Terra Nova: Enacting Videogame Development through Indigenous-Led Creation

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Abstract

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Indigenous peoples have had a rich tradition of utilizing digital media to tell their stories in new ways. These stories often run counter to popular Western-centric narratives that perpetually position Indigenous peoples as only existing in the past. Indigenous peoples are regularly forgotten as participants of the technological world, but we are also both players and producers of videogames. Indigenous videogames can express something about specific Indigenous communities and cultural contexts or can be made by Indigenous individuals who wish to communicate their own unique narratives through the medium. This research-creation project studies these aspects of Indigenous videogames in detail through the production of my own videogame, *Terra Nova*, alongside a written survey of the field, contextualization of the videogame itself, and reflections on the game and the creation process. Through the production of a videogame as its primary form of research, this project seeks to draw attention to how and why Indigenous peoples are making videogames on their own terms to answer the question of what makes a videogame Indigenous.

Keywords: Indigenous, videogame development, research-creation, representation, self-determination, consultation, cyberspace, futurisms, first contact.

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Introduction

The first time that I had access to a computer with high-speed internet in my own home was in 2006. My mother had recently secured a new job running an after-school program for teenage youth in our community of Roberts Creek, BC and needed the equipment to develop her curriculum. Having that glossy little Apple iBook G4 laptop in the house meant that if she was not using her computer to work, I was likely to be found glued to the screen. It may have already been a few years old at the time, but to me, that laptop opened a new world of online gaming that would dramatically shift my relationship with videogames from the traditional console and controller format.

This was when I first encountered *World of Warcraft* (2004), the massively multiplayer online role-playing game (MMORPG). Being a lover of fantasy, science fiction, and having had already dabbled in playing similar games like *Runescape* (2001), the sheer size and scale of Blizzard Entertainment's latest title captivated me like no other game at the time. I managed to get my hands on a friend's installation discs to start my free 10-day trial before committing to the monthly-subscription. While I waited for the excruciatingly long installation process to complete, I dove into reading every page of the game's manual to learn as much as I could about *World of Warcraft*'s geography, lore, factions, and the suite of classes and races before creating my own character. Once I had read through the summarization of every playable race, I was particularly drawn to the Tauren. The "beastial" Tauren are a tribal people that "roamed the plains of the Barrens, hunted the mighty kodos, and sought the wisdom of their eternal goddess, the Earth Mother" before their scattered nomadic communities settled atop Thunder Bluff (*World of Warcraft: Game Manual* 183). Visually, the bipedal Tauren closely resemble cattle, complete with horns, hoofs, and tails. They also don feather headdresses, bone breastplates, and rawhide garments identical to popular representations of Indigenous peoples portrayed in Wild West Hollywood films.

I instantly recognized the Tauren as an Indigenous race through this stereotypical, pan-Indigenous representation. The visual contrast between them and the other classical fantasy races like Human, Dwarf, and Orc were striking and this coupled with their backstory drew me to connect my own Indigenous identity with the Tauren Druid avatar I created. This was the first

time I recognized Indigenous representations in videogames and how my own identity as a Kanien'kehá:ka (Mohawk) person was implicated by them. I felt a real sense of pride in being able to connect with my avatar in a way that other players could not.

I have since learned that the Tauren of *World of Warcraft* are one of countless problematic examples of Indigenous representation in videogames that has already been noted and critiqued by several scholars and writers (Cruise; Langer 95-97; Monson 61; Nash 72). In 2014, E-Line Media and UpperOne Games released *Never Alone: Kisima Ingitchuna*, a 3D side-scrolling puzzle platformer developed in consultation with community members from the Cook Inlet Tribal Council of Alaska. The game follows the adventures of Nuna, a young Iñupiat girl, and her friend Fox as they attempt to save Nuna's community from a never-ending blizzard that threatens it. The narrative of the game is based on a traditional story told by the Iñupiat community and the game's narration features the voice of a local Elder speaking entirely in the Iñupiat language. The visuals are beautiful and the game's music is as equally breathtaking as it is haunting. There are also collectable items in the game called "Cultural Insights" that allow the player to watch short documentary-style videos on topics related to Iñupiat culture, history, worldviews, and contemporary life. From a representational perspective, the development studio has been guided by community consultation to create an accurate and respectful portrayal of Iñupiat peoples and motifs.

Never Alone left a profound impression on me when I first played it shortly after its release. Having the opportunity to play the game as an Indigenous female protagonist while hearing the voices and language of the Iñupiat community present and centred within the game broadened my understanding of how Indigenous communities could make videogames for their own purposes. Playing *Never Alone* made me realize the depth of videogames as an interactive medium for Indigenous peoples to tell their stories in unique ways. It is this realization that has since driven me to explore videogame development from Indigenous perspectives and ultimately what it means to make Indigenous games.

Indigenous peoples are both players and producers of videogames. This research project uses the term "Indigenous" to describe Aboriginal peoples in an international and inclusive context ("Aboriginal Identity & Terminology"). This project also uses the specific names of

Indigenous-identified individuals and communities to clarify the specific cultural contexts that they are connected to wherever appropriate. Indigenous videogames can be defined in two ways: games that express something about specific Indigenous communities and cultural contexts, and/or games made by Indigenous individuals who wish to communicate their own unique narratives through the medium. At their core, Indigenous videogames are made by Indigenous peoples.

As the library of Indigenous-made games continues to grow, it is important to understand the motivations, qualities, and creation processes of these games and their developers. This research project combines theory and creative practice to study these aspects of Indigenous videogames in detail through the production of my own videogame, *Terra Nova*, alongside a written survey of the field, contextualization of the videogame itself, and reflections on the game and the research-creation process. Through the creation of a videogame as its primary form of research, this project seeks to answer the following question: What makes a videogame Indigenous and how will the game I created be informed by my own experience as an Indigenous person?

This research matters for several reasons. First, it heightens the visibility of Indigenous uses of emergent digital media. Ongoing systems of colonization seek to relegate Indigenous peoples and Indigenous identity to a past time that is separate from our contemporary era of digital technology. I act counter to this dominant narrative through the use of digital media tools like game engines and create a videogame from scratch to demonstrate one of the ways that Indigenous peoples are present and active participants in the technological world. Second, few have studied the specifics of videogame development by Indigenous peoples. This project not only asks the question of *why* Indigenous peoples are making videogames, but also *how* they are doing so from a practical perspective. I identify several production contexts that Indigenous videogames are made within, be it by individual Indigenous developers, Indigenous-led studios, or non-Indigenous studios working in close consultation with Indigenous individuals and communities, to compare and contrast them with the development of *Terra Nova*. Using research-creation as a primary methodology allows me to understand the design and production process in much greater detail than if I were to only write about it. And third, my personal

long-term interests lie in digital media production with an Indigenous focus. This project serves as a way for me to expand my practical skills for developing digital works in the future.

Literature and Media Review

In this section, I will identify key references that contextualize Indigenous videogame development. First, I observe the traditions and continuances of Indigenous digital media-making, including videogames. I then turn my focus to texts and media that discuss and catalogue the practices of game development from Indigenous perspectives. Lastly, I note some of the literature that inspired me to contribute to discussions of Indigenous futurisms by creating *Terra Nova* as an example of Indigenous sci-fi.

Indigenous Digital Media Traditions

The emergence of Web 2.0 in the 1990s ushered in an era of sharable, user-generated content on the web, and with it came new ways to create or remediate knowledge. In framing the current discourse on Indigenous videogame development, it is important to remember that Indigenous peoples have been active participants in defining how digital media has and continues to be used. This is true in spite of the past and present infrastructural and socioeconomic barriers associated with owning personal computers and having reliable access to the Internet. Cyberspace, a term made popular by William Gibson's 1984 sci-fi novel *Neuromancer*, describes the digital realities that exist within and alongside our physical reality as "A graphic representation of data abstracted from the banks of every computer in the human system" (108). This description remains a reflection of the widespread understanding of what constitutes cyberspace today. In her chapter titled "Aboriginal Narratives in Cyberspace", Cree/Métis filmmaker Loretta Todd examines the question of what might the "new territory called cyberspace mean to aboriginal people?" (179). Todd's question marks the beginning of Indigenous peoples' critical exploration of digital media and a desire to claim space in what could be considered a landless territory. She focuses on the potential of how narratives might be communicated in the digital realm, hypothesizing that "Perhaps [cyberspace] will explore narrative forms in which you do not leave your body or soul … perhaps we can create new

narratives where you must call upon your own powers and your own words" (193). Considering early digital media works by Indigenous artists, like the *Inherent Rights, Vision Rights* virtual reality piece by Coast Salish/Okanagan artist Lawrence Paul Yuxweluptun made in 1992, we see that Indigenous peoples have been claiming digital territory to tell their own stories since the very beginnings of cyberspace's existence. Videogames are also part of cyberspace, and have long been sites of Indigenous influence. John Romero, a Yaqui/Cherokee game developer, was vital to the creation of *Doom* in 1993 and the first-person-shooter genre as we know it today (Roetman). Indigenous peoples' presence in cyberspace reached into online social spaces, as well. *CyberPowWow*, a virtual online art gallery with interconnected graphical chat rooms hosted on the popular platform, "The Palace," was curated and launched in 1997 by Kanien'kehá:ka artist and writer Skawennati (Fragnito; Gaertner 56). The project aimed to declare Indigenous peoples' "intention to be full participants in the ongoing evolution of cyberspace" by creating virtual exhibitions that featured the digital artworks of Indigenous artists (Lewis and Fragnito 30). Public gatherings were hosted in the space where the artworks could be discussed in real-time using The Palace's chat feature by users represented by avatars. *CyberPowWow* was a significant moment wherein Indigenous peoples, often separated by vast distances, could share space and talk together in an online location made by and for themselves.

Yuxweluptun, Romero, and Skawennati are just a few examples that characterize the early adoption of digital media technologies by Indigenous peoples in the 1990s. Todd, who was a frequent visitor to the Banff Centre for the Arts at a time when the first wave of artist-driven VR projects were being developed in the Art and Virtual Environments residencies, foresaw the challenges for Indigenous artists working in virtual spaces (Moser and MacLeod). Her framing of a fundamental question—'can there be Aboriginal narratives in cyberspace?'—is integral to understanding the origins of how digital media was first used to develop new methods of Indigenous narrative expression. She identified that the signs of neocolonialism emerging in user-created cyberspace were everywhere: its origins as a virtual war zone, in Corporate Virtual Workspaces, and in the virtual versions of institutions like museums (Todd 179-80). If Indigenous peoples were to have a place in this emerging digital territory that was just as colonized as the physical world, we needed to bring ourselves into the virtual realm on our own

terms, in our own ways, and for our own purposes. Storytelling, the method in which the oral traditions of many Indigenous peoples communicate their unique cultural perspectives, were integral to building Indigenous presences in cyberspace.

In addition to Todd's writing, the contributions to the field of Indigenous digital media by Aboriginal Territories in Cyberspace (AbTeC) must also be considered. Since 2005, Skawennati has collaborated with Cherokee/Kanaka Maoli/Samoan scholar and poet Jason Edward Lewis on directing AbTeC, a research network of "artists, academics, activists, and technologists who investigate methods whereby Indigenous people can be full participants in the shaping of cyberspace" ("Preparations for a Haunting" 230). Growing out of the *CyberPowWow* project, AbTeC has created a number of Indigenous digital media projects, including the *Skins Aboriginal Storytelling and Video Game Workshops* for Indigenous youth (2008-ongoing). The *Skins* workshops serve as a model for approaching videogame development from Indigenous perspectives. "*Skins* encourages teens to embrace computer technology as a means of creative expression and production, not just consumption," Lewis and Skawennati write, and "gives teens an introduction to computer programming to use as a foundation for making the computer a tool which they can fully control and exploit" (Lewis and Fragnito 30). In the first edition of *Skins*, AbTeC partnered with Kahnawake Survival School to teach high school youth how to activate their cultural knowledge using game development as a medium.

A total of six *Skins* videogames have been produced thus far, the latest of which, *Wao Kanaka: I ka Wā Mamua, i ka Wā Mahope,* was developed during a three-week intensive workshop in July 2018 with Kanaka Maoli participants in Honolulu, Hawaii. The *Skins* Workshops exemplify persistent engagements with and claims to cyberspace by Indigenous peoples through the placing of production power into the hands of Indigenous youth.

Throughout the development cycle of *Terra Nova* I consulted the *Skins* curriculum model for its use as a guide for first-time Indigenous videogame developers. During the first week of the workshop, the *Skins* curriculum encourages participants to draw upon their own personal banks of cultural knowledge to inform the game's development cycle. Beginning with storytelling, participants each share a narrative, traditional or not, and discuss how those narratives might be best suited to become a videogame. The group of participants then come to a

consensus about the narrative direction before moving into the instructional and production aspects of the workshop. Workshop instructors support participants by teaching them all of the fundamental skills required to make games, including programming, art, sound, and project management. By starting with a central theme pertinent to an Indigenous experience that then drives future game design decisions during development, the *Skins* workshop curriculum served as a model for me to create *Terra Nova* from Indigenous-centred methods in a similar way.

