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# Canadian Digital Archaeology: On Boundaries and Futures

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**T**HE DIGITAL TURN IN ARCHAEOLOGY has been promoted through—and really hinges upon—the promise of the bright and shiny future that technological advances might offer. In many ways, the use of digital technologies is becoming so ubiquitous that “digital archaeology” is used synonymously with contemporary practice. At the same time, digital archaeology has historically proved challenging to categorize. There is a tendency to construct binary classifications of digital archaeology and the role(s) that we see it playing. For example, there are those who see the incorporation of technology as employing a tool or set of tools (Evans et al. 2006:7) and those who see it as a paradigm shift (Zubrow 2006:9; see also Huggett 2015 for broader discussion). Likewise, there are those who argue that digital archaeology should be recognized as a distinct subfield (Graham et al. 2017), which stands in contrast with those who see it as permeable or universal to all archaeology (Evans et al. 2006:7). Confusion and tensions are further amplified by the fact that such binaries do not necessarily align but rather are deeply entangled in complex conceptual networks. Nevertheless, the categorization of digital archaeology has serious implications for the way that it is positioned within the discipline, including for grant and career structures. Looking retrospec-

tively, the push to see digital archaeology as a distinct subfield or specialization can make it seem ignorable by those who “don’t do that kind of archaeology”, while those who view it as a universal (we all use computers therefore we are all digital archaeologists) often limits the recognition that there is a need for more intensive training, in addition to rigorous ethical guidelines and implementation when it comes to the computational turn in archaeology.

Ultimately all branches of these binaries are true; digital technologies are indeed tools, but they are not neutral or passive and therefore the technological ecosystem within which archaeology functions must be connected to broader paradigmatic shifts. Consequently, there is a need for specialisation and focus to fully understand and take advantage of the complexities of technology, and yet it is so universal that all archaeologists must take more responsibility for their digital data, analysis, and communications. What binds these different facets together and demands a critical analysis

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of the place of the digital in Canadian archaeology is the social, political, economic and geographic landscape within the national (and international) boundaries of our discipline. Although the constraints of this paper limit the depth and breadth of this discussion, a focus on diversification, collaboration, access, and education are most pivotal to stimulating growth and mediating appropriate approaches to digital archaeology in Canada.

### **Boundaries and Designations**

Perhaps one of the most notable contributions of digital technology has been the dissolution of boundaries to accessing archaeological data, results, researchers and knowledge. While it has long been challenging to identify “Canadian archaeology” in general, the globalized nature of digital approaches further blurs the lines when it comes to identifying or categorizing “Canadian digital archaeology”. Many digital initiatives benefit from and often endeavour to cross national, geographic, and institutional borders to aggregate resources, broaden access, or highlight the permeability of heritage (see for instance, the *Digital Index of North American Archaeology* 2018, the *Reciprocal Research Network* [RRN] 2014). However, while there are powerful digital projects in reconciliation and indigenous archaeology coming out of the United States and Australia, and deeply creative applications of technology in Europe, the historical and contemporary context of Canadian heritage is unique and therefore presents its own framework for the development of digital archaeology—one that deserves further attention.

This paper, therefore, takes a flexible definition of “Canadian digital archaeology” as those projects that emerge from

or seek to address this particular context of research and access to the past through indigenous-driven research and de-colonization (Compton 2017; Supernant 2017), education and training (Cook et al. 2018; Graham et al. 2017), creative practice (Carter 2017; Compton 2017), environmental change (O’Rourke 2017), sustainability (Ferris and Cannon 2009), career/disciplinary structures (Perry 2016; Perry et al. 2015), and government (see also Gupta 2017). There are extensive examples of archaeologists in Canada utilizing digital tools to extend or enhance traditional archaeology (i.e., mapping, recording, managing data). While these projects are relevant and informative, they follow the traditional trajectory of technology adoption and therefore have been more widely covered elsewhere. This paper will instead explore and celebrate approaches that innovate or disrupt traditional archaeology, imagining new roles, solutions, and creative practice.

