




Connecting Past to Present: Enacting Indigenous Data Governance Principles in Westbank First Nation's Archaeology and Digital Heritage

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ABSTRACT

In this paper, we describe a collaboration between the Westbank First Nation Archaeology Office and UBC Okanagan that aims to create digital maps to enable engagement with syilx digital heritage and build capacity in digital tools and technologies. We examine what data governance frameworks mean for digital heritage and how they articulate with the United Nations Declaration on the Rights of Indigenous Peoples (2007) and the First Nations Information Governance Centre's OCAP® principles. We propose digital tools such as open-source and mobile-ready storymaps to showcase digital heritage that is appropriate for public sharing, practices that can promote and enhance community decision-making, and create training opportunities in digital methods in Westbank First Nation. Opening a conversation around digital tools is one way that archaeologists can begin to *enact* Indigenous data governance as a step towards dismantling colonial structures and practice in archaeology and digital heritage.

Résumé: Nous décrivons dans cet article une collaboration entre le Westbank First Nation Archaeology Office et UBC Okanagan ayant pour objectif de créer des cartes numériques afin de permettre une participation au patrimoine numérique syilx et de construire une capacité en matière d'outils et de technologies numériques. Nous examinons ce que les cadres de gouvernance de données impliquent pour le patrimoine numérique et comment ils s'articulent avec la Déclaration des Nations Unies sur les droits

des peuples autochtones (2007) et les principes OCAP® du Centre de gouvernance de l'information des Premières Nations. Nous proposons des outils numériques tels que des cartes narratives en open source et consultables sur un appareil mobile afin de présenter un patrimoine numérique approprié aux fins d'un partage public, de pratiques susceptibles de promouvoir et d'optimiser la prise de décision communautaire et de créer des opportunités de formation s'appuyant sur des méthodes numériques au sein de la Westbank First Nation. Initier une conversation sur les outils numériques est un moyen grâce auquel les archéologues peuvent commencer à mettre en œuvre une gouvernance des données autochtones à titre d'avancée vers le démantèlement de la pratique et des structures coloniales en matière d'archéologie et de patrimoine numérique

Resumen: En este documento, describimos una colaboración entre la oficina arqueológica Westbank First Nation Archaeology Office y UBC Okanagan que tiene como objetivo crear mapas digitales para permitir el compromiso con el patrimonio digital syilx y desarrollar capacidades en herramientas y tecnologías digitales. Examinamos el significado de los marcos de gobernanza de datos para el patrimonio digital y cómo se articulan con la Declaración de las Naciones Unidas sobre los Derechos de los Pueblos Indígenas (2007) y los principios OCAP® del Centro de Gobernanza de la Información de las Primeras Naciones. Proponemos herramientas digitales como esquemas narrativos (storymaps) de código abierto y listos para dispositivos móviles para mostrar el patrimonio digital que es apropiado para el intercambio público, prácticas que pueden promover y mejorar la toma de decisiones de la comunidad y crear oportunidades de capacitación en métodos digitales en Westbank First Nation. Abrir una conversación sobre herramientas digitales es una forma en que los arqueólogos pueden comenzar a promulgar la gobernanza de datos indígenas como un paso hacia el desmantelamiento de las estructuras y prácticas coloniales en la arqueología y el patrimonio digital.

KEY WORDS

Indigenous data governance, Westbank First Nation, Archaeology, Digital heritage, Digital maps

Introduction

Indigenous data governance principles draw from supranational frameworks, such as the United Nations Declaration on the Rights of Indigenous

Peoples (2007) to re-centre Indigenous peoples' rights and aspirations in research, policy and practice. By 're-centre', we mean bring to the forefront the perspectives and voices of historically excluded groups who, as a result of colonialism, have been pushed to the 'margins'. Indigenous data governance principles raise a wide range of concerns from "legal and ethical dimensions around data storage, ownership, access and consent, to intellectual property rights and practical considerations about how data are used" (Kukutai and Taylor 2016:2). Furthermore, Rainie et al. (2017:5) draw attention to the "Indigenous data landscape" and the urgency for building consistent and relevant data that "meet the needs and visions of Indigenous nations" in decision-making, policy formulation and self-determination. The principles are built upon recognition that non-Indigenous scholars have long collected Indigenous knowledge and heritage, misused this information and brought harm to these communities (Tuhiwai-Smith 1999; Battiste and Henderson 2000). Most importantly, these developments can chart a path for community governance of heritage in a digital age given that Indigenous data governance has yet to gain any real traction within the general field of archaeological inquiry.

Scholarship in community-led archaeology amplifies the perspectives, knowledge and interests of Indigenous community partners, and highlights the processes of carrying out research, teaching and knowledge mobilization (Kerber 2006; Atalay 2012; David-Chavez et al. 2020). Yet, when it comes to community-based digital work, scholarly and institutional attention tends to focus on a finished digital product and/or traditional forms of peer-reviewed publications (Kansa 2016; Hodgetts and Kelvin 2020). Colwell and Lopes (2020) have argued that collaborative archaeological projects, in and of themselves, do not address colonialism. Addressing this very issue, Uzma Rizvi (2020:90) remarks that at the heart of anti-colonial, anti-racist praxis in community-based work is a "deeper recognition and the sociality among the participants of any project".

Archaeology is inherently political, and dominant groups have long taken ownership of the past out of the hands of Indigenous, Black and other racialized communities. The operation and impact of structural racism and resulting power inequities continue to influence the range and scope of archaeological research in terms of access to material, social and ideological resources (Franklin and Paynter 2010). Re-connecting these communities with their heritage through anti-colonial work is fueled by a commitment to honouring and respecting "their/our pasts, histories and futures" (Rizvi 2020:90), despite a persistent racial hierarchy upheld through legally sanctioned racism (Blakey 2020). This, as a result, represents an equally strong push to redress such systemic bias and discrimination (Flewellen et al. 2021). Recent scholarship speaks to the potential for archaeology to align with broader social and political movements, such as

Black Lives Matter (Franklin et al. 2020), and promote explicitly anti-racist archaeological practice. In this context, we consider how archaeologists can thoughtfully engage with Indigenous data governance and cultural protocol when working with community partners on the design of a digital heritage project. These efforts can also facilitate community capacity building in digital method and practice, and encourage researchers to champion the decolonizing of academia (Gopal 2021).

Three developments, in particular, are influencing Canadian archaeology today. Recent media coverage of unmarked graves across Canada has drawn considerable attention to the experiences and well-being of survivors of residential institutions, continuing harms to Indigenous children under state guardianship and the growing demand for community-led, Nation-based archaeology as one means of addressing these profound concerns. Secondly, Indigenous peoples have deep interests in generating, analysing and sharing knowledge about their heritage, ancestors and ancestral lands, on their own terms, using digital methods and tools. Finally, federal, provincial and territorial governments and institutions have started the process of bringing Canadian law into alignment with the United Nations Declaration on the Rights of Indigenous Peoples (Ministry of Indigenous Relations and Reconciliation 2021; Government of Canada 2021) and in addressing the 94 Calls to Action of the Truth and Reconciliation Commission of Canada (2015) (Ontario Archaeological Society 2017; Supernant 2018; Simons et al. 2021; Canadian Archaeological Association 2022). In this context, greater efforts are required to re-centre the interests of Indigenous communities and governments in ownership and governance of heritage, including archaeological heritage. In this article, we reflect on Sonya Atalay's (2019) important question 'can archaeology help decolonize the way institutions think?' and draw upon her insights into community engagement in the context of archaeology and digital heritage. We present one path towards designing a digital heritage project in partnership with Westbank archaeologists who have expressed a need for a secure digital platform that enables them to interact with, and use archaeological information, and provides training in digital method and practice.

