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# Digital Representation of Indigenous Peoples through Sharing, Collaboration, and Negotiation: An Introduction

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## Abstract

In the past decade, digital media have been increasingly employed in museums in a variety of ways. This practice capitalized on the new medium's effectiveness in connecting a variety of stakeholders across multiple key issues. Projects representing Indigenous communities are not an exception to this trend. This special issue critically reflects on the politics of representation in the process of reframing culturally specific concepts in a digital environment. In addition to discussing potential benefits of digital media to working with Indigenous communities, papers in the special issue also carefully weigh the benefits and shortcomings virtual environments may bring to digital collaborations with Indigenous communities.

## Disciplines

Anthropology | Digital Humanities | Indigenous Studies | Social and Cultural Anthropology

## Comments

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# Digital Representation of Indigenous Peoples through Sharing, Collaboration, and Negotiation: An Introduction\*

Christina Gish Hill and Medeia Csoba DeHass

*Abstract: In the past decade, digital media have been increasingly employed in museums in a variety of ways. This practice capitalized on the new medium's effectiveness in connecting a variety of stakeholders across multiple key issues. Projects representing Indigenous communities are were not an exception to this trend. This special issue critically reflects on the politics of representation in the process of reframing culturally specific concepts in a digital environment. In addition to discussing potential benefits of digital media to working with Indigenous communities, papers in the special issue also carefully weigh the benefits and shortcomings virtual environments may bring to digital collaborations with Indigenous communities.*

[Keywords: *digital media; ethics; Indigenous peoples; local knowledge; material culture; museums; online video sharing; ontology; video games.* Keywords are derived from the American Folklore Society Ethnographic Thesaurus, a standard nomenclature for the ethnographic disciplines.]

One continuing challenge central to museum work involves negotiating the complexities of representation, particularly the gap between museums as sites for the production of new knowledge and as sites for the confirmation of hegemonic narratives of existing knowledge (Bodinger de Uriarte 2014, 154). This continual struggle is particularly underscored by the attempt to review, update, and assemble information about each collection piece in order to replace and eradicate antiquated knowledge that has been used in the past decades to create counterfactual representations of Indigenous peoples. Creation of new knowledge often requires undermining established representations. When considering the marginalization of Indigenous knowledge historically in the space of the museum, the recent shift of producing new representations of Indigenous peoples for the wider public in collaboration with Native peoples represents an important effort to bring their perspectives into the process.

Because representation and meaning may be different in a local space or in an Indigenous context than in a museum, the process of presenting this knowledge to a wider public must also involve negotiation that ideally occurs in conversation with Indigenous peoples. For example, as Nancy Wachowich discusses in this issue, sealskin garments only acquire a life force if they are worn and used in the way that they were made to function by the seamstresses of the Inuit Mittimatalik Arnait Miqsuqtuik Collective. This life force, however, does not come to permeate the garments when they are stored and exhibited in museums. These Inuit clothing items are imbued with different meanings when they reside in the community than when they are placed in a museum, and the lived experience of these materials can only be explored in conversation with the Native

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peoples who created and used them. This example spurs the question of how best to reflect Inuit understandings of their own objects when they are placed in a museum. If museums are to bridge the gap between hegemonic knowledge and Indigenous perspectives, collaboration between the two is necessary.

Eva Malvich, curator and director of the Yupiit Piciryarait Tribal Museum ([www.avcp.org/programs/yupiit-piciryarait-museum/](http://www.avcp.org/programs/yupiit-piciryarait-museum/)) has argued that “Elders should be the ones guiding us through the collections,” especially those of tribal museums. Without such conversations, the meanings of objects to the peoples who call them their own lacks context and depth. When discussing tribal museums, Malvich (2016) has called “the museum [...] a reflection of the culture [...] A culture without walls.” The main mission of tribal museums, unlike other type of “memory institutions” (Gill 2001), is to represent one particular culture: their own. For these reasons, tribal museums approach the concept of heritage from a perspective that does not separate it into artificial categories such as material culture, tangible and intangible heritage (UNESCO 2017a, 2017b), or even artifacts and documents. It is all theirs, and as such, it all belongs to them. As Ms. Malvich pointed out, all of their collections reflect their culture and for this reason, they must create an approach that addresses this holistic view. Their curatorial rationale and practice are inspired by local epistemological knowledge and perspectives and as such are carefully formulated and revised to express that which is culturally, situationally, and contextually appropriate. Therefore, many tribal museums incorporate archeological artifacts, ethnographic pieces collected in the past, contemporary art pieces, archival documents, audiovisual recordings, photographs, and a rich programming archive without imposing culturally inappropriate categorical divisions. Most tribal museums also have a robust education and outreach arm that is dedicated to connecting what is kept inside with those who are living the culture, to make “a culture without walls” a lived experience.