Indigenous Videogame Development

Moving from the broad field of Indigenous digital media to examining videogames specifically, it is important to note that there are a number of videogames made by Indigenous developers, Indigenous-led studios, or in consultation with Indigenous individuals and communities. Through Todd's guidance we see an identification and desire for Indigenous narratives to be represented in digital media, including videogames. Whether an Indigenous videogame is made by an individual or team of Indigenous developers, or by non-Indigenous developers working in consultation with an Indigenous community, it is determined by Indigenous peoples. The development process, from beginning to end, must be Indigenous-led. This leadership should come from as many places as possible, including creative direction, game design, writing, programming, art, sound, project coordination, and distribution among others. If decision-making power is not held by the Indigenous peoples being portrayed within the videogame, the project risks reproducing harmful representations of Indigenous peoples and cultures. The Tauren of *World of Warcraft*, Nightwolf[1] from *Mortal Kombat 3* (1995), and Tala[2] from *Darkwatch* (2005) are just a few examples of a longstanding tradition of portraying decontextualized versions of Indigeneity in videogames without involving the leadership, or even

[1] Nightwolf is described in the official Ultimate Mortal Kombat 3 game manual as "a historian and preserver of his people's culture" who "uses the magic of his Shamen to protect his tribe's sacred land" (*Ultimate Mortal Kombat 3: Game Manual*). His specific tribe is never identified and his ability to use magic is not explained. Beside this biography is a character sketch showing Nightwolf clad head-to-toe in buckskin and tassels. His portrayal as a violent tribal warrior with magic powers reproduces harmful stereotypes perpetuated in popular media.

[2] Tala is a member of the Darkwatch Regulators who are allies to the Darkwatch player-protagonist. She is known for her "seductive grace" and "who goes out of her way to engage the undead" (*Darkwatch: Game Manual*). In addition to her hyper-violent characterization, her character design is also hyper-sexulaized. Pairing Tala's pan-Indigenous identity with her portrayal as a violent temptress dehumanizes and stereotypes Indigenous women; a demographic that is largely absent in videogames.

consultation, with Indigenous developers. The erasure of Indigenous-determined narratives from videogames continues to be an issue within development spaces. In response, this project centres the work of Indigenous videogame creators themselves to show how we are choosing to activate the medium directly from our own perspectives. The games discussed in this survey of the field are those that have had the most influence over the creation of *Terra Nova*, either through Indigenous-led game design or through the production practices that were used during development.

The work of Anishinaabe/Métis/Irish scholar and game designer Elizabeth LaPensée is integral to this research project's Indigenous design and consultation frameworks. Much of her work is dedicated to discussing representations of Indigenous peoples in videogames at large, but even more important are her discussions of games made by Indigenous peoples themselves. LaPensée is a prolific game designer and her games *We Sing for Healing* (2015), *Thunderbird Strike* (2017), and *Where Rivers Were Trails* (2019) are important examples of the kind of projects that independent Indigenous videogame development can produce.

In *We Sing for Healing*, LaPensée used Adobe Dreamweaver to craft a musical choose-your-own-adventure text game that incorporates mechanics of "slowing down, listening, making choices, revisiting paths, and interpreting the journey" to transcend the abstract and homogenous flow of Western understandings of time. ("Transformations and Remembrances" 99). Slowness and self-reflexivity are mechanics that are built into the game, providing an experimental intervention that considers Indigenous-centred modes of what playing a game might actually be like.

Thunderbird Strike is a departure from this kind of experimental game design in favour of upholding an explicitly Indigenous narrative and worldview. Players control a soaring thunderbird—a supernatural being that holds great significance for many Indigenous cultures all across what is now known as North America, including for LaPensée's Anishinaabe community. The object of the game is to revitalize lands that have been poisoned by a "snake that threatens to swallow the lands and waters whole" (Thunderbird Strike - About). The thunderbird does this by building up power and unleashing it to either transform machinery that is damaging the environment or resurrect fallen animals. The game plays with themes of violence in interesting

ways, identifying tar sands oil development as an enemy of the land, water, and other-than-human beings. Players cannot lose the game as there is no way for the thunderbird's will to be challenged or its body to be harmed. Game design can reflect specific themes and communicate significant perspectives, and in the case of *Thunderbird Strike*, LaPensée uses game mechanics like invulnerability to assert Indigenous rights to land and resistances against harmful resource extraction ventures sanctioned by the colonial state.

In collaboration with the Indian Land Tenure Foundation and the Games for Entertainment and Learning Lab at Michigan State University, LaPensée directed *When Rivers Were Trails*. Players play as an Anishinaabeg living in the 1880s "who is displaced from Fond du Lac in Minnesota and travels to California due to the impact of allotment acts on Indigenous communities" (*Games — Elizabeth LaPensée*). Players navigate through the game world using an overworld map and make choices about which direction their character moves. After every move, players encounter a narrative scenario where they interact with characters, other-than-human beings, their environment, or a combination of any of these that can potentially affect the players Wellbeing, Foods, or Medicines levels. Wellbeing is the players health meter, but survival in the game "depends on your mental, emotional, physical, and spiritual wellbeing. If you have no wellbeing, you join your ancestors" (*When Rivers Were Trails*). Wellbeing is gained and lost by acting when prompted in good ways or not, respectively. Foods and Medicines are gained and lost by hunting, gathering, trading, and aiding others during the journey. *When Rivers Were Trails* teaches players that their actions have consequences for the other beings that move through the world alongside us, while also contextualizing the complexities of the history of the United States land allotment. The writing for the game was done by a team of Indigenous writers from all across Turtle Island (North America), many of whom wrote encounters with characters from their own Nations. This game by LaPensée, along with *We Sing for Healing* and *Thunderbird Strike*, demonstrates the importance for making room for Indigenous involvement in videogame development. Doing so leads to the production of work that reflects the multiplicity of Indigenous perspectives on a holistic level in ways that can have an influence on multiple aspects of a game's creation.

The latest game to be produced as part of the *Skins Aboriginal Storytelling and Video Game Workshops* by AbTeC, *Wao Kanaka: I ka Wā Mamua, i ka Wā Mahope,* is a model for how collaboration between Indigenous and non-Indigenous individuals and communities can be done to great effect. This intensive workshop hosted by Kanaeokana network of Hawaiian language schools taught a group of (mostly) Kanaka Maoli participants how to make a videogame that drew upon their cultural worldviews. The hosts, the Montreal-based Initiative for Indigenous Futures (IIF) and the Hawaii-based Kanaeokana, selected fifteen applicants from several Hawaiian communities, as well as one non-Indigenous applicant and myself to participate. A team of both Indigenous and non-Indigenous instructors was assembled to deliver a *Skins* workshop curriculum that had been localized by the AbTeC/IIF team in consultation with Kanaeokana.

The resulting game is "based on Kānaka Maoli stories and knowledge" that depicts "the central concept of *aloha 'aina* (love of the land) as a guide for shaping both narrative and gameplay" (*Skins 6.0*). Players play as a young Kanaka Maoli person who explores the interactive world, gains cultural knowledge by listening to stories from members of their community, and plays mini-games that encourage them to apply that knowledge during gameplay. The outcomes of the mini-games affect the future of Hawaii, meaning that players have a significant amount of agency in the game world. As an example, the *loko i'a* (fish pond) mini-game that I helped design and program presents players with a choice of either keeping or returning several netfulls of caught fish. Not only must players return at least half of the total fish caught back into the water, but they must also remember how much of the three unique species of fish that live in the *loko i'a* have already been kept so as not to take too much of a single type of fish. If the player fails to heed the advice of the *mo'olelo* (story) cinematic cutscene that provides a hint to the mini-game's objective, they risk creating a future world without healthy *loko i'a*. This project was the first time myself and several of the other participants had ever worked on a videogame before. Everyone involved—participants, hosts, instructors, support staff, and guests—were all unified in supporting the central goal of creating a videogame from Kanaka Maoli perspectives.

What is and what is not an Indigenous videogame is a complex question. At what point does game design go from being inspired by Indigenous themes or cultures to truly reflecting the worldviews of the people that are being depicted or the developers that are working on the game? Game developers can easily fall into appropriating aspects of Indigenous cultures when Indigenous peoples from those cultures are not involved in all aspects of the development process. Videogames that accurately reflect Indigenous peoples can be made by non-Indigenous development teams when Indigenous developers and consultants from the communities that are being represented have the ability to determine how they are being portrayed. *Never Alone: Kisima Ingitchuna* exemplifies this approach of pairing Indigenous consultation with game development practices. E-Line Media, the production company, and UpperOne Games, the development studio, were employed by the Iñupiat people from the Cook Inlet Tribal Council of Alaska to create a game that was both culturally-informative and mechanically compelling for a mainstream audience. As the official website for *Never Alone* states, "Through all stages of development members of both communities met extensively to ensure that all creative and business decisions were [appropriately] considered and supported the goals of all stakeholders" ("Never Alone - Our Team"). Ishmael Hope, an Iñupiat/Tlingit storyteller, served as both a writer and cultural consultant for the game. From the beginning of his involvement, Hope noted that he "was one of many who spoke the same message" and that he "told them that this project needed an equal collaboration with Native people, not only because it was ethically responsible, but to make a better video game" ("Never Alone Interview Series: Ishmael Hope"). His advocacy, along with the guidance of many other Iñupiat community members who acted as consultants on the project, were vital to the development process of *Never Alone*.

Consultation is an important part of videogame development and must be considered when defining what Indigenous games are. Non-Indigenous development teams can make games that accurately represent specific Indigenous peoples, cultures, and worldviews in ways that directly support the Indigenous communities being portrayed. Influential non-Indigenous organizations like E-Line Media and UpperOne Games must continue to make more space for Indigenous developers to occupy leadership positions for projects that represent them. As the Cook Inlet Iñupiat have demonstrated, Indigenous communities have a desire to utilize the skills

of outsiders to help execute their creative visions while also maintaining a high-level of control over projects that utilize their knowledge, cultures, and stories. Videogames made by non-Indigenous production companies in consultation with Indigenous communities can be Indigenous as long as those communities make impactful, equitable contributions to the project as leaders with decision-making power.

The Indigenous thinkers, artists, game developers, and games noted in this review serve as invaluable guides to exploring what Indigenous videogames are and what they could be. From Todd we see an identification and desire for Indigenous narratives to be represented in digital media, including videogames. AbTeC, along with Lewis and Skawennati, show the application of what those Indigenous narratives might look like when Indigenous peoples utilize digital media tools like chat rooms, virtual worlds, and game engines. Elizabeth LaPensée uses these tools to continue to expand the library of videogames developed by Indigenous peoples.

Wao Kanaka offers guidance for how Indigenous-led game development project can incorporate contributions from non-Indigenous team members. *Never Alone* serves as an example of how consultation with Indigenous communities can be effectively done to remediate an Indigenous narrative into a videogame in a way that speaks to large audiences. Other games that address different aspects of these questions include: *Maoriland Adventure* (2017) by Maori artist Johnson Witehira; *One Small Step* (2017) by Abenaki PhD candidate Ashlee Bird; *Ehdrigohr* (2013) by Allen Turner, *submerge* (Forthcoming) and other work by Basque PhD candidate Michelle Lee Brown, *Kilo Hōkū* (2017) by Kanaka Maoli graduate student Kari Noe, *Tipi Kaga* (2019) by Lakota game designer Carl Petersen and Northern Plains Games, *Swapbox+* (2018) by Kanien'kehá:ka game designer Nathan Powless-Lynes, and *PURITY&decay* (2017) by Métis game designer Meagan Byrne and Maliseet artist Tara Miller of Achimostawinan Games.

Theoretical Perspective

I have drawn on my training in Indigenous Studies to develop the theoretical perspectives guiding this research project. I am also committed to balancing academic research and creative practice as the most useful way to illuminate this domain. I lean heavily on theoretical contributions from Indigenous writers and makers like Todd, Lewis, and Skawennati because of

contributions from Indigenous writers and makers like Todd, Lewis, and Skawennati because of their foundational works that have helped to shape the field of Indigenous digital and new media. As Lewis and Skawennati write:

> "History has shown us that new media technologies can play a critical role in shaping how Western, technologically oriented cultures perceive Aboriginals. The camera, for instance, taught people that we all wore headdresses and lived in teepees. Cinema claimed that we spoke in broken English—if we spoke at all. The World Wide Web has offered us the possibility to shape our own representations and make them known" (29-30).

I developed this project, in part, as a response to their observations of how digital media can be a source of empowerment for Indigenous peoples. Videogames are media that continue to grow in popularity. As a result, their influence for communicating dominant narratives also continues to build momentum. Indigenous peoples can insert our voices within the larger videogame industry by utilizing the tools available to us to produce Indigenous-determined narratives while also deconstructing misguided ones.