Westbank First Nation is a self-governing nation in the Okanagan region of British Columbia, Canada and one of eight members of the Okanagan Nation Alliance. The syilx Okanagan people affirm that the land is theirs and that no treaty has been negotiated. Westbank First Nation has Aboriginal Title within the ancestral lands historically occupied by the syilx peoples, and prioritizes the "responsible management and safeguarding of its resources, environment and watersheds" (Westbank First Nation 2021a). Westbank First Nation has its own administration and is located in close proximity to both the City of West Kelowna and the City of Kelowna, which requires coordination when it comes to projects such as land devel-

opment and watershed protection. Westbank First Nation archaeology is part of the Title and Rights Department and supports the referrals process, which involves archaeological assessment specific to land development projects within its governance area. More broadly, archaeological research contributes to “the community’s understanding of the long-term existence of First Nation people in the Okanagan Valley” (Westbank First Nation 2021b).

We begin with a description of the first author’s (Gupta) journey into the Okanagan and an invitation to participate in Westbank First Nation’s digital heritage project. The next section provides a brief overview of Indigenous peoples’ heritage in the context of the Declaration, followed by Indigenous data governance and Westbank First Nation’s cultural protocol for digital heritage. Building on this collaboration, and following Westbank First Nation’s protocol regarding shareable information, part four presents the ‘work plan’ that Westbank and university archaeologists developed (Gupta et al. 2020b), and a map that Elders made for the digital heritage project. In the final section, we offer concluding thoughts about the possibilities of working with Westbank First Nation and other Indigenous communities to enhance Indigenous governance of digital heritage and the insight gained into how researchers and universities can jointly support these efforts.

An Invitation to Support Westbank First Nation’s Digital Heritage Project (Gupta’s Narrative)

My calendar for Thursday, 12 March 2020, has two entries: 11AM, Meet with Nancy Bonneau at Westbank First Nation Archaeology, followed by an afternoon blocked off for grant writing. At the same time public health officials were raising alarm about a virus spreading through community transmission. Within 24 h, the university’s president, following the advice of the province’s public health officer, called for all classes to move online. My participation in Westbank First Nation’s digital heritage project thus began concurrently with the onset of the COVID-19 pandemic, and for almost two years this has meant primarily online meetings with archaeologists.

In July 2019, I arrived in the Okanagan to begin a tenure-track position at The University of British Columbia located on the unceded, ancestral lands of the syilx Okanagan peoples. I had travelled from Fredericton, New Brunswick where I had cut short a three-year postdoctoral fellowship at the University of New Brunswick. I was fortunate to be in a position to choose between jobs, yet was hesitant to leave the community of academics that I was part of and withdraw from emerging relationships with Wolestoqey scholars. It was through conversations with these groups that I was

able to more formally articulate my interests in colonialism, power inequities, and digital and geospatial methods in archaeology.

Growing up outside of India, I have deeply rooted interests in learning about my birthplace and heritage. I became interested in archaeology when I saw on CBC (Canadian Broadcasting Corporation) news, the destruction of the Babri Masjid in the north Indian city of Ayodhya. In December 1992, kar sevaks (Hindu volunteers) tore down the mediaeval mosque, resulting in riots and subsequent loss of human life in Ayodhya and many other places. I watched at a distance and wondered what exactly was archaeology, how did it relate to the mosque, and why were people being killed? What value did archaeology hold in society? These questions continue to strongly influence my intellectual pursuits.

Two personal experiences have, for me, heightened the urgency of these questions about archaeology. First, I experienced racism during my graduate studies, and second, I had the opportunity to listen to Indian communities talk about local heritage, to learn how local people think about their past and who gets to write their narrative. During multiple trips to India for fieldwork, I observed first hand prevailing power relations when it came to 'holding' archaeological information and heritage items, and how the national narrative silenced the perspectives, voices and knowledges of local people. As a result, my interests shifted to how information was available only to specific people, in very particular ways. I saw that dominant groups had decision-making rights over digital technologies, how they might discourage or entirely prevent other people from interacting with heritage material and data, how they alone had the resources and social connections to publicize selected narratives, and that they could decide who gets required training in specialized data management and analysis skills. All this led me to wonder how these power relations operated in the Canadian context, and I set out to learn how colonial practices in archaeology distanced Indigenous peoples from knowledge creation regarding their own ancestors (Gupta and Lesage 2016; Gupta et al. 2020a).

I met with Nancy Bonneau (Westbank Archaeology Supervisor) and Nichole Vessie (Westbank Archaeology Project Coordinator) in 2020 with the hope of learning about and supporting any digital work with the local community. Nancy and Nichole graciously made the time to talk about projects they were working on, goals they had for the archaeology office and challenges they were experiencing. In our next conversation, and over many more that followed, we talked about a digital heritage project that Nichole was undertaking. The project was an interactive web-based map that showed Westbank First Nation's places of importance through historic photographs, audio and video recordings. The Westbank archaeologists hoped to use the digital map for inter-departmental presentations, and in the sncəwips Museum. Nichole planned to hire a private firm to create the

interactive map and Nancy invited me to work with Nichole on this project. It is this initiative that is the primary focus of this paper. As we talked more, the Westbank archaeologists prioritized training and capacity building in digital methods, while at the same time expressing the need to maintain community authority in heritage governance and decision-making. Yet, at present, there is limited attention being paid to developing digital methods designed to facilitate and support community governance of archaeology and digital heritage. In the next section, we discuss the need for greater attention to Indigenous peoples' rights when it comes to governance of heritage.

Indigenous Heritage in the Context of the Declaration on the Rights of Indigenous Peoples

Indigenous peoples increasingly use international law within a human rights framework to assert inherent rights, freedoms and protection of their heritage, including digital heritage. In *Protecting Indigenous Knowledge and Heritage: A Global Challenge*, Marie Battiste and James (Sakej) Youngblood Henderson (2000) describe how the state-oriented Universal Declaration on Human Rights adopted in 1948, did not recognize 'equal and inalienable rights' for colonized Indigenous peoples, a situation that ensured that historically excluded peoples remained distanced from any means of asserting their rights and of self-determination. It should come as no surprise then that the Convention Concerning the Protection of the World Cultural and Natural Heritage, adopted by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1972 also failed to adequately protect the collective rights of Indigenous peoples, their knowledge and heritage (Arizpe 2000). This glaring oversight reflects the pervasive nature of Eurocentrism and racism within international institutions (Cleere 2001). The subsequent adoption of the Convention for the Safeguarding of Intangible Cultural Heritage (2003) represents a more targeted effort to address some of these issues (Aikawa 2004).

The legal scholar S. James Anaya (1996:39) remarks that for centuries international law drew from Western legal thought and served as an instrument of colonialism that justified the seizure of lands from Indigenous peoples and the "suppression of their cultures and institutions". Yet, as he observes, non-Western perspectives increasingly influence international law and, with a shift towards concepts of peace and human rights (Anaya 1996:40), instruments like the Declaration can champion Indigenous people's rights and support their demands (Echo-Hawk 2013). However, implementing international law while bringing existing nation-state-oriented legislation into alignment with the Declaration poses many chal-

lenges and thus has become an ongoing area of scholarly discussion and development (Craft et al. 2018; Birkhold 2019; Goff 2021).

Several articles in the Declaration relate to archaeological heritage, such as Article 11.1, which reaffirms that,

Indigenous peoples have the right to practise and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature.

Article 11.2 additionally asserts that states must recognize and respect Indigenous peoples' "cultural, intellectual, religious and spiritual property" that was taken without their free, prior and informed consent. Furthermore, Article 31.1 reaffirms that Indigenous peoples have the "right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions".

