dr. Elizabeth LaPensée outlines self-determination from her perspective as Métis / Cree / Irish. LaPensée asserts in her 2017 essay, “Self-Determination in Indigenous Games,” that Indigenous peoples’ employment of self-determination in video game creation can be an act of sovereignty at both community and

¹² Intahchomphoo, “Indigenous Peoples, Social Media, and the Digital Divide” p87.

¹³ Haas, “Wampum as Hypertext.” p84.

¹⁴ Rickard, “Cew Ete Haw I Tih,” in *Parital Recall*, ed. Lippard, and Benally, p109

¹⁵ Phillips, *Trading Identities*, p195.

¹⁶ *Ibid.*, p198.

¹⁷ Rickard, “Sovereignty,” p51.

individual scales.¹⁸ Onöndowa'ga:' historian Dr. John Mohawk kè·hè directly links the sovereignty of Indigenous nations with notions of nationhood.¹⁹ The Akunęhsyè·ni? concept of sovereignty is based on the ongoing assertion of governance as expressed through nationhood. Updated ideas around sovereignty as communal or individual as often expressed in media arts like video game creation, are expanded interpretations of such nationhood concepts. Skarù·rè? Indigenous-governance scholar Mia McKie details the complexity and relationality of terms like sovereignty and self-determination as perceived from Skarù·rè? Nation's self-governing clan-based structure.²⁰ McKie states that while multiple terms are used to describe the autonomy of Indigenous peoples without settler-state interference, the most contemporary take of this concept is self-determination, which is derived out of the discourse of international law in order to be in dialogue with international bodies.²¹ This direct correlation of sovereignty and self-determination to international law is congruous to Mohawk's understanding of Indigenous autonomy as nationhood.

1.4 Indigenous Media Camp & Critical Play

New Zealand computer scientist and game designer Dr. Pippin Barr observes that value systems in games are perceived and adopted by players and shape the gameplay.²² In 2016 I saw this in action when I became co-coordinator and media instructor for Indigenous youth program Skarù·rè? Awękwehstá·θe·?, founded by McKie. We hosted 58 events from July 2016 to April 2017. Each workshop engaged youth in critical Akunęhsyè·ni? knowledge discussions while providing them with 21st-century skills to express themselves as contemporary Indigenous peoples.

Among these events was the Indigenous Media Camp.²³ Over the course of five days we introduced participants to a variety of Indigenous-made media from comic books, to films, to animations, to wearable technology, to interactive works, and of course video games. We referenced early video games I created based on traditional Skarù·rè? practices to facilitate discussions in both playing for entertainment, and what American artist and designer Dr. Mary Flanagan calls "Critical Play."²⁴ We hosted dialogues around the impact of embedding Indigenous values within video games, and how this shaping of gameplay is understood and performed by the Indigenous player.

We also referenced internationally known titles like the award-winning game *Never Alone*, one of the favorite games of the camp's participants. *Never Alone* is a puzzle-platformer side-scroller made in collaboration with the Iñupiat people that depicts an adapted story from their culture. It features two co-operative playable characters: an Iñupiat girl and an arctic fox.²⁵

¹⁸ LaPensée., "Self-Determination in Indigenous Games," *The Routledge Companion to Media Studies and Digital Humanities*, ed. Sayers, p129.

¹⁹ Mohawk, *Thinking in Indian*, p159.

²⁰ McKie, "Skarù·rè? Awękwehstá·θe·? Our Way of Life," p28-32.

²¹ Ibid., p28-29.

²² Barr, Noble, and Biddle, "Video Game Values," p193.

²³ McKie, "Skarù·rè? Awękwehstá·θe·? Our Way of Life," p74.

²⁴ Flanagan, *Critical Play*, p1-2

²⁵ E-Line Media, "Game."

The content from this game facilitated discussions around gender balance in both video game narratives and in the game development process. Additionally, participants engaged with Indigenous-determined games like the ones produced by the Aboriginal Territories in Cyberspace (AbTeC) research network. Founded in 2005, AbTeC is co-directed by Kanien'kehá:ka artist Skawennati and Jason Edward Lewis.²⁶ Their efforts to ensure an Indigenous presence in cyberspace includes a variety of digital productions: machinemas, interactive work, and video games via their youth workshops known as Skins.²⁷ These Indigenous media works fed our Indigenous Media Camp discussions around embedding Indigenous values in multimedia.

In discussions with youth participants about the relationship between values, technology and content, especially in video games, I was reminded of American game designers Katie Salen and Eric Zimmerman's words that "Meaningful play emerges from the interaction between players and the system of the game, as well as from the context in which the game is played."²⁸ Each Indigenous video game we examined fostered critical reflection through its gaming experience, pushing the boundary of what games could be – something that New Zealand interactive and game theoretician Dr. Rilla Khaled would refer to as "reflective game design".²⁹ The biggest takeaway from co-hosting the 2016 Indigenous Media Camp is that our youth are hyper fascinated by the cultures and possibilities of video games, and content is just as significant if not more than gameplay itself.

1.5 Indigenous Representation

Another Indigenous video game experience that influenced my development protocols came from discovering a mobile game that told the story of Mohawk Ironworkers. *Rivet Rampage* is a 2D vertical platformer developed by Indigenous production company Mushkeg Media Inc.³⁰ Under the co-direction of Omuskego Cree Paul Rickard, and in collaboration with Kahnawà:ke Kanien'kehá:ka Margaret Horn (amongst others), *Rivet Rampage* lets you play as a male or female Mohawk Ironworker erecting some of the most internationally famous structures in the world. I was fascinated by this game because, in addition to centering real Akunęhsyè·ni? peoples and events, it rewarded players with character profiles of the real Akunęhsyè·ni? people who inspired the game. At the time I was working on a previous game of mine, *Ēkwehé·we: The Real People*, which similarly highlights the abilities of the people from the Skarù·re? Nation by representing them as super-heroic based on their real life abilities and accomplishments.³¹

1.6 Indigenous Future Imaginary

Many of the game examples thus far center around narratives that take place in the past without much indication of a future. Loretta Todd's 1996 call for 'Indigenous narratives in

²⁶ Lewis and Fragnito, "Aboriginal Territories in Cyberspace."

²⁷ Initiative for Indigenous Futures, "What Are the Skins Workshops?."

²⁸ Salen, and Zimmerman, "Game Design and Meaningful Play," p60.

²⁹ Khaled, "Questions Over Answers," p14.

³⁰ Mushkeg Productions Inc., "Production Team."

³¹ Wilson, *Ēkwehé·we: The Real People*, video game.

cyberspace’ resonates with conversations around Indigenous Futurisms in Anishinaabe literary scholar Dr. Grace L. Dillon’s 2012 collection of essays, *Walking on Clouds: an Anthology of Indigenous Science Fiction*. Dillon complicates the current status of the Western-dominated science-fiction genre and illustrates a series of Indigenous narratives that establish imaginings of Indigenous peoples in the near and distant future. Jason Edward Lewis branches off of this discussion to focus on the concept of the “future imaginary”, i.e., calling for collective imaginings of the future that can help facilitate discussions oriented around change in the present.³² In his 2014 essay, *A Better Dance and Better Prayers: Systems, Structures, and the Future Imaginary in Aboriginal New Media*, Lewis states that by engaging Indigenous people in conversations around the future of new media, we can expand the epistemological assumptions that underpin new media systems and structures and stake our own Indigenous futures in a territory that is common for all beings, Indigenous and non-Indigenous alike.³³

Such discussions about rethinking colonial structures to include Indigenous futures motivated my own critical evaluations of how histories and cultural dominance are represented in place-based markers on the land. In June 2020, *Whose Hero? A Panel and Workshop on Monuments* was hosted by International Coalition of Sites of Consciousness. The panel invited Western feminist, architectural, and Akunęhsyę·ni? scholars to engage in a public discussion on the matter of re-authoring public monuments. The question arose: how would Indigenous peoples choose to visualize culture and history through future monuments? Or in other words, what is the future imaginary of monuments?

Indigenous people drove the conversation and encouraged a broader understanding of monument that is immersed in an Indigenous perspective: land is monument. The response of the Indigenous women present shifted the perception from ornamental concepts of monument to lived and active forms of monuments like corn and lakes.³⁴ This brought forth the idea that the condition of the land reflects the relationship humans carry with that land³⁵ and that there is a lot to be learned from these relationships. For example, Dr. Jolene Rickard stated that ‘Tuscarora white corn’ is a form of monument for Skarù·re? peoples as it tells the story of our ancestors, our history, and our culture while also carrying the geographical tracings of its generational development.³⁶ Similarly, Onayota?aka media expert Michelle Schenandoah stated that Onondaga Lake holds significant cultural narratives for the Akunęhsyę·ni? that are passed from generation to generation and orate histories and cultural significance for our peoples.³⁷ From waterfalls to gorges to natural growth forests—by engaging with the land, one learns about the land and people’s history with the land.

Like corn fields, virtual territories, and science-fiction, video games can be used as conduits to facilitate change through the activation of Indigenous knowledge about Indigenous land. Lewis states “Native people have been employing such systems and structures for millennia; there is no reason why we cannot grasp the structures and systems of cyberspace just

³² Lewis, “A Better Dance and Better Prayers” in *Coded Territories*, ed. Loft and Swanson, p72.

³³ Ibid.

³⁴ Whose hero – monument discussion...2020

³⁵ Rickard, Schenandoah, et al. “Whose Hero?.”

³⁶ Ibid.

³⁷ Ibid.

as well, and make them our own."³⁸ The continued use of advanced technology by Indigenous peoples will inspire taking ownership of these systems and structures for us to create and activate Indigenous futures and future imaginaries.

³⁸ Lewis, "A Better Dance and Better Prayers" in *Coded Territories*, ed. Loft and Swanson, p68.

CHAPTER 2: Future Imaginary as Methodology

As a Skarù·re? game maker, I use the concept of the future imaginary as a strategy to center Akunęhsyè·ni? ways of knowing in the game design and game development process. The discourse around futures and technology is a junction of histories and practices that Indigenous peoples are well acquainted with.

Indigenous people are thoroughly accustomed to the affect of modern communication strategies and the *settler-colonial imaginary*³⁹ that shaped the use of these technologies. Since the invention of photography, Indigenous peoples have often been the subject of the “colonial gaze.”⁴⁰ Our relationship to lens-based media in the 1800s to mid-1950s was about being in front of the lens or the subject of the photograph or film.⁴¹ Our images were collected as part of a form of “salvage anthropology,” which contributed to the image of Indigenous peoples as dead or part of a “vanishing paradigm”; in other words, people without a future.⁴² Indigenous erasure was what allowed the settler-colonial imaginary to consider our territory “terra nullius,” or vacant land. However, Indigenous peoples are not dead, and we are still living in our homelands. If the vanishing paradigm is a 20th-century assumption, the future imaginary is a strategic 21st-century anti-colonial Indigenous assertion about our capabilities of transformation.

Inspired by Lewis’ work co-directing the AbTeC research projects, the future imaginary draws on Dr. Dillon’s assertion of “...the need for Native people to use science fiction as a means of making themselves visible in the future.”⁴³ In a 2016 editorial, Lewis and his collaborator, Skawennati wrote, “For 500 years we have refused to be assimilated. We will refuse for the next 500 years. What is more, we are imagining the next 500 years as a time when our people will assert themselves as primary actors in the evolution of Canadian society. We are busy building that future. Imagine that.”⁴⁴ In this article they lay out the tensions between their love of “‘fantastic worlds, the strange societies and amazing technologies,’ in science fiction and ‘the absence of native peoples in those futures.’” Their use of the term future imaginary and the development of the Initiative for Indigenous Futures (IIF) at Concordia University create space for artists to be inspired to realize new stories for Indigenous peoples.⁴⁵

The future imaginary can be thought of as the common collective imaginings of a *group* of people. Effectively using the future imaginary as a research-creation method requires that I need to imagine a future that offers positive change for my community as a whole. Building a future that is beneficial to the citizens of the Skarù·re? Nation requires that I imagine a future where we are empowered and in agreement with the ways in which that future functions.

³⁹ Lynch, “Nothing but land,” *Western American Literature*, p382.

⁴⁰ Lutz, and Collins, “The Photograph as an Intersection of Gazes,” *Visual Anthropology*, p134.

⁴¹ Raheja, *Reservation Reelism*.

⁴² Hearne, *Native Recognition*.

⁴³ Dillon, *Walking the Clouds*, p59.

⁴⁴ Lewis and Fragnito, “Opinion.”

⁴⁵ Initiative for Indigenous Futures, “Initiative for Indigenous Futures.”

2.1 Hopeful Predictions

Indigenous peoples have always imagined their futures, and the concept of the future imaginary can help advance how we discuss those futures. Linguists assert that the 'past, present and future' are conceptualized differently in the Skarù·rëʔ language, as 'fact, present and prediction.' If we shift our understanding of the 'future' to focus on 'prediction,' we can then construct imaginaries based on 'fact', i.e., the past. By adapting the language of prediction into my Skarù·rëʔ-based uses of the future imaginary, I can think of the future represented by the game as a prediction based on fact. The imagined, fact-based prediction depicted in *Čá·hu* illustrates the land of Nyuhtawéʔe as once again a place of wellness for all beings who occupy it.

2.2 Closing the Digital Divide by Coding Myself into Video Games

My generation grew up with a rich variety of game platforms but with a poverty of accurate Indigenous content until *Assassin's Creed III* in 2012⁴⁶ and *Never Alone* in 2015⁴⁷. Before this, inaccurate portrayals of Indigeneity left us with generic Indigenous characters like Turok, of the fictional Saquin Nation, featured in *Turok: Dinosaur Hunter*⁴⁸ and Humba Wumba, the sexualized non-nation-specific mistress of the mystical Mumbo Jumbo shaman or witch doctor in *Banjo-Kazooie*⁴⁹. Indigenous representation in videogames was determined and made by non-Indigenous peoples; a continued practice from a time not long ago when "white explorers" exploited and shaped worldviews from their euro-centric views.⁵⁰ False portrayals of Indigeneity in digital spaces like video games negatively impact how the world views Indigenous peoples.⁵¹

Although Indigenous characters in video games were rare, it did not prevent my cousins and I from playing these games. Every now and again we would joke about designing a 'Rez-based' version of *Grand Theft Auto*⁵², or share our disappointment that sports games never included Lacrosse, a traditional Akunęsyè·niʔ game. Regardless, we gawked over gamer culture just the same, each with our own favorites and each with our own particular relationship to video games.

