Establishing Beneficial Roles:

Integrating Community Members into Archaeological Practices in Atlantic Canada

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Abstract

This master's research seeks to understand how working with undocumented collections, private artifact collectors and avocational archaeologists benefits the field of archaeology. Governmental policies related to the act of private artifact collecting and avocational archaeology in Atlantic Canada are examined. By revisiting these policies and legislation, archaeologists and non-archaeologists can begin discussing what roles private collectors and avocational archaeologists have to play in professional archaeological methodology and interpretation. Case studies are presented from Canada, England, Taiwan, the United States of America and Wales to demonstrate the significant contribution to the global archaeological record from responsible private collectors, avocational archaeologists and community museums.

The need for collaboration between professional archaeologists and non-archaeologists, is heavily emphasized based on the need to improve the discipline methodologically, theoretically and ethically. Fieldwork and museum work was completed in North West River, Labrador, to produce 3D models of Tshiashinnu artifacts and to demonstrate what role community museums have in collaborating with archaeologists. The results of this research demonstrate that the most effective 3D scanning or photogrammetry equipment that a non-archaeologist can use to produce 3D models are Android or iOS applications that are user-friendly affordable. Statistical data was collected from an online survey to gather information related to different stakeholder positions on the involvement of private collectors and avocational archaeologists in the documentation of cultural material and heritage sites. There were 14 multiple-choice questions and 171 participants who answered the survey questionnaire. Over 94% of survey respondents answered that they were in favour of collaborating with private artifact collectors. Based on survey results, this demonstrates that many more contemporary archaeologists are in favour of collaborating

with private artifact compared to those who are opposed to it. By collaborating with non-archaeologists such as responsible private artifact collectors and institutions like private museums and using 3D scanning technologies, archaeologists can help digitize and document archaeological collections held in private collections or community museums. We can then make these collections more accessible and share them with wider audiences. This benefits archaeology as it becomes more inclusive to those who are not trained in archaeological methodology or theory.

Land Acknowledgement

This research humbly acknowledges Labrador as the traditional and ancestral homeland of the Innu of Nitassinan, the Inuit of Nunatsiavut, and the Inuit of NunatuKavut.

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There are many individuals I would like to thank who supported me during my research. My story of embarking on a career in archaeology and pursuing a master's degree was kickstarted by my supervisor, Dr. Scott Neilsen. Back in 2016, Scott and I began emailing each other back and forth over lengthy discussions of archaeology and my research interests. This sporadic communication eventually led me to travel in the summer of 2018 to North West River, Labrador, to participate in the Labrador Campus field school in Community Archaeology and Cultural Resources Management. After spending time learning archaeological theory and the cultural history of the Upper Lake Melville region, field school students learned field methodology that included shovel test pitting, survey work and excavation. I greatly enjoyed my experience and spending time visiting the North. This experience is one of the reasons why I chose to apply to the master's program in the Department of Archaeology at Memorial University of Newfoundland and Labrador (MUNL). I owe many thanks to Dr. Neilsen because he was instrumental in arranging everything for travelling to Labrador, helping with my fieldwork, lab work and guiding me through the processes of developing my research. This thesis could not have been done without his support. He has been nothing but a teacher and mentor throughout my graduate program and I have learned many important lessons from him.

My Labrador Campus Research Station "roommate", David Finch, is to be thanked for his intuitive advice whenever I picked his brain for suggestions regarding my work. It was nice to have a companion to get out of the lab with and explore more of Labrador. Other individuals I

Finally, I would like to thank my mother and father for the support they gave me from the time I started my M.A. up until its completion. I lived in my old basement bedroom while I completed all of my first-year coursework. I thank them immensely for this as it was a huge help financially. I hope it was nice to have the oldest kid back in the nest. My parents' strong work ethic, devotion to improving one's self and encouragement in chasing my dreams helped me to complete my master's degree. Their common university background in history and their interest in the material culture of those who came before us here in New Brunswick and widely, Canada, rubbed off on me. I believe that reading all of the National Geographic magazines on anthropology and archaeology that I could get my hands on and the history textbooks from my mother's school classroom helped lead me to this moment. It is for all these reasons that I dedicate this thesis to you both. Thank you so very much for encouraging me to do what I love.

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Glossary

This thesis uses terminology that has over time, in the discipline of archaeology, been used interchangeably with other definitions or meanings. It is for this reason that I wish to outline the definitions of certain keywords that are used throughout my thesis.

An <u>archaeologist</u> is by definition an individual who engages in the study of the societies and the peoples of the past by examining the remains of their buildings, tools and other objects (Cambridge Dictionary 2022). An <u>avocationalist</u>, or <u>amateur archaeologist</u>, is someone who engages in archaeological practices or research as a hobby and not as a career (Cambridge Dictionary 2022). An antiquarian is by definition an individual who studies <u>antiquarianism</u>, the study of old and rare objects and their history (Cambridge Dictionary 2022).

An individual who has a private collection is defined as a private collector. <u>Private collection</u> derives from "private", meaning industries and services are owned or controlled by an individual person or a commercial company, rather than by the state or an official organization (Collins Dictionary 2022) and "collection", meaning a collection of similar things that you have deliberately acquired over time (ibid).

In archaeology, an individual who purposely disturbs archaeological sites with the intention of removing and stealing cultural materials is a looter. <u>Looter</u> derives from "looting", which is, someone who steals things or intentionally removes artifacts from their place of origin (Collins Dictionary 2022).

Chapter 1: Introduction to Research

My master's research seeks to answer how archaeologists can benefit the field of archaeology through collaborations with private artifact collectors and avocationalists through the documentation of digitizing private collections. Literature on the origin of private collecting and antiquarianism were examined to understand that private collecting is an inherent curious behaviour that can be interpreted in various ways. Governmental policies related to the act of private artifact collecting and avocational archaeology in Atlantic Canada were also examined to study how private collectors or avocationalists can be involved in archaeological methodology.

Archaeologists and non-archaeologists should therefore begin discussing what roles private collectors and avocational archaeologists can have in professional archaeological methodology and interpretation. Case studies are presented from Canada, England, Taiwan, the United States of America and Wales to demonstrate the significant of responsible private collectors, avocational archaeologists and community museums to the global archaeological record. There is a need for collaboration between professional archaeologists and non-archaeologists. This thesis heavily emphasizes the need to improve the discipline methodologically, theoretically and ethically to be more open to collaboration with non-archaeologists.

This thesis identifies responsible private collectors as those who have made efforts to or are those who are willing to collaborate with professional archaeologists to document artifacts and to share their finds. By doing so, they contribute to the knowledge of the archaeological record. My interpretation is that these are individuals who do not intentionally disturb the soil to look for artifacts or loot registered archaeological sites. This thesis will refer to non-archaeologists who have found archaeological sites from surface finds, erosional faces and who

have commonly reported their discoveries as responsible private collectors. Despite often keeping their collections, it is my hope that these responsible private collectors will either donate their collections to the appropriate archaeological regulators or museums or at the very least, collaborate with archaeologists to have their collections catalogued and professionally documented. 3D scanning technologies are an effective method of doing so and will be discussed widely in Chapter 3. It is my intention to acknowledge and thank all the professional archaeologists in Canada and abroad who have collaborated with avocationalists and private collectors in their community projects and research. We must continue to include avocationalists and responsible private collectors so that we can document and monitor the archaeological landscape.

I wish to acknowledge that archaeology, and in fact private collecting, has historic tensions or interrelationships with Indigenous stewardship over heritage. Contemporary archaeologists working in communities who are either largely, non-archaeologists or Indigenous peoples, must continue to bridge gaps to pursue decolonization (Atalay 2006; Nicholas 2006). This can be perceived as continuing to collaborate with groups like avocationalists, Indigenous peoples and responsible private collectors who feel they have rights, ownership and claims of stewardship over their heritage materials. While I do not explicitly acknowledge in this thesis if non-Indigenous private collectors should also have an equal claim to possessing pre-contact artifacts as Indigenous peoples do, I will acknowledge that few Indigenous people in Canada have control over their material heritage (Warrick 2017). Non-Indigenous avocationalists and private collectors also wish to maintain ownership over artifacts that largely represent the material culture of pre-contact peoples in Canada, which may create tensions regarding who truly has rights over material culture. Professional archaeologists must continue to collaborate with

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Indigenous peoples and responsible private collectors so that we can pursue solutions to ethical, legal and theoretical challenges (Hammond 2009; Klassen et al. 2009) that exist widely surrounding controlling the past and current identity and material culture of others.

Thesis Outline

In Chapter 2, statistical data was presented from an anonymous SurveyMonkey survey from October to December 2021. The survey goal was to collect information related to different stakeholder positions on the involvement of private collectors and avocational archaeologists in the documentation of cultural material and heritage sites. A total of 171 respondents completed the survey and answered questions pertaining to the willingness of archaeologists to collaborate with private collectors and avocationalists.

Chapter 3 represents the fieldwork and museum work that was completed in North West River, Labrador, from August to September of 2021. The goal was to produce 3D models of Tshiashinnu artifacts and to demonstrate how community museums can use 3D scanning and photogrammetry technologies to collaborate with archaeologists. The result was a set of criteria and recommendations that community museums and avocational archaeologists may consider when wanting to purchase or use 3D scanning or photogrammetry equipment to digitize or document archaeological collections.

In Chapter 4, case studies from within Atlantic Canada are presented to demonstrate that private collectors and avocational archaeologists have made significant contributions to archaeological knowledge. The results of Chapters 2 and 3 are presented as reinforcements as to why overall, collaboration with private collectors and avocational archaeologists has been and is of paramount importance to archaeology.

Organization of Sandwich Thesis Format

The structure of this M.A. is organized in a sandwich thesis format. Chapter 2 and Chapter 3 are written as stand-alone manuscripts, to submit to academic journals for publication. It is for this reason that some of the writing styles may differ between the two different papers in Chapter 2 and Chapter 3.

Chapter 2

The second chapter is called "Sharing Survey Results: Implications for Relationships Between Archaeologists and Private Collectors in Canada". Statistical data was collected from 171 anonymous survey participants who answered fourteen questions online by using SurveyMonkey from October 19th-December 19th of 2021. The questions were answered by professional archaeologists, private collectors, avocational archaeologists and non-archaeologists. The survey collected demographic data from participants and my analysis reached conclusions on what participants thought of collaborating with private collectors. This paper has been submitted to the Canadian Journal of Archaeology for consideration for peer-reviewed publication as part of a special student issue.

Chapter 3

The third chapter is entitled "Comparing 3D Imaging Technology at the Labrador Heritage Museum". This chapter was based on fieldwork completed in Labrador in August-September of 2021. This paper reflects my time using six different 3D scanning and photogrammetry technologies to create 3D models of Tshiashinnu artifacts and archaeological features at the Labrador Heritage Museum (Figure 1). This was completed in the Laboratory for Applied Archaeological Research and Community Heritage, housed in the Labrador Campus Research Station in North West River. The objectives were to test the overall quality of the 3D

models that were created from these technologies and assess the financial cost of this equipment, taking into consideration the overall user-friendliness of this equipment, accessibility regarding setup, internet bandwidth and copyright issues involving intellectual property. This paper will be submitted to the Virtual Archaeology Review for publication once this thesis is complete.

Chapter 4

The fourth chapter is comprised of a discussion on case studies where private collectors and avocational archaeologists have made significant discoveries or collaborated on important research projects that contributed to a shared collective archaeological record. The case studies were drawn from Newfoundland and Labrador and the Canadian Maritimes. A discussion on the ontology of private collecting is also examined to indicate that certain groups of people all over the world may have unique reasons to collect artifacts. It is not all for the sake of looting, and we must not ostracize these individuals. There is great value in collaborating with private collectors, avocationalists or community museums (Gaulton and Rankin 2018; Rankin and Gaulton 2021). One method of doing so would be to work together to produce 3D scans of private collections that belong to private collectors or are within the collections at private museums, which has occurred with the Newfoundland/Labrador Archaeological Society (NLAS). The NLAS has been very active with engaging with private collectors within the past decade. They have published reports on the results of cataloguing and documenting private collections collected by non-archaeologists and collections that exist in community museums throughout the province (Anstey 2014; Campbell 2016; Rast et al. 2016; Venovcevs 2017; Letemplier 2019; Flowers 2020). Archaeologists need all the help we can get in terms of collaborating with other stakeholders outside of the professional archaeological realm.

Stakeholders to consider are private collectors, avocationalists and institutions like community museums.

Connecting Theme of the Research and Focus

Throughout this research, a general theme of collaboration is presented in each chapter. The focus of the research implies that archaeologists must collaborate with private collectors, avocational archaeologists and private museums to benefit the field of archaeology. This is seen throughout Chapter 2 as the statistical data collected from the anonymous survey demonstrates an overwhelming show of support that archaeologists should be and are collaborating more with non-archaeologists. Specifically, these non-archaeologists are private collectors and avocationalists.

My collaboration with the Labrador Heritage Museum (in Chapter 3) demonstrates that private museums possess opportunities for archaeologists to work together to document unrecorded museum collections. Using 3D scanning or photogrammetry technologies is an effective method of bringing in additional stakeholders beyond that of academic archaeologists, cultural resource management officials, heritage managers or archaeology students. Chapter 3 demonstrates that using 3D scanning technology in conjunction with stakeholders like private museums or private collectors is a way to teach archaeological methodology and to share digitized archaeological images with community members, Indigenous stakeholders and other archaeologists.

Community archaeological theory and multivocality are the strongest choices to focus my research on because one way to benefit or improve the field of archaeology is to collaborate with non-archaeologists. Archaeologists have an ethical duty to collaborate and work with community members (González-Ruibal 2018) and if they do not, then we are not truly doing

research for non-archaeologists under a community lens (Atalay 2012). By collaborating with responsible private collectors, avocationalists and community museums, we have opportunities to educate non-archaeologists and to improve how we disseminate and interpret the material record with those who are not trained in archaeology. In working with responsible private collectors through a community archaeology or multivocality lens, archaeologists benefit archaeology and non-archaeologists by creating a productive relationship to researching and preserving the material record (Hodder 2008; Schaepe et al. 2017; Atalay 2019).

The Origin of Private Collecting

The origin of and reasoning behind private collecting is debated by anthropologists, archaeologists, historians and evolutionary psychologists. Our hominin ancestors first demonstrated the action of private collecting by amassing shells over time to trade. Neandertals in Spain were collecting marine shells and decorating them on the Iberian Peninsula 115,000 years ago (Hoffmann et al. 2018). This collecting was likely symbolic and could have been connected to trading activities with other groups in Europe (Hoffmann et al. 2018) and the time-consuming nature of the work displayed that it had value and was important. Approximately 120,000 years ago at Qafzeh Cave in Israel, Homo sapiens collected naturally perforated shells for potential symbolic use. The use-wear analyses demonstrated that these shells could be suspended on a string, suggesting that the collection of shells was intentional (Bar-Yosef Mayer et al. 2020).

Private collecting in the sense of amassing objects or things that either have some sense of literal trade value or figurative personal value would not have been easily achieved until after the Mesolithic period or the Early Neolithic periods. This was when humans were first beginning to settle in permanent locations, transitioning from hunting and gathering to animal

husbandry, and agriculture and drastically changing their environment (Asouti et al. 2018; Kotzamani and Livarda 2018; Levendis et al. 2019). Human energy in hunter gatherer populations was likely to have been spent more on seeking geographical locations like quarries, hunting look-outs or on gathering intangible collections such as oral traditions and knowledge. Over time, it would have been easier to amass larger amounts of tangible things with the acquisition of more property, wealth or power.

In the past, collectors believed that classical artwork and monuments had special uses to legitimize rule (Thompson 2016), to create social identities or as a means to express wealth. In the Roman period, collectors of Greek or Hellenistic art were eager to capture the essence of the Greeks and replicate this with the physical remains of their past culture (Thompson 2016). The Attalids, another Hellenistic dynasty, sought to justify their rule by connecting themselves with the legacy of Alexander the Great. Collectors in the past acquired the material culture of others to justify power and legitimacy as a social construct. I argue that contemporary collectors do not entirely collect to justify an appearance of wealth or power, but rather a curiosity or a tangible interest or passion for the material past.

The Influence of Antiquarianism

Antiquarianism has its origins, in the ancient world, first among the Greeks (Williams 2017) and later in the Age of the Enlightenment during the 16th and 17th centuries in Continental Europe and the United Kingdom (Murray 2007). Antiquarian traits were always similar; they were literate and therefore able to decipher ancient scripts. Antiquarians were passionate collectors of objects which they attempted to date and interpret (Schnapp 2002). Regardless of the origin of antiquarianism, antiquarians have repeatedly tried to interpret artifacts, based on comparative demonstrations to questions bearing on the origins, manufacture or use of ancient

objects (Schnapp 2002). Whether or not you are educated in archaeology, anthropology, or ancient history, the act of collecting artifacts stems from an inherently curious nature. I argue that most if not all private collectors have seemingly different reasons for amassing a private collection. Due to a similar interest in providing a story or an explanation of our collective material past, private collectors are in unique positions to help archaeologists monitor the archaeological landscapes through collaborative efforts. Antiquarianism has seemingly encouraged individuals to acquire answers for objects associated with the human past and to tell stories about these artifacts.

Overview of Archaeological Legislation in Atlantic Canada

Throughout Atlantic Canada, there are different federal, provincial and Indigenous jurisdictions that have outlined policies and legislation regarding who can conduct archaeological fieldwork. Legislation in different jurisdictions controls and protects the recording and removal of archaeological surface finds. Federal policies in the Atlantic Provinces protect archaeological materials that are within the boundaries of National Parks and distinguish active and controlled excavations from illegal looting. Currently, there are ten National Parks - Cape Breton Highlands National Parks, Sable Island National Park and Kejimkujik National Park in Nova Scotia, Fundy National Park and Kouchibouguac National Park in New Brunswick, Prince Edward Island National Park in Prince Edward Island, and Terra Nova National Park, Gros Morne National Park, the Torngat Mountains National Park and the Akami-Uapishk^U-KakKasuak-Mealy Mountains National Park Reserve in Newfoundland and Labrador.

Parks Canada is the federal government agency that manages national historic sites, national parks, and national marine conservation areas. In order to hold an archaeological research permit from Parks Canada, "all individuals conducting archaeological research, survey,

inventory or excavation in lands and lands underwater under Parks Canada's administration obtain a permit from the Field Unit Superintendent" (Parks Canada 09: 2005). In the case of finding accidental archaeological materials or human remains in a National Park, the discovery must be reported to the Parks Canada Field Unit Superintendent (Parks Canada 2005). It is illegal to purposely disturb archaeology and heritage sites within National Parks in Canada and to collect artifacts.

Permitting Authority and Requirements in Atlantic Canada

The four Atlantic provinces are discussed regarding their different permit requirements and who has the authority to issue archaeological field or research permits. Provincial legislation throughout Atlantic Canada exists to protect the integrity of archaeological sites. The legislation defines who can hold archaeological research permits and how this affects private collectors who have artifact collections.

Newfoundland and Labrador

Certain provincial governments have very specific requirements as to who can hold archaeological research permits. New Brunswick and Newfoundland and Labrador each require that the permit applicant has a graduate degree in archaeology or anthropology. Furthermore, the Provincial Archaeology Office (PAO) of Newfoundland and Labrador writes that "[the applicant] has had at least 24 weeks of supervised training in the field in basic research techniques in archaeological surveying and excavating and at least 6 weeks of training in one or both archaeological laboratory analysis curating" (Newfoundland and Labrador Permitting Requirements 2010).

New Brunswick

New Brunswick has similar requirements. As a minimum, all applicants will be required to have an MA in Anthropological Archaeology or Archaeology or be a Registered Professional Archaeologist (RPA). As of March 31, 2014, all Permit applicants must be a Registered Professional Archaeologist (RPA). Archaeology and Heritage Branch also requires that the applicant has: two years' experience in cultural resource management (CRM), including two months of supervisory experience, at least six months of experience participating in archaeological fieldwork in New Brunswick and compliance with all previous archaeological field research permit (AFRP) requirements of other jurisdictions (New Brunswick Archaeology Guidelines 2014).