Indigenous Videogame Development and Self-Determination

LaPensée's videogame design has deeply informed the development of *Terra Nova*, while her writing about Indigenous videogame design has been important in shaping my theoretical perspectives on Indigenous videogame development. LaPensée draws often on Anishinaabe scholar Gerald Vizenor and his concept of *survivance*, a term that acknowledges how Indigenous peoples are thriving in spite of colonial oppression rather than simply surviving through it (Vizenor 1). To LaPensée, the act of survivance is as much political as it is artistic because "Games, which are made of varying levels of code, design, art, and audio, can provide spaces for expressing self-determination" ("Games as Enduring Presence" 180). The act of developing videogames is "an extension of traditional storytelling," and survivance is a valuable theoretical concept for investigating what makes games Indigenous (180). Indigenous videogame developers who are making games about themselves and their communities represent survivance through the use of digital media tools available to us. LaPensée discusses how games made by

Indigenous developers "hold the potential for authentic self-representation in ways that engage the imagination in relation to Indigenous worldviews" ("Self-Determination in Indigenous Games" 132). Survivance is seen as a theory of design inspiration throughout her games: the learning of traditional songs in *We Sing for Healing*, the invulnerability of the Thunderbird in Thunderbird Strike, and the necessity of Wellbeing in *When Rivers Were Trails*.

My lived experience as a male-identifying Kanien'kehá:ka person who was raised in an urban context very far away from my reserve community is not easily recognized as "Indigenous," yet my positionality still greatly influences with research project. *Terra Nova* is a way for me to practice survivance on my own terms. The game reflects qualities of my identity within its narrative and mechanics that I have intentionally embedded within it. As a result, its creation has been informed by my personal experience as an Indigenous person of mixed ancestry and affirmed by LaPensée's encouragement for the continuation of Indigenous self-determination through videogame production.

Indigenous digital media artists are often confronted with the challenge of creating work with tools that have been developed by non-Indigenous peoples to serve non-Indigenous needs. Audre Lorde's presentation titled "The Master's Tools Will Never Dismantle the Master's House" is a key source for making an informed and intersectional examination of contemporary Indigenous uses of non-Indigenous tools, including videogame development engines. As Lorde states, "the master's tools will never dismantle the master's house. They may allow us temporarily to beat him at his own game, but they will never enable us to bring about genuine change" (Lorde). Lewis echoes Lorde's argument by noting the limitations of the hardware and software "stack" and the biases toward Western modes of thought that they uphold ("Preparations for a Haunting" 239-240). As Indigenous peoples continue to make space for ourselves in the existing structures that shape cyberspace, steps must also be taken for us to define what comes next. As Lewis asserts, "Tech-savvy Natives can participate in that shaping [of cyberspace]: in conceptualizing, designing, and implementing the technology," as "Participating at this more fundamental level will greatly increase our ability to make the technology speak in the way we desire" (242-3). Although the creation of an Indigenous-made tool for developing videogames falls outside the scope of this research project, I must

acknowledge the project's limitations in this respect. The systems that make *Terra Nova* a videogame are born from traditions of Western technological development. Bending these digital tools to my will reflects a longer tradition of continuing to weave Indigenous narratives into cyberspace and to serve as a reference for present and future Indigenous digital media makers to continue to be self-determining.

Indigenous Videogames and Futurisms

This research project also explores new ideas of what Indigenous videogames might become. The Indigenous developers noted in this project appear to have little interest in creating games that uphold colonial projects like resource extraction, expansion into unsettled territory, and economic individualism. Instead, we see that many Indigenous games tend to explore themes of colonial resistance, family and kinship, and human to other-than-human relationships. This is not to say that Indigenous developers should only make games that reflect their Indigenous identities, but that they can embed their Indigeneity into game design and development contexts.

Indigenous videogames can also play with alternative forms of non-linear time comprehension that are reflective of many Indigenous worldviews. Projecting Indigenous presences into the future by speculating and building worlds using videogames directly connects that speculative work with the Indigenous Future Imaginary discourse. The Future Imaginary, Lewis proposes, is a means to which Indigenous peoples are generating conversations about what "our communities will be like in one hundred, five hundred, or a thousand years" ("A Better Dance and Better Prayers" 56). Colonial society is very good at visualizing the future, but too often this also means that Indigenous perspectives and realities are not considered a part of the world to be. Videogames can do some of this work of envisioning the future.

In the analysis of Anishinaabe scholar Grace Dillon and her book *Walking the Clouds: An Anthology of Indigenous Science Fiction*, we can see how Indigenous sci-fi can help shape our imagined futures through the acts of dreaming and creation. As Dillon states:

> "all forms of Indigenous futurisms are narratives of *biskaabiiyang*, an Anishinaabemowin word connoting the process of 'returning to ourselves,' which involves discovering how personally one is affected by colonization, discarding the emotional and psychological

baggage carried from its impact, and recovering ancestral traditions in order to adapt in our post-Native Apocalypse world" (10).

The narrative of *Terra Nova* takes place in a time far in the distant future; a time that is nearly incomprehensible to dominant Western society. It is in this future that both Indigenous and Settler communities experience a moment of first contact with one another, similar to the common sci-fi template of "Contact" that Dillon identifies in her introductory chapter: "Either aliens invade humans or human invade aliens" Dillon writes, "whether the terrain is geopolitical, psychological, sexual or otherwise" (5).

What makes *Terra Nova* different from a typical contact narrative that favours either an Indigenous or a Settler narrative perspective, however, is the balanced positioning of both Indigenous and Settler as equals. By subverting the contact narrative framework, the game asks players to seriously consider what it means to be Indigenous or Settler to a particular place by bringing the complexities associated with that moment of first contact into an interactive scenario. As an example of Indigenous sci-fi, *Terra Nova* is my contribution to affirming, honouring, and furthering discussions of Dillon's engagement with *biskaabiiyang*. I have turned inward to explore what first contact in the future might look like from both Indigenous and Settler perspectives, using my own positionality as a site for that discussion to grow from.

Methodology

The primary research methodology of this project is research-creation: a practice-based approach to analysing media through the act of making it combined with scholarly writing about it (Chapman and Sawchuk 6). My research-creation methods are informed by a combination of work of scholars who actively make media as part of their research, as well as the work of Indigenous scholars who employ decolonial and Indigenous research methodologies. By merging scholarly writing studying Indigenous videogame development with a practice-based approach to learning through the making of a videogame, this project utilizes a unique methodological approach that can guide similar culturally-guided research-creation work in the future.

"Research Creation: Intervention, Analysis and 'Family Resources'" by scholars Owen Chapman and Kim Sawchuk is perhaps the most informative text on research-creation as a media

studies method. Research-creation is an appropriate methodological approach for this project because of its focus on the act of making as a means of generating new knowledge, where prototyping, design iterations, and user feedback are central components of the experimental method. Considering a process-based method of approach for studying Indigenous videogame development in conversation with Chapman and Sawchuk's four subcategories of research-creation identified in their text, this project most closely resembles "creation-as-research." Creation-as-research "involves the elaboration of projects where creation is required in order for research to emerge" and "is about investigating the relationship between technology, gathering and revealing through creation… while also seeking to extract knowledge from the process" (Chapman and Sawchuk 19). Activating this method for knowledge-production brings my practice as a scholar and game developer closely in line with those of the other Indigenous videogame developers noted in this project. Creating *Terra Nova* as a first-time videogame developer allows me to treat the game's entire production lifecycle as a framework for understanding all of the components and complexities required for making games. This research project includes a component that documents the entire production cycle of *Terra Nova*'s development, from conception to team formation, and prototyping to the final build. It also reflects upon the successes and challenges of creating *Terra Nova* to assess how the game might be positioned in relation with other Indigenous videogames. Research-creation is a strong methodological framework to study how Indigenous videogames are being made because it can incorporate the experience and reflections of the researcher.

In addition to guiding practice and process, research-creation is a method that, according to Chapman and Sawchuk, works to "challenge normative frameworks that have traditionally structured academic contributions to knowledge" (23). The disruptive quality of research-creation that is felt when rubbed up against academic protocols are also reflected in decolonial and Indigenous research methodologies. Indigenous knowledges are often categorized as non-academic and in opposition to the assumed positive development of Western society through rigorous scholarship. I reference decolonial methods using Maori scholar Linda Tuhiwai Smith and Indigenous methodologies using Cree scholar Margaret Kovach, respectively.

Smith's book titled *Decolonizing Methodologies: Research and Indigenous Peoples* is integral to informing the intersections between creation and research in ways that support Indigenous peoples sovereignty and self-determination. Her chapter titled "Twenty-Five Indigenous Projects" has provided a framework for me to work from when writing, designing, and directing the production of *Terra Nova*. The Indigenous Project of "Creating" is described as "transcending the basic survival mode through using a resource or capability which every indigenous community has retained throughout colonization – the ability to create and be creative" (Smith 158). Deconstructing ongoing forms of colonization through creative practice is a profoundly powerful action. Using Creating as a method for studying Indigenous videogame development allows me to contribute to our current cultural conversations in ways similar to what our Indigenous communities have done from the beginning—using creative making as part of our intellectual expansion. Relying upon the guidance of Indigenous thinkers like Smith, the methodological structure of this project makes a valuable academic intervention not only from framework of research-creation, but from Indigenous-oriented research methodologies as well.

Kovach defines Indigenous methodologies as "the theory and method of conducting research that flows from an Indigenous epistemology" (20). Indigenous epistemology references the relational quality of knowledge production inherent to Indigenous systems of knowledge (21). This project includes Indigenous research methodologies like survivance, *biskaabiiyang*, and Creating in order to inform both its practical and theoretical aspects. My written reflections, as well as the game itself, are informed by my positionality as a Kanien'kehá:ka person, my relationships with a multiplicity of Indigenous communities to whom I am accountable to, and my own store of cultural knowledge. Utilizing this Indigenous methodological approach, as Kovach describes, is a way for this project to be truly practiced-based, relational, and embodied.

Discussion

First Contact

Terra Nova is a game about an experience that all Indigenous communities know well: first contact with Settler peoples. Colonialism has affected the Indigenous peoples of Turtle Island since the beginning of the 16th century with the arrival of European Settlers on the

continent. Countless moments of first contact occurred between Indigenous and Settler peoples of distinct nations, communities, and factions that are remembered today through oral and recorded histories. As an example, take Tiohtiá:ke (Montréal), the territory in which this project was conducted. The island and its surrounding waterways are shared territory between Haudenosaunee, Huron-Wendat, Algonquin, and other Nations and have been significant areas of intercultural contact for thousands of years ("Territorial Acknowledgement"). The East and West waters of the Kaniatarowanenneh (St. Lawrence River) facilitated the sharing of resources, languages, protocols, and kinship networks for countless generations before European ships sailed its currents. The first contact between Jacques Cartier and the Haudenosaunee village of Hochelaga on Tiohtiá:ke in 1535 and the Indigenous peoples living there sparked massive cultural and ecological changes in this territory. According to Cartier's record, the people at Hochelaga "brought us fish and other provisions, at the same time dancing and showing great joy at our coming" (150). The people that presently reside on Tiohtiá:ke, whether Indigenous or not, experience the results of that initial first contact event and the subsequent ongoing colonization by Settler individuals, institutions, and governments.

The colonial history of Tiohtiá:ke echoes many Indigenous communities' experiences with first contact. Sometimes the events that arise from first contact are violent and cruel, but they can also be inspiring, peaceful, confusing, humourous, and mundane. The multitude of possible outcomes of first contact are what I was most interested to explore in *Terra Nova*. Instead of having Indigenous and Settler communities encounter one another as totally alien species, the game would have two human communities with differing connections to their ancestral home planet meet for the first time. The following section illustrates and discusses the development of the game's primary components: narrative design, mechanics and tools, art, and sound.

Narrative Design

Terra Nova is science fiction that takes place on Earth far in the future, long after a series of environmental disasters. Earth was being poisoned and nature became unpredictable as a result. The instability inspired a group of humans to abandon the planet and travel through space

on a giant starship to settle somewhere better. This ship was equipped with everything they would need to live millennia amongst the stars, as long as they could extract materials from planets during their journey.

Not all of humanity wanted to leave Earth, however. The humans that stayed on Earth were forced to confront the systems of their society that were poisoning the Earth. Over time, they were able to adapt to the erratic environment, and built a new relationship with the lands and waters of the Earth based on social values of sustainability and care.

Both groups of humans, those from Earth and those from the stars, eventually forgot about one another and formed distinct cultures and societies reflective of their respective environments. The Earthborn humans live high atop the overgrown, ruined city-structures built ages ago to escape the unpredictable tidal cycles of an Earth without ice caps and, as a result, high water levels. Living in this environment is nearly impossible without the help of one's community and without building relationships with local flora and fauna needed for survival. In their starship, Starborn humans live in cramped quarters and have highly regimented daily schedules oriented towards material and labour production in support of the colony. One's life is quantified as either productive or not and under-performing individuals are disciplined accordingly.