Like these museums, digital media have also created a culture without walls. Anyone exploring the use of digital media as a mechanism for preserving and dispersing cultural knowledge has navigated the gap between hegemonic knowledge and Indigenous perspectives (Brown and Nicholas 2012; Srinivasan et al. 2009; Solomon and Thorpe 2012). The possibilities digital media and new technologies offer to communities, researchers, and institutional collections are many, yet one particular aspect, the ability to take ideas familiar to Indigenous peoples and represent them through a fresh medium to a substantially wider and potentially culturally diverse audience, has created new questions concerning representation, authority, and negotiation in collaborative work. The fact that digital materials can be transmitted instantaneously and with such ease multiples these issues (Hennessy 2009), requiring careful consideration of the consequences on the part of creators of media that represents Indigenous peoples. Sharing information on the internet inherently exposes Indigenous knowledges to the possibility of misappropriation and misuse, often in ways that cannot be expected or predicted (Hennessy 2012; Leopold 2013). Finding solutions to emerging challenges can be framed to embrace learning from the outcomes of ongoing projects. Such solutions can also help us evaluate the ways in which constantly evolving technologies continue to shape the process of creating culturally relevant, locally meaningful, and ethically sound digital materials. As Nancy Wachovich (in this issue) argues, living digital archives are like organic materials, always changing, never finished. Due to this rapidly changing digital environment, ethics and best practices are only a starting point in the discussion centered on the politics of representation of Indigenous peoples and communities.

To fully explore questions regarding the most challenging aspects of digital collaboration, scholars must address the need to incorporate Indigenous epistemologies in project design and outcomes. Collaboration can take many forms including co-authoring papers or projects, co-presenting, or co-designing project activities, among others. At minimum, collaboration involves working together to develop a project in a sustained manner that allows all participants to contribute in a meaningful way and according to their interests. Authors in this issue explore the consequences that emerge from digital media that ignore Indigenous interpretations of materials that local people understand in depth. Moreover, the articles in this issue explore strategies that successfully facilitate collaboration to translate key-concepts that are central to Indigenous worldviews, but that can become estranged in the digitization process. Exploring such strategies is crucial in working towards deconstructing colonial infrastructures.

Drawing on the rich data from digital initiatives that contribute to creating digital representation of Indigenous peoples, this special issue critically reflects on the politics of representation in the process of reframing culturally specific concepts in a digital environment. It engages with discussions in museum studies concerning preservation of both knowledge and material objects using digital media, the importance of digital media as cultural artifacts, and the challenge of presenting Indigenous perspectives to a wider audience while respecting community protocols. All of the papers in this issue explore the necessity of collaboration and the inherent fluidity associated with the creation of digital media. We argue that while it has significant limitations, digital media can be useful for preserving and dispersing cultural knowledge as long as it is mindful of active collaboration from the start of a project while also thoroughly incorporating local knowledges in methodology, project design, and as a theoretical framework. When project partners accomplish these goals, digital media and new technologies have the potential to be valuable tools for decolonizing hierarchies embedded in research methodologies aimed at heritage preservation.

The projects presented in this issue are diverse in foci as well as in the type of digital technology used. Two of the papers discuss video games representing Indigenous communities. Christina Gish Hill reflects on the necessity of collaboration as part of the process of creating an educational video game about Northern Cheyenne removal, *Cheyenne Odyssey*, while Barbara Bodenhorn and Olga Ulturgasheva look at decolonizing educational systems and the use of IT for cultural survival. Wachovich looks at the impact of a small-scale digital archiving project on the social lives of an Inuit sealskin sewing cooperative's seamstresses. Finally, Medeia Csoba DeHass and Alexandra Taitt take a look at the contribution 3D modeling in heritage preservation can make to digital repatriation, discussing the potential for increasing knowledge exchange and collaboration between museum collections and origin communities. The best approach to learning about the potentials and limitations of digital media and technologies in collaborative work with Indigenous peoples is to look at the challenges and successes of individual projects. What we offer in these case-studies is the opportunity to evaluate primary research results, the unexpected impact on a broader social-cultural context that arise from using digital media, the questions that surface from the unforeseen reaction from project partners, and the challenges that prompt researchers to actively and constantly revise what constitutes an ethically sound research agenda in cyberspace. In short, we aim to explore facets of the larger question: how useful is the digital in representing Indigenous interests and perspectives?