A growing number of archaeologists are working to further the implementation of these protocols, but this continues to be a challenge (McAnany et al. 2022). Some archaeologists draw critical attention to the linkages between government and industry and their role in archaeology (Hutchings and La Salle 2017; Williamson 2018), and the continued recognition of certain researchers, particularly non-Indigenous scholars, as authorities on Indigenous heritage (Ojala and Nordin 2015; Warrick 2017; Nicholas 2019; Pyburn 2020). Other scholars focus on how community engagement and culturally sensitive archaeological research can shift power to Indigenous communities (Atalay et al. 2014; Nicholas 2017; Supernant 2020; Warrick et al. 2021), while highlighting how such collaborative archaeological projects themselves do not directly address the lasting structural inequalities of colonialism (Colwell and Lopes 2020).

Commodification of Indigenous knowledge and heritage brings into sharp relief the centrality of Intellectual Property Rights within the larger debate concerning control over Indigenous cultural heritage and how Indigenous peoples might use this legal strategy to protect their heritage from misuse (Nicholas and Hollowell 2004; Smith et al. 2004; Kansa et al. 2005; Nicholas et al. 2009; Brown and Nicholas 2012). Some scholars raise pointed questions about the appropriateness of, and limitations in dominant law for protecting Indigenous knowledge and heritage (Posey and Dutfield 1996; Polymenopoulou 2017). In this context, Anderson (2004:586) cautions that the "interrelationships between national and international development of intellectual property strategies" and the politics associated with these strategies tend to obscure differences in power

between interest-holders in local contexts. Indigenous scholars argue that the prevailing divisions between ‘intellectual’, ‘cultural’ and ‘scientific’ knowledge derive from dominant, i.e. Western legal thought (Nakata et al. 2008), and that particular Western worldview does not reflect Indigenous people’s knowledge systems. This fragmentation, in turn, diminishes, if not entirely supersedes, Indigenous legal regimes that assert collective rights and community control over heritage (Younging 2016).

So where does this place digital method and practice within the context of Indigenous people’s heritage? It is worth pausing at this juncture to carefully consider N  hinaw theorist Greg Younging’s (2003) reflections regarding the adoption of new technologies into cultural practice. Younging (2003:16) remarks that most Indigenous peoples have two “cautionary cultural practices” that have served them well through time. First, “new ways of doing things” must be considered in “consultation with the Elders, traditional people and community”, and second, following consultation, if it is established that a new technology or institution goes “against fundamental cultural values and/or might lead to negative cultural impact”, then the technology being considered should not be adopted (Younging 2003:16). These cultural protocols are living, breathing values that guide good relations, and decision-making while protecting and promoting Indigenous people’s interests and self-determination. In this context, Younging frames the proposed introduction of new technologies as *change in how things are done*, encouraging careful consideration by the community of the potential impact of such a change. With this view clearly in mind, we will now explore, using the specific case study of Westbank First Nation archaeology, how Indigenous data governance and cultural protocol support community governance of digital heritage.

Indigenous Data Governance and Cultural Protocol for Digital Heritage

In the opening decade of the twenty-first century, specialists in information technology and corporate business management developed data governance principles, prioritizing strategies regarding ‘people, processes and technology’ (Cheong and Chang 2007). Because these strategies impact data discovery, data re-use and data sharing in the global knowledge economy, specialists emphasize processes and actions that affect digital data from a decidedly corporate perspective. Recent efforts in data-centric scholarship, such as creating Findable, Accessible, Interoperable and Reusable (FAIR) data (Wilkinson et al. 2016) and the open science movement (David 1998), adhere to this line of thinking. While fruitful, these efforts typically overlook the profound influence of colonialism and underestimate the resulting structural inequalities in the development and use of definitions and classification systems,

technical standards and technological infrastructure (Ali 2016; Montenegro 2019). This situation, in turn, precipitates the erasure of any role for Indigenous peoples in data governance processes (Rainie et al. 2019; Carroll et al. 2020) and the silencing of knowledge production in the Global South (Dutta et al. 2021). The Global South broadly refers to geopolitical power relations and intellectual production in Latin America, Asia, Africa, the Caribbean and Oceania (Dados and Connell 2012).

The legal scholar Rebecca Tsosie (2019:230) explains that the expression ‘tribal data sovereignty’ refers to the “right of a nation to govern the collection, ownership and application of data” about the nation and its members, including control over data that are physically housed within the nation’s territory. In this same context, Stephanie Rainie et al. (2017:1) conceptualize data needs of Indigenous nations in terms of both internal and external application, whereby some data serve the needs of the nation and its members, and other data, the requirements of inter-governmental policy- and decision-making. This recognition reflects a complex and multi-actor data landscape that brings to the forefront several data governance issues, including, though not limited to, an Indigenous government’s right to “control the use and reuse of tribal data by third parties” (Tsosie 2019:230). This refers to control over data and decisions about who can access cultural intellectual property regarding Indigenous communities, peoples, lands and resources. The CARE principles (Collective benefit, Authority to control, Responsibility, Ethics) support Indigenous people’s rights and interests in the context of open data and complement data-centric FAIR principles (Carroll et al. 2020).

As Jodi Bruhn (2014:3) explains, inter-organizational data governance moves beyond ownership, and is associated with “setting and enforcing standards, including definitions and classification systems, development and technical standards and organizational data models”. Bruhn (2014 p. 3) further defines three additional components in a data governance framework. First, it includes developing and applying policy and process on the “creation, development, access and delivery, monitoring and measurement, management and auditing of data”. Second, the data governance framework addresses implementation of appropriate technological infrastructure with capabilities to “access, cleanse, transform, deliver and monitor data” and third, lays out roles, responsibilities and accountabilities of data producers (creators), users (receivers) and governing actors (those who oversee transactions between producers and users) (Bruhn 2014:3). Crucially, Bruhn (2014:1) remarks that data governance is a critical tool for rebuilding Indigenous governing institutions, and “can promote mutually beneficial and respectful relationships between the partners”.

There are several fundamental issues with the prevailing system of non-Indigenous data gathering, management and use. For example, Rainie et al.

(2017) demonstrate serious problems with existing Indigenous population data collected as part of the United States census. They cite inconsistencies within population data, their irrelevance in addressing the tribal nation's concerns, poor data quality and inaccuracies, their creation and use in an "environment of mistrust" and external control of data concerning tribal communities, members, lands and resources (Rainie et al. 2017:3). In such cases, community-led project design and data collection alone provides far more relevant and necessary information for decision-making and community benefit.

In a similar vein, Guiliano and Heitman (2019:3) conceptualize "colonial-centric" data as those collected by colonizers about Indigenous peoples, including analogue documents such as journals, records, images and collections that later became constituent to colonial archives. These are differentiated from "Indigenous-centric" data culture, which prioritizes and is "built upon native ways of knowing, representing, preserving, and sharing" (Guiliano and Heitman 2019:9). As the authors argue, colonial archives were created through extractive activities for the "betterment and knowledge of non-Native peoples" (Guiliano and Heitman 2019:4), and such highly biased data continue to circulate through modern digital environments. Through Edward Curtis' photographic images in *The North American Indian* volumes, now downloadable through the Library of Congress, Guiliano and Heitman (2019:8) ably demonstrate how digital circulation of the colonial archive can divorce these data from their histories of production, including erasing historical manipulation of images. In effect, digital circulation has served to further "decontextualize and reappropriate" images of Indigenous peoples. Importantly, Guiliano and Heitman (2019:13) observe that digital humanities scholars remain separate from Indigenous communities, scholars and scholarship, and this situation impacts upon capacity building and development of digital method and practice that prioritizes Indigenous data governance of digital heritage (Pohawpatchoko et al. 2017; Grey and Kuokkanen 2020; Shiri et al. 2021).