Nova Scotia and Prince Edward Island

In Nova Scotia, applicants who apply for Category B permits are those who demonstrate professional qualifications as an archaeologist. The permit applicant must have an "award of an advanced degree in archaeology, anthropology, or another relevant discipline from an accredited university, a B.A. in archaeology/anthropology with an equivalent combination of training and experience, or an equivalent combination of training and experience acceptable to the Culture and Heritage Development; a minimum of 20 weeks of participation in archaeological field projects involving survey, excavation and analysis, with at least 10 of those weeks in a supervisory capacity and the demonstrated ability to design, execute and supervise all aspects of a study comparable in scope and nature to the project described in the application, including the preparation and timely submission of a satisfactory report and supporting documents and materials" (Archaeological Research Category B 2022).

The criteria for archaeology in Prince Edward Island appear to be more vague. The Government of Prince Edward Island in 2010 decided to adopt the Government of New Brunswick's *Standards and Guidelines for Archaeological Investigations* (Kristmanson 2010). It does not appear that Prince Edward Island has their own finalized version of permitting requirements.

Incorporating non-archaeologists into archaeological interpretations and methodology requires collaborating with those who are not trained in traditional archaeological methodology. In Canada, many professional archaeologists across the territories or provinces identify as having at least an undergraduate degree in a discipline related to archaeology (ie. anthropology, history, classics, native studies) and are usually accompanied by a graduate degree in either archaeology or a related discipline. For example, a permitted archaeologist in Newfoundland and Labrador is an individual who has written a post-graduate thesis in archaeology or anthropology and awarded a graduate degree in either of those fields, along with a minimum of 24 weeks of supervised training in archaeological surveying or excavation. This also includes a minimum of 6 weeks of training in archaeological curating or laboratory analysis (Newfoundland and Labrador Provincial Archaeology Office Permit Regulations 2009).

Ontario has an avocational licensing system in place for individuals without a Master's or Undergraduate degree in archaeology but who have some field and educational experience in Archaeology (Ontario Archaeological Licensing 2021). If community members have no academic credentials to demonstrate they are professional archaeologists, then archaeologists should find ways of training or creating user-friendly methods of archaeological documentation for non-archaeologists and employees or volunteers at community museums to use. Individuals cannot collect artifacts unless otherwise permitted under an archaeological research permit,

however, once artifacts are removed from their disturbed or in situ context and are placed in collections, a permit is no longer required to document them. This allows opportunities for museum staff and volunteers to gain archaeological documentation experience if they do not hold the qualifications to conduct other archaeological research.

Indigenous Consultation

Certain Indigenous governments in Atlantic Canada have established policies regarding archaeological permits and reporting archaeological sites in areas that fall under Parks Canada's jurisdiction or provincial crown jurisdiction. In Labrador, the Nunatsiavut Government has established in their Land Claim Agreement that they are to be consulted by the Government of Canada before carrying out any permitting with regards to archaeological activity in the Torngat National Park, National Park Reserve or National Marine Conservation Area in the Labrador Inuit Settlement Area. Cancelling or altering any of these permits also requires consultation (Labrador Inuit Land Claim 2005). All consultation outside of Nunatsiavut rests with the responsibility of the Government of Newfoundland and Labrador through the Provincial Archaeology Office, the Nunatukavut Community Council and the Innu Nation.

Indigenous Governments in the remaining Atlantic Provinces, New Brunswick, Nova Scotia and Prince Edward Island do not have archaeological permitting authority. However, they exert great influence with regards to mandating responsible stewardship over archaeological sites, collections practices and advocate for active consultation with their provincial counterparts. The Wolastoqey Nation in New Brunswick, for example, is a governmental body that provides support for the six Wolastoqey communities in New Brunswick. They provide technical advice to the Wolastoqey communities regarding archaeological impact work and will soon be in discussion with the Government of New Brunswick to establish processes for the identification,

conservation and protection of artifacts found in Wolastoqey traditional territory (Wolastoqey Nation in New Brunswick 2022).

Similarly, the Archaeology Research Division in Nova Scotia was given the mandate to protect archaeological resources and burials in Nova Scotia by the Assembly of Nova Scotia Mi'kmaw Chiefs. Indigenous community involvement and consultation has been ongoing in Nova Scotia ever since archaeological research began at the Debert Paleoindian site. The Confederacy of Mainland Mi'kmaw has been increasingly involved with the protection and management of the site complex since the discoveries of Belmont I and II sites in the 1980's (Julien et al. 2008; Bernard et al. 2011; Dent 2017). They are heavily involved in consultation to ensure that archaeological resources and burials left by Mi'kmaw in Nova Scotia are protected (Dorey 2021). The two First Nations groups in Prince Edward Island, Lennox Island First Nation, L'nui Mnikuk and Abegweit First Nation, Epekwitk, do not appear to have established policies around archaeological sites or materials. However, Dent (2016) notes that the Archaeology Act of 2009 identifies that the Government of Prince Edward Island is mandated to partake in significant Indigenous engagement.

How does the Legislation affect Private Collections?

Where private collections fit in with archaeological/heritage legislation in Atlantic Canada is not always clearly defined. New Brunswick (and Prince Edward Island from adopting New Brunswick's guidelines) outline in legislation that the Crown has a vested interest in archaeological materials. This means that after 2010 (the year that the Heritage Conservation Act ascended into law) any artifact, historic or pre-contact is to be held in trust by the Crown. It is illegal to collect or intentionally look for archaeological materials without a field research permit or to keep the artifacts in a private collection (New Brunswick Heritage Conservation

Act). The primary issue of a mandated date where collecting is no longer legal is that it is difficult to prove when the artifacts were collected. The Heritage Conservation Act in New Brunswick even applies to protect archaeological sites on private land. This may make it more difficult for provincial regulators to prove that collections were amassed before or after the date when the Heritage Conservation Act became law.

It is for this reason that I argue if private collectors are acquiring artifacts through responsible methods like surface collecting from erosional faces or disturbed find spots and are not invasively looting with metal detectors or by using shovels to dig into sites, then the former is the lesser of two evils (Thomas and Pitblado 2020). It is my hope that if individuals are aware of the heritage laws in their home provinces, states or territories, they contact the appropriate jurisdiction about disturbed archaeological materials or sites. However, if they do not, I would rather someone remove an artifact after taking photographs, perhaps some notes and ideally a GPS coordinate if there is an immediate potential that the artifact will be lost from anthropogenic development or natural disturbances.

I argue that responsible private collectors who are open to allowing archaeologists to document and research their collections are ideal candidates to collaborate with and to provide training in archaeological methods. There are not enough archaeologists or heritage conservation personnel to prevent illegal looting and private collecting. In saying so, archaeologists are in a unique position to help integrate responsible private collectors into a professional archaeological methodology to help monitor their communities' landscapes for erosion (O'Rourke 2017) and disturbed find spots that will occur more often with climatic changes like coastal erosion (Rick and Sandweiss 2020).

The Lack of National Dialogue Between Private Collectors and Professional Archaeologists in Canada

There exists no dialogue between any private collector groups or professional archaeologists in Canada at the national level. The national entity that represents Canadian archaeology is the Canadian Archaeological Association (CAA). Founded in 1968, the CAA has the objectives to promote archaeological awareness in Canada, encourage conservation and research, foster cooperative initiatives with First Peoples', publish scholarly literature and to stimulate the general interest in archaeology to the wider public (Canadian Archaeological Association 2022). While the CAA has recently made strides with new committees focusing on climate change, ethics and student issues, the CAA does not have a committee focused on relations with private collectors or avocational archaeologists. However, there are local private collector groups that are present throughout the Canadian provinces, and they may interact with archaeologists who work in regulatory positions or in academia.

In contrast to Canada, the United States of America does in fact have a national dialogue with private collectors and avocational archaeologists. This national dialogue is seen within the Archaeologist-Collector Collaboration Interest Group (ACCIG) in the Society for American Archaeology (SAA). The statement of purpose from the SAA describes that ACCIG serves as a vehicle for all ethical stewards of past material culture, <u>regardless of level or formal archaeological training</u>, to effectively advance and encourage collaborative undertakings that benefit the archaeological record (Society of American Archaeology 2022). In 2016, the SAA board of directors created a task force to study and eventually submit formal recommendations to the board on how archaeologists can effectively and ethically collaborate with non-professionals, including private artifact collectors (Society of American Archaeology 2022). The interest group

has demonstrated that this is a venue to engage in appropriate conversations. Since its inception, research has been published demonstrating collaborative efforts between private artifact collectors, metal detectorists, avocationalists and professional archaeologists (Pitblado 2014; Matthew 2015; Shott 2017; Thomas & Pitblado 2020; Pitblado et al. 2022).

Undertaking Research in the Covid-19 Pandemic

Having 3D digital images created of archaeological collections is beneficial for a variety of reasons. If community museums were to have their collections digitized, it would open opportunities for researchers to work remotely and not need to travel. Desktop research is proving to be more common, and this would allow archaeologists to collaborate with community museums and non-archaeologists from anywhere around the globe. In the era of the Covid-19 pandemic where global travel was extraordinarily curbed, this would also mean that researchers would not have to travel to more at-risk communities in the North and reduce their carbon footprint from air travel. The Covid-19 pandemic has set some precedents for community museums to have their archaeological materials more widely shared with First Peoples, community members and other archaeologists across the planet if they were digitized.

Conclusion

Canada needs to have a national dialogue to promote further collaboration with non-archaeologists, irrespective of the important steps taken by many individuals over the previous decades. This thesis concludes that collaboration with non-archaeologists is a way to help promote archaeological methodology to share knowledge and preserve our shared collective past. Furthermore, archaeologists may use 3D scanning or photogrammetry technologies as effective methods to team up with organizations like community museums or with avocationalists and responsible private collectors to share unrecorded collections. This will help train non-

archaeologists in archaeological methods. I argue that Canadian archaeologists are doing a

disservice to our discipline by not formally including responsible private collectors or

avocational archaeologists in effective means of communication or collaboration at the national

level.

Chapter 2: Sharing Survey Results:

Implications for Relationships Between Archaeologists and Private Collectors in Canada

This chapter presents the research results that received ethics clearance permission from the Interdisciplinary Committee on Ethics in Human Research (ICEHR) from Memorial University of Newfoundland and Labrador. ICEHR # 20220414-AR.

Introduction

Over a period of three months, the anonymous online survey "Examining the Benefits of Archaeologists Working with Private Collectors" collected data from 177 participants from Canada, the United States of America and European countries. The survey was distributed by email to provincial archaeological offices, and local archaeological associations throughout Canada and also distributed to colleagues to share with members of the Society for American Archaeology. Furthermore, the survey was widely shared in Facebook groups, "Archaeology in Sheshatshiu", "Canadian Archaeological Exchange" and "Diggin The Rock Metal Detecting" which allowed Facebook group members to complete the survey. These Facebook groups all have members who are either community members interested in archaeology, students of archaeology, professional archaeologists, or metal detectorists and private collectors. Participants each read a consent form that was required by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) at Memorial University of Newfoundland and Labrador. No names or personal information was collected from this consent form. There was a "Submit" hyperlink at the bottom of the consent form that when clicked took a participant automatically to the online survey and constituted consent to use their survey answers as part of this research.

The survey was tailored so participants could skip any of the 14 questions and SurveyMonkey quantified how many participants answered each question.

The purpose of the online survey was to collect data to demonstrate the opinions of archaeologists and others wanting or willing to collaborate with private collectors. Over many decades, a debate has persisted within the archaeological community concerning the position of those who collect archaeological materials (Pitblado et al. 2022). The majority of the survey respondents were from the United States of America (USA) and were not identifiable as a different subset than the Canadian respondents. With this in consideration, both demographic groups are viewed to represent similar survey results. This paper uses the collected data from the anonymous survey to demonstrate that archaeologists in Canada have and should continue to openly collaborate with responsible private collectors to better train and educate non-archaeologists to preserve, document and monitor exposed and out-of-context archaeological materials.

To begin, I acknowledge that I do not view all private collecting of archaeological artifacts as looting. One problem in Canadian archaeology is that the lines are very blurred regarding who is considered a looter. There is a tendency in archaeology to paint all private collectors with the same brush and colour them as looters who disturb or worse, destroy, documented or undocumented archaeological sites. I argue that there is a difference between looting and private collecting. Arguably, the difference depends on the context of where the artifacts were collected. Where the artifacts were collected, the state of the archaeological site in which they came from, and whether they were in danger of being lost if they were not collected. These are all important factors in the distinction between collectors and looters. Furthermore, some artifacts might have been inherited or purchased by family members or friends and

eventually given to a private collector who does not purchase looted artifacts. Despite the ethical complexities surrounding these two situations, it is still a common occurrence across the globe. I argue that archaeologists should only collaborate with <u>responsible private collectors</u>, which I define as those who have inherited artifacts or who have collected artifacts from exposed or disturbed contexts, such as surface finds. It is my personal viewpoint that this represents a smaller percent of avocationalists, for example, many metal detectorists do intentionally go looking for artifacts that are either surface finds or still in the ground (Ferguson 2013; Gundersen et al. 2016). However, some metal detectorists in Newfoundland do reach out to archaeologists for advice, information and to share their discoveries (Dr. Barry Gaulton-personal communication). It has been widely documented that metal detectorists in European countries contribute to archaeological documentation and have a common understanding of best practices and ethics with archaeologists (Deckers et al. 2016; Thomas 2016; Wessman et al. 2016).

The Survey Questions

The survey asked 14 anonymous questions that demonstrated specific relevance to this academic research. The first five questions asked participants about topics pertaining to demographics. Question 1 asked "What is your age range?", Question 2 asked "What gender do you identify as?", Question 3 asked "What ethnicity do you identify as?", Question 4 asked "Do you identify yourself as a professional archaeologist?" and Question 5 asked, "If not, what category might you best fit?". Question 6 asked participants "What is your highest level of education?", Question 7 then asked, "If you answered question 6 with answers a,b, or c, please specify your degree program below". These two questions collected information from participants concerning their academic background. It allowed the survey to determine how many archaeologists took the survey versus non-archaeologists. Specific stakeholder groups

were not targeted because it would have required more robust ethical requirements. In lieu of that, the survey was shared to Facebook archaeology and community groups which allowed both archaeologists and non-archaeologists to respond to the survey. Question 8 asked participants "If you identify yourself as an archaeologist, where do you conduct archaeological fieldwork/research?" and Question 9 asked, "If you are not a professional archaeologist, where do you study, work, engage in the collection of artifacts or take interest in archaeology?". The two previous questions allowed the survey to demonstrate where the bulk of the participants either work or research as a professional archaeologist or where they engage in collecting artifacts.

The final five questions presented the opportunity for the participants to be more direct regarding their opinions involving collaboration with responsible private collectors and what they believe constitutes looting. Question 10 asked participants "What are your opinions surrounding the collaboration with private collectors and documenting their private collections?". Question 11 asked, "How would you define looting archaeological materials?". Arguably one of the most important questions was asked in Question 12, "What benefits do you believe there are in interacting with responsible private collectors?". Question 13 asked, "Are you in the possession of a private artifact collection?" and Question 14 asked, "What have you done/would you do if you come across archaeological materials?". The last three questions presented the survey with useful quantitative data to support why in Canada archaeologists should collaborate more with private collectors. It showed how many of these participants favour collaboration or if any of the archaeologists or non-archaeologists in this survey possess a private artifact collection and what they each would do if they came across archaeological materials.

Demographic Information

Specific demographic information was collected as part of this research. The first three questions asked participants to: 1) identify their age, 2) identify their gender and 3) identify their ethnicity. Although the survey was anonymous, these questions were important to ask because they provided the survey with concrete quantitative data to identify basic demographic information. Out of 177 participants, the lowest number of respondents identified that they were between the age of 18-30, approximately 11.86% or 21 participants. The demographic age sets are between 30-45 and 45-60, each approximately at 25.995 and 24.29% (or 46 and 43 respondents respectively). The largest demographic range who responded to this survey were individuals 60 and older, approximately 37.85% or 67 of the 177 respondents. This is not a surprise, as many of the respondents identified as having a Ph.D. and could therefore be employed as academic archaeologists, provincial, state or territorial regulators, or professionals in cultural resource management firms and have experienced a long career in archaeology (Speakman et al. 2018). This larger percentage certainly represents those who later self-identify as "professional archaeologists".

From 1990-to 2013, studies were monitored and published in *American Antiquity* to assess what gendered identities have contributed to archaeological research, peer-reviewed publications, conferences and presentations. The overwhelming demographic are cis-gendered, white academics (Bardolph 2014; Bardolph and Vanderwarker 2016). In more recent disseminations of peer-reviewed literature, male archaeologists remain the dominant gender in interpreting archaeological discourses in North America (Fulkerson and Tushingham 2019; Jalbert 2019). This is based on inequitable acceptance rates (Hodgetts et al. 2020; Overholtzer and Jalbert 2021) and uneven submission rates to academic journals where men submitted more

manuscripts than their female counterparts (Bardolph and Vanderwarker 2016; Heath-Stout

2020). The survey results reflect part of this wider demographic.

Another study tracked the genders, ethnicity and sexual orientations of authors who

submitted manuscripts of archaeological research to journals over ten years from 2007 to 2016.

The data showed that their self-identification was predominantly cis-gendered, male, white

academics who dominated journal submissions and accepted publications over cis-gendered

white female academic archaeologists (Heath-Stout 2020). With this in mind, I wanted to know

how participants identified in terms of gender and how this related to those who identified as

professional archaeologists, private collectors or other non-archaeologists. The results of my

survey align with previous studies and continue to portray cis-gendered white men as the most

vocal and self-important gender in archaeological studies and private artifact collecting activities.

It suggests that men are engaging in archaeology or private collecting more than other genders

surveyed. Although the dichotomy is closer than anticipated, the majority of respondents did

identify as male (58.76% or 104 participants, versus 41.24% or 73 female participants of the

survey and zero participants who identified as non-binary) (Figure 1).

Q2 What gender do you identify as?

Answered: 177   Skipped: 0
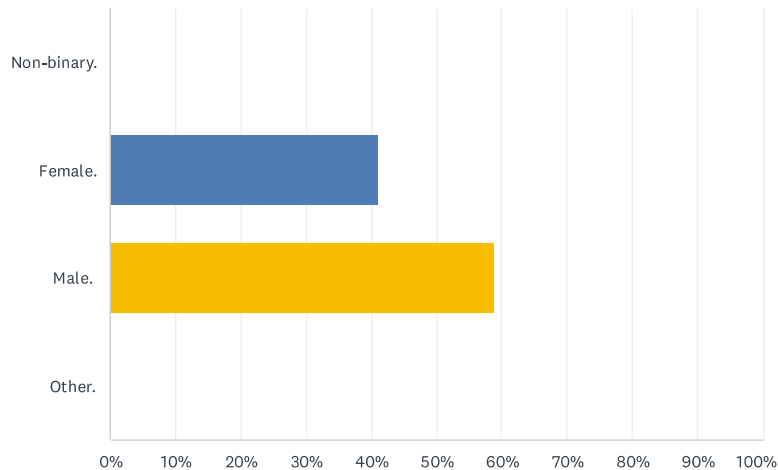
ANSWER CHOICES	RESPONSES	
Non-binary.	0.00%	0
Female.	41.24%	73
Male.	58.76%	104
Other.	0.00%	0
TOTAL		177

Figure 1: Participant survey results demonstrate self-identification regarding gender.

Question 3 specifically asked participants to identify their ethnicity and Question 4 asked if those participants identified as professional archaeologists. Out of the options presented for answers, the three lowest-ranked responses were Hispanic, Indigenous, and Other. Each ethnic identity represented one, six and eight individuals of the survey, or approximately .57%, 3.43% and 4.57% of the respondents respectively. The largest ethnic representation among survey participants were Caucasians, with 160 participants or 91.43% self-identifying in this answer. Two participants opted to skip this question. Again, it is not a surprise that the majority of the participants are Caucasian as the field of archaeology is still dominated primarily by white men

(Fulkerson and Tushingham 2019). I argue that these shortcomings demonstrate that archaeology needs to open its doors to more diversification within academic ranks, cultural resource management and more transparent community-led collaboration with Indigenous peoples, local interest groups, private collectors and avocational archaeologists.

