Ɂeləẃk̓ʷ — Belongings: A Tangible Interface for Intangible Cultural Heritage

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Ɂeləẃk̓ʷ — Belongings is an interactive tabletop using a tangible user interface to explore intangible cultural heritage. The table was designed for the *ċəsnaɁəm, the city before the city* exhibition. This exhibition is a partnership of three major institutions in Vancouver, BC, exploring the significant ancient village site on which part of Vancouver was built, as well as Musqueam culture and community today. The tabletop uses replicas of Musqueam belongings excavated from ċəsnaɁəm, as well as contemporary objects that are a part of everyday Musqueam life to access information about the long history of salmon fishing and the continuity of related knowledge at ċəsnaɁəm.

The design of Ɂeləẃk̓ʷ — Belongings highlights the tensions between fragmentation and continuity that are central to discussions of access and preservation of intangible cultural heritage in the digital age. In this paper we discuss the tangible tabletop interface as a response to the desire to reconnect fragmented collections and physical belongings from ċəsnaɁəm with Musqueam intangible cultural knowledge.

Tangible interaction; intangible cultural heritage; Museum of Anthropology; Musqueam Indian Band; ċəsnaɁəm

1. INTRODUCTION

Ɂeləẃk̓ʷ — Belongings is an interactive tangible tabletop display developed for the exhibition *ċəsnaɁəm, the city before the city* at the Museum of Anthropology (MOA) at the University of British Columbia in Vancouver, Canada. Using replicas of ancient belongings excavated from ċəsnaɁəm and contemporary everyday objects, the table shares stories of Musqueam's past and how their culture and traditional knowledge continues today. Susan Rowley, Jordan Wilson, and Lisa Uyeda at MOA worked with Kate Hennessy, Alissa Antle, Rachael Eckersley, Perry Tan, Brendan Matkin, and Reese Muntean at Simon Fraser University's School of Interactive Arts and Technology to develop the tabletop application.

ċəsnaɁəm, the city before the city is an historic partnership between the Musqueam Indian Band, the Museum of Vancouver, and the Museum of Anthropology at UBC (MOA), along with the University of Waterloo. In three unique but related exhibitions, the institutions introduce visitors to ċəsnaɁəm, an ancient Musqueam village and cemetery on which part of modern day Vancouver was built. The exhibition at the Musqueam Cultural Education Resource Centre & Gallery highlights the sophistication of Musqueam's technology and culture both past and present. The Museum of Vancouver showcases ancient Musqueam belongings and ties them to the more modern histories of colonialism, heritage politics, and cultural resilience. The MOA exhibition shares Musqueam values and worldview using media-rich installations and told from the point of view of named Musqueam community members' voices. The exhibition at MOA runs from January 2015 to January 2016.

Archaeologists generally refer to the material they excavate as "artifacts" or "objects". Our Musqueam collaborators understand these items to have been created by, and to continue to belong to, their ancestors. For this reason we refer to them as Ɂeləẃk̓ʷ, a həṅq̓əmiṅəm̓ term meaning belongings. By reframing belongings in this way, we emphasize the continuity of intangible forms of knowledge that are intrinsically connected to belongings. Even as fragments, the belongings from ċəsnaɁəm connect contemporary Musqueam people to their ancestors and their snəẃeyəɬ (teachings received since childhood).

Figure 1: *Testing ring and belonging prototypes for ʔeləw̓k̓ʷ — Belongings. Courtesy Reese Muntean.*

2. CONTEXT: c̓əsnaʔəm, the city before the city

c̓əsnaʔəm was one of Musqueam's largest village sites approximately two thousand years ago. Archaeological evidence suggests people lived there for over three thousand years, and according to Musqueam oral history, their ancestors have lived there from time immemorial (Roy 2010). The c̓əsnaʔəm village site and burial ground has had a number of names over the years as it shifted from burial site to archaeological site during British Columbia's colonial project. In archaeological circles it has been known as the Great Fraser Midden, DhRs-1, and Marpole Midden. Many in Metro Vancouver today would not even realize that the area around the railroad tracks, roads, and bridges on the way to the airport has an Indigenous name or historic significance.