## **Local Relevance**

All of the projects in this collection approach the concept of Indigenous heritage, as presented in digital media, in ways similar to the perspective used by tribal museums in managing their collections and programs. Instead of concentrating on material culture and contextualizing material cultural heritage for a variety of audiences, we focus on presenting tangible and intangible heritage as an integral part of local knowledge in a way that reflects local ontologies. These papers are also connected by several major themes including collaboration, local knowledge, representation of Indigenous peoples and communities, both locally and to a wider audience, concerns over digitization, including the colonial and postcolonial infrastructures that continue to dominate knowledge production, and the question of fluidity as a core concept of many Indigenous knowledge systems. All papers in this collection also address a particular aspect of Indigenous cultural heritage that is intertwined with the larger concept of representation in a digital environment and the potential these newly created digital artifacts carry in them for communicating culture-specific meaning. For example, Wachowich preserves local knowledge through video recording Inuit women sewing, thereby digitizing the Inuit knowledge system and the process of *enskilment* (Ingold 2000) so that future generations can learn the process in a culturally appropriate context. Yet the activities are not limited to digital space, as the recordings inspired people in the community to connect with the seamstresses in physical space to gain more in-depth knowledge. This dimension of the project encourages preservation and transmission of this local skill as well as centers local awareness and recognition of sewing as a prominent part of Inuit heritage. Csoba DeHass and Taitt encourage the transmission of local knowledge by returning information about materials that have been taken from their home community and placed in museums. People are able to examine these objects online in 3D, which provides the opportunity to transmit the local knowledge associated with those objects even when the objects themselves are far away.

Gish Hill argues that privileging a Cheyenne narrative of westward expansion instead of a hegemonic nationalist narrative presents local knowledge to a wider audience. Wachovich has focused on digitizing local knowledge primarily for community use, so that the digital and the social aspects of the project work together in synergy to help communities achieve their heritage preservation goals. She notes that colonization undermined Inuit Elders' authority when it changed the process of acquiring and transmitting knowledge, but argues that digital media have the potential to reverse this result by legitimizing Elders' authority. Ulturgasheva and Bodenhorn point out that the opposite can also occur. As digitization has the power to detach knowledge from its local Indigenous context, it objectifies it instead of recognizing its fluid and living nature. These authors, along with Gish Hill, emphasize that those who control the representation of local cultures have the power to impact the message projected in digital media. When authority is placed solely in the hands of academics, the meaning and nature of "local" and the way it is displayed can become a hotly contested issue. While there are limits to how a local Indigenous context is transmitted, such a context is always being reconstructed as part of an on-going conversation both within the community and with those beyond it. Each author emphasizes that Indigenous peoples make digital media their own according to their own ontological understanding of the world and their own way of knowing. What local knowledge is, who controls it, and how it is represented when digitized are issues that any project seeking to create such media must address.

For this reason, each project places collaboration, specifically meaningful and ongoing collaboration with Indigenous communities, at the center of their work. Whether it is decolonizing and Indigenous methodologies, building projects around Indigenous epistemologies and viewpoints, or creating a dialogic workflow, all papers discuss the negotiation process that is purposefully applied in the hopes of producing synergetic outcomes. At the same time, the papers all address unpredictability as a central tenet of the process in which human agency mingles with the challenges of applying new technologies. Questions concerning control and collaboration inform all the articles. Does engaging with the digital allow Indigenous people more control or does it take control away from them? While examining this dichotomy through a diverse selection of projects, the articles contribute to the larger discussion that highlights the benefit that can be gained from the shift in museum studies away from the authoritative curatorial voice to recognize the importance of collaboration and the presentation of multiple voices (Bowe chop and Erikson 2005; Kreps 2015; Reddy and Sonneborn 2013). Each project works to privilege Native voices, recognizing that demanding the right of self-representation is an expression of sovereignty. At one end of the spectrum, damage can occur when Indigenous heritage is co-opted by non-Natives claiming the authority to represent Indigenous production. Ulturgasheva's and Bodenhorn's discussion addresses the limitations of digital representation by straddling the conundrum delineating both the local significance of the first Alaska Native video game and also the challenges of fitting a fluid Indigenous epistemology into a rigid information technology framework. At the other end of the spectrum, the rest of the projects utilize varying degrees of collaboration, while grappling with previously unforeseen challenges that, instead of diminishing, are underscoring the importance of the process.