Question 4 was a simple yes or no answer, and all 177 participants responded. The majority of the participants identified as professional archaeologists (71.75% representation or 127/177 responses). Fifty participants answered no, representing 28.25% of the survey participants (Figure 2). It was not surprising to see that just under ¾ of the survey participants identified as professional archaeologists i.e., those who have worked professionally as archaeologists in the realm of cultural resources management, for state/provincial/territorial heritage regulators, or in academia. Typically, these individuals have the appropriate academic credentials to hold archaeological research permits varying between jurisdictions. Generally they have a vested interest in participating in a survey of this nature where avocational archaeologists and private collectors may be stigmatized and therefore, less apt to participate. As an example, in my home province of New Brunswick, the minimum requirement since March 31st, 2014 to hold an archaeological field research permit to conduct fieldwork (other than archaeological monitoring) is a Master's degree (New Brunswick Archaeology Guidelines 2014).

Q4 Do you identify yourself as a professional archaeologist?

Answered: 177   Skipped: 0
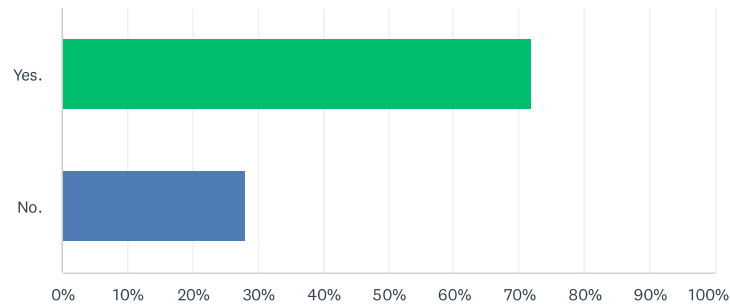
ANSWER CHOICES	RESPONSES	
Yes.	71.75%	127
No.	28.25%	50
TOTAL		177

Figure 2: Participant responses self-identifying as professional archaeologists or not. Archaeologist, or Private Collector?

Question 5 was a chance for participants who did not identify as professional archaeologists to further identify themselves and their connection to archaeology. The options available were: amateur/avocational archaeologists, students, private collectors or others. Participants also had the ability to answer that they were professional archaeologists. This may have led to some confusion as 34 participants opted to skip this question. However, out of the responses received, 22 individuals identified as amateur/avocational archaeologists, 13 identified as students, 11 as private collectors and 8 individuals identified as other. Out of the 143 responses to this question, each answer was quantified at 15.38%, 9.09%, 7.69% and 5.59% respectively. Although past studies have identified different groups concerning who is most interested or distressed regarding artifact collection in the Great Plains (Kinnear 2008), this was

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important to calculate because it would present quantified data as to how many avocationalists, students and private collectors took the survey.

The responses from Question 6 served to record the education level of each participant. Out of the 176 participants who answered, five individuals answered with community college, 24 individuals answered undergraduate degree, 131 individuals answered graduate degree, 11 answered some post-secondary coursework and five answered none of the above. Despite the overwhelming number of participants having a graduate degree (74.43%), those who responded with community college, undergraduate degree, some post-secondary coursework or none of the above (2.84%, 13.64%, 6.25% and 2.84%) still represented 45/177 participants. This portion of the survey respondents cannot hold an archaeological research permit. Despite not having the academic qualifications, I argue that since these individuals took the time to take the survey, they may possess an interest in archaeology and can be taught the knowledge to collaborate on archaeological projects or help archaeologists document artifacts, whether they are isolated find spots or in someone's private collection.

Question 7 allowed participants to specify their degree program if they chose options a, b or c as answers as part of Question 6. Those who decided to answer with "degree program" and later specified what they studied at post-secondary schooling, totalled 155 participants. Eight participants chose "did not answer question 6 with answer a, b or c". This meant that 163 participants answered this question, while 14 chose to skip. The majority of the participants who answered Question 7 with a, b or c specified that they either had a Ph.D. in archaeology or anthropology (or a subdiscipline or in a field closely related) or that they possessed a Master's degree. This was calculated at over 100 of the survey questionnaire participants.

While many jurisdictions differ as to who is considered a 'professional archaeologist', many participants from this survey would be able to qualify to possess some form of archaeological field research permit in Canada or the USA. For example, in the state of Maine, professional archaeologists are divided into two different levels, i.e., Level 1 and Level 2. The difference between the two is that Level 2 indicates a requirement for those who possess a graduate degree and who have supervisory experience in prehistoric and/or historic archaeology in northern New England (State Historic Preservation Officer's Standards for Archaeological Work in Maine 1990). This is similar to those who qualify for permits in New Brunswick, where individuals are required to have a Master's degree in anthropological archaeology and be a member of the Registry of Professional Archaeologists (New Brunswick Archaeology Guidelines 2012). All of the survey respondents clearly possess an interest in archaeology, whether or not it is in the form of being an avocationalist, private collector or professional archaeologist. The only difference is that only those who possess the appropriate credentials by proving the required amount of experience of fieldwork or academic composure are the individuals who may hold research permits.

Question 8 asked participants who self-identify as professional archaeologists to answer where they conduct archaeological research or fieldwork. Out of 177 total participants, 165 chose to answer this question. The quantified dataset is as follows: Atlantic Canada with 11.52% or 19 respondents, Central Canada with 2.42% or four respondents, Western Canada with 7.27% or 12 respondents and the Canadian North, with 1.82% or three respondents selecting this option. Canadian professional archaeologists represented approximately 23% of the 165 participants to answer this question. However, 21.21% or 35 respondents declared that they are not professional archaeologists and could therefore be students, avocationalists or private collectors

in Canada. Many of the professional archaeologists who took this survey were from the USA, representing 55.76% or 92 respondents in total.

The goal of asking Question 9 was to have non-archaeologists identify where they study, work, engage in the collection of artifacts or take an interest in archaeology. Specifically, the same geographic focus areas were used from question 8. In that manner, 18 or 13.04% of the respondents selected Atlantic Canada, zero selected Central Canada, six or 4.35% of the respondents selected Western Canada, one or 0.72% selected the Canadian North, 23 or 16.67% of respondents selected the USA and eight or 5.8% of the survey questionnaire selected Other. Again, the survey was dominated by professional archaeologists since 82 or 59.42% of the participants self-identified in this category. It is promising to see that a sizable portion of the survey was completed by non-professional archaeologists, such as those who identify as students, private collectors or interested community members.

To Work with Private Collectors or Not?

Questions 10 through 14 challenged participants to respond to different ethical situations. There have been collaborative relationships between professional archaeologists, private collectors and avocationalists in the past, as shown by the significant archaeological sites in the Atlantic Northeast that have been brought to the attention of archaeologists by collectors (Betts &Hrynick 2021). Examples such as the past collaborative research done at the Augustine Mound in New Brunswick, the finding of a Paleo spear point from Cape Spear, New Brunswick (see Chapter 4) or the ongoing community archaeology project at Ferryland on the island of Newfoundland (Gaulton 2021), all demonstrate shared interests in the collection of artifacts or in community heritage sites. Many of these individuals who are not archaeologists have become important advocates for research and protection (Pentz 2008). The 'Father of New Brunswick

Archaeology', for example, Dr. George Frederick Clarke, was an avocational archaeologist who contributed significant data to our knowledge of the archaeological record. Along with many other early researchers in archaeology, he was self-taught (Clarke 1968; Erskine 1986; Kapches 2021).

Despite the clear precedent of ethical work by responsible private collectors and avocationalists, there is still a form of stigmatization (Pitblado 2014) against collaborating or even acknowledging their potential valuable contributions to the field due to their common assumption of being looters. Looting and the antiquities trade have been one of the main concerns in the discipline of archaeology and arguably still is (Zimmerman et al. 2003; Vitelli & Colwell-Chanthaphonh 2006; Gill 2009; Field et al. 2016). I argue that archaeologists have a duty to try to find common ground and collaborate with responsible private collectors (Pitblado 2014) because of our shared interests in material cultural history, for the pursuit of learning more of the collective human past and continue to engage in theoretical debates (Gonzàlez-Ruibal 2018). Members of the Canadian Archaeological Association (CAA) are bound to engage in their activities according to the ethics and standards of scholarly practice and are committed to the promotion, protection and conservation of archaeological heritage in Canada (Canadian Archaeology Association Ethics 2022). I argue that this also includes collaborating with private collectors and avocationalists to share and encourage the dissemination of archaeological knowledge.

Q10 What are your opinions surrounding the collaboration with private collectors and documenting their private collections?

Answered: 174   Skipped: 3
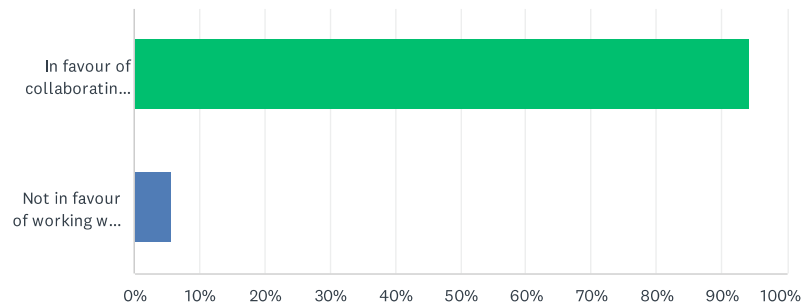
ANSWER CHOICES	RESPONSES	
In favour of collaborating with responsible private collectors and their private collections.	94.25%	164
Not in favour of working with private collectors and their private collections.	5.75%	10
TOTAL		174

Figure 3: Participants indicate their responses regarding the collaboration with private collectors.

Professional archaeologists should not forget the origins of how the discipline slowly arose and transformed over history. Archaeology grew out of the panhuman desire to acquire material expressions of the past (Brodie & Gill 2003; Trigger 2006). In the 18th and 19th centuries, archaeology was rooted in antiquarianism and therefore should continue to explore the creation of different world archaeologies by incorporating anthropological, historical and sociological studies, where there are multiple interests and objectives among both consumers and producers of archaeological knowledge (Murray 2007). There is ethical room for archaeologists to actively collaborate with private collectors and for both groups to continue to be producers of archaeological knowledge. However, in collaborating with private collectors, archaeologists must be mindful that we do not return to a colonial theoretical lens of collecting artifacts as just

'stuff' and be sure to always include Indigenous stewardship with the material record (Atalay 2006). As seen with the data collected from Question 10, 164 participants or 94.25% of the respondents indicated that they are in favour of collaborating with responsible private collectors. This is an overwhelming response that must be noted for future situations where Canadian archaeologists are considering whether they should work with a private collector or not. It can also be perceived that this is evidence that these kinds of collaborations are already ongoing. Although most of the survey respondents were from the USA and not Canada on a per capita basis, the data collected supports the conclusion that contemporary archaeology should and likely does involve collaborating with responsible private collectors.

Q11 How would you define looting archaeological materials?

Answered: 173   Skipped: 4

ANSWER CHOICES	RESPONSES	
Knowingly removing cultural materials from registered archaeological or heritage sites in Provincial, State, Federal or Indigenous parks and other jurisdictions.	35.26%	61
Removing artifacts from their place of origin and not reporting your findings to an archaeological provincial/territorial/state regulator or the local jurisdiction.	23.70%	41
Removing artifacts from find spots that have possibly been disturbed from erosion or human development and are at risk of being lost and then reporting your findings.	0.00%	0
All of the above.	41.04%	71
TOTAL		173

Figure 4: Participants answer how they define looting archaeological materials.

Potentially the most ethically challenging questions for archaeologists and non-archaeologists were collected from the answers for Question 11. While the definition of looting is generally associated with the intentional removal of a physical object (in this context, human cultural material remains), the context in which many responsible private collectors find artifacts is in secondary disturbed contexts. The collection of artifacts from both responsible and irresponsible private collectors (i.e., looters) today is fueled by climate change. I view that the media is partly to blame for the glorification of finding artifacts across the globe, as the public

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only sees the finding of artifacts sometimes through harmful methods like unpermitted shovel

digging or illegal metal detecting (Bowman Proulx 2011; Gerstenblith 2013; Bowman Proulx

2013; Dennis 2019). The effects of climate change present opportunities for professional

archaeologists to continue collaborating with responsible private collectors and other non-

archaeologists in general, especially in coastal environments. In Newfoundland and Labrador,

the Coastal Archaeological Resources Risk Assessment (CARRA) project, refines the site

vulnerability approach to risk coastal sites (Pollard-Belsheim et al. 2014), the Coastal Impacts

Visualization Environment (CLIVE) was developed in Prince Edward Island (PEI) to encourage

non-archaeologists to navigate a 3D virtual environment of PEI to view historical spatial data of

areas affected by coastal erosion (Fenech et al. 2017).

In these unprecedented times of climate change, we see that the archaeological landscape

is changing (Howard et al. 2008). All over the world, coastal environments have proven to be

inhabited by ancient humans. Coastal erosion has exposed artifacts on the surface dating from

the Middle Stone Age in Africa, down to the Terminal Pleistocene along the South American

coast (Dawson et al. 2019) and in areas found representing the 5,000-year human history in the

western regions of the Canadian Arctic (Friesen 2016; O'Rourke 2017). These sites that are no

longer in situ present opportunities where Canadian archaeologists can collaborate with

responsible private collectors and other community members and teach them how to document

these find spots. Most importantly, professional archaeologists should continue to make the

public aware of how important it is to report their findings to the appropriate heritage authorities.

In times of unprecedented erosion, we need all the help from the public that we can get.

This is reflected in one answer choice in Question 11. No participants selected the third option

that removing an artifact from an exposed find spot that is potentially at risk of being lost to the

elements and then reporting their findings constitutes the definition of looting. However, 41% of the respondents who indicated 'all of the above', did believe that this option may constitute looting. This may be an unintentional misrepresentation of the data, suggesting that the respondents do believe that this third option is of equal offence surrounding situations of looting compared to the other two answers. The third option, included also as a potential answer by selecting 'All of the above', is interpreted to truly only focus on the first two options that imply looting. Unfortunately the third answer to Question 11 is still unpermitted by most Atlantic Canadian heritage jurisdictions, but, I argue that it is widely common knowledge it is encouraged for avocationalists or responsible collectors to collect surface finds that could be lost to erosion and then reporting their discoveries.

The final three survey questions challenged participants to identify the benefits of interacting with responsible private collectors, if they have a private artifact collection, and to reflect on what they might do in a situation where they come across exposed artifacts on the land. There were different responses from Question 12 where all 177 participants gave different answers to the question of what benefits there are to interacting with responsible private collectors. The vast majority answered "all of the above" to three possible answers, promoting heritage stewardship, incorporating private collectors into archaeological methodology or interpretation and engaging in collaborative participatory-based projects regarding the monitoring of archaeological sites. The answer "all of the above" represented 141 participants or approximately 79.66%. The smallest response came from five respondents who chose the answer "there are no benefits" at 2.82%.

Q12 What benefits do you believe there are in interacting with responsible private collectors?

Answered: 177   Skipped: 0

ANSWER CHOICES	RESPONSES	
Promoting heritage stewardship.	7.34%	13
Incorporating private collectors into archaeological methodology or interpretation.	6.21%	11
Engage in collaborative participatory-based projects regarding the monitoring of archaeological and heritage sites.	3.95%	7
All of the above.	79.66%	141
There are no benefits.	2.82%	5
TOTAL		177

Figure 5: The majority of participants indicate that all of the above are benefits to interacting with private collectors.

Question 13 asked participants one question, "are you in the possession of a private artifact collection?". All 177 participants answered, and while the dominant answer was "no" with 131 participants or 74.01% answering with this option, 46 participants or 25.99% answered with "yes". In comparison to the responses collected from Question 5, participants had the opportunity to self-identify if they were avocationalists, private collectors, or students. From this question, 11 participants self-identified as private collectors. This allows me to hypothesize that even though 34 participants opted to skip Question 5 perhaps because they did not identify with

any of the categories presented, it is possible that some of the professional archaeologists who took this survey answered Question 13 with "yes". The 11 participants who self-identified as private collectors are most likely part of the 46 participants who chose this answer in Question 13, but it could also include the participants who chose avocationalists, students or non-archaeologists as answers in earlier questions. This may indicate that the different categories of respondents represent the same participants, as some of the private collectors may also have identified as students or avocationalists. It is possible that some of the professional archaeologists who took this survey may also be in possession of a private artifact collection, as there were fewer than 34 individuals who specifically identified themselves as private collectors.

Examining the Benefits of Archaeologists Working with Private Collectors   SurveyMonkey

Q13 Are you in the possession of a private artifact collection?

Answered: 177   Skipped: 0
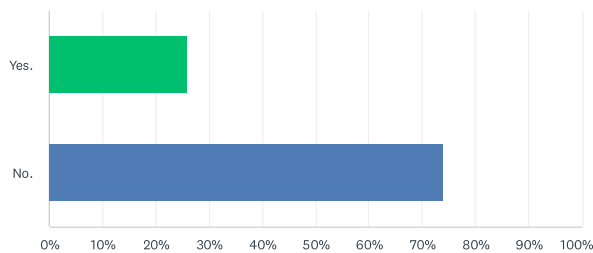
ANSWER CHOICES	RESPONSES	
Yes.	25.99%	46
No.	74.01%	131
TOTAL		177

Figure 6: Survey respondents answer Question 13, whereas the majority responded that they do not possess an artifact collection.

A total of 176 respondents answered Question 14, which asked participants "what have/would you have done if you come across archaeological materials?". 110 respondents selected the first multiple-choice answer to indicate that they would report their findings to the responsible authority if they came across archaeological materials. 33 of the participants

responded that they would leave the artifact as they found it in its find spot. 25 participants of the survey respondents selected that they would remove the artifact due to the potential loss from natural elements or human development and then proceed to report their findings. Eight respondents opted to answer that they would remove the artifact and keep it in their possession.

Q14 What have you done/would you do if you come across archaeological materials?

Answered: 176   Skipped: 1

ANSWER CHOICES	RESPONSES	
Report your findings to the appropriate provincial/territorial/state archaeological regulator or appropriate jurisdiction.	62.50%	110
Leave it there.	18.75%	33
Remove artifact due to potential loss from natural elements or human development, and then report your findings.	14.20%	25
Remove artifact and keep it in your possession.	4.55%	8
TOTAL		176

Figure 7: The answers here suggest potential situations where respondents challenged themselves on what they might do if they encounter archaeological materials.

Lessons Learned

During the course of this survey, some participants contacted me with their critiques, encouragement and feedback. One important critique was that the survey questions did not

include an Indigenous lens or address what distinctive role Indigenous peoples have with professional archaeologists and responsible private collectors. While this is true, it was a conscious decision made due to the fact that I am not Indigenous, and that it would have required additional levels of research consideration and permission that were beyond the project scope. However, it is understood that Indigenous peoples have a fundamental role in Canadian archaeology and future research should endeavour to understand Indigenous perspectives on private collecting and the role Indigenous peoples may play in citizen archaeology initiatives. Others who reached out identified ways the survey could be improved, such as allowing for more than one answer per question. This information will benefit any future effort to survey the archaeological community.

The United States of America

In 2019, the Northern Arizona Paleoindian Project was launched by researchers and undergraduate students to examine Paleoindian archaeological sites. The Research Experiences for Undergraduates (REU) 24 Paleoindian artifacts associated with drainage areas (Rowe et al. 2022). This exercise was successful in identifying new Paleoindian artifacts and previously undocumented by looking at private artifact collections that came from eroded areas. Essentially, this project demonstrates another example of how archaeologists working with private collectors on stagnant archaeological legacy collections are in unique positions to build bridges with Indigenous groups, community stakeholders and other archaeological institutions (Rowe et al. 2022). Furthermore, the Northern Arizona Paleoindian Project demonstrates that collector collaboration models (Pitblado 2014) can provide fruitful and positive results for archaeological interpretations.