### **Diversifying Digital Archaeology**

The desperate want of diversity and equity permeates both Canadian archaeology and the tech world; it is perhaps, then, unsurprising that one of the greatest impediments to the development of ethical and multi-vocal digital archaeologies has been the struggle for inclusivity. Writing as two female, early-career researchers, we recognize that there have been some inroads made here, however, structural discrimination, habitual harassment, and erasure of voices continues to define this space as one of privilege and exclusion, rather than the democratizing ideals and values typically used to sell open science and digital access. However, if we fail to make real changes in who gets to

do digital archaeology, we run the risk of replicating and even amplifying the same inequities and power structures that have long plagued the discipline. In particular, the public nature of digital archaeology and web-based intellectuals make them targets for online harassment, cyberstalking, and abuse, in addition to all the “traditional” forms of abuse, which intensifies the vulnerability of these voices (Perry 2016; Perry et al. 2015). Diverse voices, however, push forward new questions, innovative applications, and enhanced interpretations, as demonstrated, for example, by Kisha Supernant’s pioneering work in indigenous feminist digital archaeology, using indigenous knowledge to inform GIS (Supernant 2017). Transformation of career structures, recognition of digital outputs (alongside traditional academic publications), and continued policy and awareness building efforts are critical to augment inclusivity, equity, and a sense of relevance to attract and keep diverse voices to this space.

#### *Consultation and Collaboration*

Community-based research should be the cornerstone of Canadian approaches today, including in digital archaeology. Consultation and collaboration in advance of and throughout the development and launch of digital applications are key to challenging existing legacies to decolonize Canadian archaeology (see also interdisciplinary case studies in Taylor and Lauriault 2014). The Inuvialuit Pitqusiit Inuuniarutait: Inuvialuit Living History (2018) project, for instance, brings together Inuvialuit Elders, youth, and experts, with anthropologists, educators, and media producers to research, document, and share collections through a community-based virtual exhibit. Importantly, this project

has placed forging relationships at the center of digital practice to facilitate long-term access, in turn engaging with complex issues of access, intellectual property, and curatorial authority (Hennessy 2012; Hennessy et al. 2013). In a similar spirit, the Ikaahuk Archaeology Project (2015) emphasises consultation and collaboration to consider the roles and position of 3D computer models of artifacts and sites (including 3D printing) to find low-cost solutions for increasing access in ethical and engaged ways (Haukass and Hodgetts 2016; see also Compton 2017).

Recognizing the complexity and ethical responsibility of digitising culture, there is still a long road ahead to developing digital policy and practice, however there is also an opportunity here to redevelop relationships with descendant communities to transform understandings of the past. These case studies demonstrate the transformative nature of digital archaeology in reshuffling authority and layering multiple ways of knowing with tangible and intangible heritage. Nevertheless, in both diversification of the discipline and deepening collaboration with descendant communities, the motivation has a significant impact on outcome; there is a need to move beyond box checking and political correctness to sincere commitment, recognizing that this makes Canadian archaeology stronger and achieves far more.

#### **Access**

Inaccessibility of archaeological data and knowledge has been challenged recently, ranging from questions about traditional publication models and paywalls to addressing indigenous rights. The push to use digital technology as a solution to archaeology’s history of wanton inaccess-

sibility, particularly evident in the open access (Graham et al. 2015; see also Kansa 2016) and sustainability movements (Ahmed et al. 2014; Ferris and Cannon 2009), has opened many doors, however it has also stimulated concerns with intellectual property, privacy, and preservation (Brown and Nicholas 2012; Christen 2012; Compton et al. 2017). For instance, Boast and Enote (2013:109–111), in comparing projects from Canada (RRN) to Polynesia and Sierra Leone, have highlighted the dangers of “Virtual Repatriation”, and the use of digital technology to maintain neocolonial collections practices or superficial accommodations for access to cultural patrimony. To date, the majority of research considering digital intellectual property rights, access, and ethics have been based in Western European case studies and, while shaped by their own political and cultural complexities, do not necessarily parallel Canadian contexts. It is clear that further attention, collaboration, and critical assessment of protocols of access in the context of Canadian archaeology must become a priority.