## **Fluidity**

Responsible collaboration means acknowledging Indigenous understandings of the world as a socially connected system where all participants are engaged and integrated in a web of continually changing, and at the same time nuanced, relationships. Following this spirit, this collection examines the intimate understanding of fluidity that is required when representation is recognized as a building block of all cultural processes. Traditionally, museums had struggled with presenting the fluidity of Indigenous cultures, in part, due to technological limitations and in part, due to being influenced by the overarching paradigm of early anthropology focusing on constructing the cultural "Other" through salvaging what was perceived as a "vanishing race" (Clifford 1986; Hochman 2014; Lonetree 2012). Today, however, digital media provide more tools for creating a representation that aims to de-compartmentalize indigenous knowledge. By utilizing the possibility of fluidity in media, creators of digital materials can open up space for Indigenous perspectives which tend to embrace fluidity instead of insisting on static categories or narratives (Hogsden and Poulter 2012). Indigenous education, which rests firmly on experiential learning as discussed by Wachowich, Gish Hill, and Bodenhorn and Ulturgasheva, depends on incorporating fluidity. Such fluidity can be easier to capture in digital media than in other forms of preserving oral traditions, such as a text, recording, or video, because digital formats are capable of parallelly preserving and conveying multiple voices and perspectives thereby producing complex representations. As Wachowich, Csoba DeHass and Taitt, and Gish Hill explore, when used as part of a collaboration, digital technologies, due to their inherent fluidity, can assist in realizing projects that reflect Indigenous epistemologies and thereby actively contribute to decolonizing heritage

preservation and management practices. Furthermore, Indigenous peoples today are creating fluid digital materials that are also deserving of attention as they simultaneously construct Indigenous spaces and engage with and challenge non-Native discourse. As Srinivasan (2007) points out, there is a connection between oral narrative and digital storytelling. Like oral narrative, digital storytelling allows for multiple versions and can present multiple perspectives in each production. Digital media can also influence the social world just as oral narratives do, while encouraging people to participate in culturally valuable activities. As a result, the culturally specific use and adaptation of digital media and new technologies can contribute to preserving both intangible and tangible cultural products in the virtual and the physical world.

Yet digital media and the corresponding research methodologies have limits that are not immediately discernible precisely due to the same inherent fluidity. As a result, digital media need to be scrutinized for the limits and dangers it imposes on representing Indigenous peoples and communities when taken out of the local context. This fluidity allows digital technologies to be culturally adapted, but this adaptation can also open the door for subsequent misappropriation. While the fluidity of digital media makes it an exceptionally useful tool of decolonization by offering the potential for unlimited computations with which to create culturally appropriate representations, it can also limit this representation by placing Indigenous knowledge into a system with a finite number of choices and a constrained and predetermined program architecture (Bodenhorn and Ulturgasheva in this issue). In this way, digital representation can limit Indigenous ontologies and epistemologies in transmitting local knowledge and worldview. Furthermore, presenting Indigenous knowledge in a digital medium can rob the listener of a dialogic learning experience and therefore reify what would be a fluid, face to face encounter, co-constructed by the teller and the listener. Ultimately, as each of these papers demonstrate, the creators of Indigenous digital media must also navigate the tension between fluidity and reification.

