NEW MEDIA

Wrapped in the Cloud: An Interview with Meghann O'Brien and Conrad Sly

Hannah Turner, Kate Hennessy, Meghann O'Brien and Conrad Sly

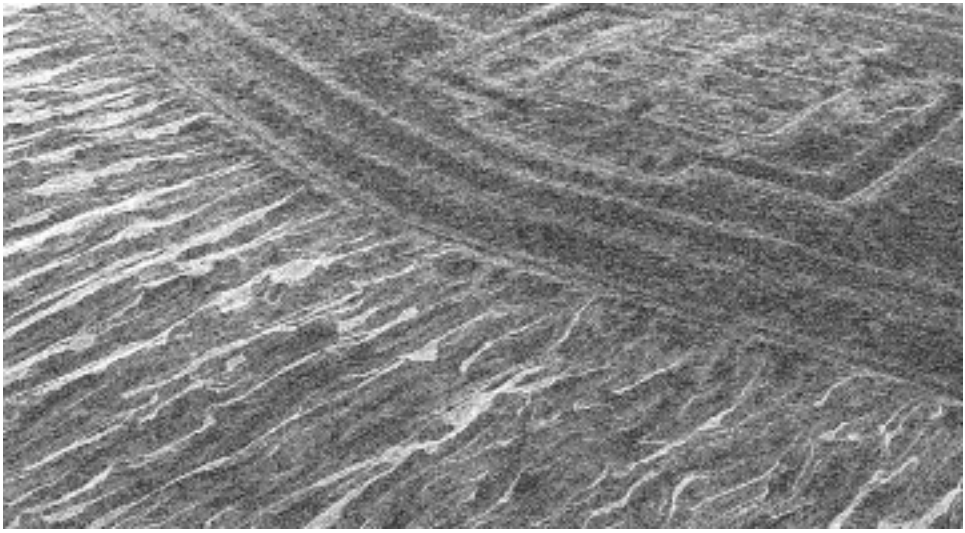

Figure 1. Screenshot of digital modelling process. From, *Wrapped in the Cloud*, Meghann O'Brien 2018. Produced in collaboration with Conrad Sly, Hannah Turner, Reese Muntean, and Kate Hennessy.

The image above evokes a landscape, undulating with two-toned folds and creases (Figure 1). It could be a coastal mountain range, or a sea floor, or a city at night, or a planetary topography. Yet the interconnecting grid-like pattern disrupts these visual cues, revealing a digital matrix. The photograph is a high-resolution detail of a reimagination of the woven artwork titled *Sky Blanket* by Meghann O'Brien (Jaad Kuujus), a Northwest Coast artist and weaver working in the traditions of basketry, Yeil Koowu (Raven's Tail), and Naaxiin (Chilkat) textiles.

The intersecting lines that form the "mountains" show the inner workings of a digital model, a kind of algorithmic bas-relief. This was created by artist Conrad Sly using an imaging methodology known as photogrammetry, which involves hundreds of high-quality photographs being taken of an object and processed using an algorithm to give a 3D structural quality to a final image, a 3D digitized object. The software relies on visual tricks to manipulate the human eye into imagining 3D relief, imagining, in this case, a mountainscape from what is "really" a flat image rendered in zeros and ones.[1] Digital modelling produces rich, detailed, and highly materialized objects in media – from video games to architectural renderings – and these are all mediated forms of visual trickery. In this particular case, the construction of this digital model is the summation of another kind of technical skill and materiality: weaving.

In the summer of 2018, Meghann O'Brien reached out to us (Kate and Hannah) to investigate the potential of digitally replicating *Sky Blanket* (Figure 2). We were excited about the opportunity to continue experimenting with 3D scanners and other digital collaborative design methodologies, as we had been doing with the Museum of Vancouver and the Museum of Anthropology and Conrad Sly and Reese Muntean.[2] *Sky Blanket* was meant to continue on display as part of the *Boarder X* exhibition, curated by Jaimie Isaac. It would travel to other institutions across Canada (like the Winnipeg Art Gallery, the MacKenzie Art Gallery, and the Art Gallery of Alberta). Yet Meghann wanted to find a way to remove *Sky Blanket* from its circulation in contemporary art spaces and use it with her family and within her community.