The Central Ohio Archaeological Digitization Survey (COADS) engages responsible private collectors, or responsible and responsive stewards (RRS; Pitblado et al. 2018) in collaborative studies to examine the archaeological record of central Ohio (Nolan et al. 2022). In sum, COADS allows for responsible and responsive stewards (i.e. responsible artifact collectors) to compile and curate their private collections into 2D images and 3D scanned models to demonstrate landmark-based geometric morphometric (LGM) analysis and GIS analysis of ancient land use in Central Ohio. This digitization survey documented over 12,000 diagnostic points and over 5,000 stone tools from 32 different private collections (Nolan et al. 2022).

In West Texas, the Spirit Eye Cave is a privately managed cave system that has changed ownership over the years. Throughout those years, it was often a pay-to dig site where individuals paid money to dig and keep artifacts and sadly, removed and collected human remains (Schroeder & Nayapiltzin 2022). This site proved to be a case study that ranged from the activities of recreational hobbyists to for-profit artifacts and human remains traffickers (Hollowell-Zimmer 2003; LaBelle 2003; Watkins 2003; Pitblado 2014; Goebel 2015; Watkins 2015; Schroeder & Nayapiltzin 2022). Preliminary fieldwork began at the Spirit Eye Cave in 2017 and documented the extent of the pay-to-dig site areas of the cave.

Researchers eventually undertook the task of locating and contacting the private collectors they believed had artifacts or human remains. It was widely viewed as a success because, in the end, nine samples submitted for radiocarbon dates were taken from artifacts in private collections from Spirit Eye Cave. The results indicated that this archaeological site represented almost 4,000 years of continuous human occupation and contained the oldest directly dated basket fragment from the Big Bend region of Texas, the first directly dated atlatl from the area, and the oldest sample of maize in Texas (Schroeder & Nayapiltzin 2022). One Indigenous

ancestor is now in the process of reburial (Schroeder & Nayapiltzin 2022) and hopefully, one day, the other private collector makes the decision to repatriate the other Indigenous ancestor so that they may be able to rest once again. This example was chosen to suggest that there are occasions where unethical collectors may have the potential to mitigate the harm they've caused by looting archaeological sites, and this may include involving them in community projects and supersized under professional archaeologists (Wessman et al. 2016). If archaeologists did not consult with private collectors and work together to track down legacy collections, we would know very little of this archaeological site and repatriation may not have been possible.

England and Wales

The Portable Antiquities Scheme (PAS) was established in 1997 to encourage the public to participate in voluntary recording of archaeological objects found in England and Wales (Portable Antiquities Scheme Website; Worrell 2004; Gill 2010). Effectively, this legislation permits any individual, such as a private collector or metal detectorist, who is searching for artifacts, to voluntarily record or submit their findings to heritage officials. The PAS encourages ethical, professional conduct while allowing non-archaeologists to use legal metal detecting and/or troweling to find and keep artifacts. Metal detecting is 'mostly' tolerated in England and Wales (Lewis 2016) and since the establishment of the PAS, data collected over ten years indicates that Roman archaeological sites have increased by 30 percent over different areas in England (Brindle 2011). One advantage of the PAS is that collectors or avocationalists may conduct survey or metal detecting work in rural areas that are typically unlikely to have been discovered by normal archaeological investigation.   Furthermore, 90 percent of all the artifact finds recorded by the PAS come from agricultural land where primary archaeological contexts are disturbed or destroyed by farming (Bland 2013). This is arguably an advantage for

professional archaeologists because community members who are trained responsibly and ethically by archaeologists can contribute to expanding the knowledge of the archaeological record in rural or non-high potential areas by recording artifacts they find on the PAS.

Taiwan

The National Museum of Taiwan holds about 7,000 artifacts of Taiwanese aboriginal origin. One special part of the collection is the partial facial skull of Tsochen Man, dated to approximately 25,000 - 30,000 years old (van der Grijp 2015). The remains of Tsochen Man were donated to the museum by a private collector who used to look for fossils in the riverbed of the Tsailiao River. The discovery of Tscochen Man represents the oldest Homo sapiens remains to date in Taiwan (van der Grijp 2015) and without the actions of the private collector intentionally looking for something, this discovery may not have even happened. There is an argument to be made that some archaeological context may have been lost since no professional documentation appears to have been recorded at the time of the discovery. However, the likelihood that the partial skull could have eroded out into the river or have been previously disturbed is also highly likely. The discovery of Tsochen Man represents archaeological evidence into ancient groups from Taiwan and Southern China engaging in maritime migration and periodically expanding into Southeast Asia (Wu 2021).

Private collections and the discoveries that private collectors make have positive implications for expanding our knowledge of the archaeological record. Archaeologists have opportunities to collaborate with private collectors as they possess collections that may not have been studied before. These collections may result in new developments towards contributing to archaeological theory or expand our knowledge of the archaeological record by documenting artifacts that exist in undocumented collections. Private collectors may also be able to take

archaeologists out to where they located their finds and there will be chances to document or salvage eroding or disturbed sites. Having private collectors work with archaeologists to document these collections either through cataloguing, photography or 3D scanning are efficient ways to collaborate and teach non-archaeologists archaeological methodologies.

Discussions

I do not advocate for non-archaeologists to openly look for artifacts. The damages of looting in archaeology are drastic and are not exactly perceived as a 'one size fits all' problem. Looting is a transnational crime (Bowman Proulx 2008), and looted sites are documented in many areas in Canada, recently in Ontario (Ionico 2021). However, it is my firm belief that it is a benefit to archaeology if a responsible private collector finds an artifact exposed and in a secondary context setting and they decide to remove the artifact. The hope is that they contact the nearest appropriate heritage jurisdiction to document the find spot and donate the artifact. If they choose to collect artifacts and maintain them in a private collection, hopefully, it is only done with surface find spots and archaeologists are willing to document and collaborate with them. Archaeologists must continue to educate those on the damage that looting can do to sites. I urge caution in the sense that we do not ostracize these individuals because if they are taught how to document these artifacts or if they are aware of the heritage legislation in place throughout Canada, they are more likely to collaborate with professional archaeologists.

To the professional and non-professional, I would argue that there is work that we all can do collectively, but we can do it far better if we are banded together on the local, state/provincial/territorial and national levels (Webb 1956). Archaeology is adapting to continuous theoretical transformations and changes in methodology, so we must adapt to view responsible private collectors as allies in the discipline here in Canada. Painting all collectors

with the same brush as "looters" is ethically dismissive from a public archaeological lens and is fundamentally nonanthropological (Pitblado and Thomas 2020; Thomas and Pitblado 2020). Archaeologists in Canada need to look within our discipline at the national level to advocate for open dialogue to view responsible private collectors as allies who can engage in a beneficial relationship with us to monitor and record the archaeological record as it is slowly lost before our eyes.

Conclusion

The ownership of material culture is a unique ontological topic in archaeology that should be debated, discussed, and understood. Hopefully, this research will encourage dialogue at a national level for Canadian archaeology regarding collaboration with responsible private collectors. Archaeologists should acknowledge their value, especially in times of finding more exposed artifacts from the effects of climate change, as seen throughout coastal Canada. In a contrast to contemporary archaeology, traditional ground-disturbing archaeology is invasive and can be destructive. Archaeology is state-sanctioned and has contributed to broader patterns of colonialism (Ferris 2003; Nahrgang 2013; Dent 2016). This research found that 94.25% of respondents were in favour of collaborating with responsible private collectors and their private collections. Therefore, archaeologists should continue to be understanding or tolerant of individuals who are not actively digging into sites with the purpose of finding artifacts, but rather the individuals who are responsible private collectors and who have only collected artifacts from surface finds. 79.66% of survey respondents were in favour of collaborating with responsible private collectors because it would promote heritage stewardship, incorporate them into archaeological methodology and interpretation and would allow them to engage in participatory-based research projects involving the monitoring of archaeological and heritage sites. By

collaborating with responsible private collectors, acknowledging their benefit to the discipline

and no longer labelling them as looters, archaeologists in Canada can more adeptly document

private collections and monitor climate change in the archaeological landscape through citizen

science initiatives that can promote a shared material cultural heritage of the human past.

Chapter 3: Comparing 3D Imaging Technology at the Labrador Heritage Museum

Introduction

This research took place at the Labrador Heritage Museum and the Laboratory for Applied Archaeological Research and Community Heritage (LARCH), in North West River, Labrador (Figure 8). The research had two different components. The first step of the research was to decide what artifacts should be included in the project to be 3D scanned with photogrammetry and 3D scanning equipment at LARCH and the Labrador Heritage Museum. The digitally documented artifacts were: a ground stone gouge (Figure 9), a lanceolate biface and two hide scrapers-bone and wood (Appendix A). These objects are part of the Labrador Heritage Society collection and lack specific provenience and archaeological interpretation. The First Nation stone tools and the historic scrapers were chosen because this project was given Indigenous research permission from the Innu Nation and because the Labrador Heritage Museum is primarily focused on exhibiting Euro-Canadian trapping history. These four artifacts were viewed to be a fair balance and could be completed within the timeframe of this research project. Replicas of stone tools were also used to practice with the 3D scanning equipment. Once the artifacts were selected, a list of outlined criteria were chosen for when testing the 3D scanning and photogrammetry technologies as part of the research intended to create the 3D models of the artifacts.

The criteria included the price and expense associated with each 3D scanning and photogrammetry technology; the accessibility and user-friendliness of the technology; tracking the file formatting; data storage and processing requirements; copyright issues and how the internet bandwidth/cell network capabilities in a Northern setting affect the outcome when developing 3D models. Results show that community museums and non-archaeologists, in

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general, should consider using basic, user-friendly and cheaper forms of 3D scanning technology

to attempt to replicate and digitize artifacts in community museums and private collections.

Furthermore, the simplest and financially cheapest method to do so would involve using iOS or

Android applications on a smartphone. In using efficient and user-friendly technologies to share

digital collections, it becomes easier for non-archaeologists and smaller community museums to

collaborate with researchers conducting archaeological research. By doing so, they can

contribute to disseminating and promoting archaeological knowledge, whereas expensive and

technically advanced 3D scanning technology may present barriers for some community

museums and non-archaeologists. There are also barriers for archaeologists who either do not

have the research funds or institutions to support them in acquiring 3D scanning equipment.
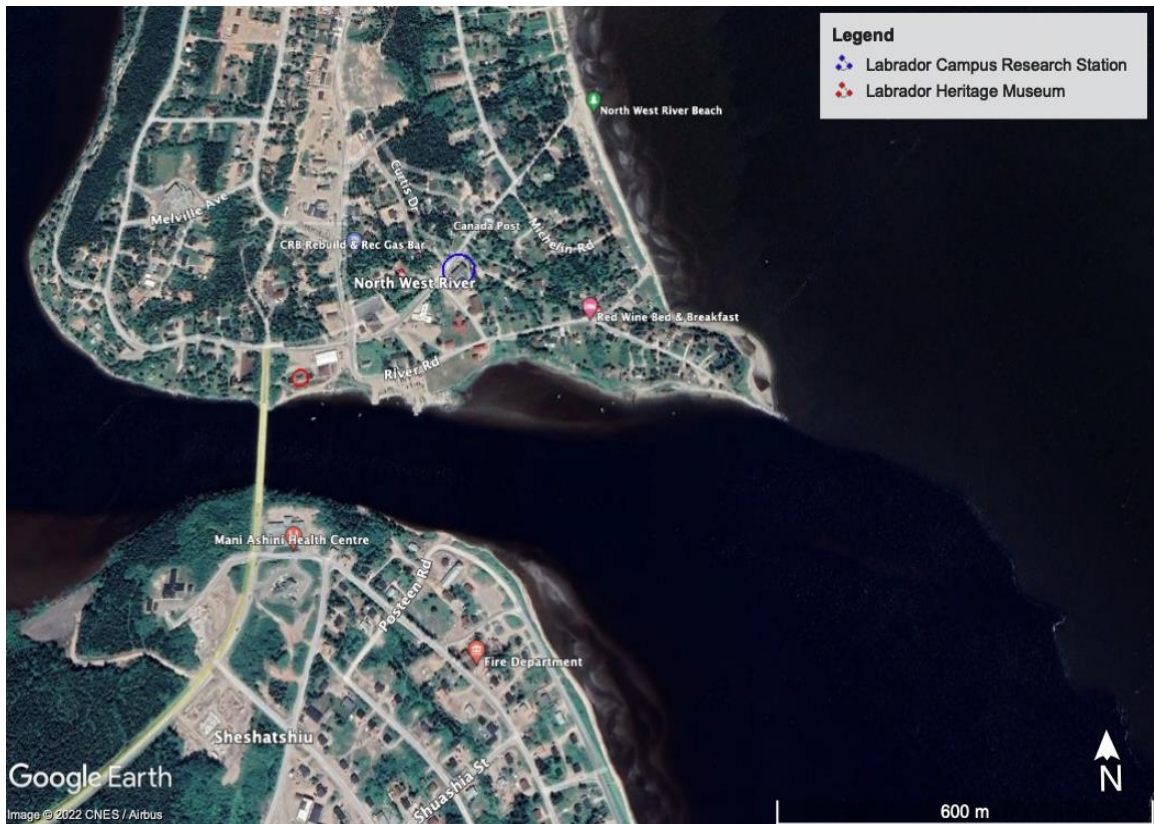
Figure 8: Locations of laboratory work to create 3D models of Tshiashinnu artifacts are encircled on this map (Google Earth 2021).

Cultural Objects

Based on their style, the lanceolate biface and gouge are believed to date to the Middle or Late Archaic period (Tuck 1975), while the scrapers date within the last century or two (Loring and Arendt 2009). The archaeological record suggests an Indigenous presence during the Early Archaic period in Labrador after deglaciation (Loring et al. 2003) and has radiocarbon evidence dating to at least 9000 years cal. BP (McGhee and Tuck 1975; Jenkinson 2010). The Maritime Archaic artifacts discussed in this paper will now be referred to as artifacts from the Tshiashinnu period meaning, "Innu from a very long time ago" (Arbour et al. 2018). Innu and some archaeologists recognize this period in history as the first traces of the Innu people in Labrador and Quebec from 8200-3500 years BC (Loring and Jenkinson 2017; Arbour et al. 2018), while others do not (McGhee 2008).

Figure 9: Tshiashinnu ground stone gouge collected by Carmen Davey in North West River, Labrador.
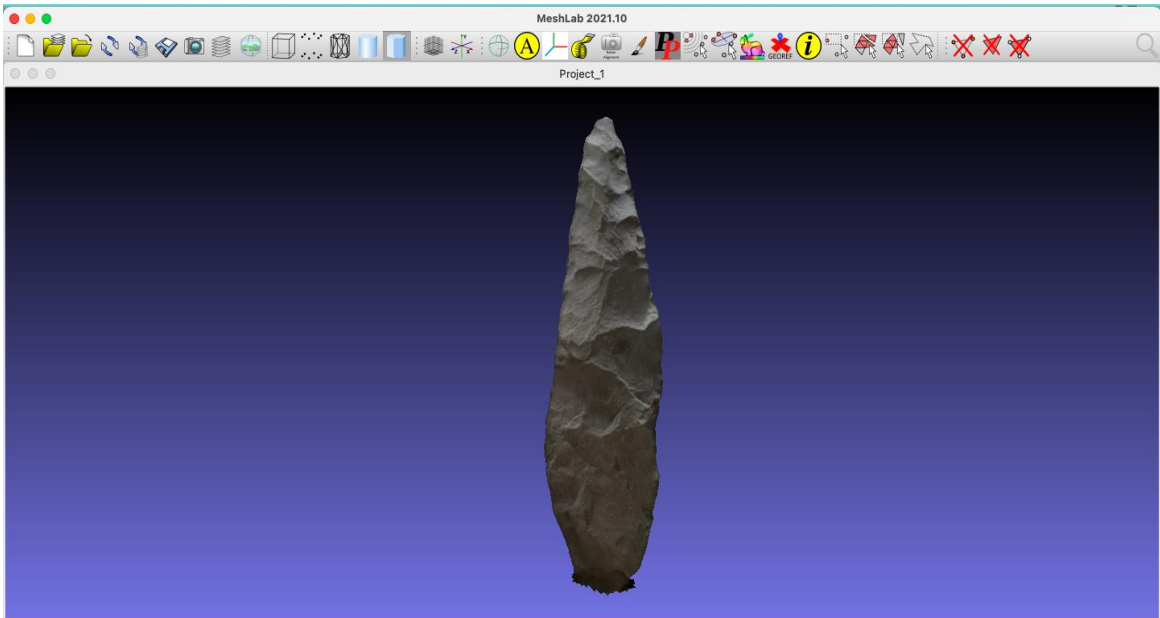
Figure 10: A 3D model of an Tshiashinnu lanceolate biface. Created with Trnio 3D Scanner and displayed in MeshLab. Hot wax was used at the base of the biface to keep the artifact propped up during the 3D scanning process.

Certain archaeological features were also documented at the archaeological site FjCa-51 (Area 15) in the community of Sheshatshiu (depicted in the centre of Figure 8). This was undertaken to provide more data from a field setting and to test and compare the quality of the 3D models of artifacts to archaeological features. Furthermore, it was done to examine what kinds of 3D scanning technology or photogrammetry equipment may be most useful to document archaeological resources. Past studies have been done comparing the efficiency of different 3D scanning technologies in archaeology (Karasik & Smilansky 2008; Slizewski & Semal 2009; Galeazzi et al. 2014; Galeazzi 2016), however, this study was to examine how this may benefit community museums who wish to digitize their collections. Although it does not have to be an archaeologist who teaches or helps with these 3D scanning techniques, we are often beneficial partners to collaborate with as we catalogue and document artifacts, often with photogrammetry or 3D scanning. The development of digital 3D visualization as an archaeological tool is a recent one (Garstki 2017) and can be utilized to help community museums effectively store,

preserve and present accurate representations of artifacts in their collections to the public, including researchers and cultural resource managers.

Methodology

This research project used different kinds of 3D modelling and photogrammetry equipment as part of a comparative analysis project. The author purchased a Structure Sensor Mark ii and attached it to an iPad 8 (Appendix A). A NextEngine 3D Scanner was accessible for use in LARCH (Appendix A). However, the scanner developed an internal power supply issue which prevented its use. It had to be returned to the manufacturer in California for repair. Agisoft Metashape was used to produce 3D models from photogrammetry completed on a DSLR Nikon D5300 camera that was accessible from LARCH. The camera was used for both documenting artifacts at the Labrador Heritage Museum and archaeological features at FjCa-51 Area 15 (Figure 12). Finally, two iOS applications (apps) were used on both the author's iPhone XR and iPad 8. These applications are Trnio and Monocle Structure Sensor (hereafter referred to as Monocle SS). Trnio is an application that relies on Lidar from the frontal camera of an iPhone product and does not require any external hardware or equipment. Monocle SS is a 3D scanning application that can be purchased on the Apple App Store but a Structure Sensor Mark ii must be externally attached with an iPad 8 bracket. It cannot work for Android products.

Figure 11: The DSLR Nikon D5300 camera set up on a tripod to do photogrammetry on a combustion feature at FjCa-51, Area 15, Feature Area 3.

Expenses of 3D Scanning and Photogrammetry Equipment

Because research projects can be expensive, it is important to consider financial costs (refer to Table 1). For graduate students, it is imperative to find funding for projects (Rawlings et al. 2012). The funding awarded for this research covered certain expenses related to processing fees in developing 3D models on iPhone XR applications. However, it did not cover the costs of equipment. Before arriving in Labrador, the researcher purchased different equipment in preparation for the project. A new iPad 8 was purchased along with an Apple pen (generation 2). Combined, this cost was approximately $800 CAD (the iPad 8 costs $631.35 and the Apple Pen costs $148.35). The iPad 8 was bought to use a Structure Sensor Mark ii with it. The iOS application Monocle Structure Sensor does not work unless there is a Structure Sensor Mark ii attached to an iPad 8. Part of the extended package of purchasing the Structure Sensor Mark ii includes a bracket that is compatible with an iPad 8. With this, the overall costs to use this 3D scanner was approximately $1,010.92 CAD. While this may seem expensive, readers must keep in mind that this is significantly less than what some 3D scanning and

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photogrammetry equipment can cost. For example, the handheld Stonex F6 3D scanner is an accessible 3D scanner that has been used to document smaller artifacts and archaeological materials (Patrucco et al. 2019) however, one downside of this technology is that it costs upwards of £12,500 pounds, or, approximately $21,430.71 CAD. The costs may fluctuate but they certainly present major financial barriers to any community museum or community member.