2.2.1 Gamer Kids Like Me

Considered revolutionary in 1991 for its intricate level design and quick gameplay, *Sonic the Hedgehog* was played on a Sega Genesis⁵³. For me, the combination of lush graphics and a quirky cartoonish character cemented my love of video games. Fast-paced action on a

⁴⁶ Ubisoft, *Assassin's Creed III*, 2012.

⁴⁷ E-Line Media, *Never Alone/Kisima Ingitchuna*, 2015.

⁴⁸ Acclaim Entertainment, *Turok: Dinosaur Hunter*, 1997.

⁴⁹ Rare, *Banjo-Kazooie*, 1998.

⁵⁰ Mahuta, "Māori in Video Games," *Te Kaharoa*, p127.

⁵¹ Ibid.

⁵² Rockstar North, *Grand Theft Auto*, 1997.

⁵³ Sega, *Sonic the Hedgehog*, 1991.

momentum-based platform⁵⁴ added depth to gameplay and level design within the side-scroller game format. Gamer kids like me marked our youth with 16-bit consoles such as the Genesis in elementary school, the Nintendo 64 and Nintendo Gamecube as we moved from elementary to middle school, and then the Nintendo Wii in high school.

Gaming brought my extended family together. We lived next to each other in our own little Tuscarora-Onondaga enclave within Nyučiré?e, just outside of Niagara Falls, New York. My grandparents played a major role in raising their grandchildren, supporting working moms and sometimes absent dads. Video games were prominent in these spaces. For my cousins, gaming was a daily routine, and in my home, it built intergenerational experiences. Racked by diabetic loss and wheelchair-bound, my grandfather, Papa Will, was still able to beat us at Wii bowling⁵⁵. Kanien'kehá:ka theoretician Steve Loft has written "...technology exists, but in a form inaccessible to the humans—yet is known and its properties appreciated. It is a part of the makeup of the universe, a tool of survival and self-determination, apart from its innate nature."⁵⁶ Growing up, video games were my tool of survival.

I spent my youth sketching video game designs without any intention of creating them. The lack of Indigenous content—characters, narratives or environments—pushed me to think about making my own games. At a young age I recognized the distance between privilege, access, opportunities, financial stability, and my position as a poor “Indian” kid living on “the Rez.” As a young person experiencing this digital divide first-hand, video game creation seemed far-fetched and not in the realm of possibility. The Sega Genesis console was released in North America in 1989, but due to pricing, my family did not have access to it until 1995. To my remorse, this was evidence that video game production would remain out of reach, and thus, not worth serious consideration. My only hope at making my game ideas a reality was to find someone with access, opportunity, and interest in taking my sketches and turning them into their own profit.

My unconscious acceptance of the digital divide led to my game-making ambitions sliding under the rug. There they stayed until a course during my undergraduate degree illuminated how accessible game production had become. In pursuit of a B.A. and Game Studies certificate in the Media Studies program at the University at Buffalo, I was introduced to two pivotal things: a free game-engine software called Unity 3D⁵⁷, and a category of alternative games known as Critical Play⁵⁸. Fascinated by the potential for games to generate social impact, I created my first video game, *Čà-wak* (the sound of a fish-spear entering the water), which was based on my ongoing research examining Skarù·re? relationship to the Niagara River. After years of brushing aside undeveloped game ideas, game-making was suddenly at my fingertips—finally I could transform my imaginaries into a reality.

After creating my own Skarù·re? game, *Čà-wak*, my first genuine exposure to Indigenous video game development, I learned about Aboriginal Territories in Cyberspace (AbTeC) and the

⁵⁴ ‘Momentum-based platform’ is a style of platformer game where the player must depend on game mechanic physics to ‘gain momentum’ in the game in order to access additional platforms in a level.

⁵⁵ Nintendo, *Wii Sports*, 2006.

⁵⁶ Loft, “Aboriginal Media Art,” *Transference, Tradition, Technology*, p93.

⁵⁷ Unity Technologies, Unity 3D, 2020.

⁵⁸ Flanagan, *Critical Play*, p2.

Indigenous multimedia work they had been producing for years. From *TimeTraveller*^{TM59} to the games produced in their Skins Workshops—*Otsi:! Rise of the Kanien`kehá:ka Legends*⁶⁰ and *Skahión:hati: Legend of the Stone Giant*⁶¹—I wanted to be part of the movement to create games with Indigenous content from an Indigenous perspective.⁶² This led me into the Master of Design program at Concordia University to work with AbTeC and its co-director, Professor Jason Edward Lewis. Through AbTeC's Indigenous game-making groundwork they exemplify how Indigenous video games are being produced in a workshop setting, which I found useful to influence my methods of producing Skarù·rę? video games as a sole game designer.

AbTeC's model of collaborating with Indigenous Nation communities, like the Kahnawà:ke Mohawk community in the creation of their first game, is a model of Indigenous accountability in research-creation methodologies and digital design. The video game produced in this workshop was determined based on what the participants contributed and thought best for their interests as members of that community.⁶³ I approached my game design process with similar accountable strategies by prioritizing what I deemed best for the community based on my experience as a citizen of the Skarù·rę? Nation; my experience working with community members from my nation, especially youth; and my ongoing relationships with whom I sought input on my game design.

2.2.2 Critical Play, Critical Game Development, and Digital Humility

As briefly stated above, I became interested in using video games as a learning tool when I was introduced to the field of Critical Play, which focuses on critiquing real-life social issues. "Critical Play looks to the commonalities among play activities, game genres, and important historical contexts to discover thematic ways in which play can continue to manifest critical thinking."⁶⁴ Critical Play piqued my interest because I recognized its function to teach Skarù·rę? youth about our traditional practices, like my research in Skarù·rę? spearfishing. Developing *Čà·wak* as a learning tool to pass on knowledge of this practice was my first attempt at implementing concepts of Critical Play into a video game and design process. This formed, in part, the foundation for the development of *Čá·hu* and accompanying thesis. Expanding Critical Play concepts to integrate Skarù·rę? practices and protocols affected the game design and the game development process overall.

The aspect of Skarù·rę? ideology that best integrates with a critical game development process is that of 'humility.' Humility is a core value many Indigenous cultures incorporate into their daily practice⁶⁵. An example of Skarù·rę? humility can be found in Onoñda?gega? lawyer Paul William's book, *Kayanerenó:wa: The Great Law of Peace*, in reference to the Ha? Kanęherathęčreh, or 'words before all else'. Williams writes "This gratitude reminds us...that we

⁵⁹ *TimeTraveller*TM, 2008-13.

⁶⁰ Aboriginal Territories in Cyberspace. *Otsi:! Rise of the Kanien`keha:ka Legends*, 2012.

⁶¹ Aboriginal Territories in Cyberspace. *Skahión:hati: Legend of the Stone Giant*, 2011.

⁶² Aboriginal Territories in Cyberspace, "Aboriginal Territories in Cyberspace."

⁶³ Lameman, Lewis, and Fragnito. "Skins 1.0," p105–112.

⁶⁴ Flanagan, *Critical Play*, 2009, p3.

⁶⁵ Leeuw, "Indigenous Medicine," *Canadian Family Physician, Le Médecin de famille canadien*.

humans are no more important than the other living parts of the world. The thanksgiving is not a recitation of a hierarchy. Giving thanks as people gathered together is the beginning of being of one mind.”⁶⁶ However, such humility is not something often found in design discussions or in the process of making videogames. My hypothesis was that game mechanics designed with a sense of humility could provide interesting and useful modes of gameplay that fall outside of those based on common Western game mechanics and point us toward design possibilities that reflect Skarù·rę? values and help us better understand our place as living beings in this shared world.

Game mechanics are the interactive operations in a video game. “Game mechanics are used to describe how players interact with rules, and as more formal properties of a game such as game goals, player actions and strategies, and game states.”⁶⁷ Game mechanics inform the emotional response of the player and encourage players to immerse themselves in a ‘digital realm.’⁶⁸ Embedding concepts of humility in the game mechanics promised to answer one of the design questions posed at the beginning of this project: what if game experience empowered players to learn about the land?

My vision for the game mechanics in *Čá·hu* included designing interactive media rewards that lasted beyond the digital experience and bled into players' physical lives⁶⁹. My goal was to establish stronger connections to real-places while encouraging accountability, reciprocity, and giving thanks based on Akunęsyè·ni? teachings around land. Incorporating humility into game design would also reinforce nonhierarchical approaches to gameplay, leading to win-win games that eliminate zero-sum outcomes. By reorienting game objectives and subverting typical patterns of gameplay, game design might be able to reform the way we engage with knowledge around land. I became interested in developing Critical Play inspired game mechanics based on concepts of humility as a way of encouraging interactions that center core Indigenous teachings.

2.3 Self-Determination and Game Making

Dr. LaPensée outlines her definition of Indigenous self-determination from her perspective of an Indigenous game designer. “Self-determination refers to the right of a people (nation) to exercise sovereignty or self-rule and to determine its own political, economic, and cultural arrangements.”⁷⁰ Self-determination can be expressed in many ways; in this project I exercise self-determination by acting the sole developer working on my game. Rather than being reliant upon a team of programmers, who may or may not understand Skarù·rę? ideologies, I challenged myself to become a programmer in order to assert Skarù·rę? ideologies across all aspects of the game-making process. This is not to say I did not require assistance but that I sought help on my terms as I saw fit for the goals of the project. I solicited assistance throughout design and development process, drawing on resources available to me as a student of Concordia

⁶⁶ Williams, *Kayanerenkó:wa*, p9.

⁶⁷ Sicart, “Defining game mechanics,” *Game Studies*.

⁶⁸ Dougherty, “‘The Last of Us Part II’ Is a Dark game for a Dark Time,” *The New York Times*.

⁶⁹ Barr, Noble, and Biddle, “Video Game Values,” p193.

⁷⁰ LaPensée., “Self-Determination in Indigenous Games,” *The Routledge Companion to Media Studies and Digital Humanities*, ed. Sayers, p129.

University, as an Indigenous person expanding my Indigenous network, as a citizen of the Skarù·rę? Nation, and a researcher making connections to online game developer communities.

My primary audience for this game is the youth of Skarù·rę? Nation, along with Indigenous youth, and Skarù·rę? gamers. Internet access is a difficult task for most of us living at Skarù·rę? Kayetá·kreh. There are no terrestrial internet sources and remote wireless modems regularly struggle to locate stable signals within the boundaries of Skarù·rę? Kayetá·kreh (Tuscarora Nation Territory). As mainstream video games move toward internet-based deliveries, it becomes more and more difficult for our people to access these mediums. In a recent conversation with Inuit artist, Jesse Tungilik, we observed that the end of the console era and the rise of cloud-based video game consoles away from physical consoles “just means no more video games for our people”⁷¹ because of the inadequate network connectivity in many Indigenous communities.

Mentioned earlier, from 2016 to 2018, I worked as a co-coordinator for the Indigenous youth program, Skarù·rę? Awękwęhstá·θę·?. Daily, I encountered the under-developed technological infrastructure reality for many young people living in Skarù·rę? Nation.⁷² However, while most youth/ teens in this age group did not have access to computers, many did have access to smartphones. Based on this reality, I made the decision to create video games that were versatile, capable of being played on a personal computer as well as on the iOS and Android devices that are the platforms to which my target audience has access. If I am to successfully distribute my work to Skarù·rę? youth, these are the platforms for which I must design my media.

⁷¹ In conversation with Jesse Tungilik, October 2019.

⁷² McKie, “Skarù·rę? Awękwęhstá·θe:’ Our Way of Life,” p76.

CHAPTER 3: Toxic Bodies or Healthy Beings? Digital Media and Place-based Knowledge

Nyuhtawé?e was considered an ‘American icon’ in the 1800s and continues to be a popular tourist destination.⁷³ The Akunęhsyè·ni? have many stories about its cultural significance as the home of the Thunderers. Each spring we listen for the thunderclap signaling the return of our Grandfathers or Thunderers, to awaken and renew É·nè? Ú?wneh, our Mother Earth, with life sustaining water. We respond by giving thanks to the Thunderers for another year of rain and protection from the benevolent forces.⁷⁴ We listen to the Thunderers and observe the beings around us, as each of us share a role in shaping our collective futures.

An objective of this game is to help Skarù·rè? youth specifically and Akunęhsyè·ni? youth in general understand the importance of reciprocity in giving or returning thanks. Cá·hu does this in part by encouraging players to call out to the Thunderers and listen to who responds. This is one of the several ways players interact with non-human beings as part of a Skarù·rè? landscape that encourages an awareness of the presence of other-than-human life.