### **Concerns with Digitization**

The reification of fluid cultural knowledge is only one of the concerns that emerged from these studies as scholars worked with Indigenous peoples to create digital materials. As Bodenhorn and Ulturgasheva point out in this volume, cultural context can also be lost as fluid and complex materials are edited and simplified for a fixed digital environment. They pose the question of whether digital representations can be sufficiently fluid to offer a range of choices that is wide enough to teach users the culturally, locally, and situationally appropriate responses. Their concern emerges from their specific experience of working with a video game meant to teach Alaska Native youth traditional knowledge about how to survive in the Arctic. Recognizing the limits of translating real life knowledge to fit digital space, the authors point out that a video game is not able to reproduce the unpredictability of an immediate interaction that teaches the kind of flexibility needed to react to the complexity of real life situations such as a bear attack. Furthermore, no digital media created now can predict the knowledge needed for a quickly changing climate, but the fluidity and responsiveness of traditional knowledge allows for a much more dynamic adaptive shift in narrative production. These concerns can be expanded to digital media in general, as even the best digitization cannot perfectly reproduce lived experience. As Csoba DeHass and Taitt point out, creators should therefore consider how much design is required to meet your goals, and balance this with the level of effort needed to achieve these specific goals.

Even digital media created with the best intentions can be co-opting, especially if it is created without the collaboration of Indigenous peoples. Native people both use and create digital media (Cha chom se nup, Heekuus, and Brand 2013; Christen 2005; Christensen 2003; Geismar and Mohns 2011; Rowley 2013). While this flies in the face of the stereotype of “ahistorical” Indians stuck in some romantic past, Native peoples certainly have the right to participate free of this stigma. As Gish Hill notes, American Indian people have never been trapped in an ahistorical past, and it is vital that digital media do not assume an ahistorical past in the images it represents or in the audience it imagines. Native people not only consume the representations projected in digital media, but are producing them as well. Therefore, it can be useful to take a local approach to ideas about representation, asking who has the right to represent the community, its knowledge, and its history, as well as considering the audience for the digitized materials. Gish Hill discusses this challenge with creating the video game, *A Cheyenne Odyssey*, which was created to present a Cheyenne perspective for both Native and non-Native audiences. The goal here, again, is to find a balance; to present a representation that is familiar and positive for Cheyenne people while creating one that is still accessible to non-Native people. Due to the great difference in cultural perspectives, this poses a considerable challenge and requires a series of negotiations with those being represented as active participants. Yet, as Wachowich aptly points out in her article for this issue, making cultural knowledge available to a mainstream media opens the possibility for its misuse. Without collaboration with community members that deliberately incorporates the local perspectives on what is appropriate for the public sphere and what is not, creators can, even unwittingly, put material online where it can easily be appropriated and misused.

## **Decolonizing Perspectives**

The efforts required to address the concerns of Indigenous people surrounding digitization can also help to produce digital media that is both decolonizing and includes Indigenous methodologies. Although incorporating decolonizing perspectives into exhibition design, curation, and collections management has increasingly become a best-practice in museum work (Basu 2015; Bowe chop and Erikson 2005; Fienup-Riordan 2003; Glass 2015; Phillips 2003; Reddy and Sonneborn 2013; Rand 2009; Srinivasan 2006; Whittam 2015; Willmott et al. 2016) articulating a new paradigm that captures and clearly defines the overlaps and differences between Indigenous and decolonizing approaches has also gained central stage in collaborating with Indigenous communities. In particular, highlighting the role of decolonial perspectives as an ongoing struggle against colonial legacies, and as a result, placing critical theory and not Indigenous or tribal methodologies into their center has been discussed from a variety of perspectives (Kovach 2009; Smith 2012; Lontree 2012). Being mindful about the terms and processes of collaboration, specifically, making room for Indigenous methodologies, is just as significant for the development of a project that is successful in addressing the difficult task of creating meaningful representation of Indigenous peoples for both insider and outsider viewers, as the act of collaboration itself. Likewise, each author in this collection is aware of the colonial and postcolonial infrastructures that continue to dominate the larger research arena producing unequal power relations in scientific collaborations and skewed representations of Indigenous people and communities.