#### *Public Digital Archaeology and Heritage*

Public archaeology and heritage in Canada is an expanding umbrella of approaches to community engagement, outreach and collaboration. Social media and blogging, web-based resources, creative media, and mobile applications are being mobilized to transform access and impact, from exploring local collections to sharing the realities and challenges of archaeological research in Canada (see blogs by Halmhofer [2018], Lacy [2018], Sustainable Archaeology, Archéo-Québec, to name a few). Relatively simple technology can also be leveraged to challenge traditional representa-

tions, for example Joanne Hammond’s (@KamloopsArchaeo) use of digital image editing and Twitter to re-write and thereby decolonize heritage plaques.

Approaches to public sharing of archaeological knowledge and experiences of the past extend to the realms of augmented and virtual reality (Carter 2017) and interactivity (Heckadon et al. 2018; see also Martin 2018). Far from simply being a novelty, these digital public archaeology experiences can be used to reinvest ourselves in the goal of making the past more accessible, as Dawson et al. (2011) have demonstrated in using 3D virtual worlds to serve Inuit elders to mobilize traditional knowledge for youth. However, whether using social media or creating advanced digital experiences, it is critical to analyze the impact and implications (Perry and Beale 2015:157–162). What do virtual experiences really mean, and are they really inclusive and accessible? And if we are going to invest in these formats, how do we sustain these projects, given the rapid changes in technology, expenses of proprietary software/hardware, and the complexities of data management? The age of openness is incredibly powerful, however, unlike a printed book or report, we cannot see digital outputs as finite; these projects must be supported by long-term curation and critical evaluation.

#### **Education**

Digital literacy and training opportunities are a major gap in archaeology in general (Cook et al. 2018), but remain particularly limited in Canada. Most programs offer no courses that teach practical skills in digital archaeology, and where they do exist, they are typically singular courses that are difficult to maintain due to the speed at which

technology shifts and lack the scaffolding that effective learning practices require. The Open Digital Archaeology Textbook Environment (Graham et al. 2017), an e-textbook and digital laboratory for students currently in development, will certainly offer new opportunities for enhancing and seamlessly integrating digital training into archaeological curriculum in Canada (Graham 2017). However, departments and institutions are ultimately responsible for ensuring that digital methods and theory are sustained throughout undergraduate and graduate programs for transferrable skills development and professionalization. More broadly, there is a large gap in the opportunities for digital training outside of post-secondary education, including for CRM, museum professionals, and descendant communities.

It is no exaggeration to say that the advancement of archaeology in Canada will need a revolution in digital literacy, data management and informatics, and even social media and web platforms. To date, most digital archaeological applications addressing access have focused on accelerating dissemination but we challenge Canadian archaeologists to explore and experiment with technology to instead transform access to make space for disrupting traditional narratives, to decolonize data collection and management practices, and to innovate learning, teaching, and collaboration (see also Costopoulos 2017).

### Conclusions

Addressing the ethical, political, and social dimensions of digital archaeology, including access, rights, and policy, within diverse Canadian communities is perhaps one of the most urgent issues facing Canadian archaeology today, as

more and more data and research are digitized or even born digital. Diversifying the voices and enhancing training opportunities within this space will be critical to framing informed, equitable, and representational approaches moving forward. Part of this will also necessitate dealing with current career structures and advocating for labour rights, opportunities, and security, particularly for early career researchers, to stem the current brain drain that has pushed many innovative minds in digital archaeology to look elsewhere for jobs and research prospects. However, the case studies and themes explored in this paper highlight the opportunities for transformative shifts in Canadian archaeology, leveraging technology to method and theory in ways that disrupt colonial legacies, problematic power structures, and ontological challenges. In part based in potential and in part in prophesy, the language of the digital turn in archaeology is undoubtedly futuristic, but also optimistic and, at times, even naive. So where are we going, and toward what end? By asking these questions for archaeology writ-large, and sparking conversations about the impact of our practices in the present (digital and non-), firmly planted within the complexities of Canadian contexts, we can purposefully build a reflexive, inclusive, and ethical digital archaeology for the future.

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