'Connecting past to present' refers to Westbank First Nation's overall project to share heritage items considered safe for public viewing on a digital map (Fig. 1). Locations of archaeological, ceremonial, harvesting and sensitive sites are sacred knowledge, therefore Westbank archaeologists do not share this information publicly. Westbank archaeologists consider digital photographs, audio and video, as well as archaeological information key to revitalizing syilx language, culture and relations with land, water, plants and animals. The Westbank First Nation digital heritage project, as we discuss in detail in the next section, focuses on heritage information about people, places and practices within the syilx community's geographical area of responsibility. Because archaeology is involved in the Province of British Columbia's regulatory referrals process, Westbank archaeologists often work in coordination with the province's archaeology branch and thus,

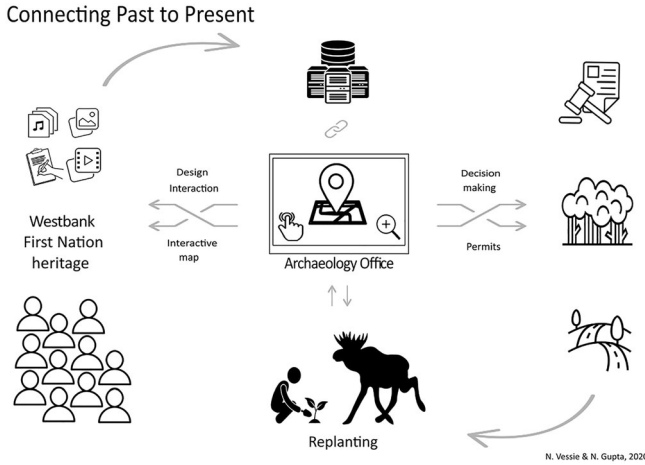


Figure 1. ‘Connecting past to present’ represents Westbank First Nation Archaeology’s overall project to showcase and share digital heritage items (e.g. images, audio and videos, descriptions) considered safe for public viewing on a digital map

share in relevant archaeological data. Sites information in the provincial database, Remote Access to Archaeological Data (RAAD), is available with permission to a range of data users (Gupta et al. 2020a). Westbank and university archaeologists therefore designed the project in two phases, namely, Phase 1, where we work with heritage items that Westbank archaeologists deem safe to share on the Web, and Phase 2 (not discussed here), where we work exclusively with private data, such as archaeological and harvesting site information, that will remain restricted to internal use. A clear separation of these phases helps minimize accidental publication of sensitive information. Knowing what Westbank First Nation has in its area of responsibility, as such where heritage sites are located and their current condition, is information necessary to the practice of caretaking and put into action to protect heritage sites that are vulnerable to flooding and fire events, as well as disturbances due to construction, forest clearance and mining. For example, recording places where plants have been disturbed enables archaeologists in organizing ‘moose planting’ to the growth of specific plants that attract moose back to these locations, which in turn, returns relations with these lands. Westbank’s control over such heritage data, thus is the first step in bringing relevant data sources together for decision-making and supports community governance of heritage.

The project is currently in progress, and our discussions focus primarily on Phase 1, culminating thus far in both a digital strategy and work plan that we are continuing to develop. We emphasized OCAP® (Ownership,

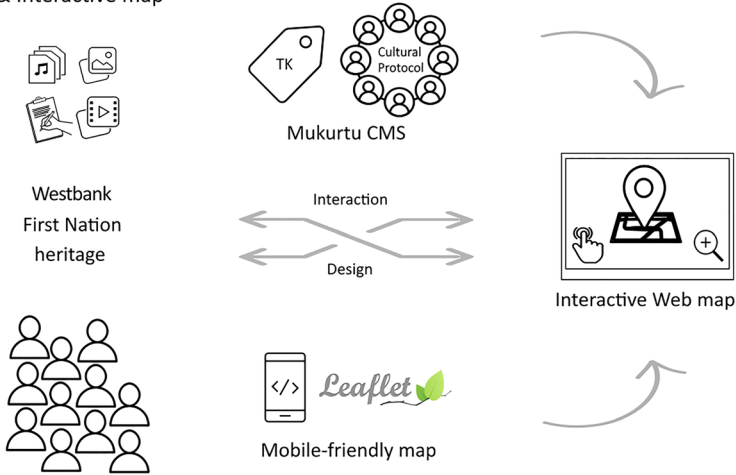
Control, Access, Possession) principles within the overall digital strategy to prioritize and enact cultural protocol and community governance of heritage. These are the same principles developed and advocated by the Assembly of First Nations (FNIGC 2016). The Assembly of First Nations is a federally recognized organization that represents First Nation peoples living across Canada. The principles provide a data governance framework for inter-governmental data sharing that includes ownership and physical possession of First Nation data, and guidelines for community control over all aspects of research and information management, as well as decision rights and cultural protocol about who can view and use data. The next section discusses the project design in greater detail, followed by challenges and opportunities in community governance of digital heritage.

Connecting Past to Present: Westbank First Nation's Digital Heritage Project

Following Bruhn (2014), three aspects stand out regarding the prevailing circumstances for the Westbank First Nation. First, the data or heritage items are already in the hands of Westbank archaeologists, which means that the heritage items neither fall within repatriation initiatives nor entail new collection efforts. Westbank First Nation archaeology encompasses vast and diverse collections of photographs and video/audio recordings from the early 1900s onwards, and their archaeologists are interested in organizing, managing, visualizing and presenting this heritage in an ethical way. While these digital heritage items are available to different offices, information about the community is made public only after staff review at the originating office and subsequent clearance from Westbank First Nation communications. The communications staff routinely use YouTube, an online video sharing and social media service, to deliver information on health, education and social development services and initiatives, advisory council updates and cultural events. Westbank First Nation's YouTube channel also has videos on language learning and interviews with Elders in the community. The heritage project therefore builds on this existing governance model, ongoing digital interests and community engagement initiatives.

Second, the project focuses on interaction and community engagement, rather than storage and preservation of existing digital heritage (Fig. 2). The goal is to facilitate community engagement with heritage on a digital map. The digital map itself can be a tool for storytelling and knowledge creation and sharing between members. The archaeologists can additionally present the community's narrative around a heritage item or place of cultural significance, which can enhance understanding about its importance

Westbank First Nation Digital Heritage Governance & Interactive map



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Figure 2. An overview of the digital tools and softwares proposed for developing the interactive digital map. Westbank archaeologists are interested in mobile-ready tools to facilitate community engagement with digital heritage

and support the community's decision-making in heritage planning. It is important to note that Westbank First Nation's cultural protocol guides how heritage items and the digital database itself are shared between groups or individuals and in deciding who can access, view and use which items. Cultural protocol represents living, collective values that inform how heritage items and collections are thought about, and they help to underscore the cultural significance of digital heritage. This knowledge and practice therefore facilitate archaeologists' efforts in organizing digital heritage. In turn, when thinking through and making decisions about access, they can gain a nuanced understanding of both technical and technological requirements.

Finally, physical possession is a key part of enacting OCAP® principles. Westbank First Nation has its own servers and staff who manage and maintain digital infrastructure. This situation means that the archaeologists have physical possession of their data, through which they can assert ownership and protect its stewardship. The existing technological infrastructure and governance structure also mean that archaeologists must coordinate their initiatives with Information Technology specialists who manage and maintain the community's computer systems, not to mention software licensing and security. Collectively, this three-pronged approach lays the foundation for developing the collaboration in co-ordinated phases and re-

centring the values, rights and authority of community members to inform project design and development.