In the 21st-Century, understanding Nyuhtawé?e as a place must include the impact of colonization and environmental destruction. This happened in waves. Post-contact the homelands or “western door” of the Akunęhsyè·ni? was fought over by the British and Americans in the War of 1812.⁷⁵ During the mid to late 1800s Nyuhtawé?e was the site of intense commercialization and tourism.⁷⁶ In the 1900s, Nyuhtawé?e waters were harnessed for the then-largest hydroelectric project in the world. Robert Moses and the New York State Power Authority dispossessed the Skarù·rè? Nation of almost a third of our land-base for the reservoir facilitating pumping water through the turbines.⁷⁷ The reservoir and forced dispossession eliminated our access to the Niagara River and severely damaged clan and family relationships within our nation⁷⁸ as well as fueling further environmental degradation. Five miles from the southern Skarù·rè? Nation border, the Love Canal site **continues** to ooze 3700 tons of highly toxic chemical waste per year? into the upper river. This environmental disaster instigated the formation of the “Environmental Justice Movement,” and the creation of Superfund sites in the 1970s.⁷⁹

One report about the damage done to this landscape stated: “By the late 1980s, Niagara was not only remediating its own toxic waste, but acting as a massive toxic garbage can for the entire Northeast.”⁸⁰ The largest hazardous waste disposal company in North America, Chemical Waste Management, has a branch one-half mile from the northern Skarù·rè? Nation border. The infamous, “Bloody Run” chemical dumpsite—whose cleanup and information management

⁷³ McKinsey, *Niagara Falls*.

⁷⁴ Converse, *Myths and Legends of the New York State Iroquois*, p40.

⁷⁵ Benn, *The War of 1812*.

⁷⁶ Phillips, *Trading Identities*.

⁷⁷ Hauptman, *The Iroquois Struggle for Survival*.

⁷⁸ Rickard and Graymont, *Fighting Tuscarora*.

⁷⁹ Aberg-Riger, “The Toxic ‘Blank Spots of Niagara Falls.’”

⁸⁰ Ibid.

became the model for national and local responses to chemically contaminated sites—is about a half-mile west of the Skarù·rę? Nation border.⁸¹

The brash lights thrown onto the water as it thunders over the falls is nothing compared to the impact of Love Canal with “acid burns, basement fumes, rocks that exploded like firecrackers, oil slicks, phosphorous floating on the river, dead fish, dead cats, sick kids, strange symptoms.” By the late 1960s the beings who occupied these territories faced “a gutted future.”⁸²

One of our teachings as Akunęhsyè·ni? is to make decisions for the faces yet unseen, or, translated from Skarù·rę?, “for the ever-coming faces.” Nyuhtawé?e is a site with multiple histories and responsibilities pertaining to this philosophy. The Skarù·rę? Ekwèhè·we (Tuscarora people) plan on being there for immeasurable amount of time into the future. This is in contrast to populations that are often just passing through or receive government buyouts to leave after environmental disasters. In this thesis I explore how the future imaginary of Nyuhčiré?e (Tuscarora Territory) and Nyuhtawé?e (Niagara Falls) can be used to predict healthy beings rather than toxic bodies.

3.1 Tuscarora Beadwork: At the Brink of the Falls

In the 1800s the Skarù·rę? Nation faced economic marginalization stemming from devastating colonization that threatened our Nation’s existence. Skarù·rę? women came together, analyzed the situation around them, and devised an economic strategy: to capitalize on the developing ‘Niagara Falls tourism’ industry as a means of survival that would ensure our Nation’s presence in the future.⁸³ This strategy manifested itself, in part, through the transformation of glass beads, cotton velvet, and sewing materials into the iconic Skarù·rę? beadwork of the 1830s-present.⁸⁴ Research conducted by folklorist Beverly Gordon amongst Skarù·rę? beadworkers in the 1970-80s documented the development of a style of raised beadwork that was sold at the brink of Niagara Falls, Luna Island, and Three Sisters Island from the 1830s to the 1960s.⁸⁵ According to Gordon,

Since the Indian still represented “wildness” in the popular mind in the period under major consideration, the Indian object represented the wildness in Niagara Falls. The nostalgia for the vanishing Indian was related to the nostalgia for the vanishing wilderness and force of nature as well. The nostalgic and sentimental value of the Niagara Falls Indian souvenir was made even more powerful by the symbolic association made between the Indian and Niagara Falls.⁸⁶

One type of Skarù·rę? beadwork that developed during that time was the ‘Jitterbug’: a palm-sized wire-framed figure made of leftover beads. Rickard wrote about the relationship between her great grandmother Flossie Jones and the sale of Jitterbugs throughout our territories

⁸¹ Stranges, “Hooker Hyde Park Landfill and ‘Bloody Run,’” *Icon*, p236.

⁸² Aberg-Riger, “The Toxic ‘Blank Spots of Niagara Falls.’”

⁸³ Phillips, *Trading Identities*, p25, 195, 256.

⁸⁴ Gordon, “The Niagara Falls Whimsey.”

⁸⁵ *Ibid.*

⁸⁶ *Ibid.*, 387.

as more than simply a means of economic strategy.⁸⁷ Rickard shares her understanding that "The dangling 'jitterbug' pins... are really messengers. What we create, tourist item or not, serves as a reminder of our spiritual, cultural and economic survival."⁸⁸ Even with these intergenerational reminders embedded in the Jitterbug, these too, are only part of the Jitterbug's significance to the Skarù·rę? Nation. Both Gordon and Rickard discuss how youth learn to make Jitterbugs as their first attempt at beading. The Jitterbug has become a remarkable tool not only to teach our youth skills in beadworking, but also to inform them about Skarù·rę? placed-based knowledge, practices, and ways of knowing.

3.1.1 Jitterbugs: Intergenerational Knowledge, Youth, and Transformation

Creating Jitterbugs teaches youth stories about Skarù·rę? women's thinking and action at the Falls as well as how to make the unusable, useful. This thinking, displayed in the action of innovative beadwork development, gave our people the ability to navigate the settler-colonial sphere bordering our nation. In other words, it gave us the ability to adapt—to transform our tactics of survival through the capitalization of beadwork sales. As well, Skarù·rę? beadwork propagated new methods of embedding our cultural knowledge for future generations, i.e. the Jitterbug. The transformation of raw materials into beaded-icons continues to contribute to the longevity of Skarù·rę? ways of knowing. We are reminded of these stories about Skarù·rę? women, and how the Jitterbug came to be with each new Jitterbug that is made.

Beadworkers describe the Jitterbug in various ways, but it is unanimously understood that the Jitterbug engages young people in Skarù·rę? practices. Renown Gayogohó:nq? / Skarù·rę? beadworker Mary Annette Clause recounts her experience with the Jitterbug and the practical reasons why it is used to teach young people early beading techniques:

I learned to make Jitterbugs as a child. Jitterbugs are little people made out of beads. Beads big enough for a child to learn how to handle a wire and go through the big holes inside of the beads. The bead wire is sturdy enough to hold and pliable enough to bend. We would use large-sized beads and dish-shaped beads to make the hats on these Jitterbugs.⁸⁹

Clause refers to Jitterbugs as "little people," acknowledging that these figures are their own being. This is in part a cultural understanding that, following the transformational process of turning loose beads into Jitterbugs, these figures take on a life of their own. Jitterbugs have also been called dolls, pins, toys, pendants, whimsies, and curiosities; depending on the context and the *who* describing these beaded innovations. For the sake of Skarù·rę? language resurgence, I would like to offer an additional descriptor that encapsulates the multiple facets of these beings: *awękwehstá·the·?*—our word for youth. I outline the correlation between 'awękwehstá·the·?' and Jitterbugs in the section that follows.

Themes of transformation reflected in the origin and formation of the Jitterbug are reflected in *awękwehstá·the·?*, which transliterates as *it-human-ness-is-new*.⁹⁰ Skarù·rę? women

⁸⁷ Rickard, "Cew Ete Haw I Tih," p108.

⁸⁸ Ibid., p108.

⁸⁹ Clause, "Beadwork: Passing on Tuscarora Culture," *Native Heritage*, p127.

⁹⁰ McKie, "Skarù·rę? Awękwehstá·the·? Our Way of Life," p96.

have been well versed in concepts of transformation for as long and as far as our memories can reach. In fact, Akunęhsyè·ni? creation stories center around our ancestors', especially women's, ability to adapt or transform through their critical thinking and action. the roots of Skarù·rę? language exhibit traces of such frameworks. Awękwehstá·θe·?, both as a word and a concept, is in itself a creation story. The idea of 'new-human-ness' implies a series of developmental phases in which the present state of 'it'—the youth—is now post-development, or post-transformation, and now considered a 'new' being who is now in a phase of growth and learning, a transformational process. The creation of the Jitterbug is similar. Rather than beadworkers discarding the accumulated odd beads not suited to typical patterns, these materials underwent a developmental and transformational process in which the beads were given life as a new being: the Jitterbug, a multi-purposeful awękwehstá·θe·? whose creation reflects transformational concepts in its new human-ness.

3.2 Energy, Beads, and Our Technological Extensions

The pliable bead wire weaving these material forces together holds an energy that, when kinesthetically activated, teaches young people to bead while simultaneously engaging them in Skarù·rę? practices of adaptability, or transformation. Jitterbugs are ornamental pins, pendants, or dolls for youth but they also have a power, a life force, and a memory; something that Blackfoot philosopher Leroy Little Bear would call a *spirit*.⁹¹

Little Bear states that many Indigenous perspectives view everything in this world as consisting of "energy waves," and embedded in these energy waves are knowledge and distant memory.⁹² As is true of many Akunęhsyè·ni? teachings, the knowledge and memory represented by/in the Jitterbug are passed intergenerationally through kinesthetic experience. The energy of the Jitterbug is relatively dormant until activated by human hands. A *jittery* movement circulates through the Jitterbug's body when it is held—perhaps this movement is how the Jitterbug got its name. Some Skarù·rę? even allude that the Jitterbug is dancing. At this moment when a person's hands make contact with the Jitterbug, energies of the Jitterbug and human intermingle, and the Jitterbug becomes an extension of the human-body. With the metal-frame and beads that make-up the humanoid figure, channeling the energy waves of our ancestors, the Jitterbug is a 200-year-old extension of the mind and body whose reach spans across generations.

By holding these Jitterbug beings we are holding the hands of our ancestors. By orating the stories and teachings of their creation, we are interpreting the encoded knowledge of our aunts and grandmothers. Haas description of the ways in which beads encode the human-material exchange to carry critical knowledge is pertinent here:

Both Western and wampum hypertexts employ digital rhetoric to communicate their nonlinear information... Wampum, then, codes local knowledges and alliances with wampum shells and sinew (or other stringing devices). Thus the beads and stringing technologies could be represented as 0-0-0-0-0-0-0-0-0-0-0, or strands of wampum code that when strung together communicate information to their "readers."⁹³

⁹¹ Hill, "Listening to Stones."

⁹² Ibid.

⁹³ Haas, "Wampum as Hypertext."

Coders of hypertext, whether it be wampum or otherwise, embed cultural perspectives—the “nonlinear information”—into legible forms to be interpreted by intended “readers.” In the case of the Jitterbug technology, the intended readers are the ever-coming faces of the Skarù·re? Nation. The materials that make up the Jitterbug are a collection of information, coded into a legible form by our ancestors, that can be studied and interpreted. The teachings we interpret are an embedded intelligence, coded by 19th century Skarù·re? women, which continues to inform our consciousness here in the 21st century.

The form of the Jitterbug has been relatively unchanged since its creation. The themes and messages that have been intergenerationally passed for centuries through the Jitterbug are energized once again by transforming the Jitterbug into a new form: the digital. Coding the Jitterbug into Čá·hu’s virtual space creates a new legibility and gives us the opportunity to expand on the Jitterbug’s embedded intelligence as it is interpreted by new faces and new generations. Čá·hu, populated with traditional Skarù·re? beadwork, animates the Jitterbug in an imagined world built specifically to support the ontology of the Jitterbug as it reaches out its beaded hand to join in the gamer culture of our youth today. Balancing between the material and virtual space, the Jitterbug empowers Skarù·re? youth to engage with Skarù·re? place-based teachings and ways of knowing using an updated digital format. In this way the teachings of the Jitterbug remain active as it continues the dance with our young gamers so that they may absorb this knowledge and code their own futures.

Digital platforms and video game systems in particular can be seen as extensions of the mind and body, both literally and metaphorically. Screens and controllers, “human-machine couplings”—the “intermingling of flesh and machine”—expand our ability to explore cyber-territories through immersion.⁹⁴ In playing games, we enter what is referred to as “the magic circle” and subject our minds to the invented boundaries of the narrative.⁹⁵ This process enables us to invest our perceptual state of being into other realms, other realities and other imaginaries. In the same way we engage with narratives embedded in the Jitterbug, we engage with narratives embedded in video games when we interlock with controllers and screen-based feedback. Skarù·re? youth are growing in a world flourishing with digital culture. Youth today are so familiar with these systems that these virtual experiences are becoming part of their psychological being: a second nature.⁹⁶ Given that the cyber-territories of video games already occupy the minds and bodies of Skarù·re? youth, and given that there are Skarù·re? lands we cannot access, we should be using video game technology to bridge the gap and teleport our Skarù·re? youth into those spaces.

3.3 Video Games Grafted on Bodies and Land

Elders from our nation, seeing the high frequency with which youth interacted with video games, understood early how they were becoming extensions of the body. These are some of the comments made by Skarù·re? Elders about youth using modern technology:

“That phone is attached to your hip.” ~ Grandma Bea, Deer clan

⁹⁴ Cleland, “Prosthetic Bodies and Virtual Cyborgs,” *Second Nature*, p78.

⁹⁵ Huizinga, *Homo Ludens*.

⁹⁶ Bers, Doyle-Lynch, and Chau. “Positive Technological Development,” *Learning in Doing*, p3.

“Those games are practically glued to your hands!” ~ Mother, Deer clan

“His eyes are just glued to the screen.” ~ Father, Eel clan

"I don't know what she would do without that thing." ~ Eli kéhe?, Bear clan

“I think that thing is stuck to your hand.” ~ Eli kéhe?, Bear clan

“Put that down and go play outside!” ~ Grandma OJ kéhe?, Eel clan⁹⁷

Video games are often vilified as a conduit for unhealthy patterns, making it easy to want to dissuade youth from spending so much time on them and other forms of digital technology. As someone who is learning our traditions and game-making at the same time, I disagree. Like the extension of ourselves we call Jitterbugs, digital mediums like video games have the capacity to strengthen and extend our abilities. It is up to us as Indigenous peoples to shape these virtual spaces for ourselves. For that reason, it is important that we create digital media like video games as way of engaging with these technologies as sites of Indigenous knowledge.