The narrative of *Terra Nova* is experienced through the eyes of the game's two player-characters: Terra, an Earthborn Elder and Land Leader, and Nova, a youthful Starborn inventor. These characters are controlled by two players playing simultaneously.

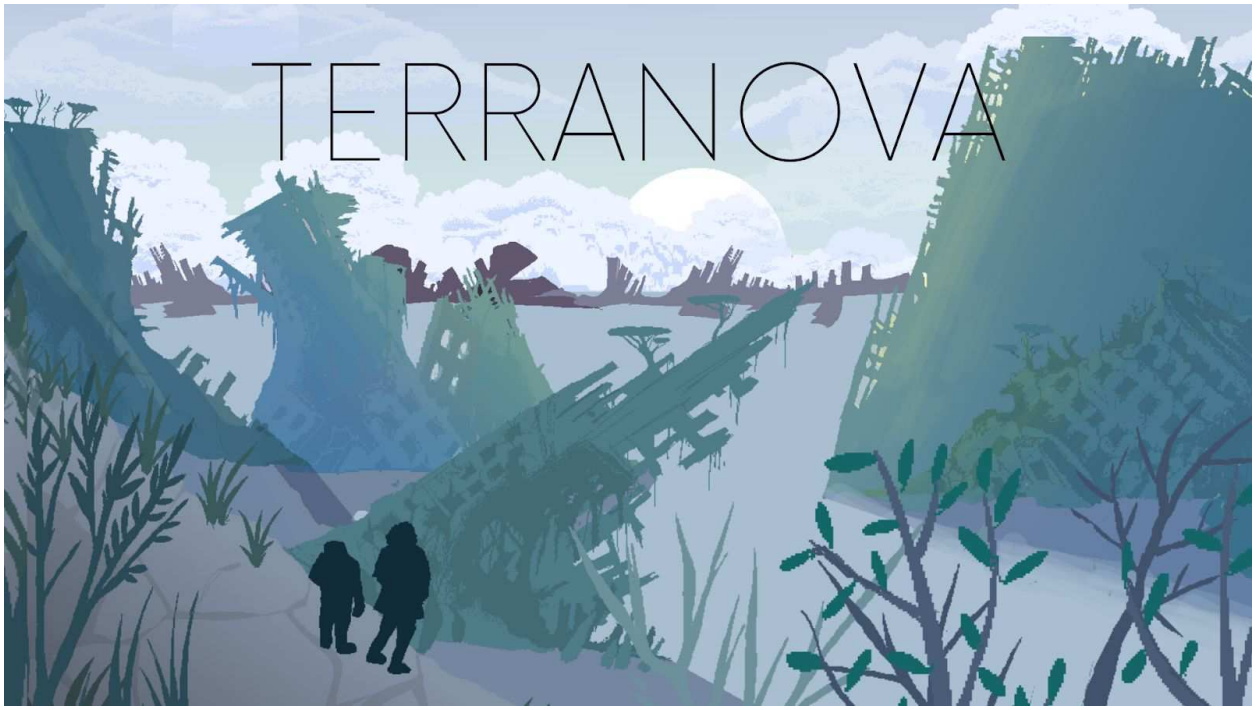

Fig. 1. Screenshot of the title screen of *Terra Nova*, 2019.

Terra's story begins when a mysterious star falls from the sky into a particularly treacherous bit of flooded land known as the Lowlands. Terra is charged to investigate the mysterious wreckage on the request of her fellow Leaders: Bellum the War Leader, Cibus the Food Leader, and Unda the Water Leader.

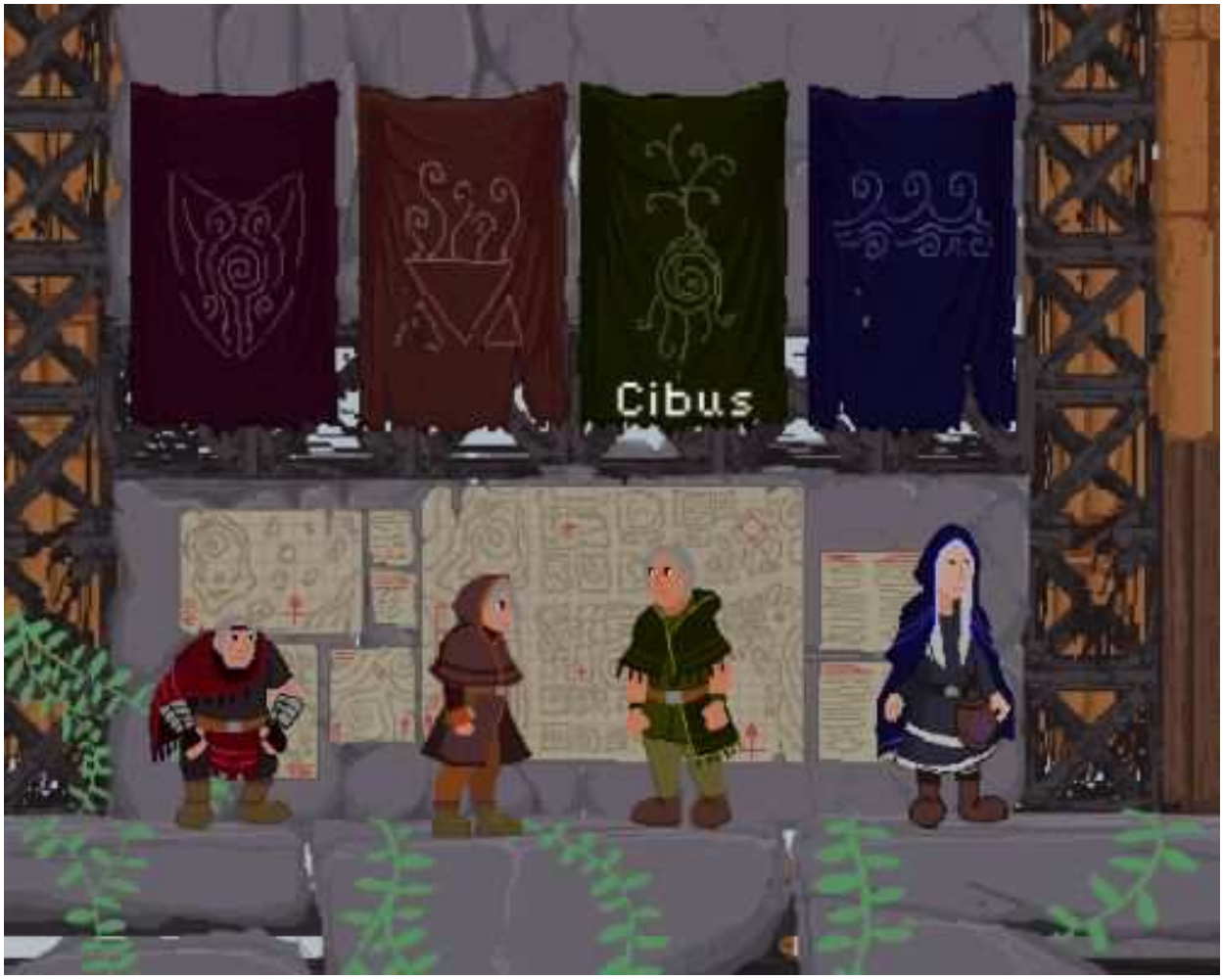

Fig. 2. Screenshot showing the four Earthborn Leaders: Bellum, Terra, Cibus, and Unda from *Terra Nova*, 2019.

The Earthborn governance structure is built around decision-making through consensus. Each Leader is determined by the larger community who identify, through consensus, the Elder who possess the qualities necessary to occupy any one of the four Leader roles. Leaders are stewards of what sustains Earthborn survival and must act in ways that protect their community. As Land Leader, Terra sets off to investigate the unidentified object by making her way down to the Lowlands, traversing treacherous structures and natural hazards before coming to a clearing.

Nova, meanwhile, is on his way to begin his first day of Settlement Training: the standardized education program that all Starborn youth must complete to be prepared for the day their colony finds a planet to settle. Somehow he is separated from the rest of the starship during the crash-landing and finds himself alone in an alien world. Determined to find his people, Nova

journeys above and below ground in an ancient pipework system; eventually emerging into a clearing. This clearing is where Terra and Nova experience the moment of first contact between Earthborn and Starborn peoples. Although they are distinct peoples, both are human and can speak the same language. After his initial shock wears off, Nova introduces himself and explains that he is looking for the rest of his people. Terra introduces herself too and explains that she is also searching for the crashed starship. The two team up and begin a harrowing climb up an ancient structure to see if they can spot the wreckage. After helping one another up through the structure, both Terra and Nova gaze out toward the Starborn starship, half-buried and smoking on the horizon. It is at this moment that reality sets in for them both: their worlds have been changed forever and it is up to them to act as liaisons between both of their communities. The narrative concludes on the unspoken questions of what is to come as a result of first contact. Will the Starborn successfully settle in a world that they no longer know anything about? Will the Earthborn let them live in their territory? Will both communities make alliances or war? Might the Starborn be forced to leave again? The narrative of *Terra Nova* suggests that all of these outcomes are possible.

The experience of first contact between Earthborn and Starborn peoples serves as the narrative backdrop of *Terra Nova*, but as the project's namesake reflects, the game narrative is primarily carried by the playable protagonist duo. Players experience the game's story through the eyes of both Terra and Nova as they move through the environment talking with non-player characters (NPCs), avoiding hazards, and observing their surroundings from their respective perspectives and cultural contexts. Players begin the game in Terra and Nova's respective areas, progressing through the levels by solving puzzles by themselves. Eventually, the players encounter one another and experience their moment of first contact. From this moment forward their individual narratives become intertwined and players can only successfully progress together.

Mechanics and Systems

Using mechanics like split-screen platforming, an interactive dialogue system, and shared perspective cooperative gameplay, *Terra Nova* asks players to engage with the potential

outcomes of first contact between Indigenous and Settler peoples. Mechanics and how they are designed and implemented into the game engine largely determine how a videogame feels during gameplay. I felt comfortable beginning the development process for *Terra Nova* by building the game's narrative based around communication, first contact, and the future. However, I felt less prepared to design the interactive systems component so I sought help from Mehrdad Dehdashti, an experienced Technical Director, to work with me to code the mechanics that I wanted to see in the game and then integrated them into the game engine from scratch. My goal was to design a game with mechanics that reflected the central first contact narrative theme so that players could experience a first-contact scenario for themselves. The game was developed using the Unity game engine, a free industry-standard software that both myself and Dehdashti were familiar with (*Unity*).

Terra Nova is a 2D platformer that replicates mechanics typical of this genre for allowing the player to guide both Terra and Nova through the game. Using Xbox One controllers, players move their particular character left and right with the left analogue stick and can jump using the A button. These basic platforming mechanics allow Terra and Nova to explore the game's horizontal and vertical environment, jump over gaps between platforms, and navigate hazardous objects throughout. If players fall between platforms or touch hazards their screen goes dark for a moment before their character is respawned at the start of the hazard so that they can try again. In order to support players of all skill levels, players are given unlimited attempts to complete platforming challenges to balance game difficulty with accessibility. Dialogues can be triggered by pressing the X button when Terra and Nova are close to NPCs or key objects, in turn opening a textbox at the bottom of the screen that displays what that character or object says or does.