Between the late 1800s and today, archaeologists, amateur archaeologists, the general public and looters have removed thousands of belongings from the ground at c̓əsnaʔəm. From living rooms to museums, belongings from c̓əsnaʔəm are scattered across the world. In Vancouver, there are large collections at the Laboratory of Archaeology at UBC and at the Museum of Vancouver. While a number of ornate, intact belongings were excavated, preserved and well disseminated through exhibits and publications— for example, a zoomorphic blanket pin—the vast majority of the belongings removed from c̓əsnaʔəm are fragments of stone or bone, and are often less exotic or mysterious to a common viewer (See Figure 2). While these belongings may appear less significant than more aesthetically intriguing belongings, they represent complex histories, deep ancestral knowledge and are of continuing value for the contemporary Musqueam community. Additionally, these belongings, which in many ways represent technologies used for daily activities, speak to the wealth, resourcefulness, and detailed knowledge of the Musqueam ancestors at c̓əsnaʔəm.

Figure 2: *Blanket pin and slate blade. Courtesy Reciprocal Research Network.*

The tangible interface developed for the c̓əsnaʔəm exhibition takes inspiration from the tensions between *fragmentation* and *continuity* that underscore the exhibition as a whole. As both metaphor and physical process, *fragmentation* includes the colonial appropriation and division of Musqueam territories and resources, the removal of belongings and ancestors from c̓əsnaʔəm, and the natural and inflicted degradation of the belongings themselves. Fragmentation is also represented in the vast collections of Northwest Coast First Nations belongings in museums around the world, the majority of which were acquired during a period (following the implementation of the Indian Act (1884)) of extreme impoverishment and demoralization, and in which the Aboriginal populations were at their lowest ebb (Phillips & Johnson 2005). Such collecting practices were justified by a 'salvage' paradigm, based on assumptions on the part of the colonizers that Indigenous peoples were doomed to vanish.

Today, museums are challenged to build new relationships with contemporary Indigenous peoples, including the repatriation of belongings and ancestral remains. At the same time, museums are struggling to find ways to bring representations of intangible cultural heritage into the museum space (Kurin 2004). Continuity of intangible forms of knowledge, languages, and traditions is in tension with their historical fragmentation, just as the prioritization of objects as the focus of museum collections has contributed to the fragmentation of tangible and intangible heritage.

Explorations in digital fabrication and tangible interactions have highlighted possibilities for these tools to support both the reconnection of intangible and tangible cultural heritage, and real interactions with physical belongings. For example, the National Museum of Natural History's Tlingit Killer Whale Hat project used 3D scanning and fabrication technology to appropriately display the replica of a crest object that had been repatriated (Hollinger *et al.* 2013). The University of Southern California's Interactive Art Museum took advantage of the PHANToM haptic device to enable visitors to handle 3D digital models so that objects that were too fragile, or even delicate in a cultural sense, could be made available for fuller appreciation and understanding (Brewster 2005). The *Mejlby Stone* at Aarhus University animates an ancient rune stone by projecting the story and the translation of the stone's inscription back onto itself (Basballe & Halskov 2010).

Given this context, developments in interactive media and the creation of new digital museum networks such as the Reciprocal Research Network (discussed below) are providing curators, software developers, and First Nations communities with new tools for the reconnection of fragmented collections with intangible forms of cultural knowledge, and their representation in museum exhibitions. In this paper, we discuss the tangible interface ʔeləẃk̓ʷ — *Belongings* as a response to the desire to work collaboratively to communicate intangible Musqueam knowledge associated with belongings from c̓əsnaʔəm and the continuity of that knowledge in contemporary Musqueam life.

As we will describe, the decision by MOA curators Sue Rowley and Jordan Wilson to *not show any physical belongings* in their exhibition posed a unique challenge for our team of developers and designers. How could select replicas of typical belongings excavated from c̓əsnaʔəm support the curatorial goal of demonstrating the continuity of Musqueam values and intangible cultural knowledge?

3. NEW RELATIONSHIPS, NEW NETWORKS

The development of ʔeləẃk̓ʷ — *Belongings* has roots in a paradigm shift in North American museology focused on building new relationships with First Peoples. In 1992 the Assembly of First Nations and the Canadian Museums Association joined together to develop the *Task Force Report on Museums and First Peoples* in order to work towards repairing the fractured relationships between Canadian institutions and First Peoples and to move towards open partnerships. The Task Force described the need for the inclusion of First Peoples in the interpretation of their cultures by Canadian institutions, calling for a change in the power relations between museums and First Peoples. The Task Force further pushed museums to increase access to collections by First Peoples and to create policies on repatriation of cultural heritage and ancestral remains. Similar mandates were underway in the United States with the 1990 passage of the Native American Graves Protection and Repatriation Act (NAGPRA) (Council of Canadian Academies 2015).

As museum anthropologist Ruth Phillips (2011) has noted, in the early 1990s, digital imaging, database, and search technologies were rapidly advancing at the same time that Canadian museums were looking for new ways to implement models of partnership and collaboration mandated in the Task Force Report. Phillips asserts that new technologies provide unprecedented new tools for both reassembling and creating new forms of access to dispersed collections of Aboriginal cultural objects.