Prompted by curator Jaimie Issac's suggestion to explore 3D printing as a possibility for creating a surrogate object in the gallery, we began to work together to imagine a future where *Sky Blanket* could both exist as a digital installation and return home. After many wide-ranging and speculative conversations, we documented *Sky Blanket* with photogrammetry and 3D scanning. As we worked together through the digital modelling process, inspired by the emergent aesthetic qualities of the model and the questions it provoked, we decided to create a media installation that would highlight the processes of digital replication rather than present a high-fidelity digital replication of the original. We titled the media work *Wrapped in the Cloud* (Figure 3), evoking the metaphorical

[1] The specific software used was a group of programs commonly used in 3D design: RealityCapture, ZBrush, 3ds Max, Substance Designer, and V-Ray.

[2] For similar projects in which we have explored digital tools, 3D printing, and collaborative design, see: Lyons et al. (2016); Muntean et al. (2014); Hennessy and Nathan (2014); Turner et al. (2017).

Figure 2. Meghann O'Brien, *Sky Blanket*. 49 x 52 inches (124 x 132 centimetres). Merino wool, cashmere, mountain goat wool. Rolf Bettner photo, courtesy the Haida Gwaii Museum at Kaay Llnagaay.

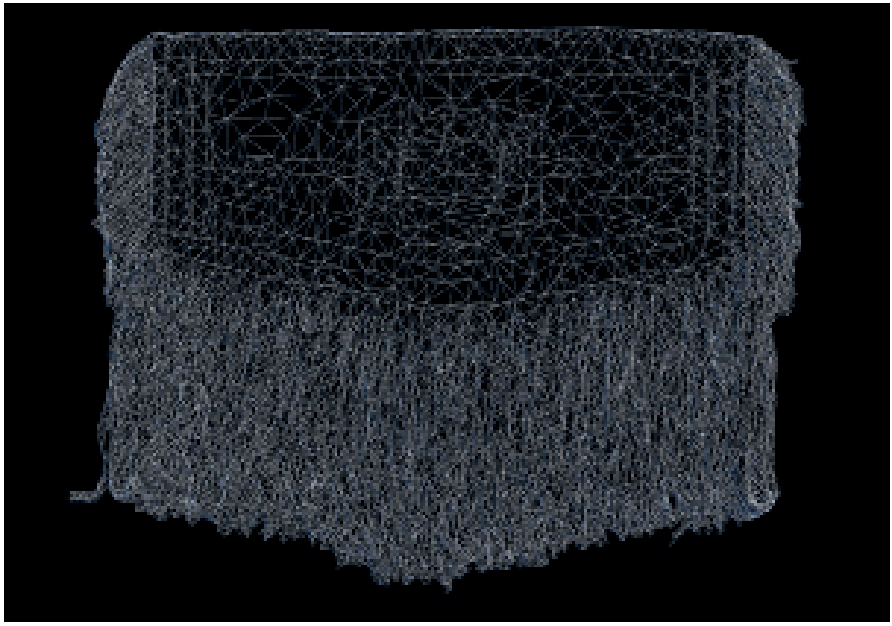

Figure 3. Video still showing a wireframe render from *Wrapped in the Cloud*, Meghann O'Brien 2018. Produced in collaboration with Conrad Sly, Hannah Turner, Reese Muntean, and Kate Hennessy.

and terminological connection between the climate ecologies of clouds and mountains, the materiality and history of *Sky Blanket*, and the digital projection itself as a digital artifact embedded in an invisible cloud of another magnitude. The projected animation would take the place of the original *Sky Blanket* in the gallery and future installations of *Boarder X*.

In the context of rapid technological change, 3D printing has moved from an eerie sci-fi dream to a ubiquitous, mundane practice. It has been used for rapid prototyping and engineering and health sciences (Mueller 2012; Rengier et al. 2010; Reyna and Striukova 2016); for experimentation and artistic and design practice (Mongeon 2015); and to document and educate about cultural heritage worldwide (Hollinger et al. 2013; Isaac 2015; Neumüller et al. 2014; Turner et al. 2017). Making 3D digital models has even, occasionally, been done to demonstrate the emancipatory potential of digital reproductions in museums (Geismar 2018). This rhetoric is not dissimilar to that used in earlier arguments about the democratization possibilities of print culture (Benjamin [1935] 1969). Printing and scanning technologies, like all new technologies, participate in existing discourses about power, democracy, labour, and the environment (to name a few). Even when working with the full collaboration of the artist, these issues still come to the fore, and we still contend with the unseen capabilities of the technologies themselves – something we are continually examining.