We opened conversation about different softwares and digital infrastructures for the project. First, the Mukurtu content management system stood out for the archaeologists because it supports implementation of cultural protocol for each heritage item, and because it has a Web-based interface (Christen 2012). After a workshop session with Michael Wynne from the Mukurtu team, the Westbank archaeologists thought that the software would work well with the different kinds of heritage items at their office and the access protocol they hoped to implement. Specifically, in Mukurtu it is possible to have layered access to individual items, which means that each heritage item can be associated with multiple protocols, and each item must be associated with a community, a cultural protocol and a category (Mukurtu 2022). For example, within a community called ‘Gupta’ there is a heritage item such as the okra plant, and we have a digital photograph, some location information, a narrative and the cultural significance associated with this item. We could assign a cultural protocol that gives access to women only and to elders only in the Gupta community. Alternatively, we can make the heritage item open to anyone in the Gupta community. Assigning a category, such as medicinal plant, helps in describing a given heritage item and allows it to be found more easily within the digital collection.

Mukurtu also incorporates Traditional Knowledge (TK) Labels and Licenses (Anderson and Christen 2013), which are an “educative and non-legal intervention” to address concerns regarding digital circulation of Indigenous heritage materials, especially those in public domain (Kansa et al. 2005). While Westbank First Nation’s heritage material is not in public domain, we considered using the TK Labels and Licenses to inform community members about conditions of use and cultural protocol associated with heritage items.

To develop the digital map, we needed another set of tools that facilitate user interaction. We were most interested in enabling touch-screen interaction on mobile devices, such as smartphones and tablets, and across a range of browsers. For this part, we considered Leaflet, an open-source library that works on Web browsers and supports user interaction. This Web-mapping library uses map tiles that load quickly on multiple browsers. A digital map is hosted on a Web server, and unlike a paper map or an image file, a reader can interact with the scale of detail (zoom) of the map and with digital objects linked within the map. We were also interested in using Leaflet to support training and capacity building with these digital tools before we consider proprietary software such as ESRI’s StoryMaps (Howland et al. 2020) among others. Digital tools such as Mukurtu and digital maps typically require server hosting and, in this case, we raised

concern that Westbank First Nation’s heritage would be housed elsewhere if we did not use its own servers. The next subsection presents a discussion of our preliminary work.

From the Elders’ Map to a Digital Map

As part of revitalizing community governance of heritage, Nichole worked with Elders and Knowledge keepers in the Westbank First Nation. They created a paper-based map denoting places of significance and explained through storytelling, which they shared in the hopes of fostering broader community engagement. The map shows 11 locations with syilx place names, and is accompanied by written descriptions of their meanings and significance (Fig. 3).

For example, Elders marked $ka?k\acute{t} \acute{c}nti?i?k\acute{e}k?qp\acute{t}n$ ((a) in Fig. 3), or the place of flooding, at the confluence between Mission Creek and the Okanagan Lake shoreline. This wetland is one that the syilx Okanagan peoples know flooded every year. Another place of importance, $s\acute{q}^w a?a\acute{f}$ ((b) in Fig. 3), was known as ‘windy ridges marsh lands’ (Antler Beach) and was one of the most important fishing spots for kokanee salmon. Here, as

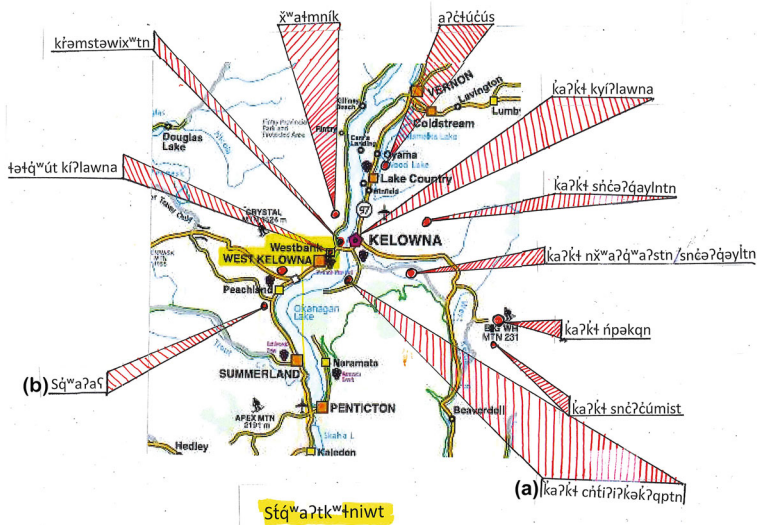


Figure 3. The map that Elders made in conversation with Nicole Vessie. The map has 11 places of interest with syilx place names. The Elders additionally gave written descriptions of the meanings of the place names and the significance of the locations. The map was digitized so that the information in it could be transferred to the storymap

the Elders explained, before non-Indigenous people came, the syilx Okanagan peoples would count salmon return cycles and care for spawning beds by ensuring adequate shade and temperature so that the kokanee would thrive. They would also leave spawned salmon on the shore for other animals to eat, and thus were able to maintain this resource for generations. After Nichole confirmed that the map and descriptions were safe for public sharing, we digitized the locations on the map for further use. We are currently developing a digital map to share the Elders' places of importance and associated narratives. While significant progress is being made, this digital work is not yet ready for public sharing. In the next section, we present on some of the challenges faced, and opportunities gained.

Challenges and Opportunities

A number of issues arose in implementing our initial work plan. Westbank archaeologists began by engaging in conversation with IT staff about the different digital tools we had hoped to use. The involvement of the IT office was important given that the tools we planned to use are server-based, and require support in terms of installation of software on the server and subsequent maintenance of software updates and licenses. The IT staff raised particular concerns about the support for and stability of the Mukurtu system. Mukurtu is an open-source software and is maintained by the Centre for Digital Scholarship and Curation at Washington State University. The IT staff expressed discomfort about the time and resources that would be required to update the software (manually) and how committing to this software would take away from management and upkeep of computational needs at Westbank First Nation. This ultimately meant that we could not install Mukurtu on Westbank First Nation's servers.

The archaeologists, for their part, raised concerns about where data would be stored, particularly when proprietary systems are used in the office. IT staff assured them that data residency is not an issue for their office and that software hosted outside of Westbank First Nation is not a concern. We therefore considered some other options, including installing the Mukurtu software on UBC servers or on commercial hosting services. In keeping with our commitment to OCAP® principles, the archaeologists continue to discuss various alternatives with IT and explore available options regarding appropriate software for Westbank's heritage governance needs.

Westbank and UBC archaeologists began work on developing a digital map hosted on Github, a code-sharing platform, which provides for building capacity in digital method and practice. We are creating open-source educational content that archaeologists can use to gain familiarity and con-

fidence with server-based digital tools. In training modules, we emphasize skills and capabilities that are transferable to between multiple contexts. Keeping in mind that there are disparities in access to such digital tools and technologies, and the training to use them effectively, we are committed to creating low-barrier learning experiences designed for community settings. The archaeologists provide important insights into how to make educational materials useful tools for community members to address their own interests and concerns.

We have proceeded with organizing and selecting heritage items to be shared on the digital map, and quickly realized the larger than expected scope of this work, including significant time and care needed in selecting relevant items. To alleviate workload pressures, Westbank and UBC archaeologists applied for additional funding to hire a student-in-training who could assist with this work. We were successful in obtaining grants in support of this initiative and we hope to proceed with hiring in the near future. All of these efforts are geared towards supporting Westbank First Nation's immediate and long-term heritage governance plans.

Next Steps

We have described one path that archaeologists took to prioritize Indigenous data governance in a digital heritage project. This process has enabled thinking about new ways of working together and building supports in terms of skills and experience in digital method and practice. University leadership often encourages community-engaged research as a way to decolonize academic inquiry. As Atalay (2019:530) observes, individual projects, curriculum redesign and mentoring are steps that university scholars can undertake, yet developing new ways of going about these endeavours requires greater investment in building a community committed to anti-colonial practice. Broadening the scope of pedagogies and welcoming community members, staff and students into the design of digital heritage projects can transform how we practice archaeology, reframe the questions we ask, and expand significantly both the foundations for and paths we create in reaching our goals. Most importantly, such a process lends itself to building relationships of trust and forming enduring partnerships.