3.4 Digital Media as Reclaiming Space

Since the invention of the first video game in the 1950s, gamer culture has become a global phenomenon. In a community like mine, where previous generations spent their time engaging with traditional practices on the land, video games are perceived as interrupting these lived ways of knowing. Yet video games, created as self-determined Indigenous experiences, can be used to enhance our Skarù·re? ways of knowing, particularly when it comes to accessing land.

When my grandfather was no longer able to walk due to diabetic-related amputation, he was fitted for a prosthetic so that he could continue to be mobile. When our people cannot access our territories due to ongoing dispossession and impacts of colonialism, video games can provide us with a portal through which we can still virtually walk the land as an exercise in remembering place-based teachings. Like my grandfather’s prosthetic, video games can take our people to places normally unreachable so that we may continue to engage with traditional teachings located in these sites. It is no substitute for the real thing, but it keeps the memories and practices alive and energizes support for taking the land back.

⁹⁷ Personal Communications with Elders from the Tuscarora Nation. 1999-2018.

CHAPTER 4: Čá·hu: Development Process, Game Walkthrough, and Design Discussion

The following section details the game development process, including a walkthrough of the game itself and the thinking that informed each design decision. It is important to note that Čá·hu is still in production at the time of this thesis submission. I will thus describe the intended gamer experience, the current stage of development, and future refinement to continue game development beyond the submission of this thesis.

4.1 Čá·hu Development Process: Capturing the Essence of Nyuhtawé?e

A major design goal is encouraging those familiar with the Nyuhtawé?e to reflect deeply on their relationship with these territories. Achieving that goal required translating the essence of the falls into the gamescape. Nyuhtawé?e is a very powerful place, and people who know it should be able to recognize it in the game. For those who are not familiar with the falls, the game should provide a sense of that experience.

To advance my thesis' investigation about how digital media can be designed to strengthen human relationships to place, I developed a narrative that reflects the idea of reconnecting to land through the game's character, aesthetic, and interactive design. Once this general direction was established, the remaining details of the game (textures, objects, sounds, etc.) were created to help support these goals.

4.1.1 Previous Game Design Experience Inspires Current Methods

I have been creating media based on Skarù·rę? relationship with the Niagara River for nearly ten years. It has been part of my ongoing research and interest as a young Skarù·rę? man learning our traditional practices and seeking ways to personally engage with these practices. My learning of traditional practices happens in no small part through the process of game development.

Čà·wak (the sound of a fish- spear entering the water) was a small experimental game I made in 2017. It contained embedded video clips of Skarù·rę? people sharing their experiences of traditional spearfishing practices along the Lower Niagara River.⁹⁸ Visualizing the Lower Niagara River in that game, I modeled the land using a technique known as 'height mapping': using a topographic grayscale map of the Niagara River to create a 1:1 3D replica of the land along the river. I considered using the same technique for Čá·hu. However, creating a 1:1 scale map was too difficult to utilize in a game where walking is the primary mode of transportation as walking the land at 1:1 scale would take hours—the same in real life. This posed a problem because many players would likely only spend a few minutes playing the game. To overcome limited exploration of the "land," I chose, therefore, to scale the map down a 1:4 scale. Unfortunately, upon game testing, I found that the strong presence of the river was diluted by being four times shorter and four times narrower. I did not want to repeat this same mistake when I modeled the land in Čá·hu. In an environment where the land is key to the impact made by the game, *scale* is a huge factor.

The scale and detail in Čá·hu presented a new series of challenges. The experience with Čà·wak taught me that Čá·hu needed to have a very specific feel: the feeling you get when you stand at the brink of the Falls. Also from Čà·wak, I knew that the height of the land, from the top

⁹⁸ Wilson, Čà·wak, 2017.

of Niagara Falls to the lower river below, had to remain a 1:1 ratio in order to maintain a comparable perspective and impact as if the player was standing at the falls in person. But creating the map at a 1:1 scale would make the explorable area of the game far too wide for the anticipated amount of time I expect players to play my game (which is anywhere between 5 - 20-minute intervals). I also had to keep in mind that I am a design team of one and however large of a level I made, I would be the one to populate it all. I decided to keep the 1:1 height of the land, but shrink the length and width to 1:3. This way I maintained the awe-inspiring feeling you get while standing atop of the falls while still providing a manageable game space for players to explore in one sitting.

4.2 Early Adaptations from "Western" Modes of Gameplay

I did not intend to make a walking simulator when I started the thesis research-creation project. Originally, I wanted to create the opposite: 3D-platform 'collectathons' which had heavily influenced my experience as a gamer. Collectathon, short for 'collection marathon,' is a style of gameplay popularized in the 1990s with the rise of 64-bit consoles. Collectathons' core gameplay mechanism is the scavenger hunt, which makes use of a reward system that provides a sense of immediate gratification and centers the main player as the most important figure of the narrative. This model of gameplay conflicts with *Akunęsyè·ni?* teachings or values. Where the collectathon highlights the significance of the individual, *Akunęsyè·ni?* recognize all beings of this world and beyond as being of equal importance. Additionally, the collectathon often features an array of tropes intended to heighten the player's achievements and further distance themselves from their surroundings toward capital gains like exploitation of the game's environment, hoarding, and taking by force or trickery. The *Akunęsyè·ni?* worldview is based around a non-hierarchical relationship with the world around us and reminds us of this through teachings of humility, accountability, and reciprocity—far different than that of the traditional collectathon.

My objective was to make a decolonial intervention on the collectathon model to reflect *Akunęsyè·ni?* ways of knowing. The new mechanics I designed could then be 'reskinned', or customized, by other Indigenous game designers based on their own place-based knowledge. Initially I made progress with this direction by reskinning the collectathon model with *Ćá·hu*'s narrative, visual, and sound design. Unfortunately, I could not redesign the collectathon's core mechanics in a manner that aligned with the nonhierarchical relationship themes I wanted to establish. This led me to realize that what I needed to do was redefine what reward systems in game models like the collectathon could be. Such a redefinition required more than just repurposing the mechanics.

Reward systems in video games provide a player with feedback through validation or enticement which persuade players to continue playing the game.⁹⁹ These rewards maintain gamer interest, provide additional in-game abilities that progress the narrative, or gratify the player through simulated experiences. Khaled organized these validating and enticing "rewards" into one of two categories: diagetic and nondiagetic. Rewards are essentially "gifts granted to users within an application as acknowledgment for their effort, commitment, or skill, and can be put to use diagetically (i.e., within the application) or nondiagetically (i.e., in the material world)."¹⁰⁰ Khaled states that "Gamification, by design, merges with day-to-day life and often

⁹⁹ Khaled, "Gamification and Culture," p306.

¹⁰⁰ Ibid., p306.

asks players to adhere to certain rule sets and game dynamics that may well clash with their immediate cultural context."¹⁰¹ I experienced this dynamic as my attempts at repurposing the collectathon reward system kept resulting in outcomes that opposed my goals rather than supported them. As a novice game designer, I underestimated the polarity of diegetic and nondiegetic reward structures, especially as applied to the collectathon model. It became clear that before I could balance the diegetic and the nondiegetic rewards, I had to first develop a better understanding of the nondiegetic rewards structures and how they conflicted with reward systems like those found in a collectathon.

Barr suggested to me that because the Nyuhtawé?e landscape I modeled in the game space was so captivating and beautiful, I might want to consider a game mechanic where the player simply sits and observes the land. My initial resistance to this suggestion was based on my goal to adapt the collectathon model of gaming into an experience that is in dialogue with critical play—a goal driven by my bias that 3D-platformers were the core games that stimulated my gamer experience. In response to Barr’s suggestion, I reflected on different ways I had derived meaningful experiences from mainstream titles. I began to focus on specific occurrences when the game character engages with its environment simply by holding still. For example, in the popular collectathon, *Donkey Kong 64*, if the player stops engaging the controller and lets the character idle, eventually the character responds by humming a tune, performing a handstand, or playing with a passing butterfly.¹⁰² Time slowed and the character expressed a sense of humility and relationship with the land that felt real, serene, and natural. Amidst the insistent scavenging action of the usual gameplay, this suspended moment felt significant, explorative, and peaceful. I could see Skarù·rə? teachings reflected in such moments.

Patience is a virtue—though not in video games. The action of inaction, promoting patience, or waiting for things to happen is a mechanic rarely explored in video games. Experimental mechanics like these are more often found in indie games rather than mainstream games. When found in mainstream games, such inaction or 'waiting' is in support of another event. Many mobile and social media games incorporate real-time waiting mechanics like *Animal Crossing: Pocket Camp*¹⁰³ or *Farmville*¹⁰⁴ to lure players into in-app purchases or promote the sales of other games.

Lewis points out it “can be difficult to find moments of quiet, or periods of stillness, that allow one to process and contemplate all of the information received” within new media art and interactive work.¹⁰⁵ Writing with media technology developer Bruno Nadeau, he labels this ‘stillness’ as *inter-inactivity* in contradistinction to the more popular motion-oriented *interactivity*.¹⁰⁶ “Inter-inactive works incorporate both motion and stillness into their design, often using periods of action to lead users into moments of rest.”¹⁰⁷ Inter-inactivity is not to be

¹⁰¹ Ibid., p318.

¹⁰² Rare, *Donkey Kong 64*, 1999.

¹⁰³ Nintendo Entertainment and Development, *Animal Crossing: Pocket Camp*, 2017.

¹⁰⁴ Zynga, *Farmville*, 2009.

¹⁰⁵ Lewis, and Nadeau, "Inter-inactivity," in *Digital Arts and Culture Conference*.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

confused with ‘disengagement’ from media work; rather it is a term helpful in the discussion of using stillness as a mechanic for engagement. My hope is that *Čá·hu*'s performative action, or inter-inactivity, of listening and observing can help change that.

The inspiration for a game based on observation and exploration also comes from moments of gameplay where I would stop playing a game in a goal-oriented manner and just explore the levels of the game. In this way I was able to derive meaningful play out of triple-A titles in ways different than what the game narrative intended. These spontaneous moments of explorative gameplay were to some degree a practice of the Ha? Kanęherathęčreh—simply wandering and observing, appreciating the digital elements, beautiful landscapes, and characters present in each new virtual world. *Čá·hu* evolved into a walking simulator based on the same principals of Ha? Kanęherathęčreh, using environmental storytelling techniques to draw the player into a world created from a Skarù·re? perspective.

4.3 Programming Self-Determination and Capacity Building

Creating *Čá·hu* was a conscious act of Indigenous sovereignty, using a self-determined research-creation process from concept to design to production to distribution. As stated previously in the section “Self-Determination and Game Making,” this meant, in part, not hiring an external programmer. I needed to understand the technology with which I was working. I needed to know the technology’s capabilities in order to understand what I am capable of making with it. Understanding how technology operates opens opportunities to embed our ways of knowing into deeper levels of human-computer interaction. Both of these types of understanding increased my ability to shape the technology so that it better reflected my Skarù·re? perspective. If we as Indigenous peoples do not understand the systematic languages and capabilities of technology, how can we ever truly express self-determination in using this technology?

I also want to build up my skills so that I may bring them home and share them with the faces of my nation, both present and ever-coming, and with future Indigenous gamers globally. Finally, I want to remain in control of my creations so that I have the flexibility to update my work to either expand the experience or to port it to ever-advancing digital platforms.

4.4 Impact of COVID-19

In my final semester while writing the thesis and developing the game, the global Coronavirus (COVID-19) pandemic occurred, causing the Skarù·re? Nation, Canada and the United States to take cautionary measures. On the weekend I came home to Skarù·re? Kayetá·kreh to attend our closing Maple Ceremony, the United States and Canada instituted social distancing orders and closed down the US-Canada border, restricting access to essential travelers only. Up to this point, I had conducted the majority of my research from Tio’tià:ke (Montréal). I was lucky I brought my computer equipment with me that weekend and was able to continue my research remotely. Less than one week later, Concordia University announced the public closure of its facilities until safe measures could be worked out to access campus buildings. All department and lab personnel were sent home. This impacted my game development as I no longer had access to the studios and digital resources I intended to use in my production.

Working remotely from Skarù·re? Kayetá·kreh presented its own series of challenges. As a sovereign nation operating under our traditional government separate from the United States or Canada, we do not have the same privileged access to terrestrial internet sources as those living

off the territory. Everything has to be accessed via cellular modems. Supporting Skarù·rę? students and households with internet access is difficult with wireless internet modems struggling to maintain dependable net connectivity. Usual provisions by the Skarù·rę? Nation to support its citizens with data access were also interrupted during the COVID-19 pandemic as the facilities that housed public computers and wireless internet closed its doors to prevent the spread of the virus. I am one of the privileged few who can receive semi-stable internet access within the Nation territorial boundaries due to the fact that where I lived happens to have decent cellular coverage.

However, that coverage was semi-stable. For instance, while receiving remote assistance from my department's Computation Lab involving the exchange of large computer files, I regularly needed to park outside of our Nation's community center to wirelessly connect to their more stable internet. I had my own vehicle and my own laptop in order for this connectivity to be possible; not everyone had such resources available to them. In every technical blip that occurred within this new normal—whether the internet kicked out due to cloudy skies or rainstorms prevented me from setting up outside the community center—the realities of weak internet infrastructures had to be accounted for and worked around.

4.5 Čá·hu: A Walkthrough of the Game

The game opens with a cutscene presenting an aerial view of Nyuhtawę?e. A voiceover introduces the land as Nyuhčirę?e, or Tuscarora territory, outlining the history of dispossession, environmental devastation, and development that has affected these lands. It then describes how the game imagines the land: one of wellness where the Indigenous peoples from these lands are the ones who determine its use and its future. The voiceover then introduces the Skarù·rę? Nation, our relationship with the land and focuses on the sale of beadwork our women sold beadwork at the brink of the falls.