From the first time we met and began working, we had rich conversations about the intersections of materiality, digitality, time, environmentalism, and cultural reclamation and return. We learned from each other about mountain goat wool, 3D scanners, and wireframes. Importantly, we began to see a connection among our practice as artists, museum scholars, and researchers. As we worked through digitally replicating *Sky Blanket*, we uncovered histories of weaving-as-technology and questioned the new relations we could bring to future work in these areas.

Weaving is both a technology and a practice, and the creation of digital files has resonance with the style of weaving Meghann does. We hope to question the potential for the technology to be used in such a way that it is more than just another plastic reproduction. As new technologies often have impenetrable, resource-hungry attachments to the world, the blanket has its own attachments that help us to think more broadly about dispossession and colonial extractivist policies. This project – and the interview that follows here – reflect recognition of relationships that are by necessity beyond an anthropocentric view of what it is to exist

or to create. They incite us to question the way new technologies are developed, and offered to us, when they, as if by magic, dial up a song or turn off a light.

As artists and technicians, Meghann and Conrad speak about their experiences working together and across media and cultural milieux. We have split the conversation into four topics, or themes: (1) project origins, (2) process, (3) return, and (4) collaboration and making. As Meghann and Conrad show us with and through their practices and stories, relations with ancestors are tied up with relations with technological practices, processes, and the natural resources under threat. For us as a group, this has been a chance to work with scanning and printing as tools to think with the ready-made, yet unsteady, categories of the digital and the material, practice and theory, knowledge and culture, and past and present.

We edited the interview below collectively, using this process as an opportunity to document and share our reflections on our work together.

1. Origins: It Started with a Goat

Kate Hennessy: Meghann, can you tell us about how you sourced the material for *Sky Blanket*? How did it begin?

Meghann O'Brien: I had been asking around for a couple of years with people I know, and I was on a trip in Knight Inlet and I was talking to the family there that I went with, the Beans family they're called. Stevie Beans has been going up since he was twelve years old with his parents and grandparents and now he's in his eighties. He said he remembered they used to hunt mountain goats in Knight Inlet when he was teenager still, but that when the helicopter logging came in, like the sixties and seventies and the eighties maybe, that it really impacted the population up there so they stopped in Kwakwa̲ka̲'wakw territory.

I went on that trip but was living in northern BC, and I remember I got back from the trip in Knight Inlet and I got on the phone and a couple of friends were, like, "Oh, we got you a mountain goat. We were hunting for something else but we knew that you were looking for one," and they were along the Skeena River and they saw the goat sitting up on a ridge. So they hiked up around the ridge and it was still standing on the spot where they had seen it before, and they got it with a bow and arrow. It was interesting to me because I found out later that my family has a mountain goat dance that's performed with a bow and arrow too.

It was taking a long time to pass away so they left for the night, and then came back in the morning. It died where it was on this ledge, and then they brought it down the mountain and distributed all of the meat and I got the hide and the horns and I just had a really strong feeling from it because I was seeking to work with it because it was the original fibre that our people used for the ceremonial chief's robes.

I was wanting to work with it as a way of learning and connecting with the original material for those art forms. When I learned to weave, I was working with a merino wool coming mostly from New Zealand. I'm sure it has meaning for the people there but I don't know what that is, and I felt like the intention of approaching something as a person wanting to learn from that material or animal or substance was different; there was a different desire and respect that went with it, towards its spirit versus the animals that are exploited, and maybe, and their wool taken and sent through machines, and that intention is gone with the machine to a large extent.

How we approach something is really important. It's like this reciprocity, and it doesn't open up for you if you're approaching it in a bad way or a hierarchical domination way. I got a Canada Council for the Arts grant and spent the year working with that hide. It took a long time to relearn the spinning techniques and it was, for me, a show of devotion to the spirit of the art form.

I worked with George Emmons's (1907) book *The Chilkat Blanket*. I was working with the wool without a drop spindle or a spinning wheel or anything. When I got it all washed and everything, it was the most light, almost air-like material, and if you held it, it was instantaneously warm. It's like radiant heat almost, so amazing, and it's lofty and soft and it's pure white.