The Westbank First Nation digital heritage project has not yet produced a 'digital product'. The conversations that the archaeologists have had up to now have served to highlight the intrinsic complexities surrounding how to build a secure digital platform for community governance of heritage, and has provided many insights into what building blocks are needed in order for this work to achieve fruition. It becomes clear that when we

centre the rights of Indigenous peoples to their heritage, and take deliberate meaningful steps to activate Indigenous data governance in archaeology, we create space for new forms of research in alignment with anti-colonial practice in archaeology and digital heritage.

Our next steps include building towards Westbank archaeologists' goals for a public digital map, one that will be shared with the sncəwips Museum and that the archaeologists can use for storytelling with Elders, Knowledge keepers and youth in the community. At the same time, we continue work on creating low-barrier learning experiences, training and workshops to be run on a regular basis within the community. This is clearly a feasible goal given the geographical proximity of The University of British Columbia Okanagan campus to Westbank First Nation and the keen interest of Westbank archaeologists in acquiring skills and capabilities in digital method and practice. Similar to this initiative, efforts are being made to develop a four-year Bachelor of Indigenous Land Stewardship program that will begin to be offered in Westbank First Nation, pending approval, in September 2022.

Greater investments are also needed in ensuring long-term preservation of community-held archaeological data and digital heritage, along with operational models and software to support community governance of heritage. Digital archaeologists typically focus on developing large-scale research infrastructures and considerable investment is directed towards these goals. While fruitful, these efforts overlook a critical gap in both skills and technological requirements when it comes to Nation-based data governance of heritage. Each Indigenous government and community has its own values, protocols and requirements, and an explicitly anti-colonial digital archaeology can begin to redress structural inequalities through attention to the needs of community governance of Indigenous heritage.

Acknowledgements

Gupta thanks Nancy Bonneau for her invitation to support Westbank's digital heritage project, and for her time to complete and review our paper. Gupta is grateful for Nicole Vessie (formerly Westbank Archaeology Coordinator), her patience, voice and knowledge to conceptualize and design the work plan for the digital heritage project. Our initial work was supported by the UBC Public Humanities Hub Okanagan's Fellowship, awarded to Vessie and Gupta, and the Hampton New Faculty grant, awarded to Gupta. We thank the two external reviewers for their helpful comments and the copy editor for improving the clarity of the manuscript.

Declarations

Conflict of interest The authors declare no conflict of interest.

References

- Aikawa, N.
(2004). An Historical Overview of the Preparation of the UNESCO International Convention for the Safeguarding of the Intangible Cultural Heritage. *Museum International*, 56, 137–149. <https://doi.org/10.1111/j.1350-0775.2004.00468.x>.
- Ali, S. M.
(2016). A Brief Introduction to Decolonial Computing. *XRDS*, 22, 16–21. <https://doi.org/10.1145/2930886>.
- Anaya, S. J.
(1996). *Indigenous Peoples in International Law*. Oxford: Oxford University Press.
- Anderson, J.
(2004). The Politics of Indigenous Knowledge: Australia's Proposed Communal Moral Rights Bill. *UNSWLJ*, 27, 585–604.
- Anderson, J., & Christen, K.
(2013). 'Chuck a Copyright On It': Dilemmas of Digital Return and the Possibilities for Traditional Knowledge Licenses and Labels. *Museum Anthropology Review*, 7, 105–126.
- Arizpe, L.
(2000). Cultural Heritage and Globalisation. In E. Avrant, R. Mason, & M. de la Torre (Eds.), *Values and Heritage Conservation* (pp. 32–37). Los Angeles: The Getty Conservation Institute.
- Atalay, S.
(2012). *Community-Based Archaeology: Research with, by and for Indigenous and Local Communities*. California: University of California Press.
- Atalay, S.
(2019). Can archaeology Help Decolonize the Way Institutions Think? How Community-Based Research is Transforming The Archaeology Training Toolbox and Helping to Transform Institutions. *Archaeologies*, 15(3), 514–535.
- Atalay, S., Clauss, L. R., McGuire, R. H., & Welch, J. R.
(2014). Transforming Archaeology. In S. Atalay, L. R. Clauss, R. H. McGuire, & J. R. Welch (Eds.), *Transforming Archaeology: Activist Practices and Prospects* (pp. 7–28). New York: Routledge.

Connecting Past to Present: Enacting Indigenous Data Governance Principles

- Battiste, M., & Sa'ke'j Henderson, J. Y.
(2000). *Protecting Indigenous Knowledge and Heritage: A Global Challenge*.
Georgetown: UBC Press.
- Birkhold, M. H.
(2019). The Indigenous McClain Doctrine: A New Legal Tool to Protect Cultural Patrimony and the Right to Self-determination. *Washington University Law Review*, 97, 113–163.
- Blakey, M. L.
(2020). Archaeology Under the Blinding Light of Race. *Current Anthropology*, 61, S183–S197. <https://doi.org/10.1086/710357>.
- Brown, D., & Nicholas, G. P.
(2012). Protecting Indigenous Cultural Property in the Age of Digital Democracy: Institutional and Communal Responses to Canadian First Nations and Māori Heritage Concerns. *Journal of Material Culture*, 17, 307–324. <https://doi.org/10.1177/1359183512454065>.
- Bruhn, J.
(2014). Identifying Useful Approaches to the Governance Of Indigenous Data. *International Indigenous Policy Journal*. <https://doi.org/10.18584/iipj.2014.5.2.5>.
- Canadian Archaeological Association.
(2022). Statement on UNDRIP and TRC Calls to Action, <https://canadianarchaeology.com/caa/about/ethics/statement-undrip-and-trc-calls-action> Accessed May 2022.
- Carroll, S. R., Garba, I., Figueroa-Rodríguez, O. L., Holbrook, J., Lovett, R., Materechera, S., Parsons, M., Raseroka, K., Rodriguez-Lonebear, D., Rowe, R., Sara, R., Walker, J. D., Anderson, J., & Hudson, M.
(2020). The CARE Principles for Indigenous Data Governance. *Data Science Journal*, 19, 43. <https://doi.org/10.5334/dsj-2020-043>.
- Cheong, L. K., & Chang, V.
(2007). The Need for Data Governance: A Case Study. *Australasian (ACIS) 2007 Proceedings*, 11, 89.
- Christen, K. A.
(2012). *Mukurtu: An Indigenous Archive and Publishing Tool*. White Paper, Washington State University, <https://hcommons.org/deposits/item/hc:12001/>.
- Cleere, H.
(2001). The Uneasy Bedfellows: Universality and Cultural Heritage. In R. Layton, P. Stone, & J. Thomas (Eds.), *Destruction and Conservation of Cultural Property* (pp. 22–29). New York: Routledge.