Figure 2. Aerial view of Nyuhtawę?e (Niagara Falls) in Čá·hu

The aerial view displays a wide river leading up to a series of large roaring waterfalls as seen in Figure 2. A large green island surrounded by smaller islands sits in the middle of the river, at the brink of the falls and merges into the gorge below. A bridge stretches halfway across the river, connecting a gray urban landscape along the riverbank, cutting through a small island, and continuing onto the large island. At a glance, the environment appears not too dissimilar from other aerial views: the player will see vibrant blue waters, foamy white waterfalls, green islands and grey cityscapes. Upon closer inspection, however, much more detail is revealed.



Figure 3. Wireframe Jitterbug wandering the urban, or 'stone' landscape

The cutscene transitions to a third-person view of the game's main character: a lone red wireframe of a Jitterbug, without any beads attached to it. In Figure 3, you can see the wiry body is easily lost amidst a chaotic urban landscape. The ground and each surrounding building are textured gray with calico cotton patterns, making it difficult to distinguish the end of one structure from the beginning of the next. Particles of sawdust debris cloud the open areas between the urban structures making it difficult to perceive distance. Without a clear horizon, deciphering one's direction is a tricky task. Even retracing steps made seconds before can prove a difficult task. As the player begins to navigate the endless maze, overbearing sounds of traffic, inaudible crowds of people, and cityscape noises saturate the ambience. Periodically, the Jitterbug will call out "Čá·hu!" in an attempt to see if anyone is around. The call is quickly drowned out by the cityscape. The player's visual and audible senses flood with havoc and the only break from the gray fortress is in the glimpses of blue sky resting above the landscape. If the player looks up at the right moment, they might catch sight of birds flocking overhead. A player who is lost can follow the birds as a guide to locate the way out of the maze. As the character moves toward the clearing leading out of the cityscape, the fog clears, the ambient noises dissipate. In its place rises a comforting hum of flowing water as the player comes to a bridge that crosses a large powerful river. Figure 4 demonstrates the wireframed Jitterbug approaching the clearing that leads out of the maze.

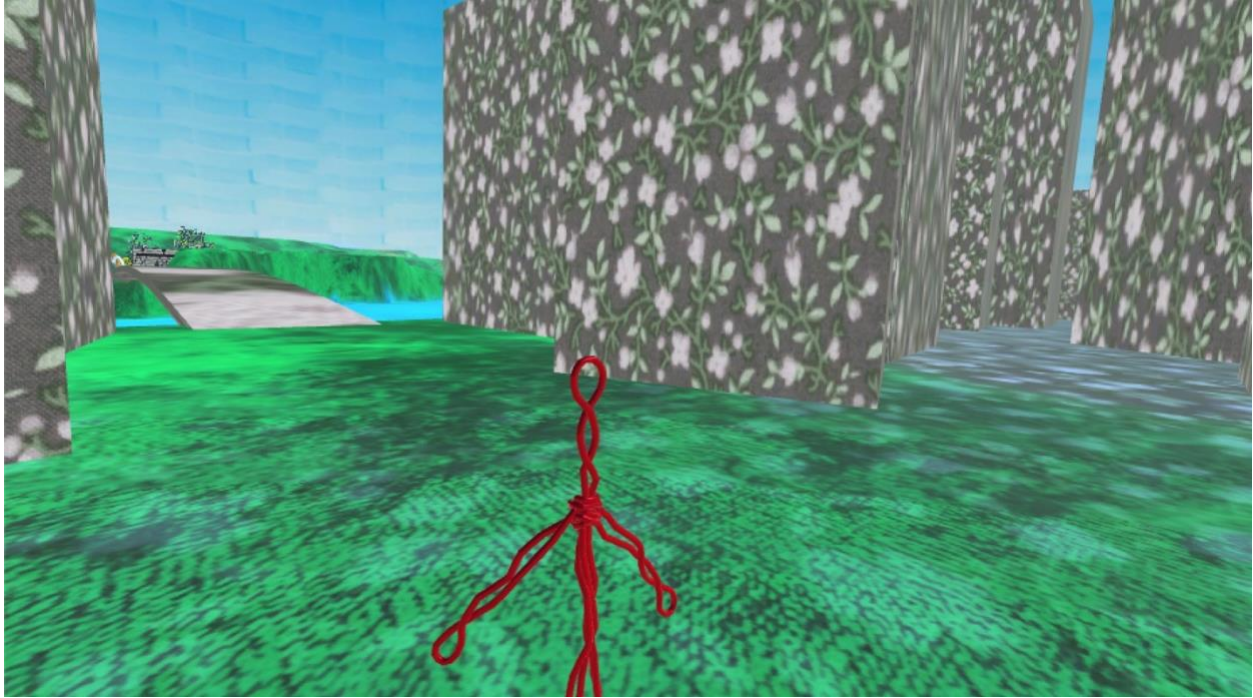


Figure 4. A clearing in the stone landscape leads to a bridge

As the player crosses the bridge and observes the clearing, they discover a colorful world of vibrant blue waters and green islands. It is at this moment the player will notice the textures of the environment are made of materials associated with beadwork. The river is made of blue seed-beads, the ground is made of crushed velvet, and the sky is imprinted with basket textures.

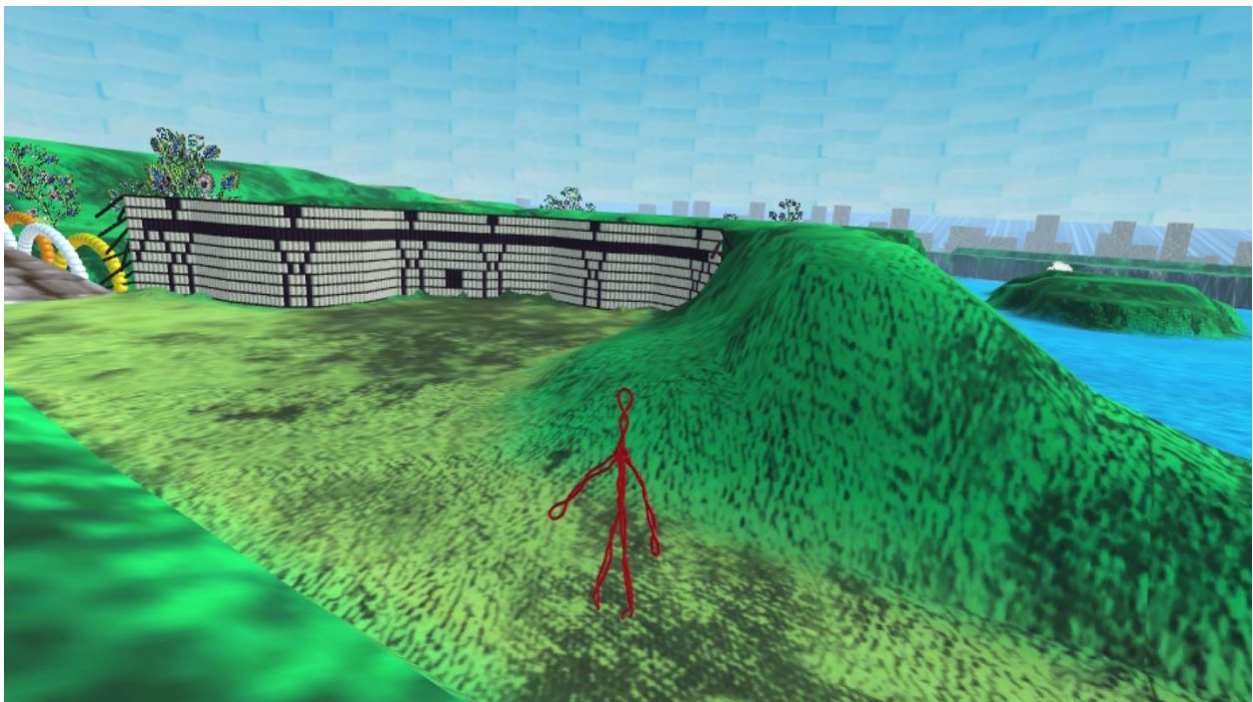


Figure 5. The Jitterbug finds the Akunęšyę-ni? Women's Nomination Belt

The bridge leads to a small island before continuing onto the larger island. While crossing the small island, the player finds a large wampum belt, shown in Figure 5, standing taller than the Jitterbug character itself. It is the Women's Nomination Belt of the Akunęhsyę·ni? Confederacy¹⁰⁸. Portrayed in the belt are six female figures locking arms that look to be protecting a house-like structure that sits between them. As the player approaches the belt, the Jitterbug calls out "Čá·hu!" At that instant a figure from the wampum belt animates and pops out of the belt to greet you. It is a beaded woman made of wampum, an ancestral being to the Jitterbug. She introduces herself as Skarù·rę? (Tuscarora) and welcomes the Jitterbug to Nyuhčirę?e (Tuscarora Territory):

“Čwé·?n ahské·nę hę? nya?nè·ru! Hello my friend! Welcome to Tuscarora Nation territory. We call this place Nyuhtawé?e, home of the Thunderers. It is the home of many beings! If you listen and observe, you may just hear them. If you call out to them, they may just respond.

The two bridges seen from this vantage point go to different places. The path you choose is up to you. There is plenty here to learn from. Be patient. Observe. Listen. When you feel you have learned enough for today and are done exploring, give thanks to each of these beings for sharing this space with you, and please come back whenever you wish. Eθké·?ke?! Until I talk with you again!"

¹⁰⁸ Haudenosaunee Confederacy, *Women's Nomination Wampum Belt*, ca 1800.

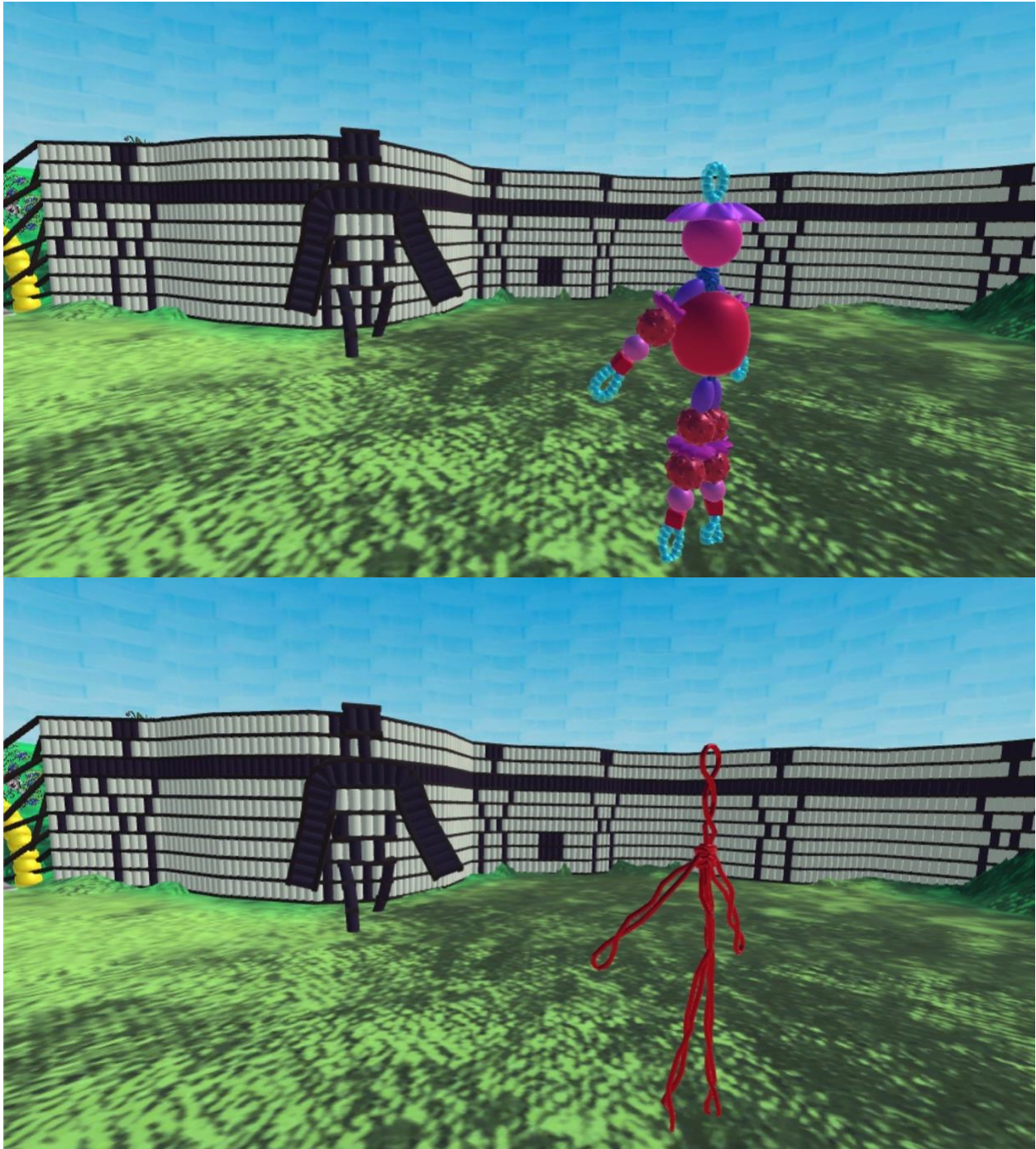


Figure 6. Transformation of the Jitterbug

The Wampum Figure returns to her position in the wampum belt. At this moment, the player's character transforms from the red wire frame to a fully beaded Jitterbug, with a beautiful array of colors, multiple shapes of beads, a crown-hat and a shiny wiry core. Figure 6 demonstrates the before and after state of the Jitterbug following its transformation. If the player were to return to the side of the river where the cityscape is, the player would change back into the bead-less red frame it started as. If the player chooses to stay, or should the player continue to the green side of the river, the character will continue as a transformed fully beaded Jitterbug.