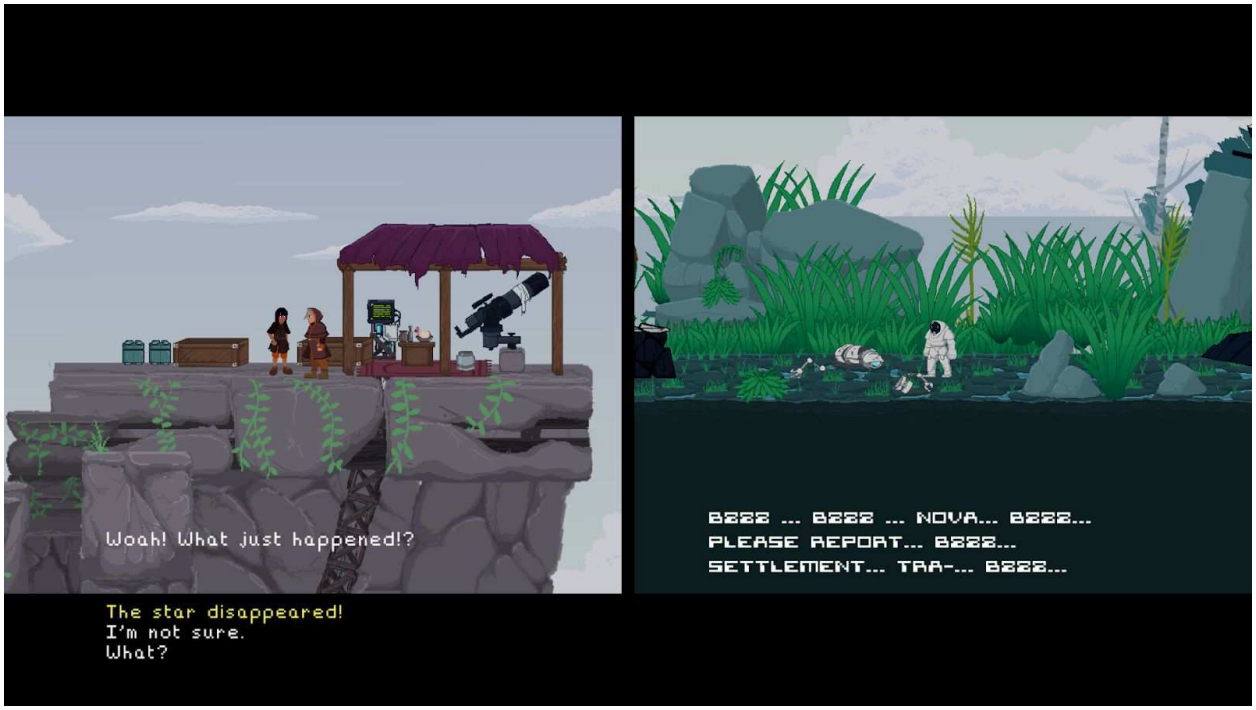

Fig. 3. Screenshot showing the interactive dialogue system used by both players in *Terra Nova*, 2019.

There are often multiple dialogue response options to the text from which players can choose in order to continue the conversation. This level of interactivity to scripted conversations is intended to allow the players to define what kind of responses Terra and Nova have in any given scenario. Some dialogue responses also trigger in-game events that make new paths forward accessible.

Terra Nova's interactive dialogue system was created with C#, Unity's primary coding language, and paired with a custom reader tool that converts HTML code generated by files published using Twine. As stated on its official website, "Twine is an open-source tool for telling interactive, non-linear stories" and has a simple user interface that I have had experience using prior to working on *Terra Nova* ("Twine"). This "Twine Reader" tool contains all of the functionality of Twine's text-based node system and brings it into Unity to create the branching interactive dialogues that structure how the narrative of *Terra Nova* is conveyed. I can write NPC dialogues directly in Twine and then bring the published files into the Unity project for implementation without needing any coding experience.

Terra Nova is also a two-player cooperative game. The game is designed around facilitating two character narratives that two players experience simultaneously. Each player controls either Terra or Nova from a split perspective as they move left and right, up and down through their respective levels displayed on the screen.

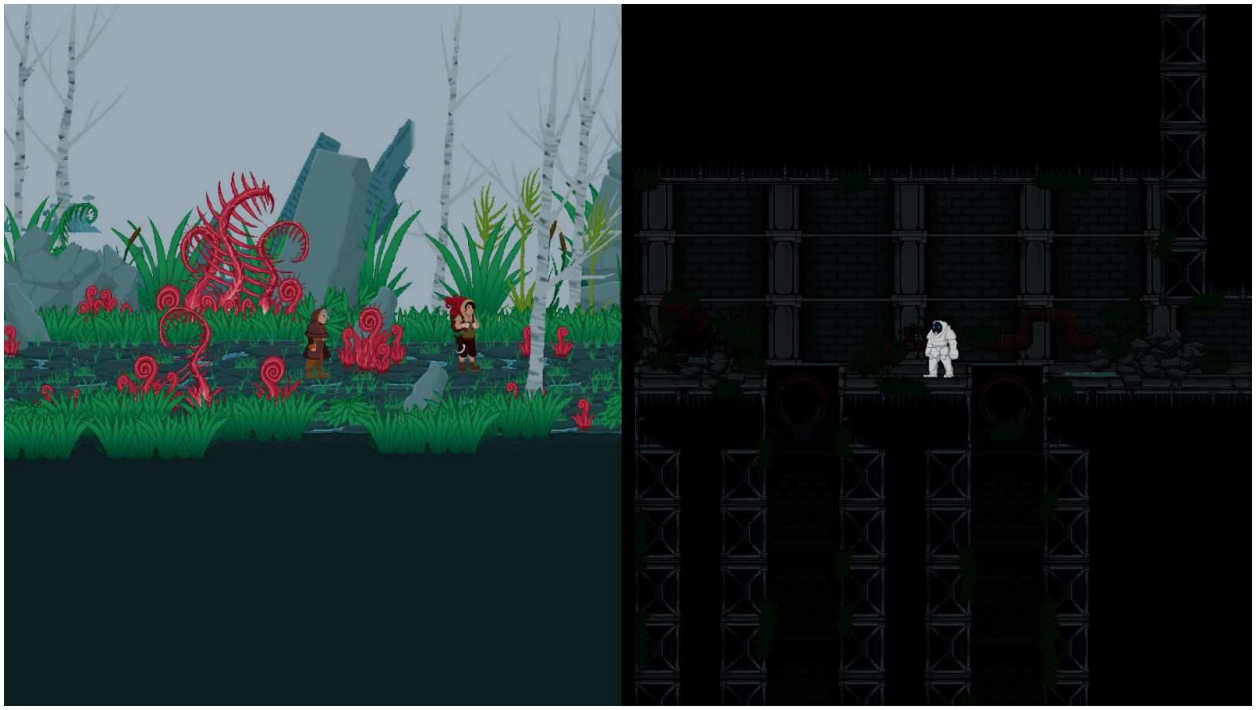

Fig. 4. Screenshot showing a split-screen perspective in *Terra Nova*, 2019.

Having the game played in split-screen is intended to keep the worlds of Terra and Nova separated from one another to signify the clear divide between Earthborn and Starborn experiences. Environments displayed during split-screen play can vary wildly to the point where players may feel like they are playing a completely different game. Although the split-screen separates the two characters' perspectives, there are moments where one character can affect the other character's narrative. Some of these moments are minor, like when the player of one character selects a particular dialogue option that then triggers a small change in the other character's environment. But some of these cross-effect moments have a greater impact on how the game is played.

When Terra and Nova both enter the clearing in the Lowlands and move close enough to one another, the screen's perspective changes.

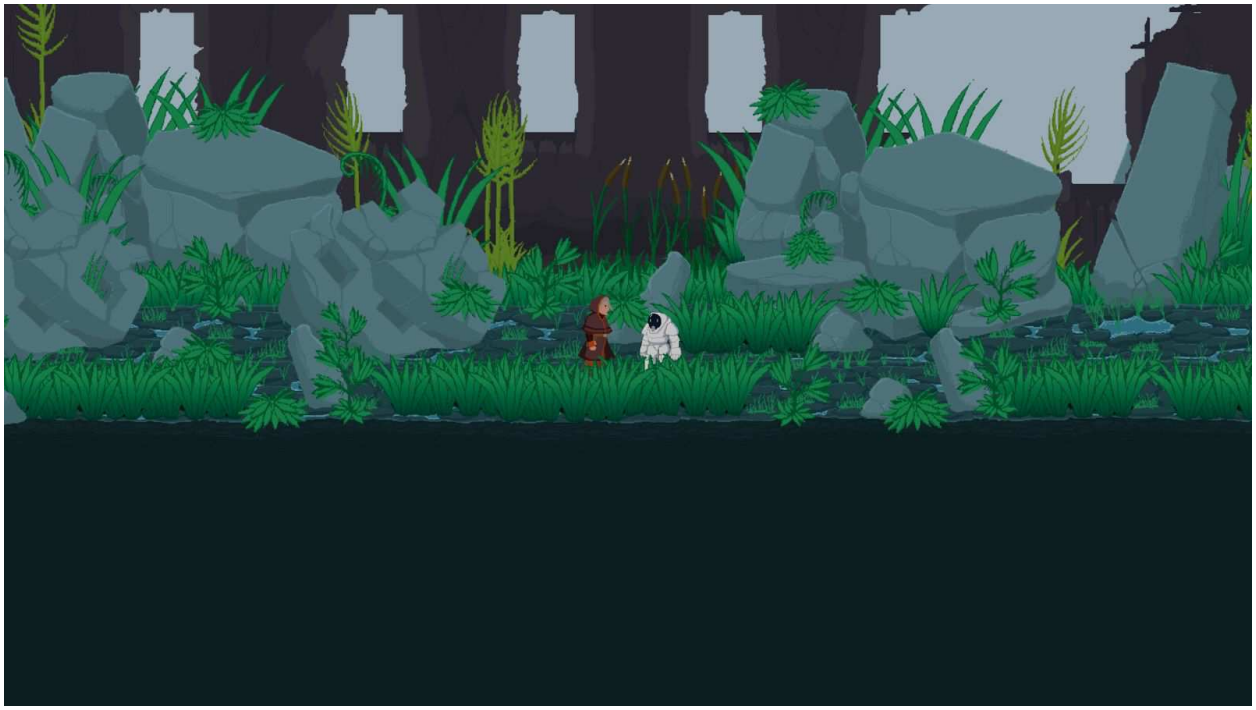

Fig. 5. Screenshot showing the shared perspective after Terra and Nova make contact in *Terra Nova*, 2019.

The divider in the centre of the display disappears and the perspective instantly transforms to a fullscreen perspective with both characters sharing the entire screen. This is the moment, Terra and Nova's first contact, when gameplay becomes explicitly cooperative. Players now share the same screen space and must communicate with one another by coordinating their movements to navigate the final platform puzzles in the game.

Cooperation between players is required to complete *Terra Nova*. There are certain platforming puzzles in the final, shared sequence that can only be solved by either Terra or Nova. As an Earthborn Elder, Terra has extensive knowledge of her people's territory and can lead the duo's quest of locating the crashed Starborn starship. She also has immunity to a species of flora called Brightshade, a future species of curled red vine, that is toxic to the touch of those who did not eat it as children. Terra can pass through Brightshade with ease, whereas Nova must avoid touching it at all costs. Some areas are only accessible by Terra because of groups of Brightshade that might block Nova from entering.

Nova has unique skills of his own. Using his Multitool, a device of his own engineering, Nova can clear away debris from the crash that is blocking his path. When Nova gets close to the

debris and activates a text-based interaction he is able to use his Multitool to clear the way. When the player confirms that they want the debris to be removed, the interaction finishes and the debris disappears so that Nova and Terra can progress onward. Without the two player's deliberate cooperation, Terra and Nova cannot progress through the platforming puzzles that require both of their unique skill sets to complete.

Art

The visuals that form the world and characters of *Terra Nova* are typical for a 2D platformer.

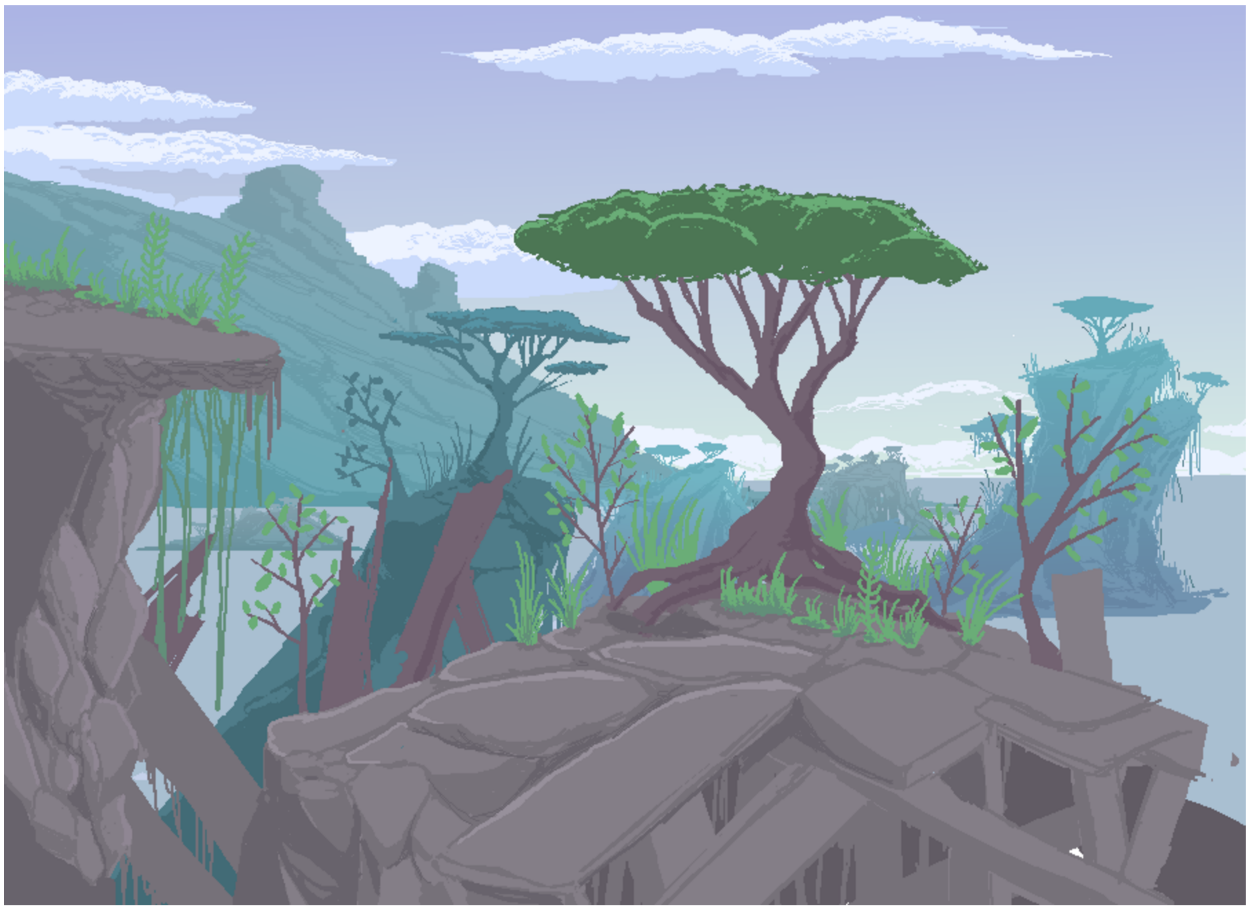

Fig. 6. Early visual proof of concept using pixel-art techniques for *Terra Nova*, 2019.