Recognizing in 2001 that museums did not yet have the infrastructure to support such a collaborative museum model, the Musqueam Indian Band, the Stó:lō Nation, the U'mista Cultural Society, and MOA applied for a grant as research partners to develop a digital infrastructure for museums, researchers, and community members. The outcome, the Reciprocal Research Network (RRN), creates an online research forum enabling community members, researchers, and institutions to access collections and information housed in different geographic locations (Rowley 2013).

The RRN also aims to support different cultural systems of knowing. Along with maintaining and sharing museum data on Northwest Coast collections, community partners are able to contribute their own knowledge about belongings. By creating virtual space to share and foster discussions around the collections, the RRN community can contribute to a greater understanding of belongings than is present in the original museum records (Rowley *et al.* 2010). The RRN was used by curators at all three of the *ċəsnaʔəm, the city before the city* exhibits to share digital records of belongings from their institutions, to collaboratively develop curatorial texts, and to connect intangible knowledge to tangible belongings.

With the established relationship between the Musqueam Indian Band and MOA, and the collaborative research infrastructure of the RRN well in place, we therefore had a solid foundation from which to design a tangible interface that 1) makes fragments from the large collection of belongings from ċəsnaʔəm accessible to the public; and 2) connects them to the intangible stories of the belongings and Musqueam culture through contemporary voices. However the design and development work for *ʔeləẃkʷ — Belongings* relied on direction from the curators of MOA's *ċəsnaʔəm, the city before the city* exhibit, who made the bold decision not to include any ancient belongings at all. We discuss this decision, and how it informed the design of the tangible interface, below.

4. CURATING CONTINUITY

New museological discourse in the late 1970s included the ideas that knowledge is social, that knowledge is shared, and that objects themselves embody knowledge. Indeed, "a necessary condition for the generation of knowledge is engagement with objects" (Srinivasan *et al.* 2009).

It is difficult for museums to interest visitors in the seemingly unimportant fragments from the past, and usually only a carefully curated, well-preserved selection of 'treasures' are exhibited. MOA curators

Susan Rowley and Jordan Wilson discussed the challenges and opportunities afforded by exhibiting a fraction of the collection held in trust for Musqueam at the UBC Laboratory of Archaeology (LOA), all the collection, or none of the collection. After debate, and discussions with Musqueam exhibit advisory committee members, they determined the MOA exhibition would not feature any ancient belongings.

A number of factors influenced the decision. Displaying all of the thousands of belongings removed from ċəsnaʔəm and housed at LOA would be a logistical challenge. Displaying a few would force the curatorial team to select and interpret belongings in the way they were trying to avoid. Certainly displaying belongings associated with burials and ceremonial use would be inappropriate culturally, but given the history of excavation process at ċəsnaʔəm it would be nearly impossible to determine the exact provenance of particular belongings and thus how appropriate it would be to display. Wilson, a member of the Musqueam Indian Band as well as co-curator, furthermore noted that from the community's perspective, ċəsnaʔəm is not viewed as an archaeological site, rather, it is commonly referred to a former village and cemetery, an important part of Musqueam's extensive history. In fact, the excavations and removal of ancestors, and many other forms of Western research, have been viewed as contravention of cultural values and protocol, and damaging to the community.

Rowley and Wilson were also attempting to challenge the meaning of an archaeology exhibit. As MOA is known for its collecting, displaying, and interpreting material culture, visitors would likely expect to see ancient objects supplemented by academic experts' scientific views. They wanted to convey that material culture is not equivalent to culture; there is much more to Indigenous communities than art and artifacts. Displaying only the historic runs the risk of falsely implying that Musqueam are a people of the past or that their practices, values, and traditions have diminished over time. Rather than focusing on the tangibles, MOA highlighted the intangible values, worldviews, and teachings of Musqueam culture.

ʔeləẃkʷ — Belongings is one component of the MOA exhibition. While the tangible table was designed with MOA's curatorial philosophies in mind, the table's development team saw this as an opportunity for incorporating tangible technology within the museum space to tell the greater stories of Musqueam history. It could show how the importance of ancient belongings is not about their form and function but is about their connection to the ancestors and the teachings (snəẃeyəɬ) that were handed down from them. These snəẃeyəɬ are

part of everyday life, in the past as well as in the present. By using ancient belongings that would have been common in their own time to visualize the story of Musqueam's long history of knowledge and culture, we could show the culture and practices with contemporary everyday items that are similarly common today.