Table 1: The different 3D scanning and photogrammetry technologies used and their associated expenses in Canadian currency.

3D Scanning & Photogrammetry Equipment/Software/Applications	Approximate Market Price (Canadian Currency; CAD)
Apple iPad Gen. 8 (with Apple Pen Gen. 2)	$800
Structure Sensor Mark ii (with Apple iPad Gen. 8 bracket)	$1,010.92
Trnio (for Apple/iOS products)	$6.99
Agisoft Metashape Professional Edition Node-Locked License	$4435.14
NextEngine 3D Scanner	$3796.30
Monocle Structure Sensor (SS)	$36.99

It is important to consider costs in each step of research with consideration of expenses and a budget (Heidenberger et al. 2003). The overall costs of purchasing user-friendly 3D modelling/photogrammetry applications on the researcher's iPhone XR and iPad 8 were approximately $40.00 CAD. While staying at the Labrador Campus Research Station in North West River, Labrador, the researcher had access to a NextEngine 3D Scanner and the photogrammetry software, Agisoft Metashape. Both of these 3D scanning and photogrammetry technologies cost approximately $3,600 CAD (www.NextEngine.com 2022) and $3,400 USD (www.Agisoft.com 2021). However, since these products were previously purchased and student licenses were acquired, LARCH generously allowed the researcher to use them. This saved the researcher a considerable amount of money. Low cost and user-friendly 3D scanning

and photogrammetry equipment may function appropriately in documenting archaeological materials and may be of great use to community members who do not have access to funding packages or research grants (Polster 2007). There are also costs associated with the use of photogrammetry or 3D scanning iOS applications if you need to use data and are not using the internet. Alternatives to expensive and non-user-friendly technologies should be taken into consideration for more common use. Many methods of 3D scanning can be discouraging to archaeologists or community members due to their high financial costs and technical requirements (Barber et al. 2014). By using user-friendly 3D processes to digitally record artifacts, community museums can reconstruct materials from the archaeological record and share this information with visitors (Dilena & Soressi 2020).

Accessibility and User-Friendliness

Accessible and user-friendly 3D scanning and photogrammetry technologies were important qualities noted in this research. For discussion, the NextEngine 3D Scanner was found to be less user-friendly method of producing 3D scans for the general public. Firstly, the price of this 3D scanner presents barriers on who can afford to purchase it (it is approximately $2,995 USD). Second, it requires that it be connected to a desktop PC with internet access to process 3D scans. Third, if repairs are needed, this 3D scanner must be sent back to the manufacturer which is in California, USA. The NextEngine 3D Scanner is the least accessible option for non-professionals to make 3D scans of objects or archaeological sites. It is less mobile because it needs to be connected to a computer. This eliminates any potential possibility of using a NextEngine 3D scanner in a field setting. The financial price of the NextEngine 3D Scanner also limits non-professionals from acquiring this form of 3D scanner. The *NextEngine User's Guide* enables the user to set up the controls and how to process data (NextEngine User's Guide), but it

is not very user-friendly. I argue that the NextEngine 3D Scanner is a very precise but not very user-friendly method of 3D scanning for those who are not trained in using it.

The Structure Sensor Mark ii, the DSLR Nikon D5300 Camera and the researcher's iPhone XR and iPad 8 proved to be the most accessible methods of 3D scanning and photogrammetry during this research project. Attached to the iPad 8 with the bracket, the Structure Sensor ii depth scanner was easily transportable. However, the Structure Sensor did not take high-quality 3D scans of the Tshiashinnu artifacts. This method of 3D scanning was less efficient for producing digital images of objects that were under 30cm in height, as the preferred range of taking scans of objects are within 0.3m-5m in height (Pick 3D Printer Structure Sensor Mark 2 Review 2022). The iOS application Monocle SS allows for an object to be scanned in either rectangular or square boundary boxes and the user has the option to decrease or increase the size of the box to get more precision of the object. To help with this, the researcher elevated the artifacts higher on a flat surface so that the depth sensor could get a better 3D scan (Figure 12). However, because the 3D scanning process included other objects (such as the boxes on a flat surface) in the scan, they were of poor digital quality. The Structure Sensor working in conjunction with applications like Monocle SS requires that the user walk entirely around the object until the bounding box in the corner of the app is entirely green, which means it is completed. With this in mind, researchers or community members must make sure that their workspace is comfortable and that they have enough room to adequately walk around the artifact or object several times to develop the 3D scan. Some researchers use an inexpensive rotating chair or turntable to place their artifacts on so that they may do a full 360 rotation of the object while conducting a 3D scan or taking pictures for photogrammetry (Porter et al. 2016). Using a rotating chair or turntable could prove to be reasonably mobile and would be a benefit to non-

archaeologists and community museums who may not have access to research grants or

laboratory resources (Polster 2007; Li et al. 2021).

Figure 12: A Tshiashinnu gouge that is stabilized with hot wax on boxes so that the researcher could walk safely around the artifact to do 3D scanning and photogrammetry. The small lamps produce neutral light so that they reduce the chance of creating shadows. Artifact was used as practice and not selected as the chosen four for this study.

The DSLR Nikon D5300 camera was used to take over six hundred photographs of the

Tshiashinnu artifacts over the course of this research project. Its technological value derives

from providing higher intensity resolutions and produces a far superior quality image (Pirie et al.

2012; Javh et al. 2018). In terms of this camera's mobility, it was easy to carry and allowed the

researcher to take photographs in a stationary laboratory setting (at LARCH), inside the Labrador

Heritage Museum and during fieldwork at FjCa-51 in Sheshatshiu. The D5300 Nikon camera

model with a tripod extension costs approximately $2,209.95 CAD, a price that is likely beyond what some non-archaeologists and community museums can afford. However, for the sake of this project, the researcher was able to use it because it was provided by LARCH.

The easiest and most accessible equipment was the researcher's iPhone XR and the iPad 8. Despite the low-quality digital images from the Structure Sensor in conjunction with the iPad (including Monocle SS), the iPad 8 and the iPhone XR took high-quality photographs using their frontal 8-12-megapixel cameras. The LiDAR sensors in these cameras collected measurement data from the photos and from there enabled point cloud meshes to transform them into 3D models (Simarcek and Lindenbergh 2014; Gollob et al. 2021). This was done in both the field, at LARCH and at the Labrador Heritage Museum.

The easiest models to develop were created with the iPhone and iPad application, Trnio 3D Scanner. This application costs $6.99 CAD and can be used on the iPhone or iPad without any other equipment. In terms of archaeological fieldwork, it is very portable and an iPhone or iPad is all that is required. The application uses the LiDAR camera (Simarcek and Lindenbergh 2014) to collect a maximum of 100 high-definition photos and stitch them together to create 3D models (Trnio.com/product-page). Close-range photogrammetry is very common (Patrucco et al. 2019) and accessible with smartphones, such as iPhones that are equipped with LiDAR cameras. This product has two image capture options, a LiDAR camera integration and an ARKit integration. The ARKit integration allows for thousands of points to be collected and stitched together to form the 3D model. As opposed to processing the cloud point and images later through photogrammetry software like Agisoft Metashape, Trnio 3D Scanner processes the 3D model for the user in the application itself. To do this, you need to be connected to the internet or have cellular reception and access to data.

The Trnio 3D Scanner is beneficial for presentation purposes as AR (augmented reality) and VR (virtual reality) technology are demonstrated to be very useful and informative tools for improving visitor experiences with archaeological sites or artifacts (Bruno et al. 2019). Employing this method of 3D scanning is simple and could benefit community museums and their visitor's experience as it is an inexpensive application that is incredibly user-friendly and produces a product that gives an accurate representation of the artifact in digital form. Essentially, it allows archaeological information to be sustainable and can be more widely shared. It could effectively be used by community museums for presentation purposes to visitors. The Trnio 3D Scanner may benefit researchers who are working remotely who can access a community museum's digital collections without having to travel or handle the artifacts. Furthermore, this method of 3D scanning allows for easier digital and tactile learning activities (Vasudevan and Tucker 2013; Gasparetto and Baratin 2021).

File Formatting

The next stage of this comparative analysis focused on what kind of file formatting these methods required. First, the researcher purchased an extended package of the iOS application Monocle SS so that it could be used to process the 3D models and share them in different file formats. The extended package allows for an individual to export the 3D model as a USDZ file. A USDZ (universal screen description) is a file format that was developed by Apple for iOS devices that use 3D modelling and photogrammetry applications. Furthermore, this file format is capable of augmented reality by viewing the 3D model on an individual's mobile device. By formatting a 3D model into a USDZ file, individuals who own Apple (iOS) products can open the file and view the model on their mobile phone, iPad or in their Safari web browser. The only

limitation to this kind of file format is that USDZ files are restricted to iOS devices, but, they are ultimately popular with many different demographics of consumers (Sanii 2020).

The other primary type of file that was used to develop and share the 3D models of the Tshiashinnu artifacts was in .obj format. Obj files are a common file type for transferring 3D models between different applications (Possemiers and Lee 2015). All the 3D models that were developed by photogrammetry through the DSLR Nikon D5300 camera and Object mode in Trnio 3D Scanner were exported into .obj files. This method of file sharing is more accessible than USDZ files because once they are exported into .obj's, they may be shared over email and can be opened on PC desktops and iOS desktop or mobile products. The researcher examined the .obj files on the multiplatform open-source program MeshLab, a multiplatform open-sourced free program where an individual can decide to make more edits to the 3D model. MeshLab has been used to display osteological remains with high proficiency, it can therefore display reasonable quality 3D models of archaeological stone tools for presentation purposes to improve visitor experiences in community museums (Possemiers and Lee 2015; Mohd et al. 2018). The .obj and USDZ file formats were chosen to export the 3D models in since they are a common file format to employ and since iOS technology was used, the USDZ file format was ideal to apply with the researcher's iPhone XR and iPad 8.
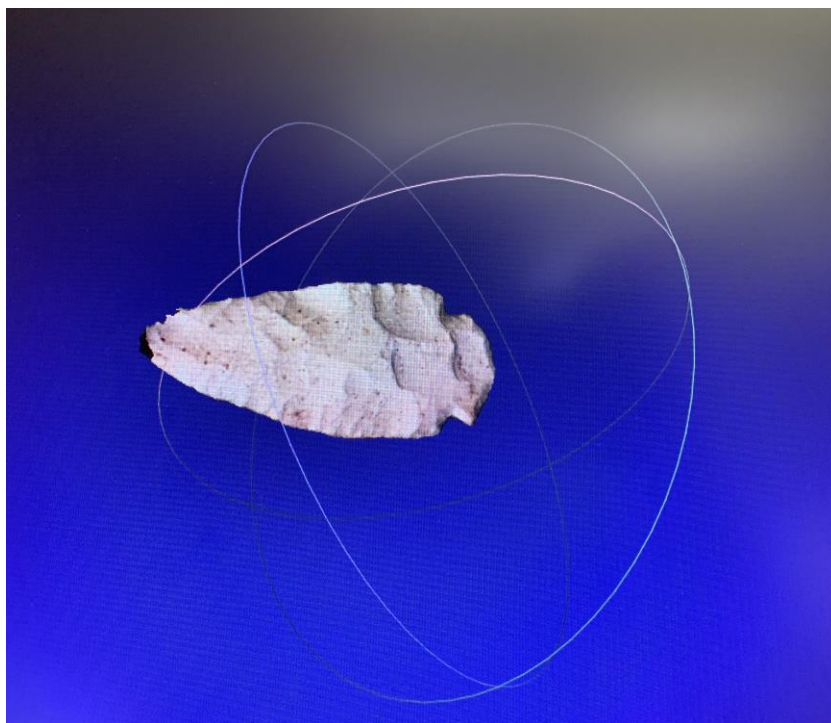
Figure 13: A replica of a projectile point, created by Chris Dalton. Exported into a .obj file from the Structure Sensor Mark ii (with iPad 8) and uploaded to MeshLab to be displayed.

Data Storage

In developing the 3D models of the Tshiashinu artifacts, the researcher maintained a record of approximately how much storage each model would require. The completed 3D models that were developed with the iOS application Trnio 3D Scanner required on average, over 100Mb (megabytes) of data to process in the cloud (based upon the four artifacts scanned). These applications require approximately 5Mb-10Mb to store on the user's device. With specific attention to the Tshiashinnu lithic artifacts, each digital image was created by using the frontal LiDAR camera of the researcher's iPad 8 or iPhone XR (Gaiani et al. 2019; Sanii 2020; Gollob et al. 2021). The only exception to this amount of data storage were the 3D models created while doing fieldwork in Sheshatshiu, Labrador. Three digital images of combustion features were developed in ARKit mode from Trnio 3D Scanner and each took approximately 150Mb of data cloud storage to develop (Figure 14). Relatively speaking, each of these files takes a reasonable

amount of digital storage in comparison to other methods of storing photogrammetry or 3D

modelling files. In contrast, the photos taken with the DSLR Nikon camera required a greater

amount of storage than the 3D models developed with Trnio 3D Scanner or the Structure

Scanner with Monocle SS.
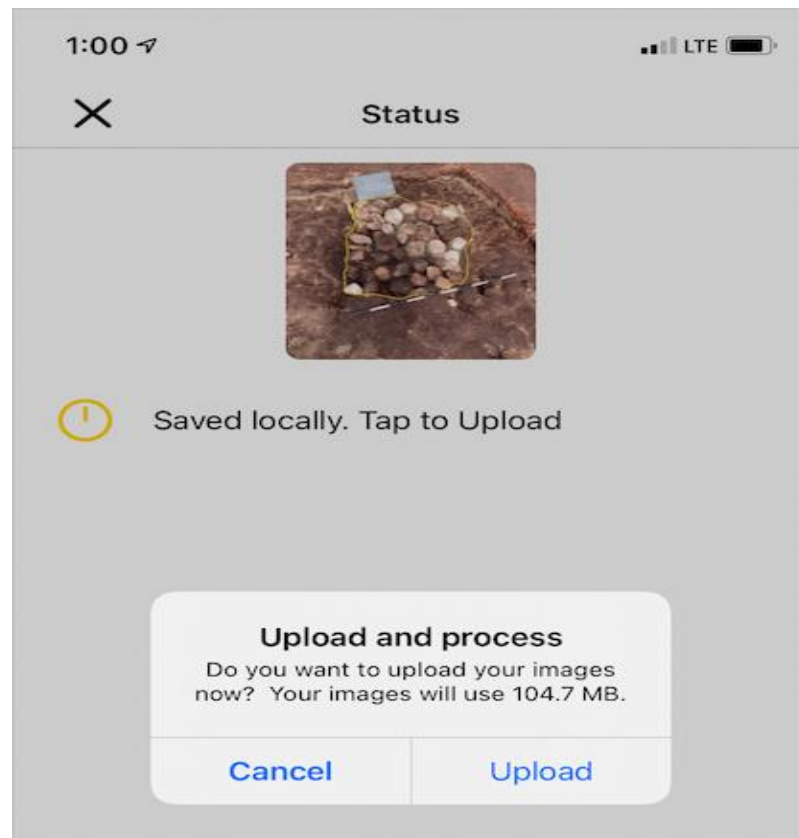
Figure 14: Screenshot of Trnio 3D Scanner processing the archaeological combustion feature in the cloud. It required 104.7MB of data to stitch together the images into the 3D model.

The JPEG (Joint Photographic Experts Group) files that were amassed during this

research required the greatest amount of file storage. Approximately 658 JPEG photos were

collected with the DSLR Nikon D5300 camera alone and were stored on a Dell computer. Each

JPEG required on average 3MB of digital memory storage. While JPEGs are a universally

shared and easily created file format (Palmer 2013), there are benefits of their overall

accessibility with regards to creating 3D models from photogrammetry equipment and there are

also certain obstacles. Despite the larger amount of data storage, the camera device

identification sequence that exists in JPEG file formats (Qiao et al. 2017) allowed for more

precise camera identification during the mesh building process of the 3D models in Agisoft

Metashape.

Processing Time

The most time-consuming portion of this research was the processing time for each

method of 3D scanning or photogrammetry. Each was monitored in terms of how long it took to

produce or attempt to produce 3D models of the Tshiashinnu artifacts. The 3D models that were

created with the iOS application Monocle SS only took minutes to develop. In contrast, digital

images of the artifacts took longer to develop on Trnio 3D Scanner and the longest with Agisoft

Metashape. For the 3D model to be created on Trnio, the researcher had to either have access to

wireless internet or cell reception and data availability. This was needed so that the images

could be uploaded to Trnio's cloud and stitched together to create the 3D model. The process

used to create these models is different than using the photogrammetry software Agisoft

Metashape.

Trnio 3D Scanner uses its method of internally processing the images on a cloud in

comparison to the researcher having to upload all the JPEG photos of the artifacts and begin the

process of creating the 3D model on your desktop. Once the model was finished being stitched

together, it was saved "locally" and available in the storage of the app. This could take

anywhere from thirty minutes to over an hour, depending on bandwidth or cellular signal

strength. In contrast to the long times encountered with the processing most of the 3D models in

LARCH, it took approximately 45 minutes to an hour to develop the 3D models of the

Tshiashinnu artifacts and archaeological features from Sheshatshiu. The majority of the 3D

models took hours to complete during the mesh building process of Agisoft Metashape in LARCH (Appendix A). This could be due to the low-resolution processor from a low amount of random-access memory (RAM) on the Dell desktop PC that the researcher used in LARCH. Agisoft Metashape does not require an internet connection (Agisoft HelpDesk Portal 2022) and so any delays caused in the development of the 3D models were likely caused by a shortage of RAM. However, because Agisoft Metashape is a highly processual software, it placed more strain on the internal drive of the Dell computer. This caused the computer on occasion to freeze and crash. Each time this happened, it caused greater frustration to finalize the development of the 3D models. Due to constraints surrounding the slow internal drive downloading speed, some of the 3D models were not completed using Agisoft Metashape.

Internet Bandwidth in the North

Accessibility concerns in affordable housing, healthcare and internet download and upload speeds are prevalent in Northern communities and especially within Indigenous households (Oosterveer and Kue Young 2015). Community museums must take the quality of their internet into consideration when creating digital images of their artifact collections. If non-archaeologists have cell reception with data services to produce a basic 3D model of an artifact that they come across disturbed as a surface find it could be helpful to share archaeological knowledge by photographing or creating 3D models from surface finds in the field. For example, the iOS application Trnio 3D Scanner requires either a wireless connection or cell reception with data services to digitally produce the artifact into a 3D model. If a community member finds an artifact exposed on the surface as a single find spot in the interior of Labrador, this northern setting may present difficulties in using 3D scanning equipment that requires cloud services to process the images. In this case, taking photographs of the find spot would be helpful

to potentially process the 3D scan at a later date. A 3D scanner that could be easily transported

to scan small artifacts would also be useful in this case, but their financial costs may pose further

barriers for individuals living in the North. Having faster internet bandwidth in rural Northern

settings will improve the likelihood that community museums or non-archaeologists interested in

working on digitizing artifact collections on a small budget will improve the production of basic

3D models (Conley and Whitacre 2020).

Copyright Issues

One factor that was considered while developing the Tshiashinnu artifacts into 3D

models was determining the copyright and intellectual property right ownership with each of the

3D modelling applications used. Even though the words copyright and intellectual property are

often used interchangeably, copyright law is one tool behind the intellectual property triumvirate

(Ferullo 2004) and may enable the protection of intellectual property rights of archaeological

materials (Blackwell and Blackwell 2013). For example, all the iOS applications that were used

as part of this research methodology have copyright policies that users need to adhere to.

Within the Trnio User Agreement, Section 3 indicates that the user owns all worldwide

rights, title and interest, including all the intellectual property and the proprietary rights to the 3D

models, subject to the licenses granted to the Company (Trnio User Agreement 2009).