- Colwell, C., & de Almeida Lopes, R.
(2020). Collaborative Archaeology is not the End/ Arqueologia colaborativa nao e o fim. *Revista do Museu de Arqueologia e Etnologia*, 34, 41.
- Craft, A., Gunn, B. L., Knockwood, C., Christie, G., Askew, H., Henderson, J. S. Y., Borrows, J., Hichols, J., Wilkins, K., Chartrand, L., Fitzgerald, O. E., Hamilton, R., Beaton, R., Morales, S., & Lightfoot, S.
(2018). *UNDRIP Implementation: More Reflections on the Braiding of International, Domestic and Indigenous Laws*. Centre for International Governance Innovation, October 30, 2018. <https://www.cigionline.org/publications/undrip-implementation-more-reflections-braiding-international-domestic-and-indigenous/>.
- Dados, N., & Connell, R.
(2012). The Global South. *Contexts*, 11, 12–13. <https://doi.org/10.1177/1536504212436479>.
- David, P. A.
(1998). Common Agency Contracting and the Emergence of “Open Science” Institutions. *The American Economic Review*, 88, 15–21.
- David-Chavez, D. M., Valdez, S., Estevez, J. B., Meléndez Martínez, C., Garcia, A. A., Josephs, K., & Troncoso, A.
(2020). Community-Based (Rooted). Research for Regeneration: Understanding Benefits, Barriers, and Resources for Indigenous Education and Research. *AlterNative: An International Journal of Indigenous Peoples*, 16, 220–232. <https://doi.org/10.1177/1177180120952896>.
- Dutta, M., Ramasubramanian, S., Barrett, M., Elers, C., Sarwatay, D., Raghunath, P., Kaur, S., Dutta, D., Jayan, P., Rahman, M., Tallam, E., Roy, S., Falnikar, A., Johnson, G. M., Mandal, I., Dutta, U., Basnyat, I., Soriano, C., Pavarala, V., ... Zapata, D.
(2021). Decolonizing Open Science: Southern Interventions. *Journal of Communication*. <https://doi.org/10.1093/joc/jqab027>.
- Echo-Hawk, W.
(2013). *In the Light of Justice: The Rise of Human Rights in Native America and the UN Declaration on the Rights of Indigenous Peoples*. Wheat Ridge: Fulcrum Publishing.
- First Nations Information Governance Centre (FNIGC).
(2016). Pathways to First Nations’ Data and Information Sovereignty. In T. Kukutai & J. Taylor (Eds.), *Indigenous Data Sovereignty: Toward an Agenda* (pp. 139–156). Acton ACT: ANU Press.
- Flewellen, A. O., Dunnavant, J. P., Odewale, A., Jones, A., Wolde-Michael, T., Crossland, Z., & Franklin, M.
(2021). The Future of Archaeology Is Antiracist: Archaeology in the Time of Black Lives Matter. *American Antiquity*, 86, 224–243. <https://doi.org/10.1017/aaq.2021.18>.

Connecting Past to Present: Enacting Indigenous Data Governance Principles

Franklin, M., & Paynter, R.

(2010). Inequality and archaeology. In W. Ashmore, D. Lippert, & B. Mills (Eds.), *Voices in American Archaeology: the 75th Anniversary Volume of the Society for American Archaeology* (pp. 94–130). Washington DC: Society for American Archaeology Press.

Franklin, M., Dunnivant, J. P., Flewellen, A. O., & Odewale, A.

(2020). The Future is Now: Archaeology and the Eradication of Anti-Blackness. *International Journal of Historical Archaeology*, 24, 753–766. <https://doi.org/10.1007/s10761-020-00577-1>.

Goff, P. M.

(2021). Bringing Indigenous Goals and Concerns into the Progressive Trade Agenda. *Revue Interventions Économiques*. <https://doi.org/10.4000/interventionseconomiques.12777>.

Gopal, P.

(2021). On Decolonisation and the University. *Textual Practice*, 35, 873–899. <https://doi.org/10.1080/0950236X.2021.1929561>.

Government of Canada; Crown-Indigenous Relations and Northern Affairs Canada.

(2015). *Truth and Reconciliation Commission of Canada*. Government of Canada; Crown-Indigenous Relations and Northern Affairs Canada. <https://www.rcaanc-cirnac.gc.ca/eng/1450124405592/1529106060525>.

Government of Canada, Legislative Services Branch.

(2021). *Consolidated Federal Laws of Canada, United Nations Declaration on the Rights of Indigenous Peoples Act*. United Nations Declaration on the Rights of Indigenous Peoples Act, February 4, 2022. <https://laws-lois.justice.gc.ca/eng/acts/U-2.2/>.

Grey, S., & Kuokkanen, R.

(2020). Indigenous Governance of Cultural Heritage: Searching for Alternatives to Co-management. *International Journal of Heritage Studies*, 26, 919–941. <https://doi.org/10.1080/13527258.2019.1703202>.

Guiliano, J., & Heitman, C.

(2019). Difficult Heritage and the Complexities of Indigenous Data. *Journal of Cultural Analytics*, 10(22148/16), 044.

Gupta, N., & Lesage, L.

(2016). Multidisciplinary Investigations into Huron-Wendat and St. Lawrence Iroquoian Connections. *Ontario Archaeology*, 96, 59.

Gupta, N., Blair, S., & Nicholas, R.

(2020a). What We See, What We Don't See: Data Governance, Archaeological Spatial Databases and the Rights of Indigenous Peoples in an Age of Big Data. *Journal of Field Archaeology*, 45(sup1), S39–S50. <https://doi.org/10.1080/00934690.2020.1713969>.

NEHA GUPTA ET AL.

- Gupta, N., Vessie, N., & Bonneau, N.
(2020b). Enacting Indigenous Data Governance in Archaeology. In *Presentation for Working Tools Seminar*. University of British Columbia.
- Hodgetts, L., & Kelvin, L.
(2020). At the Heart of the Ikaahuk Archaeology Project. In K. Supernant, J. E. Baxter, N. Lyons, & S. Atalay (Eds.), *Archaeologies of the Heart* (pp. 97–115). New York: Springer.
- Howland, M. D., Liss, B., Levy, T. E., & Najjar, M.
(2020). Integrating Digital Datasets into Public Engagement Through ArcGIS StoryMaps. *Advances in Archaeological Practice*. <https://doi.org/10.1017/aap.2020.14>.
- Hutchings, R. M., & La Salle, M.
(2017). Archaeology as State Heritage Crime. *Archaeologies*, 13(1), 66–87.
- Kansa, E. C., Schultz, J., & Bissell, A. N.
(2005). Protecting Traditional Knowledge and Expanding Access to Scientific Data: Juxtaposing Intellectual Property Agendas via a “Some Rights Reserved” Model. *International Journal of Cultural Property*, 12, 285–314. <https://doi.org/10.1017/S0940739105050204>.
- Kansa, E. C.
(2016). Click Here to Save the Past. In E. W. Averett, J. M. Gordon, & D. B. Counts (Eds.), *Mobilizing the Past for a Digital Future: The Potential of Digital Archaeology* (pp. 443–472). Grand Forks: The Digital Press at the University of North Dakota.
- Kerber, J. E.
(2006). *Cross-Cultural Collaboration: Native Peoples and Archaeology in the North-Eastern United States*. Dearborn: University of Nebraska Press.
- Kukutai, T., & Taylor, J.
(2016). Data Sovereignty for Indigenous Peoples: Current Practice and Future Needs. In T. Kukutai & J. Taylor (Eds.), *Indigenous Data Sovereignty: Toward an Agenda* (pp. 1–14). ANU Press.
- McAnany, P. A., Nicholas, G., Lippert, D., Wilcox, M., Zimmerman, L. J., Montgomery, L. M., McGuire, R., Rocabado, P. A., Conkey, M., & Colwell, C.
(2022). Reading the Fine Print: What You Should Know About UNDRIP. *The SAA Archaeological Record*, 22(3), 14–18.
- Ministry of Indigenous Relations and Reconciliation.
(2021). Declaration on the Rights of Indigenous Peoples Act. Province of British Columbia. Province of British Columbia, October 18, 2021. <https://www2.gov.bc.ca/gov/content/governments/indigenous-people/new-relationship/united-nations-declaration-on-the-rights-of-indigenous-peoples>.

Connecting Past to Present: Enacting Indigenous Data Governance Principles

Montenegro, M.