5. ʔeləw̓k̓ʷ — BELONGINGS

ʔeləw̓k̓ʷ — Belongings is a tabletop application for the Samsung SUR40. The SUR40 is a horizontal HD display with legs. Using Microsoft PixelSense, which utilizes infrared sensors to detect objects the screen, the table can detect blobs, fiducial tags, and up to 50 touch inputs. The ability to detect blobs and tags extends the table's possibilities beyond a simple touchscreen and offers the ability to support tangible interactions. By utilizing the touch and tag reading functions of the table, we have the opportunity to combine physical replicas of cultural belongings to additional media such as text, images, audio clips, and videos.


Figure 3: *The twelve contemporary and ancient belongings. Courtesy Reese Muntean.*

The tangible interface of the system comprises six replicas of ancient belongings excavated from c̓əsnaʔəm (net weight, celt, slate blade, harpoon, a decorated fragment, as well as a piece of cedar bark that stands for everything that is not preserved), six contemporary everyday items (ice cube, keys, status card, tide chart, quarters, and a Coke can), and two activator rings. The replicas, cast from molds and hand painted by members of our design team to resemble the originals, sit together with and contemporary belongings on a collections cart. Juxtaposed with ordinary items like keys and a crumpled tide chart, visitors are invited to pick up the ancient belongings to discover their importance. Conversely, seeing a Coke can on display encourages them to question how mundane modern objects are relevant to Musqueam culture.

Three monitors are situated on the walls surrounding the table and the belongings cart; two of these are associated with each of the rings while the third displays photographs of the process of cleaning and filleting a fish. The table itself shows a top down view of a fish-cutting table. On the table are a salmon, salmon fillets, a knife and sharpener, and an iPhone. Around the table are related supplies for fishing and fish preservation: fishing nets, firewood, an axe, a gas can, an oilcan, and a tote of fish.
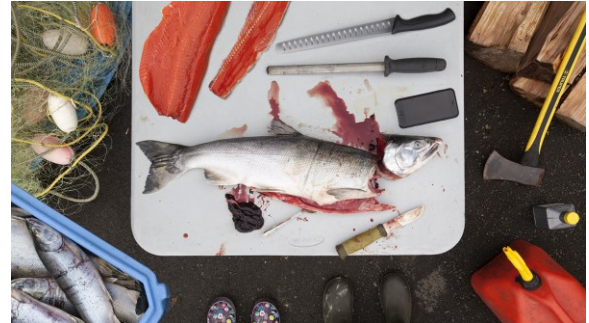
Figure 4: *The fish-cutting table. Courtesy Reese Muntean.*

When a visitor places a belonging in one of the rings on the table, basic information about the belonging and its use appears on the table. Additional images of similar belongings from the LOA collections database appears on the ring's monitor so visitors can see other examples of this type of belonging.

Visitors can connect the belonging to its related area of the fish-cutting image. When the correct section of the image is located, information about the belonging's use and place in Musqueam culture appears. An assortment of images, quotes, documents, and text will tell the story of how the belonging functions in Musqueam life (long ago or today) and why it is important. Some of the connections made between the belongings and the underlying image are more expected than others, but they work together to show the complexities of their interrelated histories.
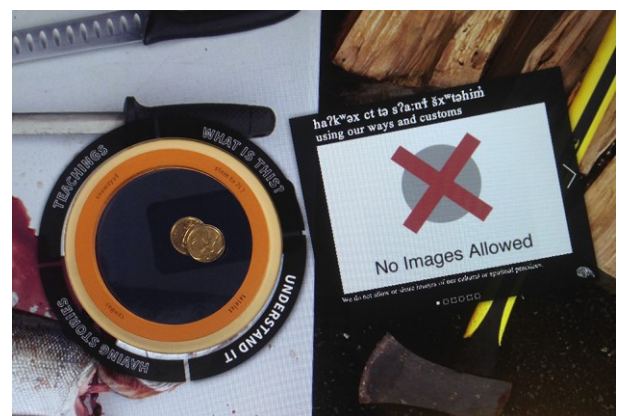

Figure 5: *The quarters connect to the iPhone. Courtesy Reese Muntean.*

The value of the two quarters, for instance, is symbolic. Two quarters are used in ceremonial contexts to thank people who have contributed in particular roles. The quarters match to the iPhone in the image, because while recognizing that we live in a time where information is literally at our fingertips, Musqueam keeps their spiritual and ceremonial lives private from those outside of the community.

As məṅeɁɬ – Johnny Louis explains in a quote that appears on the table, "It's just a part of us, part of our life and traditions, and then one of the very few things we have left. So we have to protect it, so it doesn't get carried away."