The game's visual assets were created using a "pixel-art" method, where each game asset is built from individual pixels arranged on a grid. This method gives *Terra Nova* a classic, retro arcade

style that takes inspiration from the recent wave of pixel art games like *Owlboy* (2016) and *Hyper Light Drifter* (2016).

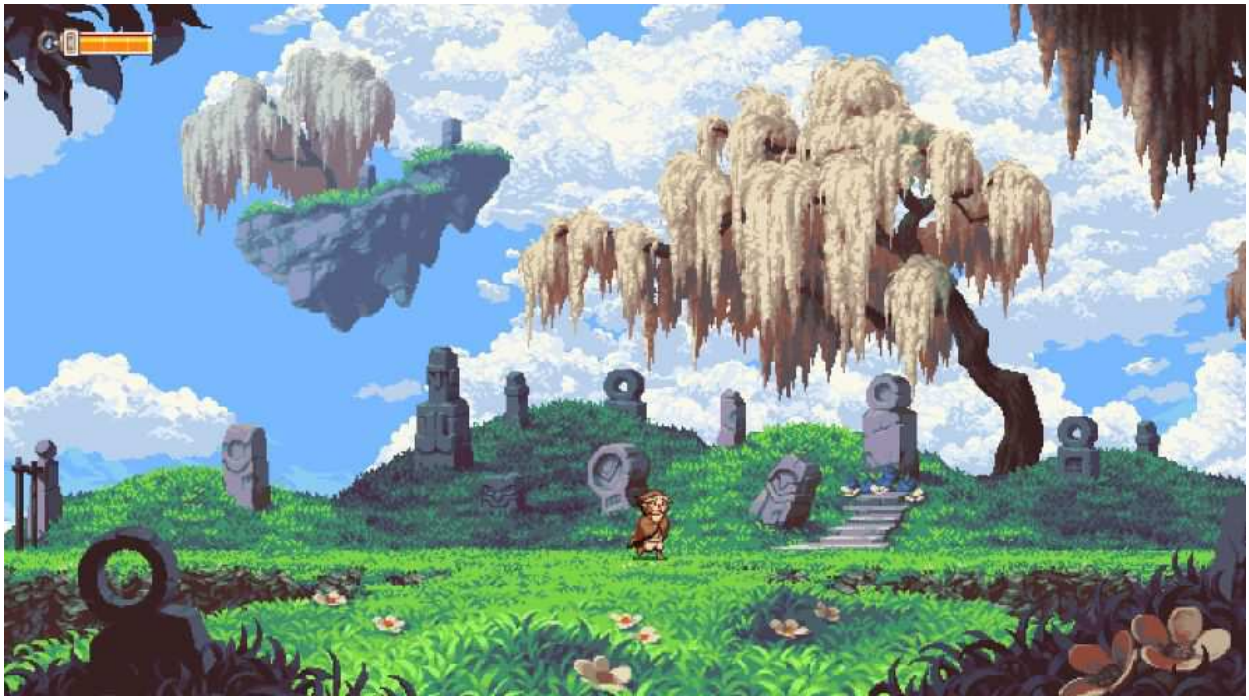

Fig. 7. Screenshot from *Owlboy*. D-Pad Studio, 2016.

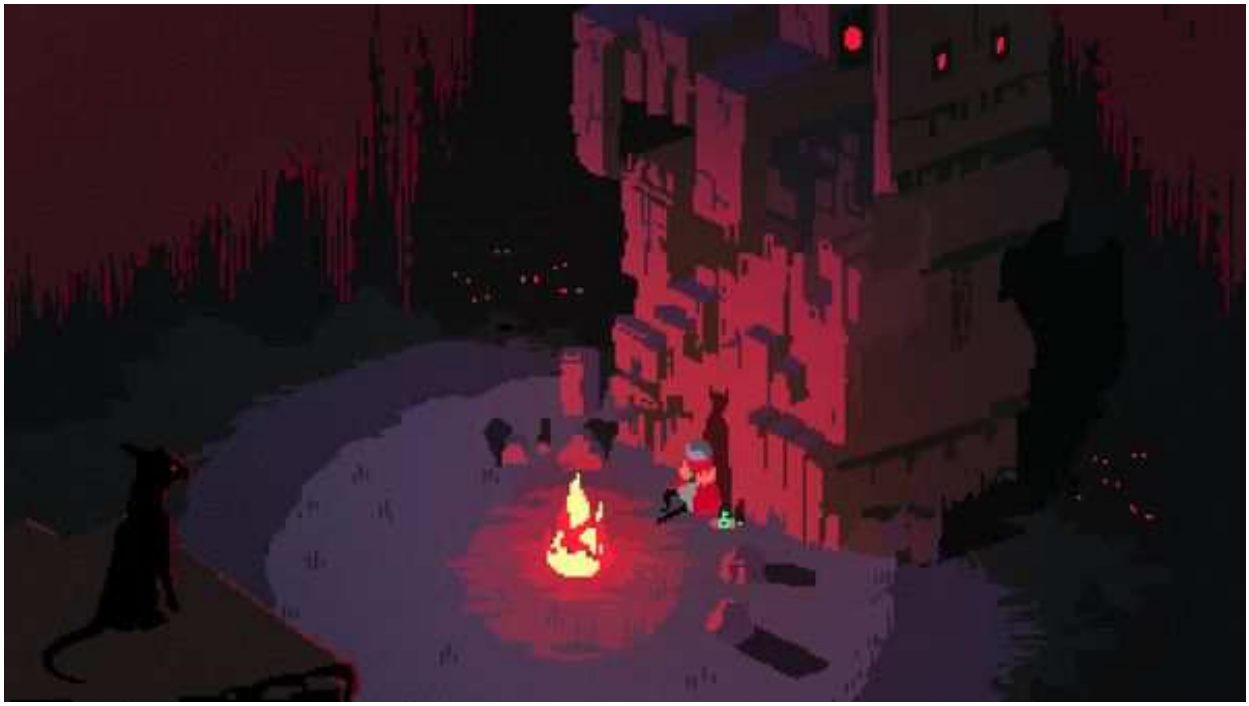

Fig. 8. Screenshot from *Hyper Light Drifter*. Heart Machine, 2016.

2D pixel art platformers are a longstanding and approachable genre due to their familiarity to a wide array of players with varying levels of experience with videogames. The visuals of *Terra Nova* are purposefully directed to match and enhance the approachability of both the narrative and mechanics of the game design.

When considering how Earthborn and Starborn characters and environments were going to be visually represented, I did not want the art of *Terra Nova* to depict stereotypical Indigenous iconography. Videogames, especially those made by non-Indigenous production companies and studios, often rely heavily on trite representations from the film and television industry to signify Indigenous characters and presences within their narratives. Visual design for *Terra Nova* actively pushes back against the assumption that Indigenous characters in media must don feathers and buckskin to truly be Indigenous. The contrast between both Earthborn and Starborn visual representations and narrative contexts aid in differentiating those who are coded as Indigenous peoples and those who are coded as Settlers. Setting the narrative in the future further enabled me to create a story with unique characters and environments that could reference events and peoples of a colonial past while also inspiring discussions about what a future Earth might look like.

From harrowingly tall cement structures from a long past era now covered in green overgrowth, to sterile corridors with advanced technologies embedded in their walls, the art direction of *Terra Nova* conveys an imagined future world where new stories emerge.
The game's Artist, Mi'kmaq illustrator and animator Ray Caplin, and I first started by developing concept art that depicted a flooded Earth and a crash-landed alien starship, setting the aesthetic looks and feel of the game's sets. The set design was done before designing the Earthborn and Starborn characters because it was important for the aesthetic qualities of the two cultures to evolve as a result of their respective environments.

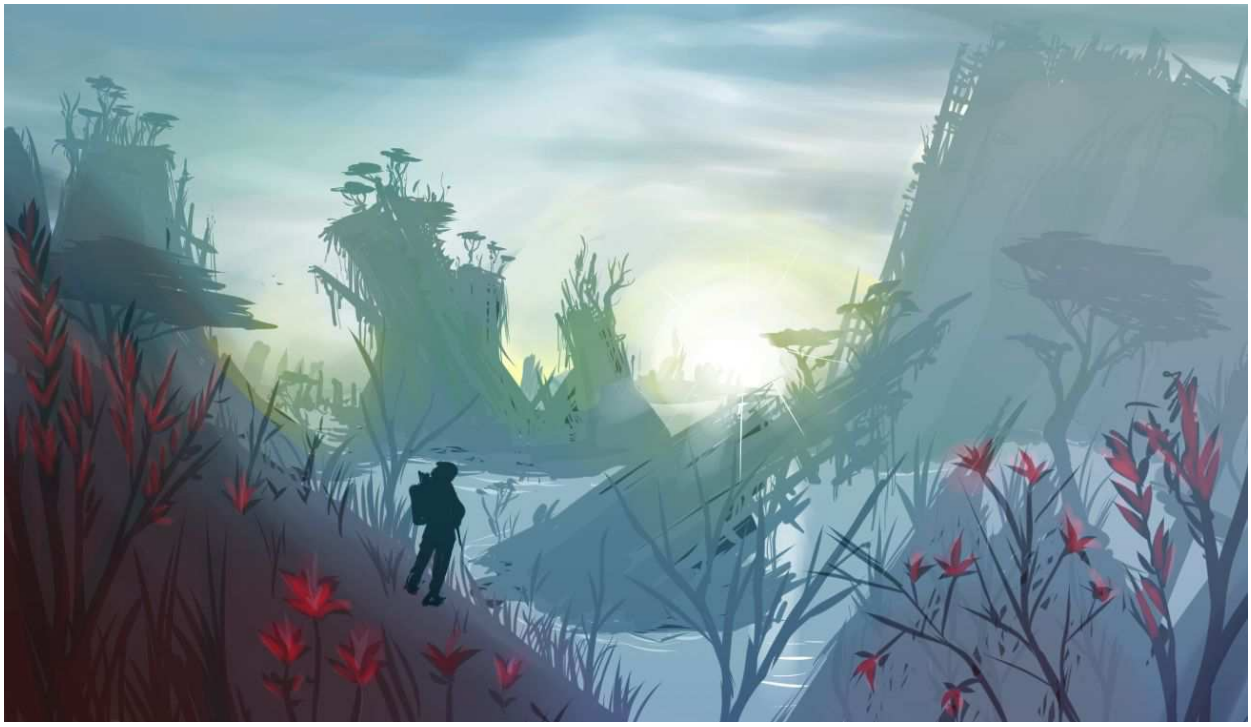

Fig. 9. Early *Terra Nova* concept art depicting a flooded planet and overgrown skyscrapers of an era long past.