I remember a lot of thoughts around it started coming up when I was drafting the wool. You take the ball of wool after you've taken all the guard hairs out and you start stretching it between your fingers, pulling it from one hand into the other, and instead of being this huge wool ball, it turns into this long piece that's very delicate. I remember this because I didn't know how to spin it yet. I was coiling it into balls of wool, and then I had this feeling that it was as if you could touch one of those beautiful puffy cumulus clouds. And I think it was Kwiaawah Jones, who has read the ethnology of the Haida multiple times over, and she told me about all of these references to Cloud Blankets. Her name actually means "cumulus clouds coming from the northwest."

I think those references are to the borders of mats being lined with cumulus clouds or cirrus clouds, and in other books there are references to mountains being regarded as supernatural beings wrapping themselves with clouds. You can see this in the land sometimes when mountains do have that blanketing of clouds right around them. It's really cool.

That all led into this, because I'm sitting there doing the same thing over and over and over again, basically, making up my own stories about what I think things are. I saw that the process was transforming the wool from the mountain goat into being a robe, [and] that encoded in that is a shifting of states between all the different forms. It's like gas and liquid and solid states of water. There's something about the fact that animals live on mountains, and what's on their bodies is related to the clouds and the snow, and that those are all cycles of water. Because the wool spent so much time on the mountains, I felt intrigued and fascinated about how beautiful that was.

I remember there was one point with it where I felt that energy of the material, holding it, and gradually over the course of the day I felt it building up in my hands and it started travelling up into my arms, this accumulation of that spiritual material stuff. It came into my chest area and my heart and it made this, like, beautiful full feeling, this warmth that had this gentleness to it. It's regarded as a sacred material or a sacred animal all over the coast, and it made this incredible feeling in my chest, and I was sitting there over, like, hours or whatever and, to me, it felt like this opportunity to contemplate the people who've done that activity before me, and it brought me into the past with ancestors and where it comes from. There was this recognition that the work that we do today, leaving behind visual objects, physical things, these are a means of communication with the people.

The work we do today gets left for the people who come after us and even though there's these concepts of ancestors and descendants, through art we are connected and able to communicate with each other through it. But that feeling of a timeline was sitting in me, I guess, and it was, like, from the present, it was, like, extending in both directions into the past and future in a linear way, and then, it reached a place to me that felt like it was extremely ancient, so far in the past and future that it's not even fathomable I guess.

The feeling was no longer linear and it turned into this, like, arc and it came back on itself, almost instantaneously, and it made this cycling feeling where the past and future were intersecting in a full feeling in my heart, it was [an] incredible feeling. I had approached working with

the wool as a teaching tool; I just felt that this was one of the most incredible things I've felt in my whole life and it came from working with this animal that's regarded as sacred by our people historically. In the end it felt like that experience needed to be translated as the robe, so that's basically what I tried to articulate.

2. Process: Digitizing Sky Blanket

Hannah Turner: Meghann and Conrad, can you describe how the *Wrapped in the Cloud* project began?

Meghann O'Brien: I was involved with Jaimie Isaac at the Winnipeg Art Gallery, through her show *Boarder X*, in 2016. The piece [*Sky Blanket*] was finished in 2014, and basically went on exhibit from place to place; sometimes I didn't even get it back. It would just get shipped from institution to institution, which was great because I had intentions for the piece to share something that was really broad, more based around worldview rather than specific crests. But when Jaimie said she was planning to tour *Boarder X* and the tour dates were scheduled to go into 2022, I had this anxiety. I didn't want that piece to only be shown in museums and never be used in the big house.

Jaimie said she really wanted that piece in the show, and that it was an important part of the show. So she was brainstorming and texted me at, like, 1:00 in the morning one night and was, like, "I had an epiphany or something, how about we 3D print it?" I was, like, "Oh my God. That is the best idea I've ever heard in my entire life. You just solved all my problems." I had found out my work was being shipped without an art shipper recently, and I didn't want to put my work through being treated like another package, I wanted to make sure it was safe because I spent a long time making it.

Hannah Turner: Then you contacted Kate and me through Karen Duffek at the Museum of Anthropology. Conrad and Meghann, can you talk about the process of documenting the blanket and what you learned from it?