Visitors can further explore the belongings by connecting an ancient belonging to its contemporary match to learn about the continuity of Musqueam culture from the past to present day, learning what has changed and what has remained. When visitors connect two seemingly unrelated belongings from the past and present day, a series of texts, contemporary images, historical documents, and quotes from community members appear on the table. Through this assemblage of information, visitors gain insight into the history of Musqueam culture and how their traditions remain part of their everyday life.

The slate blade and ice cube are two such belongings that match up to tell a larger story about their importance in fish preparation and preservation. The slate blade was used to process fish for drying, smoking, and cooking, while today fish are often preserved through freezing. Yet the fragments of information tie the concepts of everyday fish preservation into the greater issue of fish conservation and sustainability, as overharvesting by commercial interests and environmental changes have had a dramatic impact on the salmon, sturgeon, eulachon, shellfish, and other culturally significant species.
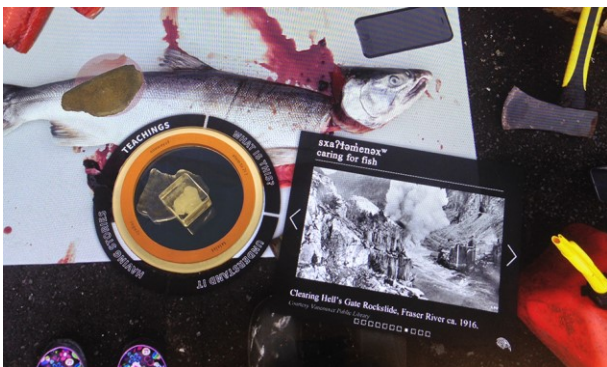
Figure 6: The slate blade pairs with the ice cube. Courtesy Reese Muntean.

Community member secəlenəxʷ - Morgan Guerin explains salmon fishing and issues in the region. "The sockeye salmon run is species-specific and year-specific for every one of the four-year cycles. There are four cycles of them and two cycles being off and two cycles being on. Two years of abundance and two bad years. They used to historically of course be all good years except when the rockslide triggered during the railroad construction at Hell's Gate in 1914 collapsed one whole run."

Figure 7: Detail of historical image from the table, "Clearing Hell's Gate Rockslide, Fraser River ca. 1916," Courtesy Vancouver Public Library.

The information is quite specific, but it also conveys the larger message about Musqueam life today. While Musqueam's traditional ways have been fragmented by colonialism, they are actively working to increase the salmon stock, collaborating closely with other Indian Bands as well as Canada's Department of Fisheries and Oceans.

Once a visitor has fully explored a belonging though these interactions and activities, they gain access to a short video of a Musqueam community member sharing their own lived experiences, often relating important moments of learning about history and culture.

6. CONCLUSION

In our efforts to create a tangible interface for the exploration of intangible cultural heritage, Ɂəlɘẃkʷ — Belongings has taken inspiration from the tensions that exist between historical fragmentation of cultural heritage collections (including colonial collecting practices, looting, geographical dispersal, and removal of belongings from intangible cultural life) and the ongoing role of belongings in the continuity of cultural knowledge. It builds on decades of work in the North American museum community and Native American and Canadian Aboriginal communities to build new relationships. This has more recently included the collaborative development of digital museum networks such as the Reciprocal Research Network that facilitate

collaborative research, access to digital representations of belongings, and the re-connection of geographically dispersed First Nations belongings. Digital networks like the RRN provide resources for the development of projects like ʔeləw̓k̓ʷ — *Belongings*.

The tangible interface further responds to the challenge of representing the significance of fragments and everyday belongings, and their connections to contemporary Musqueam culture, in the museum space. Replicas of belongings provide the opportunity for museum visitors to spend time with Musqueam belongings from c̓əsnaʔəm and to interact with them in a way that the exhibition of real belongings would not allow.

ʔeləw̓k̓ʷ — *Belongings* encourages interactions between visitors, the sharing of information, and the informal discussion of the intangible knowledge being shared about Musqueam belongings. In reframing what archaeologists refer to as "objects" or "artifacts" as Musqueam belongings, we support a growing movement aimed at decolonizing museum practices. While engaging with issues of access, preservation, and continuity of culture that are central to discussions of digital heritage, the overarching goal of this project has been to communicate Musqueam cultural values, to build greater understanding, and to move towards a future where decolonization is a priority for us all.

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Figure 8: Demonstrating ʔeləw̓k̓ʷ — *Belongings*. Courtesy Reese Muntean.