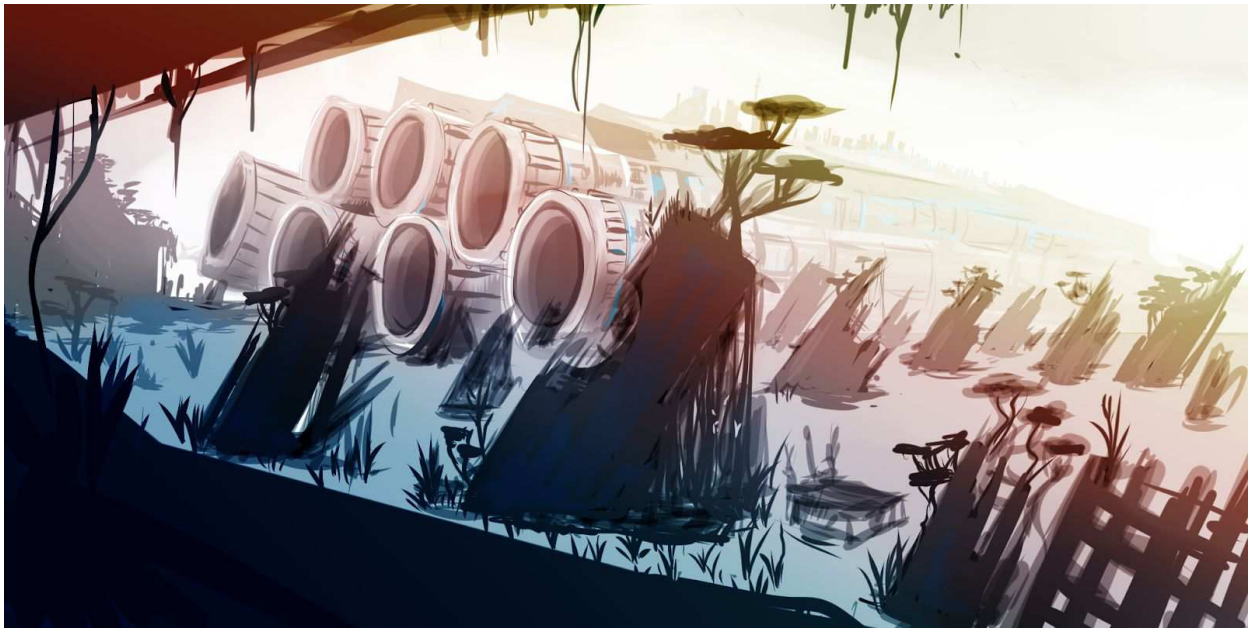

Fig. 10. Early *Terra Nova* concept art depicting the Starborn starship crash-landed in the Lowlands.

On Earth, unpredictable weather patterns of a flooded planet have made livable land scarce. A vast diversity of plants cover much of the surfaces that remain. Nature has taken over, and thus the Earthborn villages are built upon the tops of the ancient structures high above the tides. Their villages are constructed from natural materials and are constantly having to be repaired or rebuilt after storms.

The Starborn starship, on the other hand, has served as the home of the Starborn for millennia. It has been immaculately maintained to be as clean and sterile as possible to ensure its longevity. Starborn living quarters are cramped, but adequate. Elevators quickly ferry their riders to all corners of the starship. The sheer size of the vehicle is massive and even features its own skyscraper city.

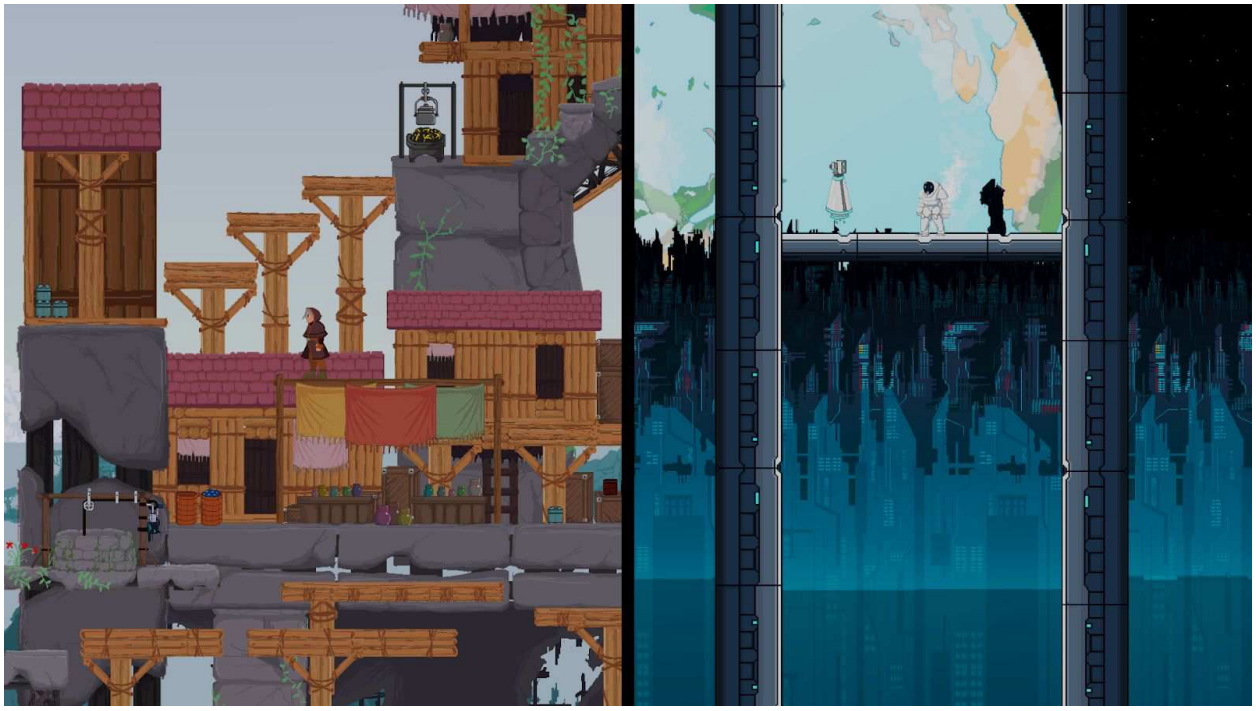

Fig. 11. Screenshot showing the contrast between the Earthborn village and Starborn Starship in *Terra Nova*, 2019.

After we determined the environmental contexts, specific colours were chosen to characterize each setting and represent their associated culture. Earth environments are comprised of muted natural blues, greens, and purples. In contrast, the starship is coloured by various shades of grey highlighted by inorganic electric red, blue, and green.

From both narrative and visual perspectives, Terra is designed to be an embodiment of Earthborn relationality to the land that sustains her people. Like their environment, Earthborn are rugged, resilient, and adaptable. They are devoted to the networks of relationships they exist within. Terra, their Elder Land Leader, is garbed in clothing designed to support her mobility and athleticism needed to move across the land. The fabrics and leathers used to make her hood, shawl, leggings, and boots are all sourced sustainably from natural materials.

Fig. 12. Terra character sprite in *Terra Nova*, 2019.

Nova is different from Terra in several ways, but maybe none more so than his appearance. Life in space requires humans to protect themselves from a number of hazards like radiation and extreme temperatures (even within the starship), so Nova must spend nearly all of his time wearing a high-tech spacesuit. His helmet even has an outward digital display that has the ability to represent his facial expressions. At first glance he may even appear to be something other than human. Nova looks similar to other Starborn while wearing their suits, but he is notably smaller in stature than adults. Not only are their spacesuits necessary for them to survive out in space, but their smooth white finish also represents the social value they place on uniformity. The Starborn have embedded their technology within their human experience and have become almost entirely disconnected from any kind of relationship with their home planet.

Fig. 13. Nova character sprite in *Terra Nova*, 2019.

Sound

When players first load into the game they are greeted by soft, ambient tones that characterize the uniqueness of both Earthborn and Starborn scenes. The Earthborn village environment is filled with sounds of people bustling to and fro, animals, and wind blowing high above the ground. In contrast, the Starborn starship environment has beeps and boops of the vessel's various robots and space instruments as they communicate. With the help of a custom left-right audio listener system developed by Beatrix Moersch, the game's Sound Designer, the unique soundtracks from both environments and player perspectives blends seamlessly together without becoming incoherent. This effect is achieved using the Unity engine by manipulating the listener component of each respective player and splitting each into left and right stereo feeds. This system is active throughout the split-screen portion of the game to tie together the contrasted split visuals of each player using sound. Whether the game is played using speakers or with two pairs of headphones connected to an audio splitter, players experience overlapping sounds from both Earthborn and Starborn perspectives.

In addition to ambient sounds, *Terra Nova* also features sound effects that enhance player immersion in the game's world. In the starship, elevators make noises and airlock doors hiss when opening or closing. Interactive dialogues also provide feedback for players as they navigate between choices. Terra and Nova even have a set of unique vocalization sounds that play when they confirm interactions with the NPCs and objects in the world. Having vocalizations for Terra and Nova without having them speak their dialogues was a way to help players connect with the

characters and their personalities. It also helped to manage the game's scope and kept the narrative dialogue fluid during the iteration process.

Each aspect of *Terra Nova*'s design is vital for guiding the themes that I was interested in exploring from early on in its development. Byway of the discussion above I have highlighted the careful intentionality behind much of the design process to highlight the multiple creative disciplines required to create it. Having the game's narrative inform the design of its mechanics, the mechanics informing the visuals, visuals informing the sound design, and vice versa at multiple stages of development, creates a game that conveys the experiences of first contact from both Indigenous and Settler perspectives in a way that is intentional. It is my hope that not only its content and player experience communicate this clearly, but that the process of its development also serves as a model for other Indigenous game developers to explore the medium. In the next section I discuss and reflect upon the development process of *Terra Nova* to highlight its strengths and shortcomings.

Production Findings

Reflecting on the production cycle of *Terra Nova* in detail is an important aspect of this research-creation project that acts as a roadmap for the game's development from conception to completion. The inspiration for creating *Terra Nova* began with my desire to explore the theme of first contact between Indigenous and Settler peoples in the future. Written records and oral histories that describe moments of first contact are rich with nuance that is often then obscured when Settler society emerges as the dominant culture in Indigenous territory. As an example, the vast majority of present-day residents of Tiohtiá:ke are only aware of the territory's history from Cartier's arrival onward despite thousands of years of Indigenous presence prior. I wanted to question what first contact might be like for both Indigenous and Settler peoples in the moments leading up to, during, and immediately after a similar meeting.

I was unsure of how playing through a first contact scenario was going to be achieved through game mechanics, so I began by fleshing out the game narrative while also strategizing how I might build a small team to support the technical and artistic requirements of the project. Setting the game's narrative in the distant future would allow me to freely play with what first

contact might look like when it happens again. Science fiction is rife with first contact narratives between humans and exotic aliens from outer space. These two communities are usually placed in direct conflict with one another (think films like *War of the Worlds* (2005), *Alien* (1979), and *Avatar* (2009)) in a very binary, "us-versus-them" way. I saw the creation of this game as an opportunity to complicate the genre. This is when the game's Earthborn and Starborn communities, and both Terra and Nova by extension, first emerged as a potential two-player game.

Multiple aspects of project preparation began moving simultaneously after I had a clear game concept ready to share with potential team members. This included firming up my creative direction, circulating job postings for Technical Director, Lead Artist, and Lead Sound Designer positions, developing a draft production schedule, and building a project budget.

I had the great fortune of receiving multiple sources of funding to support the development of *Terra Nova*, specifically from the Social Sciences and Humanities Research Council of Canada and the Hexagram research network. These funds allowed me to hire a team to create the technical and artistic aspects of the project so that I could focus on growing my skills as an emerging producer and creative director. Considering that this would be my first time leading development on a videogame project, I recognized the necessity for me to approach my leadership role from a place of humility and learning. I knew that my lack of experience as a game developer would mean that I needed to not only ask the future members of my team to produce assets for the game and implement them into the game engine, but to also share the methods that they used to complete the tasks for this project. I am aware that the videogame industry has a general reputation of overworking and undercompensating its workers (Legault and Ouellet 83; Dyer-Witheford and de Peuter 607-612; O'Donnell 110; Arguello; Glasner; Milner; Schreier). From the beginning, I knew that I wanted to invest in the people working on this project, rather than the product that was being produced. I believe that this was the best way to create the highest quality work while also ensuring a healthy working environment for all members of the project team.

Not only did I need to find people who could do the work required to make a videogame, but I also needed people who were supportive of creating a game as part of a research-creation

project focused on studying Indigenous videogame development. This meant that the potential candidates required a base level of knowledge about Indigenous peoples and contexts to be able to work effectively with concepts that this game sought to engage with. The future team members also needed to be comfortable being led by a first-time developer. These requirements limited the pool of candidates, but it also pushed me to be thorough in evaluating potential team members. The team-building process happened over several weeks in September and October of 2018. I began by looking to fill part-time Technical Director, Lead Artist, and Lead Sound Designer roles by creating and circulating the job postings in my personal networks by word of mouth. I also posted information about the jobs on the Game and Color (MTL) Facebook page to offer the opportunities to developers who would likely be familiar with making games from a racialized lens. These methods of circulation allowed me to find several candidates and conduct interviews to find the best fit for the unique requirements of this project. The final composition of the team consisted of three male individuals and one female individual; a male-dominated ratio is unfortunately commonplace in the game development industry. According to a 2017 Developer Satisfaction Survey, the International Game Developers Association determined that only 26% of respondents working in the game industry self-identified as female, transgender, or "Other" (Weststar et al.). Additionally, the team included two Indigenous and two non-Indigenous members, including myself; well above the 2% of survey respondents who identified as Aboriginal or Indigenous. With the team composition set and employment contracts signed, we were ready to begin pre-production on the game that would become *Terra Nova*.