Conrad Sly: For me, it was enlightening to learn how long things would take because I had to teach myself a few new things in order to do this project. Just learning about the photogrammetry process itself and how many pictures it takes (Figure 4), how painstaking it is to set up the

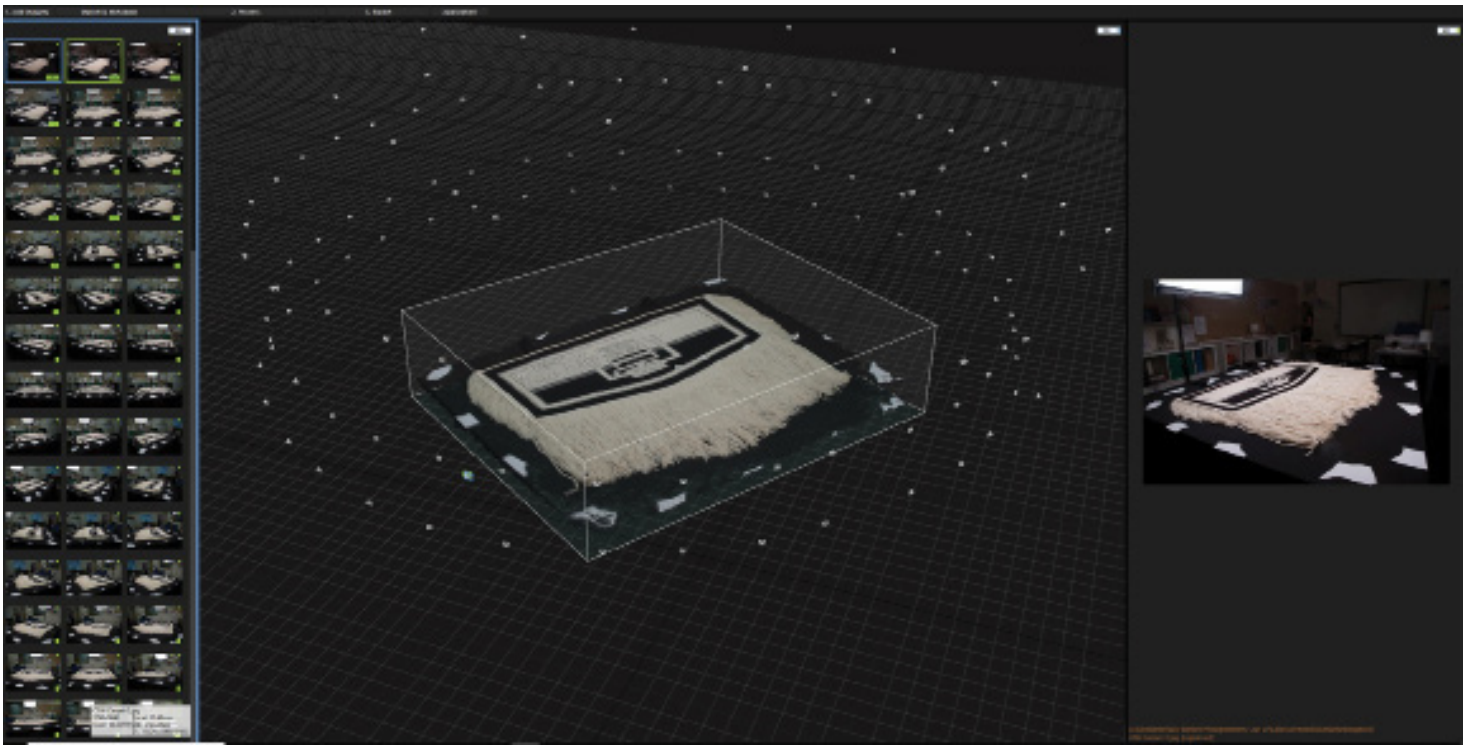

Figure 4. Screenshot of photogrammetry process. From, *Wrapped in the Cloud*, Meghann O'Brien 2018. Produced in collaboration with Conrad Sly, Hannah Turner, Reese Muntean, and Kate Hennessy.

studio and to do it and to be meticulous [about] … it and, thankfully, we worked with Reese Muntean and she was good at that.

Meghann O'Brien: I remember early on Hannah asking how involved I'd like to be in the process of seeing it happen, and I was really excited about that because, like, I love learning and I loved learning very limited amounts or just having introductions into how it all happens and works and seeing inside of your process. I was just taken so much with what an incredible human element is in technology. Conrad, you were saying that this is so taken for granted, like all of the people's efforts that have led us to where we are now.