Figure 7. Bridge leading to the beaded island.

As the player steps toward the large island as shown in Figure 7, they will see a world filled with beautiful beaded trees, flowers, birds and other natural life. The plants and animals are all made of beaded designs. Each design is a style of Skarù·rę? beadwork. This is not explicitly told in the game's narrative but can be inferred by the figure from the wampum belt introducing this place as Nyuhčirę?e, Skarù·rę? territory. There is much to explore on the island. The colorful illustrations of nature feel as familiar as they do unique. Birds made of beaded felt fly overhead and can sometimes be found gathered in flocks on the ground. Bright beaded flowers line the paths throughout the island. There are even patches of beaded strawberries that the player can walk through and eat! As the Jitterbug rummages through these patches, the character makes mouth crunching noises and says "nyà·wę wí·set," meaning thank you strawberry. From any given location on the island, the river can be heard filling in the ambience of the island along with the singing birds. The waterfalls are powerful and when you get close you can hear their thunderous roll and understand why it is known as the home of the Thunderbeings.

While exploring the land, if the player stops to observe something, the Jitterbug may call out "Čá·hu!" and listen for a response. If the player is not patient enough to wait for a response, nothing will call back. But if the player waits patiently without moving, various beings will call back introducing themselves in the Skarù·rę? language and then translate what they said into English. For example, if the player patiently waits by the strawberry patch and calls out "Čá·hu," as shown in Figure 8, a voice representing the strawberry appears and says "kiáθe wí·set! I am called strawberry!" The player can explore and call to many "beings" throughout the entire beaded island including, the strawberries, birds, flowers, trees, the waters and the Thunderers. A player's continued observation and location of each being, as well as the being's response and exchange of Skarù·rę? language is a symbolic transmission of knowledge representing the coming of one mind and the place-based knowledge each of these beings hold in the real world. This acknowledgment of each other as co-inhabitants of Nyuhtawę?e is a teaching directly derived from the Ha? Kanęherathęčreh. If one is not patient and never waits long enough

to hear the knowledge these beings offer, then one is not really of one mind with their co-inhabitants. The gameplay continues this way until the player decides to conclude their gaming session by giving thanks as the wampum figure taught the Jitterbug to do.

4.5.1 State of the Game at Time of Thesis Submission

The above walkthrough reflects the script of the game. Not everything in the script has been fully implemented, but plans are in place to complete the game within the year. Most of these features described in the walkthrough are complete while some interactions like the call back mechanic are only partially developed. The game does not yet have an official ending because I am still determining a conclusion that satisfies the narrative while making it clear that these teachings should continue beyond the game. The end state of a video game is a significant moment between player and narrative where the player chooses to either leave the gaming experience behind or to reflect on their gaming experience as they carry on with their day. My goal is to design this transition from game to reality, so that the teachings in the game bleed into the player's real life to engender an understanding of how the Indigenous knowledge in the game applies to the real world.



Figure 8. The Jitterbug finds a strawberry patch

4.6 Čá·hu Design Discussion: A World Rich with Metaphor and Meaning

4.6.1 The Narrative

The game's narrative is designed to have numerous interpretations that reflect how individuals have their own connection with their surroundings. I wanted the narrative to embrace these individual relationships. The most obvious way to read it is that a Jitterbug person who is disconnected from the natural world seeks to find its way back to it. The origin of the character and the reason why the narrative begins in the chaotic landscape is not specified in the game,

leaving it up to the player to infer their own meaning. This is designed so that the narrative can accommodate the multitude of origins of each person that occupy these real-life territories. There is very little nature in the gray landscape; however, remnants of nature can be seen in the lingering sawdust debris, the floral calico patterns, and the birds that fly overhead. These small details are meant to communicate that a natural environment did exist in this landscape at one time, but it has now become a disorienting maze. The island across the river represents the “future imaginary” as a recovered relationship to the natural world and establishes that the Jitterbug character is somehow related to this land because they are both made of similar beaded materials.



Figure 9. The Jitterbug walks a greener path

4.6.2 *The Path*

Although the character begins in the gray landscape and moves to the beaded landscape, the bridge and river represent a place between these worlds. This can be interpreted as a metaphorical rendition of teachings in the Akunęsyę·ni? Two Row Wampum belt¹⁰⁹. The Two Row Wampum Belt depicts two rows of purple beads in parallel with one another against a white background, representing two non-intersecting entities. The interpretation of these paths states that one row represents the path of the settlers and the other row represents the path of the Akunęsyę·ni?: these paths shall travel alongside each other in the same direction but never intersect, symbolizing a peaceful understanding that neither shall interfere with each other’s way of life. From this teaching comes the idea that one cannot travel on both paths at the same time, but that one path must be definitively chosen. If one does not definitively choose a path, then like having ‘a foot in two canoes,’¹¹⁰ you will eventually fall into the water.

¹⁰⁹ Haudenosaunee Confederacy, *Two Row Wampum Belt*.

¹¹⁰ Haudenosaunee metaphor

Although invisible boundaries in the game prevent the Jitterbug player from falling into the river, the space between the gray landscape and beaded landscape represents an in-between state of being where a definitive path, or way of life, must be chosen in order to advance in the game. The path chosen by the player leading to either landscape on either of the river is reflected in the transformation of the Jitterbug as it enters that chosen environment. The Jitterbug shown in Figure 9 is walking a path in the beaded landscape, and because it chose this path over the gray landscape, the Jitterbug is beaded to reflect its connection to that particular land.

4.6.3 The Transformation

There are two moments of transformation that occur in the game: when the wireframe transforms into a beaded Jitterbug as it crosses into the beaded landscape, and when the beaded Jitterbug transforms into the bead-less wireframe as it makes its way back into the gray concrete or 'stone' landscape. Each transformation represents several things.

The 'wireframe-to-bead' transformation can be viewed as an enlightening experience of the Jitterbug as it gains knowledge following its interaction with the wampum figure. It also represents general themes of growth and the willingness to learn. The colorful shapes of the beads that make up the Jitterbug's body also represent the general tenor of the Jitterbug's blooming connection with the land.

As the Jitterbug makes its way back to the gray stone landscape, the 'bead-to-wireframe' transformation will vary in interpretation depending on how the player reads the character's initial transition into a beaded Jitterbug. Transforming back into a wireframe, unlike the enlightening experience of the wire-to-bead transition, inversely symbolizes a lack of consciousness. This interpretation can range from themes of neglect, ignorance, a loss of place-based knowledge, or general disconnection from land. It can also be seen as a tactic adapted by the character with the logic that if the character was smaller it might have a better chance of navigating through the tight areas of the stone maze. The red color of the Jitterbug's core frame stems from the Akunęhsyę·ni? practice of painting wampum belts red during times of war. This visualization of the Jitterbug's frame is to allude that the character is at least in part, at war with its environment; reinforcing that the bead-less Jitterbug is not at peace so long as it remains disconnected from the land.

These transformations are designed so that the player can infer one of these many interpretations for their self, based on how they choose to play the game, which paths they choose to follow, and their personal context upon entering the game. Although the player is free to choose whatever direction they want to go, the path that advances the game is the one from the stone landscape to the beaded landscape.

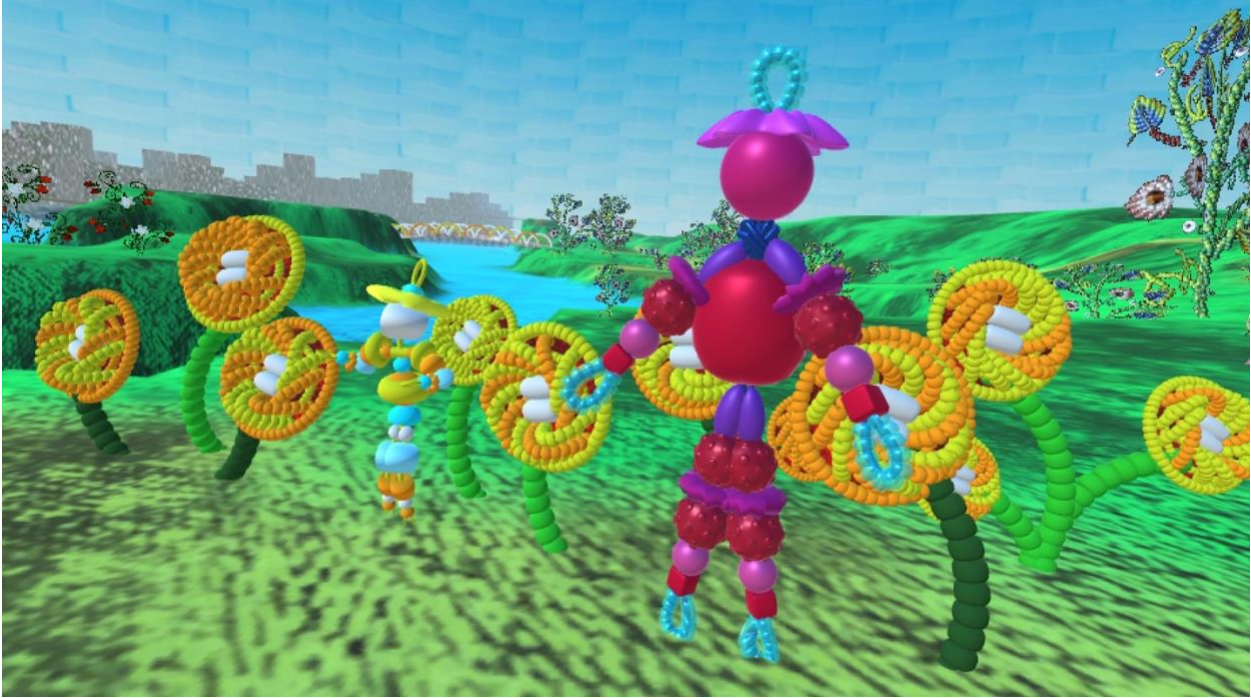


Figure 10. The Jitterbug meets a young Jitterbug in a patch of sunflowers

4.6.4 Transitioning Beadwork to Digital Spaces

One of the complexities of transferring the abstract designs of Skarù·rę? beadwork into a virtual environment was that many beaded designs have preexisting meanings and interpretations. In the design process I had to consider how the transference of beadwork into digital spaces alters the purpose and meaning of each of those designs and consider how removing it from its original context might change that meaning.

Populating the island with beadwork required a slow, patient process due to my desire to represent Skarù·rę? beadwork accurately. Interpreting the abstract meanings in beadwork is not a knowledge I grew up with. I had to sift through community and scholarly sources in search of details regarding specific designs in order to understand each design within each beaded object before I could decide how to accurately adapt it into a digital space. I also created my own contemporary designs, a much faster process. But if the new designs are to be recognized as distinctly Skarù·rę? (and not other forms of Akunęhsyę̀·ni? beadwork) I must also incorporate patterns of beadwork established by the Skarù·rę? faces that came before me.

This beading research took considerable time. An analogy is this: imagine if, in other game productions, in order for level designers to create and place a 3D model of a tree into an environment, the designer first has to understand what kind of tree it is; what the specific properties of the tree are; whether or not there are cultural teachings about the tree's bark that would support or conflict with the game's meaning; what makes this tree distinct from similar trees; what is meaning in the colors or shapes of the leaves; etc. The research and skill required to create each tree as a one-person team considerably lengthens the production timeline.

The expertise and high quality of Skarù·rę? beadwork is well known.¹¹¹ I acknowledge the skills of the women from my nation by using their ‘raised beadwork’ style in my environment design. This raised style is different from the majority of beadwork on the North American market, which is ‘flat work.’ The distinctive Skarù·rę? style is more difficult to emulate in a digital setting due to the complexity of differential bead patterns. I modeled a few 3D digital pieces in the Skarù·rę? raised beadwork style which are included in the game and quickly realized that modeling flat beadwork would have been much easier.

4.6.5 *Dual Realities, Coinciding Worlds*

One of the most intriguing concepts represented in Skarù·rę? and Akunęhsyè·ni? beadwork is the idea that two worlds exist at the same time; the lived world and the spirit world. There are various beadwork designs that capture this idea, like the ‘double-curve’ pattern seen in some Akunęhsyè·ni? beaded skirts.¹¹² Although I have not transferred these designs directly into the game environment, I have translated these concepts into the game space in my own way.



Figure 11. The Jitterbug observes the land and sky

The texture of the sky is designed to resemble the texture of an ash basket, which can be seen in Figure 11. This is derived from how Skarù·rę? women often transported their beadwork, as seen in early photos of Skarù·rę? women selling beadwork at Nyuhtawę?e¹¹³. They carried their items in a basket made of black ash tree. By texturing the sky of the video game world to

¹¹¹ Gordon, "The Niagara Falls Whimsey," 1984; Phillips, *Trading Identities*, 1998; Rickard, "Caw Cew Ete Haw I Tih," in *Partial Recall*, ed. Lippard and Benally, 1992.

¹¹² *Leggings, Wearing Our Identity*, 1800-1825.

¹¹³ Notman, *Tuscarora Women Selling Curiosities*, ca 1860.

resemble the black ash basket, I tease the idea that not only are these beaded traditions still being carried by our peoples, but in fact this “Jitterbug world” we interpret as digital, exists in parallel to our own lived world. If the land we know s Nyuhtawé?e exists here in our lived world, the environment in *Čá·hu* is an interpretation of how the Jitterbug people experience Nyuhtawé?e in their world—parallel to ours—inside the ash basket.

4.6.6 Hearing *Čá·hu*

The ambience in *Čá·hu* should reflect the real-life ambience of Nyuhtawé?e. Sound is a critical component to induce such immersion. The sounds you hear throughout Nyuhtawé?e in real life are the peaceful hums of rapids, thunderous waterfalls and singing birds. I made many listening and sensing trips to visit Luna Island and the Bridal Veil Falls. The thunderous roar of the river at this point is louder than any other place you can safely access from atop the waterfalls. *Čá·hu* attempts to simulate this aural experience in the game world. As the player stands in the game version of Luna Island and approach the waterfalls, their ears rush with the sound of heavy waters.