Furthermore, the photos of the Tshiashinnu artifacts taken with the DSLR Nikon D5300 Camera

and developed into 3D models in Agisoft Metashape are owned by the developer of the digital

images. However, it is not just the developer, archaeologist or community museum that needs to

be acknowledged in this situation. The Innu Nation may eventually claim ownership over the

design of the Tshiashinnu 3D models. Handling the Tshiashinnu artifacts and creating digital

copies, creates more transparent ways for the Innu Nation to view and maintain cultural ties to

their collective past. This sense of ownership could turn a debate of property rights from rights of possession into rights of creation. Rights of creation could create a new lens of Indigenous claims of identity through the 3D copies of the archaeological materials (Strathern 1999). This strengthens how heritage management includes the identification, evaluation and protection of evidence of past human lives in their material or digital form (Nicholas et al. 2009) and may enable more Indigenous consultation.

Future Research Potential

There are many opportunities for young archaeologists and other researchers to collaborate with different community museums to help them digitize their artifact collections. Graduate students are in positions to access research grants and to use their time and resources to ensure that artifacts are properly digitized in private community museums so that the 3D models are shared for larger audiences to view and study. This may not guarantee that the artifacts are always reflected in pristine 3D representation, but it will guarantee that they are stored electronically so that First Peoples, other community members and researchers can have access to them for basic presentation purposes and be a part of a wider shared heritage or collective archaeological past.

Conclusion

The comparison of this comparing 3D imaging technology at the Labrador Heritage Museum paves the way for a system of best practices and use for community museums. This system of best practices can be implemented when community museums wish to digitally document and produce 3D models of artifacts in their collections. In terms of the financial costs associated with community museums that operate on small budgets, the iOS application Trnio 3D Scanner is a fiscally wise option to consider. The low cost of $6.99 CAD makes it an

affordable choice for individuals or institutions to produce digital recordings of museum collections. With regards to accessibility and user-friendliness, each handheld piece of equipment was easy to transport and use (i.e. the iOS applications on the iPhone XR, iPad 8 and the DSLR Nikon D5300 camera). Regarding file formatting, data storage and processing time, the .obj file appears to be the most universally friendly format to store the 3D model mesh in and to distribute them over email (Possemiers and Lee 2015). Their storage has proven to require a relatively low amount of data. The processing time and overall internet and satellite reception proved to be the two biggest challenges over the course of this research. If a community museum decides to use one of these methods to conduct photogrammetry or produce 3D models of artifacts, they should be prepared to experience longer processing times due to barriers accessing high-speed internet in Northern settings (Conley and Whitacre 2020). Delays may occur if a community museum does not have the funds to acquire high-processing computers or to purchase expensive software that will be able to quickly process point cloud data for the production of 3D models.

Comparative studies have been conducted in the past to suggest what kinds of low-cost and accessible 3D scanning equipment are beneficial to document small artifacts including lithics or textiles (Grosman et al. 2008; Mathys et al. 2013; Adamopoulos et al. 2021; Zyla et al. 2021) however, no studies have used this technology to set a precedent on best cases of procedure for how community museums can digitize artifacts. Ultimately, the goal of this paper was to suggest some methods for community museums to follow and consider if they decide to digitize their archaeological collections and have digital catalogues available instead of directly handling the artifacts. Digital archaeological collections could be more widely available and interesting to the public (Dilena and Soressi 2020); therefore, community museums should consider steps on how

to present this. Archaeologists certainly can and should have a role in helping with this, as we know how to catalogue, store, display and at times, conserve artifacts. I argue that the best practices and procedures for a community museum to follow are accessible, inexpensive, user-friendly technologies like the iOS application Trnio 3D Scanner. Archaeologists also have access to grants that community museums may not be able to access, so archaeologists should collaborate with private museums to help them access 3D modelling equipment and digitize collections. Another possible scenario could involve the collaboration with Government of Newfounland and Labrador employees or staff from The Rooms who have expertise in cataloguing or digitizing artifact collections.

This case study involving digitizing Tshiashinnu stone tools and historic hide scrapers presents an opportunity for future research in the communities of North West River and Sheshatshiu, Labrador. 3D modelling and photogrammetry continue to be an asset in how archaeologists engage the public and share research results. Collaborating with community museums is a way to share the archaeological record with First Peoples, private collectors, avocational archaeologists and non-archaeologists in general.

Chapter 4: Discussion and Conclusions

Introduction

This section presents regional case studies in Atlantic Canada where private collectors, avocational archaeologists, and community members have made significant contributions to archaeology. These efforts were accomplished by maintaining legacy collections or by 3D scanning and conducting photogrammetry techniques to document archaeological sites and share their discoveries. A summary of the thesis research is also presented to demonstrate why collaborations with <u>responsible private collectors</u> and the use of 3D scanning and photogrammetry equipment in partnership with community museums are beneficial ways to benefit archaeological theory and methodology.

Newfoundland and Labrador

On the island of Newfoundland, a man from Grand Falls, Don Locke eventually became regarded as the province's 'premier amateur archaeologist'. He made significant contributions to achieving a better understanding of the Beothuk and the other pre and post-contact First Peoples of Newfoundland (Penney 2015). Not a professional archaeologist by trade, Locke is credited with having worked on more than 50 Beothuk sites in Newfoundland, as early as the 1960's. Unfortunately, some of these sites were damaged as they were not properly documented with professional archaeological methodology. However, Locke made significant contributions to the cultural history of Newfoundland and did in fact keep field notes, and photographs and eventually donated his collections to the Rooms (Stephen Hull-personal communication). Another unique archaeological site was investigated in the Avalon Peninsula. Everett Lynch contacted the Department of Archaeology at MUN to confirm that there was a Roman-type script on a rock face and what also appeared to be two anthropomorphic and one zoomorphic figure

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below the script. Archaeologists recorded the petroglyph using both photogrammetry and highlight-reflectance-transformation-imaging (H-RTI). This archaeological site, the Upper Island Cove Petroglyph (CjAh-29), is now recorded as the first Indigenous petroglyph from Newfoundland (Gaulton et al. 2019). By using photogrammetry technologies and turning them into 3D models, researchers can share images of the petroglyphs with other archaeologists, avocationalists or Indigenous stakeholders. This discovery would not have been made without archaeologists being notified by community members.

In North West River, Labrador, a community member, Carmen Davey, found an artifact he believed to be of Indigenous origin in the gravel pits east of the town. The artifact is a ground stone gouge belonging to the Tshiashinnu tradition and likely dates to 4000-5000 years old (Bethune and Champion 2017). It was brought to the attention of Dr. Scott Neilsen, who confirmed that it is in fact an artifact and that prior to finding it, there were no diagnostic Late Archaic stone tools documented in the area (Dr. Scott Neilsen-personal communication). The action of Mr. Davey provided information on earlier human occupations in the North West River area, dating to at least 4000-5000 years ago. The Community Collections Archaeology Research Project (CCARP) orchestrated by the Newfoundland and Labrador Archaeological Society is a project focusing on unknown or under researched private collections to enhance engagement and facilitate public education. The latest report was completed by Nicholas Flowers, a student from Hopedale, Labrador. His report focused on a large private community museum collection that was associated with a 2007 excavation of a 19th-century Moravian midden site in Hopedale. The successful completion of this project enabled the cataloguing and interpretation of a total of 1310 artifacts from a private museum collection (Flowers 2020) and it may not have been documented if not for community outreach.

The Canadian Maritimes

In my home province of New Brunswick, I have read many examples where private collectors and in general, non-archaeologists, made substantial archaeological discoveries. For example, the dentist and 'Father of New Brunswick Archaeology', Dr. George Frederick Clarke, found many archaeological sites in the Saint John River Valley. Entirely self-taught, his discoveries significantly contributed to knowledge pertaining to the material past of Indigenous peoples (Betts and Hrynick 2021), particularly the Wolastoqiyik whose ancestral home is the Wolastoq (Saint John River), otherwise known as the beautiful river (Ganong 1896).

Other non-archaeologists in New Brunswick have also made substantial discoveries. The late Chief Joseph Augustine of Metepenagiag Mi'kmaq First Nation explored a childhood memory that his father showed him. The Augustine Mound, as it is now known, is situated near the Little Southwest Miramichi River. It was reported to archaeologists and later documented in 1975/1976 to be a 2,500 Early Woodland Period Middlesex burial mound (Augustine et al. 2007). The fieldwork led to the documentation of Indigenous copper, textiles, stone tools and burial features that are more commonly associated with mound building techniques in the Ohio Valley (Turnbull 1976). The human remains were later reburied in appropriate ceremonies as per the communities wishes. The implications of this discovery led to the first archaeological field research permit on First Nation reserve property and eventually led to the site being documented as a National Historic Site of Canada (Turnbull 1976; Jaratt 2013). The project was a community initiative that helped the community of Metepenagiag have influence over their material culture by being involved as a rightsholder in due process and directly involved with the excavations and curatorial work.

More recent discoveries that were made by curious community members or private collectors in New Brunswick have contributed to the interpretation of the archaeological record. In 2006, the Archaeological Services Unit of the Government of New Brunswick was contacted by Mrs. Joan Rennick concerning a projectile point that she found in Cape Spear. The artifact was retrieved from a rocky shoreline that had likely eroded from an erosional face down onto the beach. Members of the Archaeological Services Unit confirmed that the artifact is a large black chert lanceolate biface, exhibiting flaking and basal thinning through the removal of small, fluting flakes (Suttie 2006). The discovery that Mrs. Rennick made demonstrates a Paleoindian presence in the Cape Spear area back to at least 10,000 - 9,500 years BP (Suttie 2006). Upon examining the artifact, the fluted point displayed use-wear as the collector had grown accustomed to wearing it as a necklace (Brent Suttie-personal communication). Archaeologists would not have been informed of this discovery if private collectors or curious non-archaeologists had not collected or removed the artifact from their find spots. This unique discovery wouldn't have occurred without the intervention of private collectors.

The provincial collection of Prince Edward Island, through the Prince Edward Island Museums and Heritage Foundation, is available online for viewers to see images of artifacts and ecofacts that are representative of the human and natural history of the island. The digitized collection also provides content about every item in the collection repository so viewers can have some background information. One highlighted item in the collection is the 'Sorensen Spearpoint', representing the oldest artifact from Prince Edward Island. It is believed to date from the Paleoindian period, approximately 11,000 years ago. The discovery was made by a Mr. Aage Sorensen, who in the 1930's found the spearpoint while digging for potatoes on the island (Prince Edward Island Museum Collections).

The Ontology of Artifact Collecting

There are ontological reasons why individuals decide to collect artifacts. We as archaeologists may not understand why non-archaeologists have infatuations for collecting artifacts and other items. For example, citizens from ancient Rome sought to embody or embrace a likeness toward their predecessors from the Greek and Hellenistic city-states, and that is why they removed statues from Greece and collected them as part of their private property (Thompson 2016). As opposed to periods in ancient history, contemporary non-archaeologists have been emboldened by popular culture and the media with an interest in ancient history and archaeology. The general public has a perception that all archaeology is about adventurous treasure hunting, as seen in classic movies like the Indiana Jones series (McGeough 2006).

The wider public is not necessarily aware of the heritage laws that are in place to protect archaeological sites, both documented and non-documented. It is for this reason that archaeologists need to continue to educate and work with responsible private artifact collectors (Schadla-Hall 1999; Atalay 2012). Despite the taboo of metal detecting, metal detectorists show the initiative or interest in learning about a human material past. If trained properly, archaeologists can use volunteer metal detectorists to help us in wider community archaeological projects (Dobat 2013; Piblado 2014; Reeves 2015; Thomas 2015; Herva et al. 2016; Rodríguez Temiño 2016).

I argue against the anecdotal viewpoint that all private collecting is unethical or that archaeological methodology should solely be left in the hands of professional archaeologists. Contemporary archaeology is now undergoing a paradigm shift that is focusing on community initiatives, Indigenous designs or shared control over archaeological projects (Colwell-Chanthaphonh 2010; Atalay 2012). Archaeologists must continue to decolonize archaeology

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(Atalay 2006) and propose new initiatives that better engage with non-archaeologists that conform to ethical standards of engaging, teaching or embodying Indigenous concepts or ways of knowledge regarding the collection of material objects (Nicholas and Markey 2014; Gonzàlez-Ruibal 2018).

Archaeologists must continue attempting to incorporate ontological connections that Indigenous peoples have to their material culture into archaeological theory. One way of doing so would be to continuously collaborate with Indigenous peoples in archaeological methodology. Indigenous ways of knowing should be acknowledged as spheres of knowledge that can work in conjunction with archaeological practices (Colwell-Chanthaphonh & Ferguson 2010). Indigenous peoples who engage in private artifact collecting, should be viewed as another method of engagement and system of knowing or understanding material culture (Strathern 1999; Strathern 2021). Western-trained (non-Indigenous) archaeologists may not be able to understand why private collectors and Indigenous peoples collect artifacts. Archaeologists of the future should regard their relationship with responsible private collectors as continuing to adapt knowledges, concepts and paradigms with deep cultural traditions to solve contemporary issues, and to use this 'weaving back and forth between perspectives' to seek middle understanding and middle ground (Lyons & Blair 2018).

I argue that archaeologists continue to tolerate that all responsible private collectors, especially those who are Indigenous, should be able to surface collect artifacts without ostracization from the archaeological community. Responsible private collectors must continue to be viewed differently than those who are breaking the law by using invasive techniques to loot for artifacts. Private collecting should be viewed as a different worldview within a different set of knowledge systems (Law 2011), an understanding that is accepted and tolerated despite being

outside of professional archaeological methodology. We should no longer try to differentiate between knowledge systems (Strathern 1996) and continue to 'look both ways' (Crowell et al. 2001) by embracing the understanding that non-archaeologists also have a tangible interest in understanding material culture. Indigenous friends have indicated that they perceive finding artifacts on the surface and keeping them in a private collection as a way to reclaim their heritage. Arguably, they are taking back ownership of their material culture. As a male, white and western archaeologist, who am I to judge Indigenous peoples for wanting to reclaim their culture through the collection of artifacts they find perhaps eroded on the surface?

Conclusion

The introduction to this thesis included a literature review that examined heritage policies and legislation from the provincial governments of Atlantic Canada. In the majority of the legislation, an individual must have a minimum of a graduate degree, preferably in Anthropology or Archaeology, to conduct any kind of archaeological field research. Private artifact collections are no longer permitted, and the surface collection of artifacts is either considered looting or is against heritage legislation. I propose that since we are unlikely to stop private collecting and it is very difficult to prevent looting, archaeologists must collaborate with avocationalists and private collectors to train them in different archaeological methodologies. Community member participation is one of the most ideal ways of including stakeholders in the documentation or protection of archaeological heritage. This will include promoting archaeological education to the public, increasing archaeology's relevance to present day communities and bridging the 'gap' between fieldwork and including Indigenous and local communities (Chirikure & Pwiti 2008).

Allowing the public to be aware of methods to document cultural materials could potentially aid archaeologists. For example, the archaeological landscape is changing during the

current global epoch, the Anthropocene (Howard et al. 2008; Lawrence et al. 2016). With this change, artifacts will appear more frequently as archaeological sites and artifacts erode out from fields, shorelines or riverbanks and can be viewed as a non-renewable resource that is akin to losing volumes of history books that researchers have never read (Rick and Sandweiss 2020). One way of supporting archaeological documentation in the field or the laboratory could be by incorporating responsible community members into archaeological practices (Atalay 2010; Pitblado 2014).

There are potential practical means where archaeologists can train responsible private collectors and avocationalists. Considering there are fewer professional archaeologists working in Atlantic Canada than in other jurisdictions, I propose that archaeologists further collaborate with non-archaeologists like avocationalists and responsible private collectors by training them on how to document and monitor archaeological materials. Some of these practical methods could involve including non-archaeologists in community projects that monitor shoreline erosion after storms, which is already on going in areas like Maine and Massachusetts (Dawson et al. 2020; Maloy et al. 2020). This can be viewed as a citizen science approach to building community research initiatives to monitor soil erosion at undocumented archaeological sites and preserve the integrity of existing or undocumented sites (Dawson et al. 2017; Hillerdal et al. 2019; Dawson et al. 2020). It is my opinion that there should be a discussion in Atlantic Canada where a protocol like the Portable Antiquities Scheme (PAS) from England and Wales (Portable Antiquities Scheme Website; Worrell 2004; Gill 2010) is effective. It would be an excellent method to allow and encourage avocationalists and responsible private collectors to report any archaeological resources that they find, intentional or unintentional. If trained properly by archaeologists and heritage officials, this would allow them to become beneficial partners in

documenting artifacts while being compliant with heritage legislation. Incorporating procedures that mimic the PAS in Atlantic Canada may take years as it would be up to archaeological regulators and legislators to agree and decide who administers the program and oversees training, maintains a responsible private collectors database and ensures that Indigenous consultation is maintained.

Archaeologists should be allowed to be included in school curriculums or have community programs partnering with class subjects like anthropology, history or even geography where they can inform students about material culture (Thomas 2006). This ideally will continue to create more awareness and involvement from students who might eventually become avocationalists and responsible private collectors by educating them on how to contribute to documenting and protecting archaeological and heritage sites (Baugher 2013; Thomas & Lea 2014). Archaeologists or heritage professionals can also train avocationalists and responsible private collectors to use low cost and user-friendly 3D scanning and photogrammetry technologies and outline steps (Chapter 3; McLean 2022) to document unrecorded private collections that they possess or for artifacts that they encounter along shorelines, riverbanks, plough zones or many other commonly disturbed or eroded areas. Having a regulated database or a 'private collector file' that keeps track of archaeological sites found by avocationalists or responsible private collectors and whether they donated 'their' collections would be invaluable data.

In Chapter 2, my anonymous questionnaire, "Examining the Benefits of Archaeologists Working with Private Collectors", collected the responses of 177 informants. Overall, I argue that this survey was positive. Archaeologists should continue acknowledging the value of private artifact collectors, and their contributions towards expanding our knowledge of the

archaeological record. This is to be further emphasized as artifacts are exposed from the effects

of climate change, as seen throughout coastal Canada. Traditional ground-disturbing

archaeology is invasive and can be destructive. Non-archaeologists and Indigenous peoples, in

general, may question why we are digging up the past (Green 2015). In saying so, archaeologists

need to think of ways to continue being relevant (Trigger 2006) and pursue sustainable, less

invasive and more interactive ways to include community members in archaeological research

(Lehmann et al. 2005; Glencross et al. 2017; Warrick 2021). This survey questionnaire found

that 94.25% of respondents were in favour of collaborating with responsible private collectors

and their private collections (Chapter 2). Therefore, archaeologists need to continue to be

understanding or tolerant of individuals who are not actively digging into sites with the purpose

of finding artifacts. It is imperative from a community archaeology theoretical perspective that

we need to continue collaborating and working with individuals who are avocationalists and

responsible private collectors.

In Chapter 3, a case study was presented that ultimately demonstrates that community

museums can be beneficial partners for archaeologists or researchers to train non-archaeologists

and share undocumented collections. The results of my lab and fieldwork in the summer of 2021

in Labrador (McLean 2022) demonstrate that affordable, portable and user-friendly 3D scanning

or photogrammetry equipment are the best technologies for community museums or private

collectors to use to document archaeological collections. The 3D scanning of artifacts from the

Labrador Heritage Museum demonstrated a tangible beneficial partnership by proving that

archaeologists are in unique positions to collaborate with community museums who have

unrecorded artifact collections. By digitizing some of the artifacts, it enables the 3D models to

be shared and studied with other stakeholders, in comparison to how visitors would have to go in

person to see the collections. The Labrador Heritage Museum and the Innu Nation will both

have access to the digitized artifacts and features.

The researcher, the Labrador Heritage Museum and other community museums will

benefit from this partnership because this research outlined procedures and steps to follow when

trying to digitize and document unrecorded artifact collections. The set of criteria proposed and

studied from Chapter 3 could also be both applied to avocationalists and responsible private

collectors who wish to digitize artifacts they encounter or 'their' private collections. In focusing

on cheaper (Heidenberger et al. 2003; Allegra et al. 2016) and more user-friendly (Dilena &

Soressi 2020) 3D scanning technology, it may not guarantee that artifacts are presented in highly

accurate/detailed 3D models. However, it will guarantee that they are stored electronically so

that Indigenous peoples, other community members and researchers can have access to them for

basic presentation and research purposes and be a part of a wider shared heritage or collective

archaeological past.