The digital world is still dominated by hegemonic perspectives and stereotyped depictions of Indigenous peoples (Benson Taylor 2011). The articles here propose that creators of digital media are still susceptible to such depictions unless they purposefully and systematically incorporate Indigenous voices throughout the project. Therefore, the authors have all privileged Indigenous perspectives to some degree in order to explore decolonizing approaches to creating digital media as well as to consider how Indigenous methodologies can contribute to better delineating of what can, should, or should not be represented in digital space. Furthermore, following this train of thought, we hypothesize that the lives of, and the protocols associated with, digital artifacts that are created and curated in collaboration with Indigenous communities are highly idiosyncratic as they reflect both the agency of local people and the shift in understanding of who the end users of these digital artifacts are (Hollinger et al. 2013). In this collection, Wachowich warns scholars that new media and technologies mean that “anthropologists no longer have sole control over the production or circulation of knowledge” and she urges anthropologist to consider new ways to collaborate that go beyond anthropological agendas. Amy Lonetree has described Native museum practices as sites for active decolonization that address legacies of historical unresolved grief through “truth telling” (Lonetree 2012, 5). Specifically, she urges museums not to merely privilege Indigenous perspectives as one of many voices, but to center them as the core message that Indigenous people wish to communicate about themselves as part of their representation (Lonetree 2012, 169). In this process, Indigenous perspectives are used to contextualize materials that have been, until recently, collected and managed without input from origin and descendant communities. In this manner, museums can become active participants in contributing to the healing process that emerges from acknowledging historical trauma that has been shaping Indigenous identities (Madley 2016) while helping visitors understand the ongoing nature of decolonization. When created with the collaboration of Indigenous peoples, digital media hold the same potential.

Decolonizing digital media involves working with communities as equal partners on research that interests communities. In the same vein, Wachowich brings attention to the local impact of digitizing cultural materials that is just as much, perhaps even more so, created for collaborators and origin communities than for researchers and the general public. Each article demonstrates the power of Indigenous people taking back the right to represent themselves, their cultures, and their communities. Gish Hill demonstrates how even digital media that do not emerge from an Indigenous community can challenge hegemonic narratives and affirm cultural identity when it is created in collaboration. Lonetree has argued that an emphasis on survival is important, but the context of survival also matters. She notes that representations should also address the forces that Native people have struggled against and should reveal the ongoing legacies that have emerged from these struggles. (Lonetree 2012, 5). Like tribal museums, digital media have the power to become a symbol and expression of Indigenous sovereignty. In fact, simply being in control of the representations of your own people is a form of sovereignty, and can become part of both the decolonizing and indigenizing potential of digital media.

Furthermore, as Ulturgasheva and Bodenhorn argue, when Indigenous people “control and orchestrate the educational process” and the representation of local people and their cultures, digital media can produce decolonizing educational practices. Colonial influences have disrupted Native ways of learning. They have undermined the authority of Native elders and have taken a fluid, adaptive process and made it into a rigid, one-directional one. Nevertheless, Wachowich

argues that digital technologies can re-establish traditional pedagogies, which, in turn, will also engender culturally appropriate social relations. Furthermore, as Gish Hill points out, digital media can reproduce experiential learning. While these technologies cannot perfectly simulate lived experience, they can provide students with experiences that demand choices and then reflect the consequences of those choices. It can produce an environment where there are multiple outcomes and students can explore these different, parallel perspectives. In presenting multiple viewpoints, digital media can challenge the dominant voice entrenched in colonial legacies. Gish Hill, and Csoba DeHass and Taitt both demonstrate that digital media have the power to decolonize hegemonic narratives about Indigenous people by revealing their presence within hegemonic narratives. For Gish Hill, by telling the history of US westward expansion from the perspective of a Cheyenne youth, *A Cheyenne Odyssey* asserts that American history is also American Indian history. For Csoba DeHass and Taitt, sharing 3D models of Native people's "belongings" (Muntean et al. 2015) with all members of a descendent community creates an opportunity for Indigenous peoples to personally and collectively engage with the lives of their ancestors. These digital representations work to decolonize educational materials because they emphasize the human agency of Native peoples in their representations of these communities.

### **Towards A Positive Digital Anthropology**

For the better part of the history of anthropology, and even in today's problem-oriented research paradigm, working with Native peoples and communities meant and still often means scrutinizing a problem and finding solutions for it. As a result, many communities are portrayed only in negative terms as researchers highlight the seemingly ubiquitous problems that appear to be riddling all aspects of Indigenous lives. Being portrayed as "the one with the problem" has caused long-lasting damages to both communities and the collaborative process on a variety of levels. For many communities, challenging researchers to study and learn from what works and what is successful on the local level has spurred the establishment of local review boards and the creation of culturally-specific and place-based research protocols. Reframing problem-oriented research to take into consideration the local perspective that focuses on positive outcomes is often a formidable, yet inspiring task (Fischer 2014; Mohatt et al. 2004). It carries in itself a high potential for producing results that are locally meaningful by virtue of local engagement, being invested in the project as collaborators, and being able to shape the project to reflect local expectations. Thus examining what works locally in order to draw conclusions that can be applied on a broader scale provides an opportunity for Indigenous communities to shape their own image while also taking a significant step towards dismantling the still lingering colonial hierarchies embedded in scientific research.