Pre-production on the videogame began with determining the project's scope for the core narrative and technical direction of the game. Scoping considers the goals, personnel, budget, and timeline of a project to create a production schedule tailored to that project's specific parameters and constraints. During this phase I worked closely with Dehdashti to explore potential gameplay genres that might best represent the central theme of first contact, including 2D platformer and 3D open-world exploration with isometric perspective. We settled on creating a two-player 2D platformer so that both perspectives, Indigenous and Settler, could be experienced in a balanced way in a split-screen format. From there, several of the other core game mechanics quickly fell into place. The game would be cooperative to encourage players to

recognize strengths and weaknesses within both characters. We also saw the potential for the split-screen visual perspective to merge into one single screen at the moment of first contact to signify a change from separate to cooperative gameplay. It would also have text dialogues to convey the overarching narrative and an interactive system with multiple response option to encourage player agency to drive the story forward themselves.

After the core game mechanics were decided upon, Dehdashti and I created a production schedule and budget for *Terra Nova*. We believed that if the team started pre-production in October 2018 that a game of this predetermined scale could be completed by the end of January 2019 if each member of the team devoted roughly 15 hours per week to the project. We then proposed this four-month timeline to Caplin and Moersch who accepted. We collectively agreed to work on our pre-production tasks individually using a two-week-long design sprint structure. Sprints are short periods of work time that allowed us to breakdown larger development tasks that might take several weeks or months to fully finish into multiple smaller tasks that could be completed in up to a few hours. As an example, my role as Narrative Designer meant that I was responsible for writing all of the dialogue that appears in the game. I could not have written all of the dialogue files over one two-week period and kept up with my other responsibilities, so instead I broke the writing down over several design sprints and wrote a few dialogues at a time. By conducting their work in similar ways, all of the team members could complete multiple small tasks every sprint to eventually finish their larger tasks over the course of several weeks or months. This was also an effective way to keep track of our working hours, as all of us were working part-time on this project in addition to our other jobs and responsibilities. We came together in-person at the start of each sprint to discuss potential changes to the project and to create our task list for the weeks ahead. We then broke off and worked on our tasks individually and communicated using Slack, a free web-based team collaboration software (*Slack*). At the end of each sprint we met again and reported on the progress of our tasks, asked questions, shared concerns and challenges, expressed needs, workshopped solutions, and created new tasks for the upcoming week. Our team found that the sprint system worked well for the most part, but sometimes the time required to complete tasks was underestimated. This meant that some tasks needed to be carried into the next sprint cycle, taking valuable time away from other work.

Task-carryover was a trend that continued throughout the development process of *Terra Nova* and served as a consistent reminder that I had much to learn as a Producer.

The software and hardware that would be used to create *Terra Nova* was also determined in the pre-production phase. The game was built using version 2018.2.14 of the Unity game engine and programmed using C#. Unity is a powerful, industry standard software that is used by independent and corporate videogame studios all over the world ("Products"). We linked the project files to a Git repository to manage the project versions using online cloud storage (*Git*). Team members could access the latest version of the project by accessing the online repository and "pulling" the most recent changes that had been "pushed" by other members of the team. Using Git allowed the team to work remotely and on their own production computers, but still be able to work off of the most up to date version. Game art assets were created using Aseprite, a program for creating 2D pixel-art graphics, sprites, and animations (Capello). These art assets were exported from Aseprite and added to the Unity project folder. Sounds were either recorded using a NT2A microphone or drawn from Moersch's master sound bank and mixed using Pro Tools, a program used by professionals for composing, recording, editing, mixing, and mastering audio. Integrations for sounds were done using version 2018.1.3.6784 of the cross-platform audio authoring tool Wwise (*Audiokinetic Wwise*). The team also used web-based tools like Slack for communication, Trello for task management, and Google Drive to share and store project files (*Trello*) (*Google Drive*). These programs all functioned without issue on our personal production computers all running the Windows 10 operating system.

By December 2018 the team was prepared to begin the production phase of creating *Terra Nova*. Dehdashti set up the project files, programmed the game mechanics and in-engine tools, and managed the integration of art and sound assets. Caplin created modular art assets that would be arranged in scenes to form the game's environments, as well as all of the characters and their animations. Moersch recorded, composed, and mixed sounds that were then brought into Wwise and linked to the Unity project files. I crafted dialogues using Twine and exported HTML files that were then copied for use in the Unity project, designed the game's levels using paper and pencil, used the greyboxing method of building those levels in-engine using basic shapes, playtested the platforming puzzles, and worked with Dehdashti to integrate art assets

overtop the greyboxes. I fielded questions by members of the team throughout the production process and provided feedback on art assets before being finalized. I also organized meetings, kept members of the team up to date on the most recent changes to the project, and made sure everyone was paid promptly after submitting their invoices. Together, all of us formed a balanced team that supported all aspects of videogame development.

Although we had originally forecasted four months to complete the full development cycle of this project, the production time extended far beyond the late-January deadline and into May 2019. This delayed production timeline caused additional funds to be used to compensate the team for their extra time working on the project. This ultimately worked out, as I had allocated extra money at the beginning of the production schedule in case we went over the projected deadline. While I did my best to manage the project scope and respect my team members' time as diligently as possible, the development cycle of *Terra Nova* could not avoid having to make schedule changes along the way.

Notable challenges that caused delays included an underestimation of project's scope for level design, dialogue writing and rewriting, art asset creation, and bug identification and debugging. If given the chance to lead the creation of another videogame I will be more vigilant in forecasting how narrative, level design, and art assets might affect production schedules. Furthermore, I would also leave time and budget to curb the effects of unforeseen issues like unruly bugs, support team wellbeing, and better recognize feature-creep (the addition of new features when in production). These are issues of scope and production efficiency that I, as a Producer, can address.

Even with all of the production-related challenges that plagued the development cycle of *Terra Nova* and forced the team to work on the project for an additional four months, there were several notable successful outcomes of the project. The fact that a game of this size and complexity, from both a narrative and technical perspective, went from a concept to being fully completed within an eight-month period with a team working part-time is impressive.

Team cohesion and working relationships were the primary reasons for our ability to be able to complete the project. I would not have been able to finish *Terra Nova* without the time, expertise, patience, care, and passion offered by my fellow team members. There was very little

conflict between the group and we kept critical discussions both respectful and professional. Feedback on tasks was provided to all team members during sprint meetings and discussed in-person or later using Slack throughout the week. Roles were clearly defined from the start of the process to minimize the potential for confusion. I also frequently encouraged the team members to make creative contributions to the project in ways that they felt comfortable with. I wanted them to know that they were free to take a level of personal ownership over the elements of the game that they were responsible for. While I certainly had a vision for what I wanted the game to be, I also understood that every member of the team was a specialist in each of their given fields. They held the knowledge to improve or refine components of the game and I welcomed many proposed changes simply because it was advised that there was a better way to complete a certain task. This showed in Dehdashti's proposal to have some areas blocked off to a certain player until the other player triggered an environmental change for them, like when Nova is trapped in a Starship elevator and cannot continue until Terra looks through her telescope. Furthermore, *Terra Nova* was both a research-creation project and a professional development opportunity for the members of the team. Everyone learned new skills that can now be applied to the future projects we work on. As an example, this was the first time that Caplin had ever created pixel-art and showed notable improvement in skill and efficiency over the course of production. The working relationships that I intentionally nurtured throughout the production cycle of *Terra Nova* are where I see my incorporation of Indigenous research methodologies best reflected in practice. This project required every member of the team to engage with the work in a way that acknowledged their identities and expertise, as well as their personal strengths and weaknesses. They were paid a living wage and tracked their own hours using the task management tools as a guide. If certain tasks were proving to be more challenging than expected, we discussed the issues as a group and offered suggestions on how to shift the approach when appropriate. The voices of all team members were needed to make contributions that would have been impossible to do alone. Our collective strength as a group of individual experts created a project that has the potential to serve as a practical model for the creation of future projects led by Indigenous videogame developers.

Terra Nova has been featured in several media outlets' programming since I shared its production progress in an Initiative for Indigenous Futures blog post in February 2019. I have also been contacted by several organizations to give demonstrations of the game for public schools, art galleries, and workshops. Dissemination of *Terra Nova* will continue to be done on a per-request basis until the team decides to make it more readily available to other audiences. Although the game has been successful as a piece of media that others outside of the university setting have shown interest in learning about, I recognize that the true success of this project stems from how it has fulfilled my interests in exploring Indigenous videogame development through the perspective of a first-time developer.

Conclusion

I believe that *Terra Nova* makes a significant contribution by enriching the discussion of the qualities that I identified as important to Indigenous videogames, both in the game itself and in its development cycle. The project also makes a significant contribution to Indigenous futurisms by creating a sci-fi narrative that conveyed a speculative experience of first contact to players. First contact is a rich theme, worth exploring from an Indigenous narrative perspective because of how it has been used to convey Western-oriented conceptions of alien invasion. By using a videogame as an interactive medium, Indigenous and Settler perspectives were portrayed equitably to show how both communities might be affected by a first contact event in the future. I worked closely with Caplin and Moersch to create visual and audio elements of the game world and characters that actively challenge assumptions about Indigenous peoples and how they are to be represented in a game. I designed game mechanics with the help of Dehdashti that encouraged players to explore and interact with the game world in ways that purposefully drew attention to Terra and Nova's relationship with their respective environments. Even after the game completed development and the members of the team pursued other employment opportunities, it was important to continue to keep them informed and involved in the media coverage and demo activity that *Terra Nova* garnered. I have done my best to create *Terra Nova* from a place within myself that acknowledges my own mixed heritage by designing a narrative of first contact that reflects both Indigenous and Settler perspectives. Indigenous videogames are acknowledged as

such by Indigenous players. The greatest success of this project is in drawing attention to other Indigenous videogames and support the work of my fellow Indigenous developers.

Indigenous videogames are created by Indigenous developers. Indigenous videogames also utilize the interactivity of the medium to express aspects of culture, worldviews, histories, experiences, identities, community, and activism in ways that challenge the passive consumption of reductive representations of Indigenous peoples. Indigenous videogames, even the most simple ones, are sites of resistance and reclamation for their makers. Making videogames is just one of the ways that Indigenous peoples around the world are actively expressing their diverse cultures, identities, and love for themselves and their communities. In doing to, Indigenous game developers are making space for themselves within the wide-reaching network of industry and independent videogame entities that continue to feature harmful cultural tropes in their games.

When reflecting on the process of creating *Terra Nova* and placing it in conversation with my research question, I see that there is an urgent need for the videogame industry to develop more equitable and ongoing methods of consultation with Indigenous individuals and communities. Utilizing research-creation as the primary methodology for this project is my contribution to actively contesting the present methods of how development communities within the industry choose to include or silence the Indigenous voices most affected by the creation of their games. I do this by featuring the work of some of the most important developers, artists, thinkers, writers, and scholars who have made contributions to expanding the breadth of what Indigenous videogames can be. Their teachings have guided my hypotheses and methods for making *Terra Nova* into the game that it is. I am immensely proud of my accomplishments as a first-time Producer and Creative Director. However, I recognize how the creation of a videogame is rarely done by one person and see that my successes could not have come without the help of my teammates, mentors, and fellow developers. The encouragement that I have felt from the Indigenous videogame community is reflected in the words of Elizabeth LaPensée: “The more we uplift by challenging ourselves to keep this work going, and the more we push for self-determination in Indigenous games, the more we rise in parallel, standing side by side” (“Self-Determination in Indigenous Games” 136). The Indigenous videogame development community may be relatively small, but we have the knowledge and capacities to make real

changes that will impact future generations of videogame players. By uplifting one another we can both create great games and make overdue interventions within oppressive systems together.

The future of *Terra Nova* and my personal pursuits as a videogame developer are still undecided. I feel that *Terra Nova* must be shared with as many potential players as possible. Distributing copies of the finished game for free through web-based platforms like Steam or itch.io for both PC and Mac users is a goal of mine to complete after the conclusion of this research-creation project. Additionally, having the in-game text of *Terra Nova* translated into additional languages, including Kanien'keha and French, would be the next goal after making the game public. There have also been expressions of interest to have the game made available on widely-accessible home videogame consoles like Xbox One, Playstation 4, and Nintendo Switch. Considering how strict the licensing regulations are for those systems, this may prove to be too difficult without additional resources and people who have the expertise of building and shipping games for home consoles. This is a goal for a future time.

Leading the development of my first videogame production as part of this project has given me the confidence to continue to support the creation of more games. Videogames have been a part of my life for as long as I have memories and remain a passion of mine. I have found empowerment by being a creator of a form of media that has shaped me since my youth. My hope is that other potential Indigenous videogame developers can utilize this project as inspiration for making their own games.

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