Conrad Sly: In the spirit of the collaboration it was decided we would do the photogrammetry capture of the blanket, and we … did a scan of it with a laser scanner as well, which we didn't end up using in the final animation. In the photogrammetry process, we took a couple hundred reference photographs meticulously oriented around the object, and [ensured] very careful lighting condition[s] in order to capture the object with a high degree of fidelity.

Then, those images were loaded into a piece of software that is a networked software. My local computer wasn't even working on the photogrammetry; those images were sent somewhere else in the world to be processed and to create an object that is millions and millions of polygons in a point cloud, essentially, and then, the point cloud is triangulated into a topology.

It's an unfathomable amount of technical ability and things that have happened over the course of many scientists contributing to what we now have. It is hard to understand the way that computers are collaborating all over the world to produce one instance or replication of a thing. It's something we wanted to try to illustrate in the animation, I think, because it represents more than just a replication, I think.

They've produced these algorithms to do these very sophisticated imaging things over many, many decades. What we end up with now is these pieces of software where they hide how all of that's done. We tried to show some of the processes happening in the final animation. We had talked a lot about the goat-wool-to-blanket process, and how important that was in the meaning of the final object. There are so many processes happening in the creation of the digital version [that] we wanted to illustrate in the animation.

I came up with something that looks like a realistic object through the process of rasterization in a renderer, the translation of information to pixels on a screen, on a two-dimensional surface, it's so deconstructivist. These efforts have been made to translate the real world, how light interacts with surfaces and how objects are made, their topologies, and how to represent that on a two-dimensional surface.

If we try to represent every single fibre of this amazing goats' wool, it would take trillions of polygons to do it authentically, as authentically as possible, so there are, like, tricks to achieve that look without having to actually make something that is so overwhelmingly complex.

Going forward, the process of 3D printing the thing will be similar. We're probably going to have to send it to somebody somewhere in the world to help us manufacture 3D print with a larger-scale 3D printer or I will have to figure out a way to break the thing into multiple pieces and assemble it in a way like that.

Meghann O'Brien: That's super fascinating. I remember I got so excited when you guys were talking about working with the laser scanner. Watching you work on the screen and showing us where you were at in the stages of putting it into the computer and building, stitching it together I guess. When you could turn it on its side and it looked like a mountain range was so cool to me.

I felt through the animation of this and showing that it parallels and reveals the process of the technology, reading the physical world and bringing it into a digital form. And by showing the wireframe paths and the point clouds, that brought to life the things I love to talk about the most with the blanket and made me feel like it had more of a potential to share than the actual end object had, which was really exciting.

3. *Sky Blanket*'s Return

Kate Hennessy: Can you speak a little more about what it's meant to have the reproduction, *Wrapped in the Cloud*, on display and to have *Sky Blanket* back home? What are the broader implications of this?

Meghann O'Brien: It's been interesting how a traditional art form has brought me back into the societal and ceremonial parts of the culture … We had a feast in 2011 that celebrated the completion of the first Raven's tail robe and that was our first cultural feasting that my family had had since maybe 1920. Then, we named our whole family. But there was a

Figure 5. Nalaga (Avis O'Brien) dancing *Sky Blanket* during a Hilugwila Feast held for K'yuusdaa (Rose Davidson) at the Campbell River Big House. During this traditional naming ceremony a baby also receives their first name and haircut. Pictured left is grandmother Minnie Johnston with Hilda Sewid, her best friend since childhood. Melanie April Graham-Orr photograph, 2018.

big gap between when my sister planned our next event in the big house. Our first one was at a community hall in Campbell River, and the second one was in the big house in Campbell River (Figure 5). It was for my sister's daughter, who's the first of the great-grandchildren, I guess, in the family, and our whole family came. *Sky Blanket* fits my grandmother perfectly, and I hope my grandmother will be able to wear it. My sister asked to dance it as well, and she's a phenomenal dancer. It meant a lot for our family to be able to have our regalia even though it's something that isn't clan specific. I think it's something that anybody could wear.

It's not all the time that you see our artwork in the big house because, even though with the weaving [it] is a bit more complicated than [with the] carving, carvers have fought a long time to be considered art[ists]. Weaving still does struggle with that because it's, like, classed as "women's work" and historically it wasn't thought to be as closely tied to the potlatch ban.