I wanted the sounds in the urban environment to resemble the overbearing and never-ending ambience of urban development. Even in rural locations like Skarù·rə? Kayetá·kreh, the hum of vehicles can always be heard. I never noticed how loud traffic was around Skarù·rə? Kayetá·kreh until I tried to record songbirds for the game. The background noise of traffic never seemed to stop, even from hundreds of yards away.

4.6.7 Additional Metaphors and Meanings Throughout the Game

The textures that make up the game world are sourced from materials associated with Skarù·rə? beadwork. The surface land is made of crushed velvet, which is a common fabric onto which beadwork is sewn. The stone surfaces are made of various calico patterns inspired by the cotton fabric patterns that often line the inside of beaded objects like purses and squeeze boxes.¹¹⁴ The gorge is a split or opening in the earth’s surface, and I use calico cotton textures to represent its stone, concrete, and inner-Earth surfaces.

The player will notice that the first bridge they come across is made of the same repetitive calico texture as the urban environment, but it looks different because the scale of the texture has increase in size, allowing the player to see the texture from a different perspective. This represents how the act of stepping out of an environment gives you an alternative perspective on that environment, providing further insight into that space. The second bridge that leads the player to the beaded island however is textured to look like grayish white beads, hinting at the idea that these beads are steppingstones. The juxtaposition of ‘repetitive textures’ and beaded ‘stepping stones’ on each bridge represents a transition from one way of living to another: from a perceived state of chaos to one of clarity, or vice versa depending on the chosen path of the player.

The waters of Nyuhtawé?e are made of beads and the mist rising from those waters are made of cotton. The river was originally textured to look like silk fabric until one day, while making jitterbugs in real life, I filled a container with blue seed beads and realized the beautiful natural texture of the beads was what the river should look like. I snapped a picture to use as the

¹¹⁴ Squeeze boxes are handheld three-sided containers crafted from fabric, cardboard, and beads that require a squeeze-like motion to open them.

river's texture. The falling waters are photos of strung beads that naturally look like waterfalls. The rising mist, made of frayed fabric particles, recalls the remnants of fabric and cotton thread that rises and settles over a beadworker's workstation like mist covers the land of Nyuhtawé?e.

The sawdust fog in the stone landscape represents the air pollution from nearby garbage facilities as well as how the natural site was disrupted in the making of the current landscape, leaving behind only traces of what once was. Sawdust was traditionally used to fill beaded pincushions, as it kept the point of the needles sharp. As cotton filling became more widely distributed and financially available, it eventually replaced the sawdust in contemporary beadwork.

The birds that fly overhead represent messengers. In our culture we view birds as symbolic messengers for numerous reasons. They sing and give thanks in the morning and at night, reminding us to be thankful for all beings around us. I grew up with this perspective and am still learning all that it means. Birds are illustrated throughout raised beadwork patterns, and in fact have their own category of beadwork: beaded pincushion birds, often sewn with berries dangling from their beaks. Beaded pincushion birds of various designs are present throughout the island, each made of felt and beads.

The birds that fly over the urban landscape were inspired by my experience living in Tio'tià:ke while pursuing my master's degree. It was my first time living in a city, and I constantly felt disconnected from the land. In the endless horizon of concrete buildings distorting my vision, the birds that flew overhead and sang outside my apartment window were the only part of nature around me that felt free. On stressful days I looked to the birds and thought about home, sometimes marveling at their freedom to fly between the urban and natural landscape. For this reason, I included them in the game so that the player who gets lost in the stone landscape can look to the direction the birds fly to find their way to nature.

The distorted horizon line and cluttered vision amidst the stone landscape was also inspired by my experience in Tio'tià:ke. Coming from Skarù·re? Kayetá·kreh—a place of heavily wooded environments, nature, spontaneous animal life, and deep green forests and fields—the concrete buildings, sidewalks and asphalt roadways seemed like the antithesis of what I had grown accustomed to. I felt disoriented whichever direction I turned; it was difficult to locate the sun; the trees along sidewalks were cut down if they grew too large; the flowers were constrained to patterns in pedestrian areas. Everything I was used to seeing in nature was curated, and each city block began to blend into the next. Tio'tià:ke, or perhaps its more fitting name in this scenario—Montréal—seemed to me as disorienting as a maze of calico. The stone landscape in the game was designed to be nauseating and reflect this disconnected experience. I purposefully made the texture of the building-like structures match the texture of the ground in order to disrupt the perspective of the player. Overall, I wanted this concrete, maze-like landscape to evoke feelings of alienation and disorientation similar to what I had experienced.

I want to clarify that although this was my experience as a first-time city dweller, this is not my lasting impression of Tio'tià:ke. It is an absolutely beautiful land, as all Akunęhsyè·ni? territories are; however the overwhelming city development made it difficult for me to perceive its grandeur. I am thankful for this experience as it pushed me to think more critically about each design decision in *Čá·hu* game, especially concerning the textures of each object.

In a game space, the *texture* of an object can be just as significant as the *form* of the object. Each aspect communicates important information which influences the overall experience of the game. The gamer experience impacts the way a player reflects on the narrative and teachings embedded in the game and ultimately impacts the effectiveness of a player's decision

whether or not to carry these teaching with them into the real world. Through this chain reaction it becomes evident why even the smallest of details like textures are so crucial to the overall impact of the game.

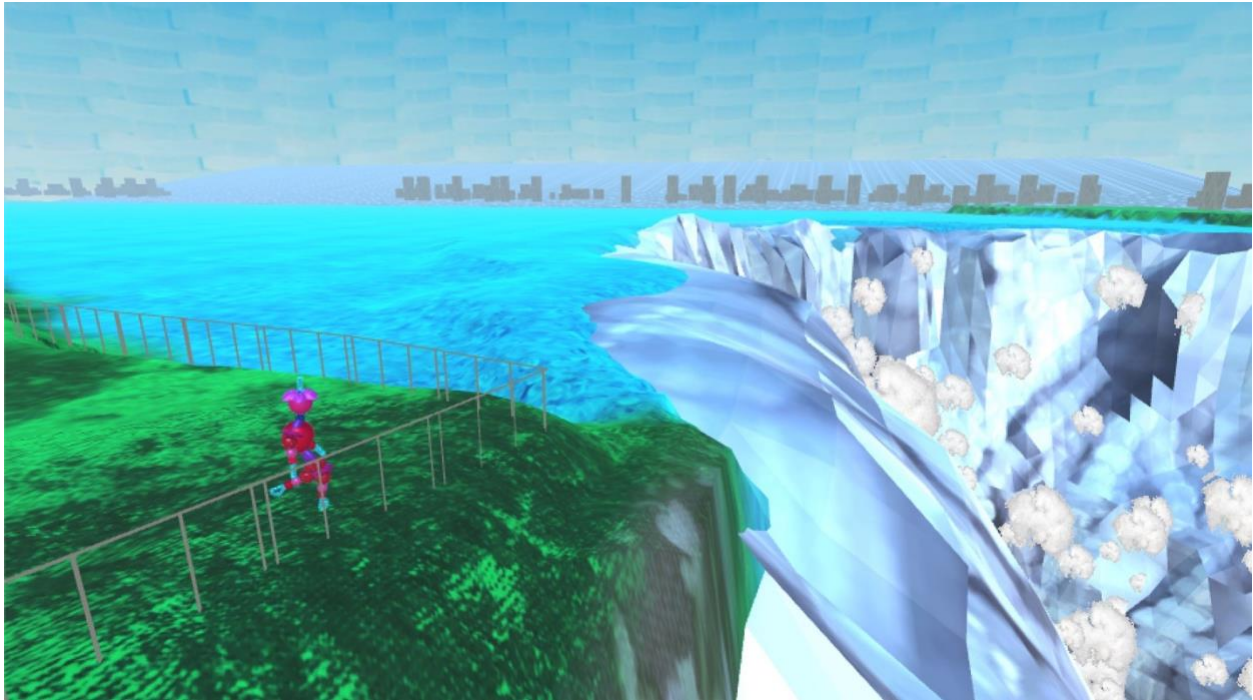


Figure 12. The Jitterbug listens to the thunderous waterfalls.

4.7 Future Production

At the time of submission, I have programmed the core mechanics into *Čá·hu*'s gameplay. However a few remain to be implemented in the fall of 2020 (after the submission of this thesis). Updated tasks include making the game's soundscape more interactive so that the player can experience words and phrases of the Skarù·rę? language as they are contextually located throughout Nyuhtawé?e; updating all game assets with original Skarù·rę?-crafted and -owned content; and animating additional features like flowing waters, waving grasses, swaying trees, and interactive animal life. Additionally, as mention in the design section, the scale of the land is at a 1:3 scale. I plan to one day rebuild the landscape in a virtual 1:1 scale to witness how a precise replication of the land will impact the experience and player relationship to the land.

Before such ambitions can be realized, I hope to get *Čá·hu* into a playable state so that I can host playtest sessions with people of my nation. Due to COVID-19, I was not able to host such sessions, which I think would have significantly impacted the outcome of the game. I was planning on facilitating discussions around the game's purpose and incorporating ideas and tester-feedback as a method of participatory design.¹¹⁵ During some of the game testing conducted with Skarù·rę? youth on my previous games, their feedback had a huge impact on the final game. I expect the same will occur with this game as well—a welcome reminder of the need for digital humility. I spent the better part of two years designing and programming a video

¹¹⁵ Khaled and Vasalou, "Bridging Serious Games," in *International Journal of Child-Computer Interaction 2*.

game, but if my community, the Skarù·rę? Nation, calls for it to change, it is my responsibility to accept this criticism and try again.

I would like to distribute this game using app stores so that it will be playable on personal computers and mobile devices. Ideally, I would like to privately release the game to my Skarù·rę? audience before releasing it to the general public, however the use of public app stores seems like the most effective method available right now to distribute the game. Still, to accommodate desires to have a private Skarù·rę? launch, I will host a launch party to download and discuss the game with Skarù·rę? Nation citizens.

4.8 Reflections

4.8.1 Beading is a Patient and Humbling Process...Even Digitally

As game production on *Čá·hu* continues, I reflect on one of the gameplay's core motifs, which encourage the embodiment of patience and humility. I find I am discovering these virtues for myself in the process of designing and embellishing the digital landscape. Particularly when delving behind-the-scenes into the world of Skarù·rę? beadwork, I am forced to confront the simple but significant fact that I am not a beadworker, and my experience with beading is very limited. When I began this project, I was already familiar with the distinct raised style of beadwork established by Skarù·rę? women and the fact that our people sold beadwork to tourists at Nyuhtawé?e. Additionally, like many other Skarù·rę? children, I too made Jitterbugs with my mother when I was young. Seeing as that was over 20 years ago now, I found myself having to relearn that physical process of constructing a Jitterbug before I could dive into creating a digital one. Beyond that, the metaphors and teachings of resiliency and transformation embedded in the Jitterbug are life lessons that I have never forgotten. Engaging with these lessons through beadwork practices guided the design process and taught me a deeper understanding of Skarù·rę? knowledge and culture. Capturing and translating that same experience into the game through the digital transformation of beadwork, however, continues to be a humbling and patient process.

Embellishing *Čá·hu*'s landscape with Skarù·rę? beadwork is not a task that can be rushed, and in fact, having the patience to ethically source and create accurate and appropriate bead patterns is the most difficult part. As I stated, I am not a beadworker. I do not have the skills required to create beadwork, or at least not legible or pretty beadwork. Therefore, I basically have two methods of obtaining digital beadwork to fill out the landscape. I can create 3D models of beadwork and I can produce 2D graphics from photographs of beadwork. Each method comes with its own orchestrated courses of action.

As a one-person team, modeling 3D renditions of beadwork takes a lot of time, but I am slowly working to find shortcuts that speed up the process. This is an effective and visually stimulating method of filling out the landscape, however the 3D models lack a certain luster that photographs of real beadwork maintain. While modeling 3D renditions of beadwork can be done on my own, obtaining photographs of actual beadwork requires me to reach out to others who possess and create beadwork. This is a much more involved process, not strictly due to time and physical limitations, but each beadwork is a work of art; each has its own world of complex figurative and metaphoric illustrations and this production of beadwork is still exercised as an economic strategy to combat colonialism. This means that using an image of someone else's creative intelligence and labor requires a lengthier process of relationship building, reciprocity, negotiation, accreditation, and in some cases, compensation. For me to incorporate an element or entire piece of beadwork in my game that someone else created means that I am incorporating an

entire system of someone else' vision, creation, collection, and quite likely their financial plan. If I am to ethically obtain and utilize anyone else' work as part of my practice, I must embrace this lengthy and patient process as a humbling experience—a process of design that all media makers benefitting from Indigenous knowledge should employ.

For now, the 2D graphics that makeup the landscape are uncredited placeholders taken from basic internet searches of Akunęhsyè·ni? beadwork. These placeholders aided my design process as a method of rapid prototyping and were included an initial test to see if this concept would work as a video game. These graphics will be replaced with ethically-obtained credited Skarù·rę? beadwork and original content before the game is publicly launched.

Rediscovering Skarù·rę? beadwork has been an unexpected driving force in creating *Čá·hu* and drew me into the roots of beading practices. Throughout this process I frequently found myself discussing beadwork with Skarù·rę? women back home who lent their thoughts and pointed me toward other sources. I also found myself examining several accounts of Skarù·rę? beadworkers and beading practices in books, articles, dissertations, blogs, artist interviews, archived photos, social media, exhibits, boutiques, online auctions, and recent beadwork innovations. I've only been able to demonstrate *Čá·hu* a few times to individuals I happened to run into during trips home. They have responded with positive feedback and wonder in observing these familiar beings now animated in a video game. If I am lucky, sharing my work strikes up a story or two about their experience and memories with Skarù·rę? beadwork.