(2019). Subverting the Universality of Metadata Standards: The TK Labels as a Tool to Promote Indigenous Data Sovereignty. *Journal of Documentation*, 75, 731–749. <https://doi.org/10.1108/JD-08-2018-0124>.

Mukurtu CMS.

(2022). Center for Digital Scholarship and Curation at Washington State University, <https://mukurtu.org/> Accessed Jan 2022.

Nakata, M., Nakata, V., Gardiner, G., McKeough, J., Byrne, A., & Gibson, J.

(2008). Indigenous Digital Collections: An Early Look at the Organisation and Culture Interface. *Australian Academic & Research Libraries*, 39, 223–236. <https://doi.org/10.1080/00048623.2008.10721360>.

Nicholas, G. P., & Hollowell, J.

(2004). Intellectual Property Rights in Archaeology? *Anthropology News*, 45(6), 8.

Nicholas, G., Bell, C., Bannister, K., Ouzman, S., & Anderson, J.

(2009). Intellectual Property Issues in Heritage Management: Part 1: Challenges and Opportunities Relating to Appropriation, Information Access, Bioarchaeology, and Cultural Tourism. *Heritage Management*, 2(2), 26.

Nicholas, G. P.

(2017). Culture, rights, indigeneity and intervention: Addressing inequality in indigenous heritage protection and control, In C. Hillerdal, A. Karlström, C.-G. Ojala (Eds.), *Archaeologies of “Us” and “Them”: Debating History, Heritage and Indigeneity*, (pp. 199–216). New York, NY: Routledge. <https://doi.org/10.4324/9781315641997>.

Nicholas, G. P.

(2019). Reconciling Heritage: Doing Archaeology at the Intersection of Indigenous Heritage, Intellectual Property, and Human Rights. In K. Pennanen and S. Goosney (Eds.), *Chacmool at 50: The Past, Present, and Future of Archaeology. Proceedings of the 50th Annual Chacmool Archaeology Conference* (pp. 85–101). Calgary: Chacmool Archaeology Association, University of Calgary, Calgary.

Ojala, C.-G., & Nordin, J. M.

(2015). Mining Sápmi: Colonial Histories, Sámi Archaeology, and the Exploitation of Natural Resources in Northern Sweden. *Arctic Anthropology*, 52 (2), 6–21. <https://doi.org/10.3368/aa.52.2.6>.

Ontario Archaeological Society.

(2017). *From Truth to Reconciliation: Redefining Archaeology in Ontario*, 2017 Annual OAS Symposium, Brantford, <https://www.ontarioarchaeology.org/event-2596855>.

Pohawpatchoko, C., Colwell, C., Powell, J., & Lassos, J.

(2017). Developing a Native Digital Voice: Technology and Inclusivity in Museums. *Museum Anthropology*, 40(1), 52–64.

- Polymenopoulou, E.
(2017). Indigenous Cultural Heritage and Artistic Expressions: Localizing Intellectual Property Rights and UNESCO Claims. *Canadian Journal of Human Rights*, 6, 87–126.
- Posey, D. A., & Dutfield, G.
(1996). *Beyond Intellectual Property Toward Traditional Resource Rights for Indigenous Peoples and Local Communities*. Ottawa: International Development Research Centre.
- Pyburn, K. A.
(2020). Archaeology, Communities and Economic Development: A Pandora's Box. In V. Higgins & D. Douglas (Eds.), *Communities and Cultural Heritage: Global Issues, Local Values* (pp. 93–105). New York: Routledge.
- Rainie, S. C., Schultz, J. L., Briggs, E., Riggs, P., & Palmanteer-Holder, N. L.
(2017). Data as a Strategic Resource: Self-determination, Governance, and the Data Challenge for Indigenous Nations in the United States. *International Indigenous Policy Journal*. <https://doi.org/10.18584/iipj.2017.8.2.1>.
- Rainie, S., Kukutai, T., Walter, M., Figueroa-Rodriguez, O., Walker, J., & Axelsson, P.
(2019). Issues in Open Data - Indigenous Data Sovereignty. In T. Davies, S. Walker, M. Rubinstein, & F. Perini (Eds.), *The State of Open Data: Histories and Horizons* (pp. 300–319). Cape Town: African Minds and International Development Research Centre.
- Rizvi, U.
(2020). Community-Based and Participatory Praxis as Decolonizing Archaeological Methods and the Betrayal of New Research". In K. Supernant, J. E. Baxter, N. Lyons, & S. Atalay (Eds.), *Archaeologies of the Heart* (pp. 83–96). Springer.
- Shiri, A., Howard, D., & Farnel, S.
(2021). Indigenous Digital Storytelling: Digital Interfaces Supporting Cultural Heritage Preservation and Access. *International Information & Library Review*. <https://doi.org/10.1080/10572317.2021.1946748>.
- Smith, C., Nicholas, G. P., & Bannister, K. P.
(2004). On Intellectual Property Rights and Archaeology. *Current Anthropology*, 45, 527–529. <https://doi.org/10.1086/423495>.
- Simons, E., Martindale, A., & Wylie, A.
(2021). Bearing Witness: What Can Archaeology Contribute in an Indian Residential School Context? In C. Meloche, K. Nichols, & L. Spake (Eds.), *Working with and for Ancestors: Collaboration in the Care and Study of Ancestral Remains* (pp. 21–31). London: Routledge.

Connecting Past to Present: Enacting Indigenous Data Governance Principles

Supernant, K.

(2018). Reconciling the Past for the Future: The Next 50 Years of Canadian Archaeology in the Post-TRC Era. *Canadian Journal of Archaeology*, 42 (1), 144–153.

Supernant, K.

(2020). Grand Challenges No.1 Truth and Reconciliation: Archaeological Pedagogy, Indigenous Histories, and Reconciliation in Canada. *Journal of Archaeology and Education*, 4(3), 2.

Tsosie, R.

(2019). Tribal Data Governance and Informational Privacy: Constructing Indigenous Data Sovereignty. *Montana Law Review*, 80, 41.

Tuhiwai-Smith, L.

(1999). *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books.

Warrick, G.

(2017). Control of Indigenous Archaeological Heritage in Ontario, Canada. *Archaeologies*, 13, 88–109. <https://doi.org/10.1007/s11759-017-9310-1>.

Warrick, G., Glencross, B., & Lesage, L.

(2021). The Importance of Minimally Invasive Remote Sensing Methods in Huron -Wendat Archaeology. *Advances in Archaeological Practice*, 9(3), 238–249. <https://doi.org/10.1017/aap.2021.7>.

Westbank First Nation.

(2021a). Intergovernmental Affairs/ Title and Rights: Title & Rights. Westbank First Nation, <https://www.wfn.ca/your-government/government-overview/departments.htm>.

Westbank First Nation.

(2021b). Intergovernmental Affairs/ Title and Rights: Archaeology. Westbank First Nation, <https://www.wfn.ca/your-government/government-overview/departments.htm>.

Wilkinson, M. M. D., Dumontier, M. M., Aalbersberg, I. J. J., Appleton, G. G., Axton, M. M., Baak, A. A., Blomberg, N. N., et al.

(2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*, 3, 160018. <https://doi.org/10.1038/sdata.2016.18>.

Williamson, R. F.

(2018). Archaeological Heritage Management: The Last and Next Half Century. *Canadian Journal of Archaeology*, 42(1), 13–19.

Younging, G.

(2003). Perspectives on the Indigenous Tradition/New Technology Interface. *Indigenous Affairs Journal*, 2, 14–17.

Younging, G.

(2016). The Traditional Knowledge – Intellectual Property Interface. In C. Callison, L. Roy, & G. A. LeCheminant (Eds.), *Indigenous Notions of Ownership and Libraries, Archives and Museums* (pp. 67–74). Boston: De Gruyter Saur.

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