Lonetree suggests that digital materials have a responsibility to "provide a [...] rigorous review of the colonial entanglements that a site embodies" (Lonetree 2012, 64). Each of the authors in this issue have either worked to reveal the colonial entanglements of their projects or critique creators of digital media who fail to provide this transparency, and therefore reinforce the authoritative voice and reify existing ideas, no matter how problematic. Many of the articles in this issue reveal the positive outcomes that this kind of work can have for Native communities when attempted with care. All authors approach new technologies with caution, as they carefully weigh the benefits and shortcomings virtual environments may bring both to their own projects in specific and to

digital collaborations with Indigenous communities in general. Moreover, a common theme threaded through the discussion is the wide-ranging response these virtual projects elicit from community partners whether positive, negative, or simply unforeseen. Yet, taking a closer look at responses that re-shape digital collaborations helps better illuminate the negotiation process, which results not in estrangement, but empowerment of Indigenous communities through the use of new technologies. Digital media that includes an interactive component can act as a richer archive for materials than only video or audio recordings—for example cultural materials or narratives or language materials with options the user can navigate. Digital media can also act as an archive that uses culturally specific ontologies as an organizing principle for material that belong together whether they are tangible or intangible aspects of Indigenous heritage. 3D models convey information about material culture that is only meaningful to those who know the local context, such as environmental knowledge through the materials used, specific techniques like stitching or carving in producing an item, symbolic meaning through form or emic association, or traditional knowledge such as ceremonies or historical narratives. Recording sewing techniques preserve techniques, such as stitches and skin preparation methods, that are successfully used today and can also be built upon, adapted, and personalized by new generations of future seamstresses. Visualizing the collective Cheyenne memories of the 19th century lived experience through a video game to help both Native and non-Native users understand how specific events formulated contemporary Cheyenne identity archives a wealth of knowledge that has been passed down through generations. Critically examining the limitations of digitizing Indigenous knowledge through information technology provides opportunities to assess its impact on how preservation may alter and modify the original contexts and epistemologies. It also brings attention to the colonial legacies of archiving practice that are fraught with pitfalls of (mis)representation, and illustrates the power of strategic representation and the legacy it creates through preservation (Duarte and Belarde-Lewis 2015).

Through these examples, our aim is to demonstrate that digitization upholds and expands the two main goals of museums, namely, preservation and education, by providing a way to archive conversations, contextualization, and discourse in conjunction with material culture. The preservation of interactive and digital media continue to challenge curators, researchers, and communities alike due to rapid technological advancements, and, for this reason, the issue of successful and efficient long-term preservation is likely to remain in the center of discourse in the future. At the same time, thinking about and designing systems and procedures that actively use the latest digital technologies to preserve Indigenous knowledge opens up opportunities to reconsider issues of representation and engagement. Moreover, like museums, digital media have the potential to become a valuable tool in the decolonization process, but only if Indigenous peoples have a voice in the creation and management of these digital representations. Like museums, digital spaces can also become collaborative venues for representing Indigenous pasts and presents. Furthermore, new technologies have the capability to convey the fluidity of Indigenous knowledge systems and the multivocality of Indigenous communities. Additionally, IT, digital technologies, and virtual space are all means to an end; tools in the toolbox of Native communities whose human agency can adapt, transform, and mold them into versatile instruments for expressing, preserving, revitalizing, reframing, and re-imagining local knowledge. In the process, we have the opportunity to learn about how Indigenous peoples reconceptualize digital space so that it is suitable and even welcoming to Native heritage. Having the opportunity to collaborate on these projects also requires us to reflect on where our projects fall in the process of

decolonizing cyberspace and supporting Indigenous initiatives in taking control of their virtual representations.

Finally, these studies are still ongoing and at various stages of their progress. They are shaping our understanding of how technology impacts and is used by Indigenous communities. Simultaneously, as is often the case with most digital anthropology projects, these studies are also being shaped by rapid advances in the field, and this reciprocal dynamic makes the contribution of these papers enduring.

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