Professional archaeologists should continue making efforts to collaborate with

responsible private collectors in future community archaeological initiatives and research

projects. Climate change may continue to open more opportunities where archaeologists must

work together with avocationalists and responsible private artifact collectors. It is widely

believed that humans have altered our environment since at least the Late Pleistocene (Rick and

Sandweiss 2020) and with sea levels rising and anthropogenic developments increasing globally,

there is a higher potential for finding material objects from the past. In Atlantic Canada, there

are more frequent instances of non-archaeologists finding exposed artifacts on the ground that

have eroded from their in-situ origin as a result of anthropogenic development or climatic

changes in river and shoreline elevation (Tattrie 2020). There is not enough time, funding, or

archaeologists, to monitor vulnerable archaeological sites from anthropogenic disturbance, looting and coastal erosion (Martens 2017; Hollesen et al. 2018; Dawson et al. 2021).

I do not advocate for non-archaeologists to openly look for artifacts, however, it is my belief that if a member of a descendant community or a non-archaeologist, in general, finds an artifact that is exposed and no longer in a primary setting, what is the harm? I urge caution in the sense that we do not ostracize private collectors or avocationalists. If they were taught to document these artifacts or if they were aware of the heritage legislation set in Canadian provinces and territories, they may be more likely to collaborate with professional archaeologists on documenting their finds. They may eventually report and surrender the artifacts to regulators. More and more archaeologists are recognizing the colonial foundations of our work and are trying to pursue better ways to collaborate with others (Dent 2020). Archaeologists need to continue working together with avocationalists and <u>responsible private collectors</u> on methodological approaches so that their interpretations and discoveries can continue being recognized in archaeology. Taking the approach and proverb of 'many hands make light work' is an ideal outlook on how professional archaeologists need all the help we can get from community institutions and members to responsibly monitor and document archaeological resources. This way, we can keep up with the race against time on climate change and avocationalists and responsible private collectors may help us record and preserve future and existing archaeological material and heritage sites.

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Appendix A:

Images of 3D Models of Tshiashinnu artifacts, fieldwork and laboratory work

Figure 15: On August 19th, 2021, the researcher is seen using low-cost 3D scanning with the iOS application Trnio 3D Scanner. The technology used the front camera of an iPhone XR to produce the 3D model by walking around the Tshiashinnu combustion feature.

Figure 16: Screenshot of a digitally produced 3D model of a Tshiashinnu cache or combustion feature in Area 15 of FjCa-51 in Sheshatshiu, Labrador. The 3D model is viewed in object mode in Trnio 3D Scanner with an iPad 8.

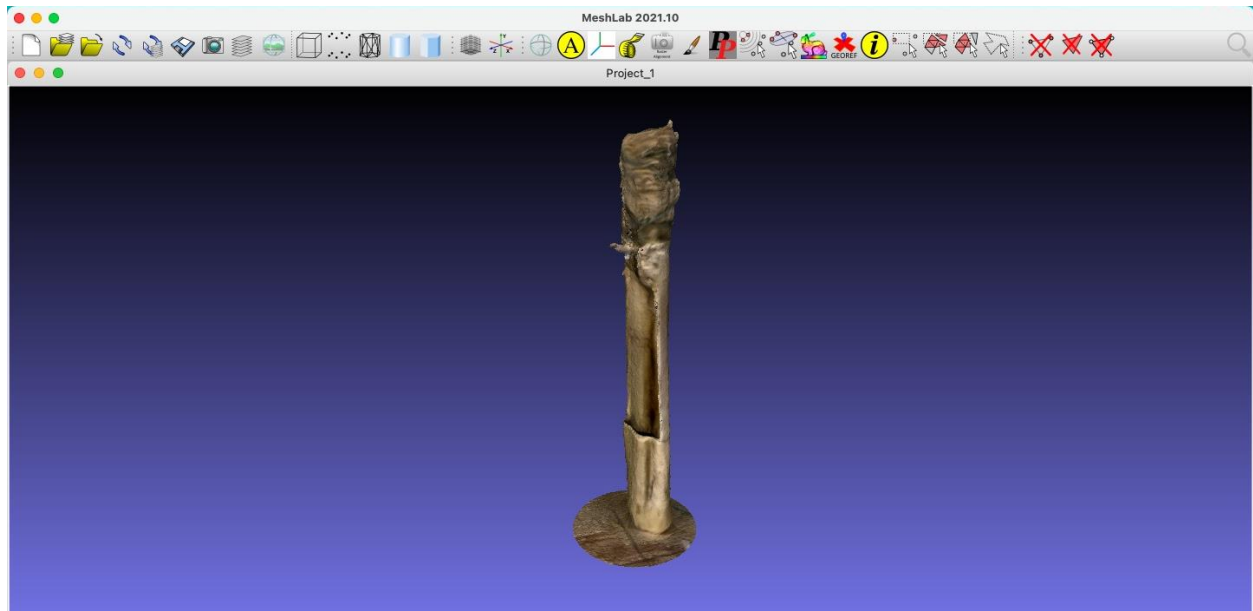**Figure 17: The bone hide scraper in the Labrador Heritage Museum, North West River.**

Figure 18: 3D model of historic bone scraper in the collection of the Labrador Heritage Museum. Created with the researcher's iPad through Trnio 3D Scanner and displayed on MeshLab.
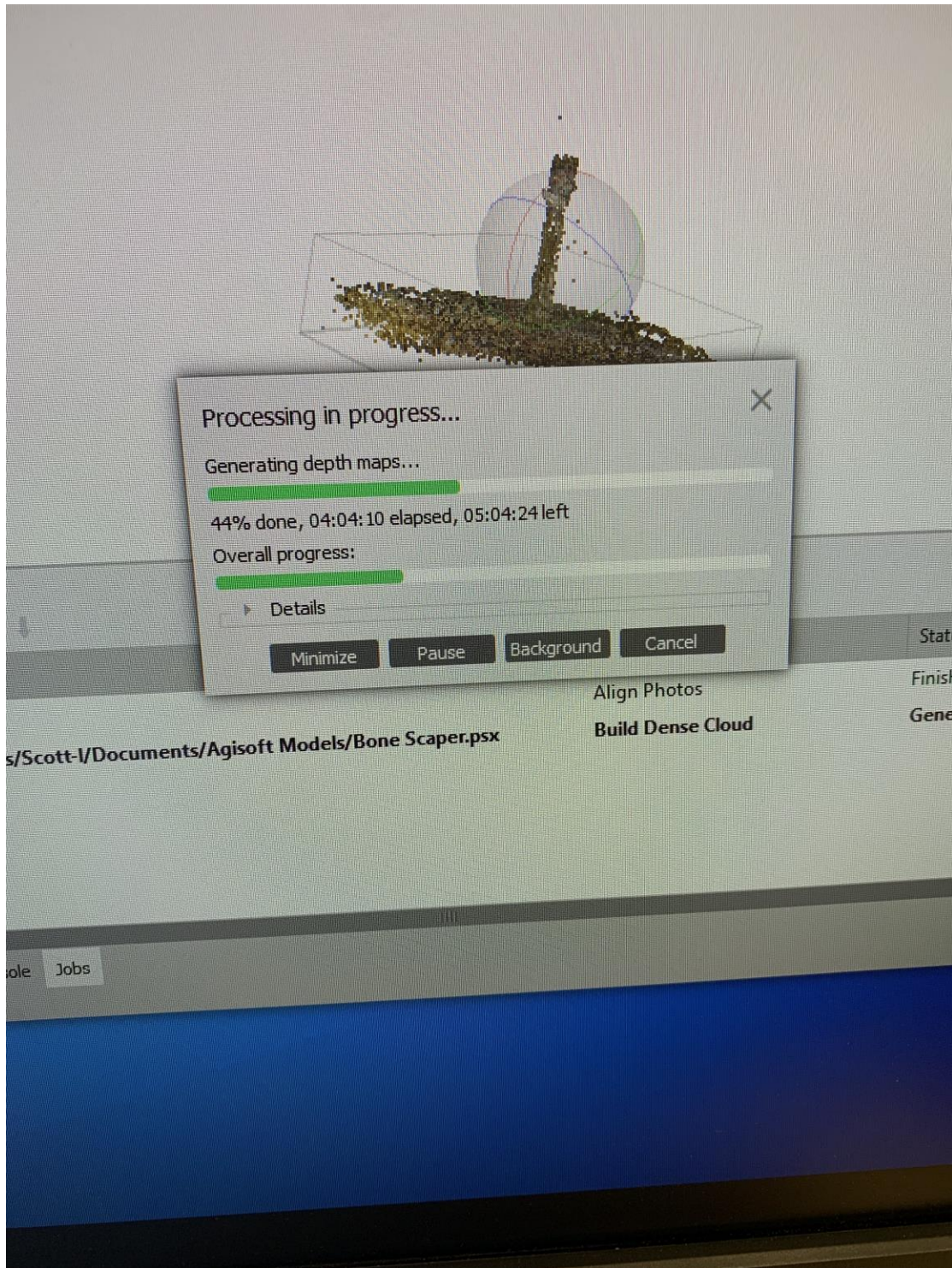
Figure 19: A screenshot of the researcher's DELL computer screen attempting to process a 3D model of a historic bone hide scraper in Agisoft Metashape. The images collected to create the model were done with the DSLR Nikon D5300 camera.
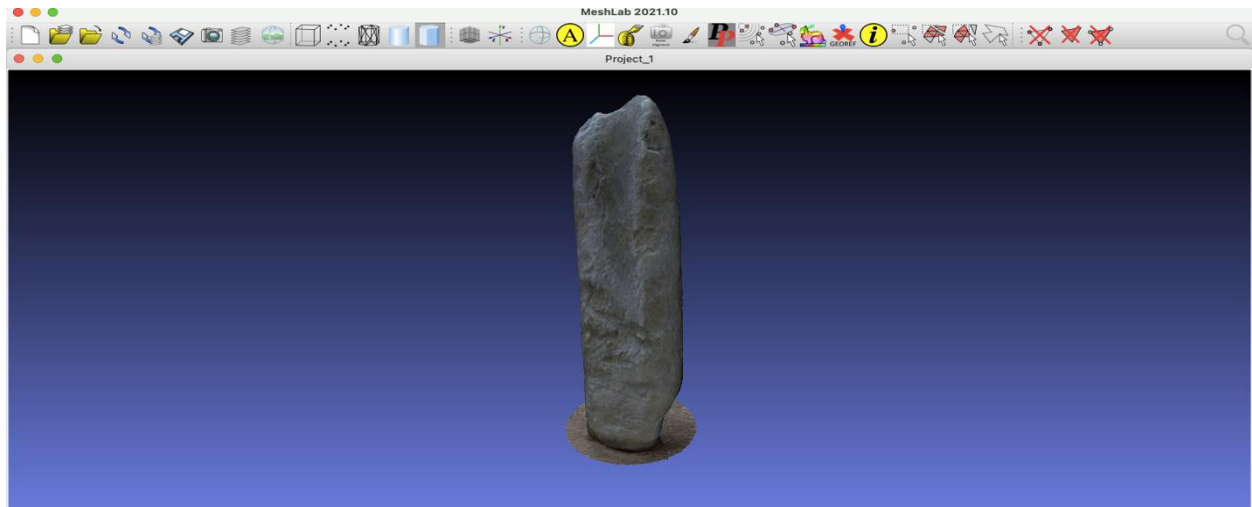
Figure 20: 3D model of a Tshiashinnu ground stone gouge that is interpreted to be 3500-5000 years old. The model was created with the researcher's iPad with Trnio 3D Scanner and is displayed on MeshLab.

Figure 21: The wooden hide scraper on display at the Labrador Heritage Museum in North West River.
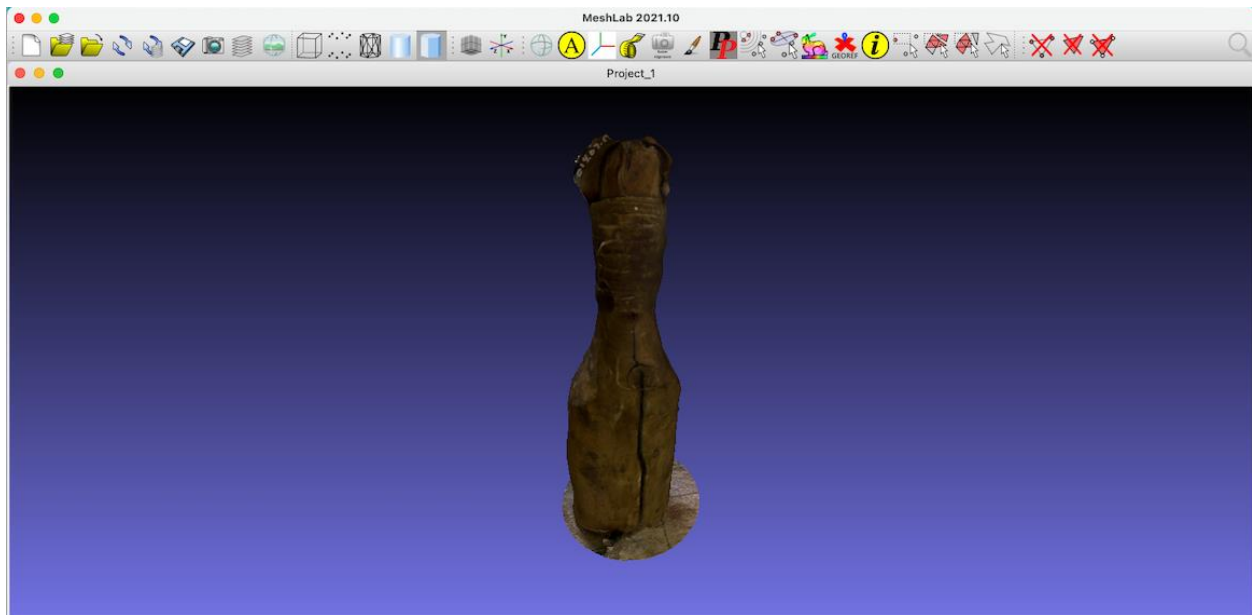
Figure 22: 3D model of a historic wooden hide scraper. The model was created with the researcher's iPhone XR with Trnio 3D Scanner and is displayed in MeshLab.
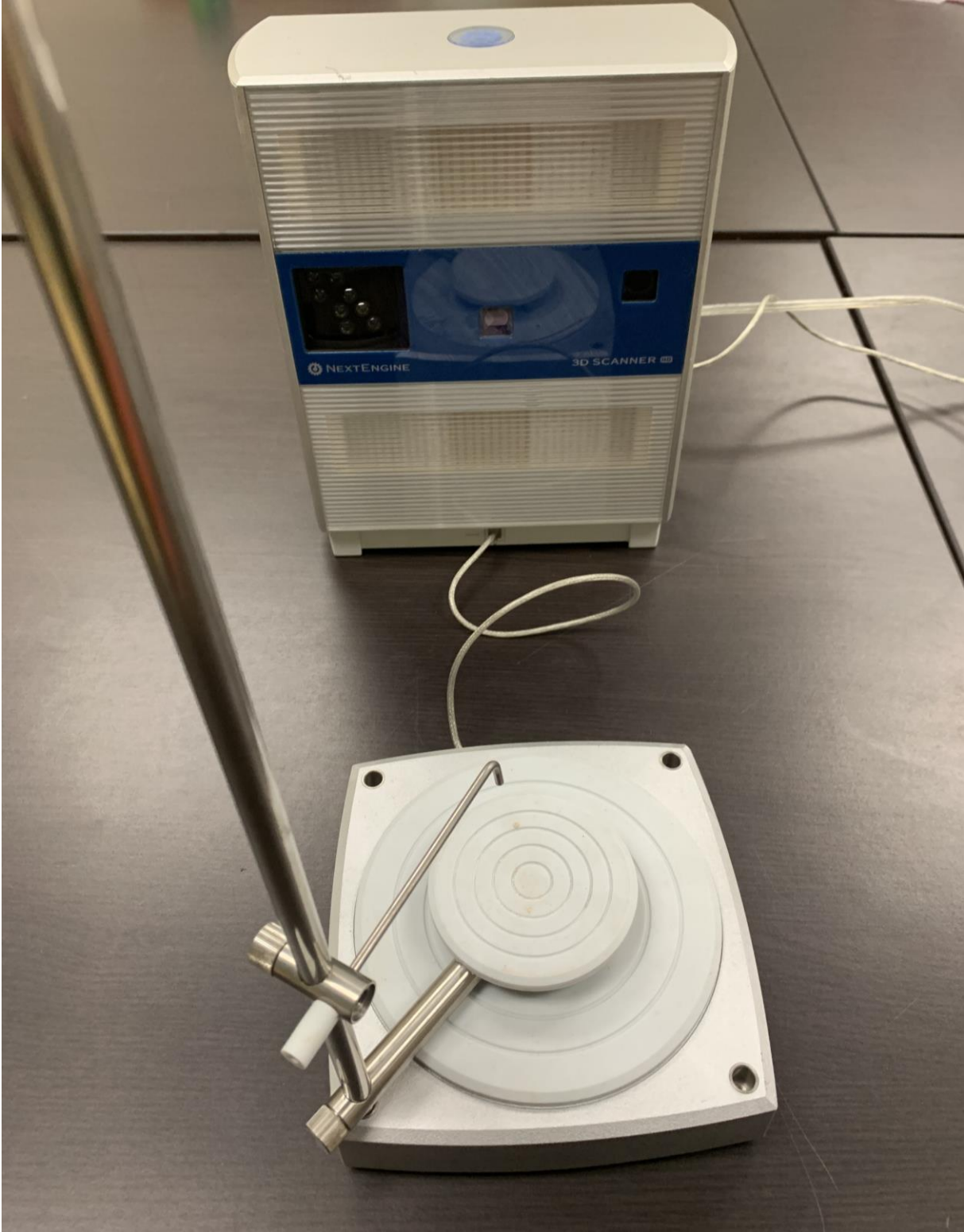
Figure 23: NextEngine 3D Scanner.

Figure 24: Ground stone gouge that is part of the Labrador Heritage Museum collection.

Figure 25: The researcher practicing photogrammetry with the DSLR Nikon D5300 camera. Documenting a combustion feature at FjCa-51, Area 15, Feature Area 3, Sheshatshiu.

Figure 26: The Structure Sensor Mark ii attached to the iPad 8.

Appendix B: SurveyMonkey Exported Statistical Data

Q1 What is your age range?

Answered: 177   Skipped: 0
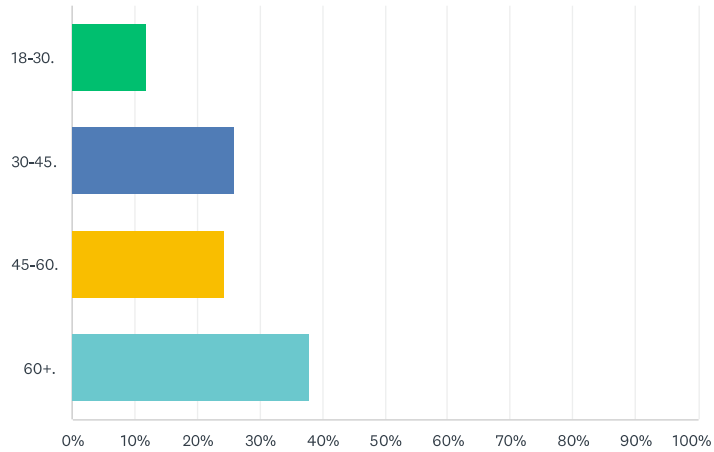
ANSWER CHOICES	RESPONSES	
18-30.	11.86%	21
30-45.	25.99%	46
45-60.	24.29%	43
60+.	37.85%	67
TOTAL		177

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Q2 What gender do you identify as?