4.8.2 Critical Considerations in Representing Nyuhtawé?e as a Video Game

The safety measures we take in real life when engaging with Nyuhtawé?e, must be reflected in the game space. Rendering Nyuhtawé?e as a 3D interactive digital landscape means that we must also render knowledge practices that are imperative to our ongoing respectful coexistence and well-being when engaging with such places. This is particularly important considering the incredible force of the waters that flow through Nyuhtawé?e. Although *Čá·hu* is created from a Skarù·rę? perspective, safety protocols must be heeded by Indigenous and non-Indigenous people alike in both the digital landscape and the living landscape.

Although *Čá·hu* is a virtual space, it is still a place where real knowledge can be attained and applied. A palpable example of this is how the player engages with Skarù·rę? language throughout the game. The player learns Skarù·rę? words and phrases and how speaking this language is practiced within the landscape. This practice of language knowledge continues into our lived experiences beyond the game. For those who are not familiar with these words, this game may be their first experience engaging and exercising the use of this language. The same is true for the way in which we take precaution when approaching the waters of Nyuhtawé?e. It is our understanding that the river is a powerful being and must be treated with its due respect. Its large and forceful waters present potentially harmful conditions, and if we are not careful, these conditions could turn life threatening very suddenly. To ensure that players understand the vital importance to keep their distance from the river's edge and are to never go into the water, invisible borders are being placed in the game that prevent the player from purposefully or accidentally falling into the river or into the gorge of the lower river. In other words, the digital landscape in *Čá·hu* is designed to prevent the player from entering into any conditions that may be harmful to themselves. The hope is that even players who are not familiar with the understanding that these waters are life-threatening, will embody a sense of keeping safe distance from the waters when engaging with Nyuhtawé?e, either in the game or real life. Bluntly stated,

the Niagara River is dangerous and without proper attention or care, getting too close to the river could have fatal results.

For some, this unfortunate scenario is a reality, and there are people who have lost loved ones to the force of this river. With this understanding, I did not want to create a space that could be potentially triggering for those who may have traumatic experiences or memories associated with Nyuhtawé?e. It occurred to me that I could implement a game mechanic where if a player were to enter the water for whatever reason, the player would simply be placed back onto the land as if they had never done so. The act of a video game character reappearing in this way is known as ‘respawning.’ This is a mechanic that is commonly used in western modes of gameplay where killing, death, loss of life, and failure are key components to the main aspects of the game. I perceived such a mechanic as conflicting with Skarù·rę? worldviews that advocate futurity, but also potentially triggering if I were to program it into Čá·hu’s gameplay. I do not want this game to be a trigger for anyone, regardless of their memories and experiences associated with this place. Čá·hu is about imagining a healthy future for all beings, and with the right precautions in game design, for some this game could potentially be a space of healing.

4.8.3 Spiritual-Digital Spaces and the Responsibility of the Designer

A player’s engagement with a digital space like video games is essentially a player forming a relationship with the places, beings, and knowledge represented in that digital space. A player’s learned perspective and way of knowing that space is dependent on the protocols, aesthetics, narrative and actions that have been embedded into that space for the player to interpret. Although each player derives their own meaning from media like video games, the game design is ultimately the driving influence in a gamer’s experience. What this boils down to is that, fundamentally, it is the game designer’s responsibility to ensure the game design best reflects the goals of the game in the most effective, ethical, and attainable way possible.

How places, people, and knowledge are represented in video games influences a player’s actions and responsibility to that gaming world. Consider a game where the objective is to mine lands seeking elements for a player’s own capital gain. That player would develop a very different relationship with the game’s landscape versus if that same game’s objective were to restore lands with plants that best support a healthy ecosystem. If a player was to engage in the video game where mining and capital gain are the main objectives, the player’s actions would likely result in less responsibility taken to question what is best for the land. Whereas, if the player was to engage in the video game where planting and restoration are the main objectives, the player’s actions are centered around taking responsibility for the land to ensure the land’s longevity.

A player’s understanding of a video game landscape is derived from the persuasiveness of the game’s design and how that player is encouraged to interact with that landscape. Čá·hu encourages the player to interact with the lands, waterways, airways, and beings inhabiting Nyuhtawé?e in a manner that demonstrates thankfulness and humility. Building the game mechanics, aesthetics, and narrative based on Skarù·rę? and Akunęsyè·ni? ideologies establishes a form of gameplay that can seamlessly merge into our daily lives—blurring the boundary between real and virtual environments.

The virtuality of computer-generated simulations, whether it be video games, mobile apps, websites, or any other form of digital media, can be designed to perpetuate Indigenous ways of knowing, in ways that are inseparable from our lived realities. If we design these simulations to function in a way that reflects Indigenous philosophies and ways of knowing,

these digital interfaces can essentially become alternative methods of practicing and engaging with Indigenous knowledge. In the very least, digital media is a tool that can help maintain the survivance and resiliency of Indigenous ways of knowing. The goal then is to design media in a way that encourages players to carry this knowledge forward into our daily lives beyond the digital interface toward Indigenous resurgence.

Engaging digital media is a tangible as well as a virtual experience. The physical existence of the digital worlds and objects we develop within them may not be tangible, but our interactions and experiences with these illustrations are. The virtuality of computer-generated simulations, whether it be video games, mobile apps, websites, or any other form of digital media, can be designed to perpetuate Indigenous ways of knowing, in ways that are inseparable from our lived realities. Calling back to Leroy Littlebear's notion of *spirit* as well as the Skarù·rę? and Akunęhsyè·ni? 'double-curve' beadwork depicting the coexisting *lived world* and *spirit world*, perhaps it is accurate to refer to these digital media as a 'spiritual-digital' space. Digital forms of media aren't usually associated with spirituality, however in Skarù·rę? and Akunęhsyè·ni? ideologies, they are inseparable. Contextualizing spiritual-digital spaces as coexisting with our lived realities may help us as game designers and media makers develop an understanding that it is our responsibility to create ethical, meaningful, and critical components to our lives through gameplay.

Conclusion

Young Indigenous/ Skarù·rę? people do not immediately associate digital technology with tradition; however, both are critical aspects to our lives. The combining of virtual environments with the place-based knowledge and ways of knowing of my own Skarù·rę? Nation has fueled my examination of how digital media can be designed to strengthen human relationships to place. I wanted to open up a space where Skarù·rę? youth's engagement with media, specifically video games, becomes synonymous with our traditional knowledge. By informing the game design with aspects of the Ha? Kanęherathęčreh (Thanksgiving Address) which instructs us to be thankful for creation and all beings of the land, the game provides an opportunity for me to tease out the relationships between learning/expressing core teachings like humility and the use of digital technology.

Many of our Akunęhsyę·ni? teachings are expressed through recited speeches in our Ękwehę·we (Indigenous) languages. Over the past five years, I attended the Recital of the Great Law of Peace several times and left feeling frustrated by the difficulty of transitioning these teachings into our lives today. The recital takes place primarily in Mohawk, Cayuga, and Oneida with short English interpretations. As an English speaker, the message was in a form I couldn't understand. Although I would sit and 'listen' as instructed by the speakers, I kept asking myself how I could understand the message without first knowing the language? Without the language knowledge, is the recital practice of the Great Law or even the Ha? Kanęherathęčreh, becoming merely rhetorical? People recite it, but do not embody its intended meaning of gratitude, humility, and responsibility. By transforming an aspect of this traditional teaching into a game space I have attempted to activate this knowledge via game mechanics, aesthetic-design and interactivity. Čá·hu embraces the understanding of our traditional practices as tied to land and responsibility to place, while strengthening our knowledge of the Skarù·rę? language.

The Ha? Kanęherathęčreh is about practicing the tradition of patience and knowledge observation. It reinforces that our traditional knowledge comes from observation of the world around us in the same way that beadwork designs are informed by imitating the environment around us. Čá·hu demonstrates multiple examples of these scenarios. The Ha? Kanęherathęčreh is a cyclical process and by putting this practice into action in the game, it removes this teaching from the realm of pure rhetoric and brings it into practice. Time, sound, and patience are essential and present within the experience of Čá·hu. As an exploratory game it is moving against some of my gamer instincts: the game is not based on conflict; it is not a collectathon. It is influenced by the future imaginary as a call for ecocritical change in the home of the Thunderers and all of Nyuhčirę?e, a change that starts first with the transformation of our own ways of thinking and knowing. In the gameplay, after the initial call of "Čá·hu" to see who is there, it is my hope that the player realizes that the "somebody" is actually a *some-being*. The *who* that answers are beings like the strawberry, the Thunderers, the trees, and the waters. Each one is equally as important; humans are not the center.

One teaching in the Ha? Kanęherathęčreh that the game illustrates is the perspective that being of the land and sharing the land means sharing with all of the beings who inhabit that land. Even without the presence of other players, the beings who inhabit this place reflect the expressions of Ha? Kanęherathęčreh. The observational gameplay centers a new mindset that encourages the Jitterbug player to embrace the opportunity to interact with all of the entities described in Ha? Kanęherathęčreh.

Similarly, I attempt to make this work legible for all those who are like me and did not grow up with Indigenous knowledge structures and thus develop their understanding when older. Even though my work centers Skarù·rə? youth, I understand that not everyone within my Nation has the same access to our cultural knowledge. Accommodating as many people from our Nation as possible also helps make my work legible to the general public. Drawing inspiration from the teachings of Ha? Kanəherathéčreh, this work is part a larger context of sharing, giving thanks, and working with all beings of this land. It demonstrates that, in Indigenous-Settler-Earth relationships, we all are of the same place and must learn to live in peace with and respect one another. Hopefully the future imaginary presented in the game will one day be true for all occupants— Indigenous and non-Indigenous—of these territories, both digital and non-digital.

The Jitterbug player has the opportunity to practice these teachings as it has the ability to choose to move from the stone, concrete and asphalt world to a beaded landscape. The transformation experienced by the Jitterbug as the player moves toward either landscape reflects the decision of the player to move into that space. Since it is an exploratory game, the player can make the decision to stay in the stone world in the same way that we have to decide if we want to live our lives based on Indigenous ideologies. This choice is not rhetorical, you have to move forward and make the transformation in the game in order to gain access to the language materials, the more peaceful soundscape, and experience the beautiful artistry of beadwork inspired by Skarù·rə? women. Additionally, based on early feedback from family and friends, I was reminded that our people are not in the middle of nowhere with no direction. We have helpers, messengers that help to illuminate our path when necessary. This prompted the inclusion of the birds within the stone world to help provide direction. Although everything may be overwhelming and we may feel like we are at a loss of direction, it is important to trust that our relatives—the other than human beings—still remember their responsibilities to us and we just need to pay attention and look their way.

Čá·hu is an experiment bringing two ideas together: the video game space and the beading space. My hope is that Indigenous makers will observe the computer-generated 3D beads in my game and draw a correlation between beading materials and game-making materials. Like Jitterbugs and beadwork, video game engines like Unity 3D can be used as a means of exploring traditional knowledge, new ideas, and celebrating Indigenous culture. Our coders and 3D modelers of the 1800s expressed their knowledge using glass beads, wire, thread, and fabric; today our coders and 3D modelers use keyboards, game engine software and other digital devices and applications. Transforming the Jitterbug into a digital form creates a familiar Skarù·rə?-based narrative for our youth to engage with. The Jitterbug, an item of our youth, now transitioned into a virtual form creates an easy transition to understand digital media like video games as capable modes of engaging Skarù·rə? knowledge. Skarù·rə? youth today need no introduction to video games or digital technology. However, artists, scholars and makers like me can facilitate experiences for our youth to see themselves reflected in these virtual spaces. *Čá·hu* empowers Skarù·rə? youth to explore a Skarù·rə?-determined world and hopefully empowers youth to create their own imaginaries.

As a game of resurgence, advocating for contemporary illustrations and translations of Skarù·rə? knowledge, I think it is important to consider how assets made by Skarù·rə? citizens support the game in future development. In order for that to happen, Skarù·rə? citizens must not only have access to the technology but must have the opportunity to develop digital skills so that they too can determine these spaces. The digital divide that continues to separate Indigenous peoples from access to digital technology, like the transition from video game consoles to cloud-

based video gaming, must be addressed and equity must be initiated by Indigenous and non-Indigenous alike. Sharing the land and co-existing means also sharing opportunities and co-existence in technology. I will take my skills back to my community to teach whomever may want to learn as an effort to build the community together. This is a conscious act of self-determination to empower Skarù·rę? peoples to improve our digital literacy and develop these futures for ourselves.

With self-determined Skarù·rę? protocols built into these systems and structures, these spaces can become extensions of our realities where we can embed our intelligence for the ever-coming faces of the Skarù·rę? Nation. My hope is that this practice-based research game-making process will exemplify to other Indigenous game developers a methodological accountability that reflects their Nation's ways of knowing. The knowledge that circulates throughout Nyuhtawé?e are depicted in *Čá·hu* as materials related to Skarù·rę? beadwork. The digital rendition of these materials as place allows us to engage with the conceptual place-based knowledge of Nyuhtawé?e through the use of video game technology. Thus, video games become a portal through which we can access and determine Nyuhtawé?e from our Skarù·rę? perspective until we once again have uninhibited access to these territories in real-life.

When considering our disconnect to place and land, it is important to remember that even though our access to these places may not look the same right now as it has to our peoples in the past, that does not mean we cannot still engage with our knowledge tied to these places in the present or future. In the video game world, texture and form can become a place, and through texture and form, an object can become a being. I wanted to represent each being honestly, and that is why I focused so rigorously on the detail and meanings of each object. Each being and each place has so much it can teach us, and we can still engage with many of those teachings even at a distance. With Indigenous thinkers and creators influencing the future of cyber networks, forms of digital media like video games can become sites of Indigenous resurgence. Video games offer new pathways to Indigenous knowledge practice. It is up to Indigenous peoples to innovate those paths and determine their trajectory for our futures.

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