A lot of the weaving traditions continue but, for me, I struggle to maintain balance between a cultural responsibility and being in this time when Northwest Coast art exists in so many other places. Weaving, to me, comes from a period of time when there was no computers or no art world. It is about how you take the skills that you have now, that your ancestors had, and how you use them in a responsible way today.

It's such a double-edged thing with the anthropology museums because, on the one hand, you have this … huge break in the cultural transmission. So those objects [in museums] are so precious and so valuable to have and to learn from. On the other hand, it's so contrary to what some of the people on the coast believe … The community will go and say, "We'd like to repatriate this object." The museum will say, "Well, you can have it back but only if you model yourselves after us," basically. You have to build yourself a museum, then you can have it back. No. As an artist, I can decide what to do with it [*Sky Blanket*]. It's my complete freedom to decide now and I don't have to; I have the skills that my ancestor had to weave it again.

I like to think when I'm weaving, once the piece is complete, that, to me, is like a body. And the patterns that are represented there, the spirit of those patterns can exist in that inanimate object that doesn't have biological life. I don't know, for me, I like believing that there's a spirit that lives in weaving, and just like with 3D printing things, the same spirit [is] able to be in those objects too.

4. On Collaborative Work and Digital Making

Kate Hennessy: What did this collaboration provoke you to think about in your own practices of making?

Conrad Sly: It was quite different [from other work] because we had so many great conversations. I felt so much more of a, I would say spiritual connection to what's happening, and I very deeply investigated things like the refraction index of goat wool, and I wanted to try to get to a level of authenticity that I previously had never really striven for just because it's not very necessary to do that most of the time in my normal work so … Those are kind of technical things.

But also, just you have these ideas of decentralized meaning and how to think about those kinds of things in ways that made me feel it wasn't just replication of a thing, the way as [with] some of my other projects that I've worked with 3D printing before, and I've always asked myself,

well, at the beginning, why 3D printing? What makes that end medium meaningful specifically to this project on a conceptual level?

I think the animation we ended up with for the MacKenzie Gallery is sort of that searching. Because I think eventually we're working towards the 3D print, so it's this in-between contemplation of why a 3D-printed thing could have new forms of meaning in today's culture and could be important and not just replication of a thing but more of, like, a companionship thing.

Meghann O'Brien: There's something that I hope we can contribute to in terms of a conversation about provocative digital modelling that aims to get people thinking about the relationship between the material and the digital, and then its own on the sort of big web of human, non-human technical relationships that it depends on.

I think that the process of making the work has been very important, and my impression of the projection that we created, and I hope also the 3D print eventually, is that what is represented gets people to think about process perhaps more than a completed high-fidelity replica. In fact, the goal that we all tossed around here is that this projection should not be only a high-fidelity replica, it should be something else.

It should be something that raises questions and is intriguing. These shapes and points and relationships between points and the way that they're connected should make people question what a digital thing is and how it's created, and also, the level of artistry and consideration that it takes to create the work, that it's not something that a machine has produced.

Conrad Sly: I question in what ways does [the machine] inform the way I think and the things that I do and how I can connect to it, when it is so isolated within this black box of technical pieces that have been assembled. Yet it is so vital to the entire operation; and in BC, we happen to have hydroelectric power. It just means that all of that energy is coming from a mountain essentially, right?

It is like weaving in the binary sense. You have the zeros and ones and they're assembled in these vast arrays of functions but also in terms of actually 3D printing something; the way that happens is like it's building the object incrementally one little slice at a time. It's similar in that sense too in the way the end object is created, but the environmental impact of 3D printing is always something I'm thinking about and the environmental impact of computing and every project, digital project, at some

point in its essence is about power and energy. Because vast amounts of it are needed to make the computer work at all. It's always something to think about when you're working on this stuff. Hopefully, we can find the right filament for the 3D printing that is more environmentally sound and that resonates more with the histories of the *Sky Blanket* object.

Meghann O'Brien: I was recently at a textile society symposium and they asked what material would be used in the 3D printing and the environmental impact. I strongly felt that it's a compromise, but the possibility that 3D printing allows for Indigenous people to reclaim objects from museum collections ... Who would have thought that would have come through this alienating technology path, in some ways, that leads back into community, and for people?

People have had to make decisions and there's had to be a lot of thinking around those decisions. I think that part of what's been really beautiful about it is still the level of consideration and willingness to make this a collaborative artistic expression of the blanket.

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