Answered: 177   Skipped: 0
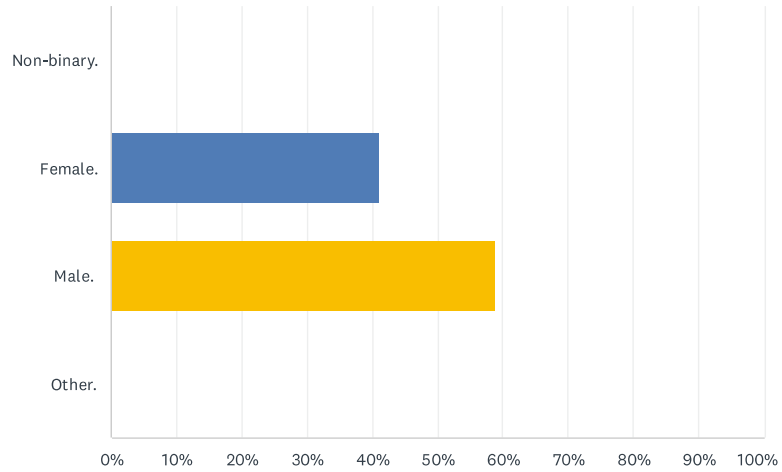
ANSWER CHOICES	RESPONSES	
Non-binary.	0.00%	0
Female.	41.24%	73
Male.	58.76%	104
Other.	0.00%	0
TOTAL		177

Q3 What ethnicity do you identify as?

Answered: 175   Skipped: 2
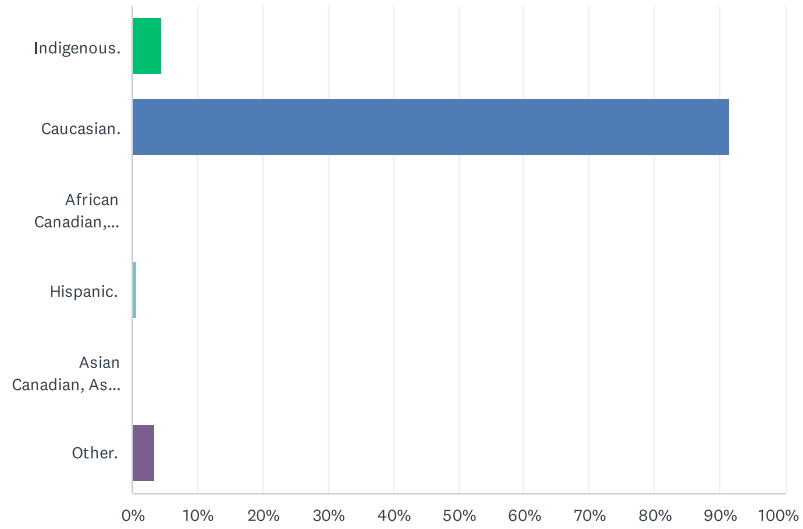
ANSWER CHOICES	RESPONSES	
Indigenous.	4.57%	8
Caucasian.	91.43%	160
African Canadian, African American.	0.00%	0
Hispanic.	0.57%	1
Asian Canadian, Asian American.	0.00%	0
Other.	3.43%	6
TOTAL		175

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Q4 Do you identify yourself as a professional archaeologist?

Answered: 177   Skipped: 0
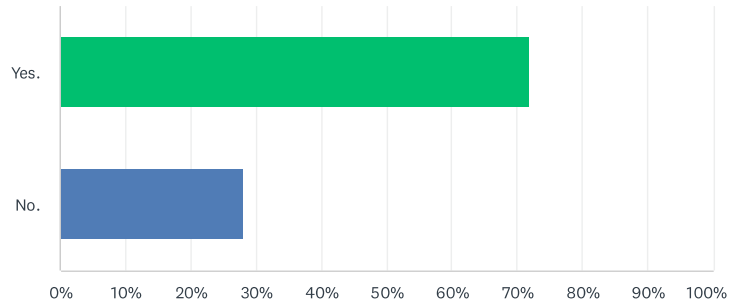
ANSWER CHOICES	RESPONSES	
Yes.	71.75%	127
No.	28.25%	50
TOTAL		177

Q5 If not, what category might you best fit in?
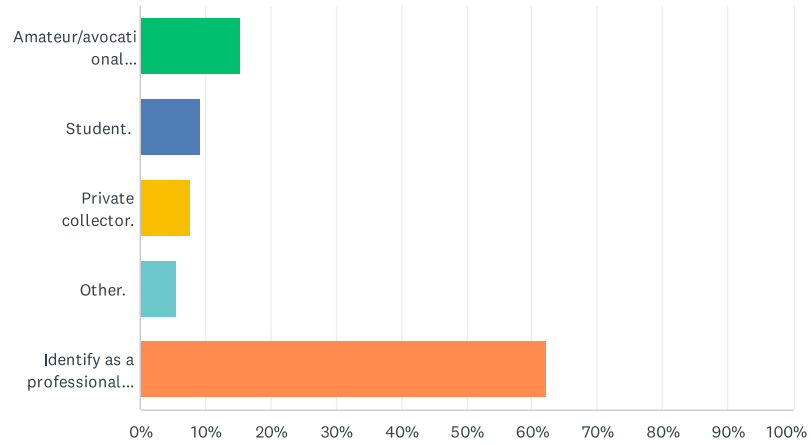
ANSWER CHOICES	RESPONSES	
Amateur/avocational archaeologist.	15.38%	22
Student.	9.09%	13
Private collector.	7.69%	11
Other.	5.59%	8
Identify as a professional archaeologist.	62.24%	89
TOTAL		143

Q6 What is your highest level of education?

Answered: 176   Skipped: 1
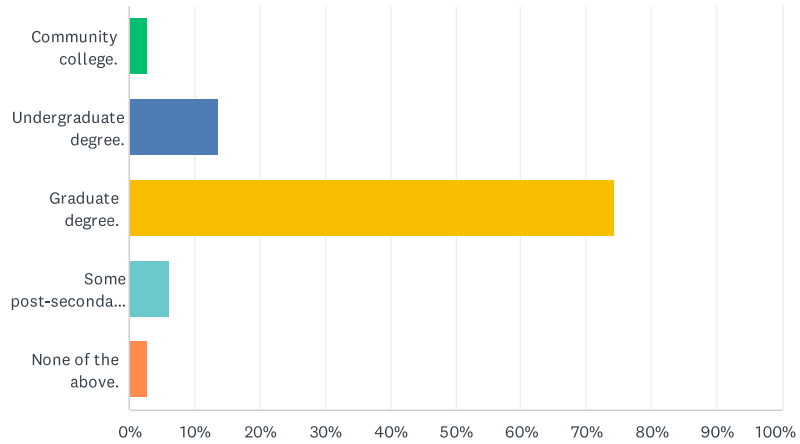
ANSWER CHOICES	RESPONSES	
Community college.	2.84%	5
Undergraduate degree.	13.64%	24
Graduate degree.	74.43%	131
Some post-secondary coursework.	6.25%	11
None of the above.	2.84%	5
TOTAL		176

Q7 If you answered question 6 with answers a, b or c, please specify your degree program below.

Answered: 161   Skipped: 16

ANSWER CHOICES	RESPONSES	
Degree program.	96.27%	155
Did not answer question 6 with answer a, b or c.	4.97%	8

#	DEGREE PROGRAM.	DATE
1	Master of Interdisciplinary Studies	12/16/2021 1:40 PM
2	Masters Anthropology	12/12/2021 11:50 AM
3	BA in Anthropology	12/11/2021 1:29 PM
4	Masters of Anthropology - Archaeology	12/10/2021 10:17 PM
5	Science	12/10/2021 12:22 PM
6	Nautical science	12/10/2021 11:56 AM
7	Masters arts archaeology	12/9/2021 7:59 PM
8	BSC Hotel & Catering Management	12/9/2021 6:45 PM
9	PhD	12/7/2021 12:39 AM
10	PhD in Anthropology with a focus on archaeology	12/2/2021 5:22 PM
11	Ph.D. - Anthropology	12/2/2021 5:09 PM
12	Ph.D.	12/2/2021 10:44 AM
13	Master of Applied Anthropology	11/30/2021 3:31 PM
14	Anthropology MA & PhD	11/30/2021 2:16 PM
15	SAIT 2YR Aircraft Maintenance Eng. Technology	11/30/2021 1:53 PM
16	Masters of Arts in Anthropology - Colorado State Univ	11/29/2021 6:43 PM
17	MPhil	11/29/2021 6:35 PM
18	Geoarchaeology PhD	11/29/2021 5:02 PM
19	Anthropology	11/29/2021 1:50 PM
20	Masters in Anthropology	11/29/2021 11:18 AM
21	University of Missouri, Department of Anthropology	11/28/2021 9:23 PM
22	MA	11/28/2021 8:35 PM
23	MBA	11/28/2021 2:52 PM
24	PHD	11/28/2021 1:12 PM
25	Anthropology, PhD	11/28/2021 12:59 PM
26	Anthropology/Archaeology, FSU, PhD	11/28/2021 11:37 AM
27	PhD in Anthropology (Archaeology)	11/26/2021 8:22 PM
28	B.S. in Education	11/25/2021 10:44 PM

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29	Bachelor in Science in Organizational Leadership	11/25/2021 12:44 PM
30	Medical laboratory scientist	11/24/2021 10:15 PM
31	MA Anthroology	11/24/2021 8:31 PM
32	Masters	11/24/2021 4:21 PM
33	civil engineering	11/24/2021 2:12 PM
34	PhD in Anthropology	11/24/2021 2:06 PM
35	PhD	11/24/2021 1:16 PM
36	Biology	11/24/2021 12:55 PM
37	Anthropology	11/24/2021 12:43 PM
38	Anthropology	11/24/2021 12:23 PM
39	Prehistoric Archaeology	11/24/2021 10:53 AM
40	Ph.D.	11/24/2021 9:49 AM
41	PhD	11/24/2021 9:05 AM
42	Ph.D. Anthropology, University of Kentucky	11/23/2021 11:26 PM
43	PhD in Anthropology	11/23/2021 10:18 PM
44	PhD.	11/23/2021 7:58 PM
45	Anthropology/archaeology	11/23/2021 4:45 PM
46	Master of Arts, University of Arizona, Anthropology	11/23/2021 3:56 PM
47	Masters in Anthropology/Archaeology	11/23/2021 3:24 PM
48	MA	11/23/2021 2:44 PM
49	Masters in Business Administration	11/23/2021 1:59 PM
50	Master's of Anthropology at University	11/23/2021 1:54 PM
51	PhD Anthropology-Archaeology specialization	11/23/2021 1:45 PM
52	MA History	11/23/2021 1:38 PM
53	BA - Anthropology and BA - Geology	11/23/2021 1:02 PM
54	Masters in Anthropology	11/23/2021 11:54 AM
55	MA in Anthropology, Univ of Colorado, Boulder	11/23/2021 11:53 AM
56	Ph.D. Anthropology	11/23/2021 10:56 AM
57	Engineering	11/23/2021 10:51 AM
58	Anthropology	11/23/2021 10:50 AM
59	U California Santa Barbara	11/23/2021 10:37 AM
60	UC Berkeley	11/23/2021 9:42 AM
61	Doctorate	11/23/2021 9:39 AM
62	MA Archaeology and Heritage, University of Leicester	11/23/2021 8:48 AM
63	there is no alpha designation for the responses above, but I have PhD	11/23/2021 12:27 AM
64	Anthropology with Emphasis in Archaeology	11/22/2021 11:45 PM
65	ma	11/22/2021 10:50 PM
66	MD	11/22/2021 9:01 PM

67	History/Anthropology	11/22/2021 8:39 PM
68	Anthropology (archaeology)	11/22/2021 8:30 PM
69	M.A. Anthropology, historical archaeology concentration	11/22/2021 7:38 PM
70	Anthropology	11/22/2021 6:12 PM
71	Ph.D	11/22/2021 5:41 PM
72	Ph.D., Anthropology, UC Berkeley	11/22/2021 5:35 PM
73	Miami university Anthropology degree	11/22/2021 5:23 PM
74	PhD	11/22/2021 4:48 PM
75	Anhropology	11/22/2021 4:47 PM
76	UCLA Anthropology	11/22/2021 4:45 PM
77	Ph.D. Anthropology (archaeology specialization)	11/22/2021 4:42 PM
78	PhD	11/22/2021 4:17 PM
79	PhD in Archaeology	11/22/2021 4:14 PM
80	PhD	11/22/2021 4:12 PM
81	MA Anthropology received, PhD Anthropology in Progress	11/22/2021 4:11 PM
82	Anthropology/Archaeology	11/22/2021 3:53 PM
83	MA, Art History	11/22/2021 3:27 PM
84	Masters degree in Anthropology	11/22/2021 3:12 PM
85	MA and MBA	11/22/2021 2:57 PM
86	Master's	11/22/2021 2:53 PM
87	Ph.D.	11/22/2021 2:45 PM
88	Masters degree	11/22/2021 2:41 PM
89	Anthropology, MA	11/22/2021 2:37 PM
90	PhD	11/22/2021 2:24 PM
91	M.A.	11/22/2021 2:21 PM
92	PhD in Anthropology	11/22/2021 2:03 PM
93	PhD in Anthropology/archaeology	11/22/2021 1:59 PM
94	Archaeology, PhD	11/22/2021 1:56 PM
95	Phd underway in anthropology dept at Univ at Albany, SUNY	11/22/2021 1:53 PM
96	PhD	11/22/2021 1:52 PM
97	MA in Anthropology	11/22/2021 1:52 PM
98	Anthropology	11/22/2021 1:51 PM
99	Master of Arts, Anthropology, Georgia State University	11/22/2021 1:50 PM
100	Estudios Mesoamericanos	11/22/2021 1:48 PM
101	Dept of Anth, Southern Illinois University Carbondale	11/22/2021 1:48 PM
102	PhD	11/22/2021 1:47 PM
103	MBA, LSU. Religious studies BA	11/22/2021 1:46 PM
104	History	11/22/2021 1:38 PM

| 105	PhD, University of Kentucky Anthropology	11/22/2021 1:28 PM
106	Anthropology	11/22/2021 1:27 PM
107	M.A. in Archaeology	11/22/2021 1:26 PM
108	Anthropology, PhD	11/22/2021 1:26 PM
109	BS in Anthropology	11/22/2021 1:23 PM
110	Ma, current phd candidate	11/22/2021 1:22 PM
111	PhD Program, have a MS	11/22/2021 1:21 PM
112	Masters Degree, The College of William & Mary	11/22/2021 1:18 PM
113	Masters	11/22/2021 1:18 PM
114	PhD	11/22/2021 1:15 PM
115	Ph.D in anthropology	11/22/2021 1:10 PM
116	PhD	11/22/2021 1:10 PM
117	PhD	11/22/2021 1:09 PM
118	PhD in Archaeology	11/22/2021 3:51 AM
119	MD, FRCSC	11/16/2021 10:45 PM
120	PhD	11/15/2021 7:18 PM
121	MA	11/14/2021 8:39 AM
122	BA Archaeology	11/12/2021 3:53 PM
123	anthropology	11/12/2021 3:07 PM
124	Anthropology	11/12/2021 2:30 PM
125	Master's	11/12/2021 12:36 PM
126	MA	11/12/2021 11:07 AM
127	Masters	11/12/2021 8:14 AM
128	BSc. Archaeology; BSc. Geography	11/6/2021 10:16 AM
129	Undergraduate	11/5/2021 2:31 PM
130	MSc Archaeological Sciences, currently PhD candidate Geological Sciences	11/5/2021 1:19 PM
131	Bach. of Arts	11/5/2021 1:06 PM
132	Master of Arts	11/3/2021 5:06 PM
133	PhD candidate	11/3/2021 9:08 AM
134	BA	11/2/2021 2:58 PM
135	Masters Archaeology	11/1/2021 1:44 PM
136	Master of Arts	11/1/2021 1:39 PM
137	Surveying Technology	11/1/2021 12:39 PM
138	MA Anthropology	11/1/2021 11:28 AM
139	PhD	11/1/2021 10:57 AM
140	Masters of Arts Cultural Resource management	11/1/2021 9:56 AM
141	Honors BSc Archaeology	11/1/2021 9:25 AM
142	Honours - Bachelors of Arts Degree - Archaeology	10/27/2021 6:40 PM

143	Bachelor of Arts	10/26/2021 3:41 PM
144	PhD	10/26/2021 12:15 PM
145	Ph.D (Archaeology)	10/26/2021 10:56 AM
146	PhD in Anthropology	10/26/2021 10:10 AM
147	BA Archaeology	10/26/2021 6:30 AM
148	Ph.D.	10/26/2021 2:18 AM
149	Archaeology and Heritage MA	10/25/2021 11:44 PM
150	PhD candidate	10/25/2021 9:37 PM
151	Aboriginal Bridging	10/25/2021 9:33 PM
152	Currently doing a PhD	10/25/2021 9:30 PM
153	Multidisciplinary (northern environments & cultures)	10/25/2021 8:54 PM
154	PhD	10/24/2021 2:58 PM
155	Archaeology	10/18/2021 10:19 PM
#	**DID NOT ANSWER QUESTION 6 WITH ANSWER A, B OR C.**	**DATE**
1	Master of Arts	11/28/2021 11:14 PM
2	Social Work/Economic Development/Tourism/Hotel Mangement	11/28/2021 5:33 PM
3	Masters in Soil Science	11/23/2021 1:59 PM
4	Anthropology, archaeology emphasis	11/22/2021 6:59 PM
5	General coursework at several institutions. No degree.	11/22/2021 3:10 PM
6	Electronic engineering technologies	11/2/2021 12:31 PM
7	NA	11/1/2021 9:25 AM
8	Archaeology	10/25/2021 10:07 PM

# Q8 If you identify yourself as an archaeologist, where do you conduct archaeological fieldwork/research?

Answered: 165   Skipped: 12
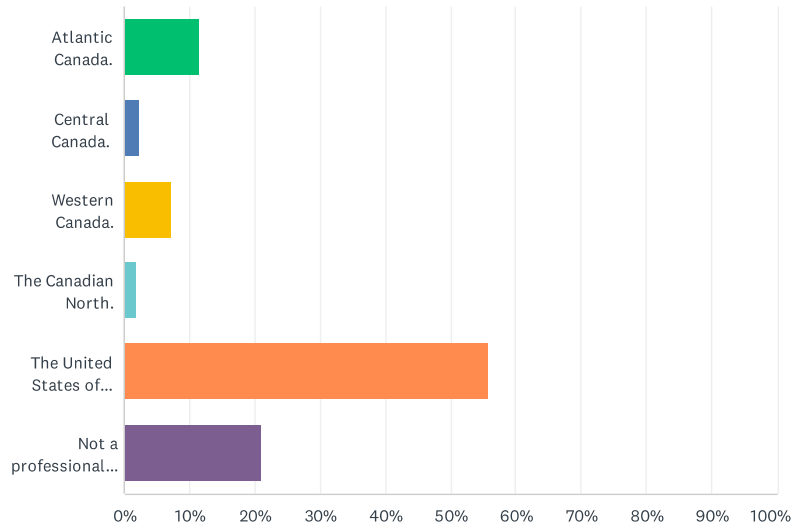
ANSWER CHOICES	RESPONSES	
Atlantic Canada.	11.52%	19
Central Canada.	2.42%	4
Western Canada.	7.27%	12
The Canadian North.	1.82%	3
The United States of America.	55.76%	92
Not a professional archaeologist.	21.21%	35
TOTAL		165

Q9 If you are not a professional archaeologist, where do you study, work, engage in the collection of artifacts or take interest in archaeology?
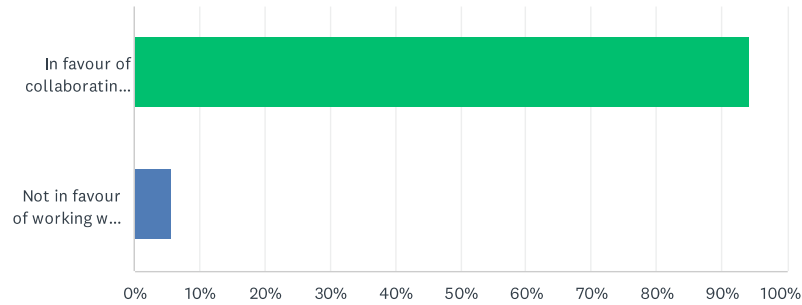
Answered: 138   Skipped: 39
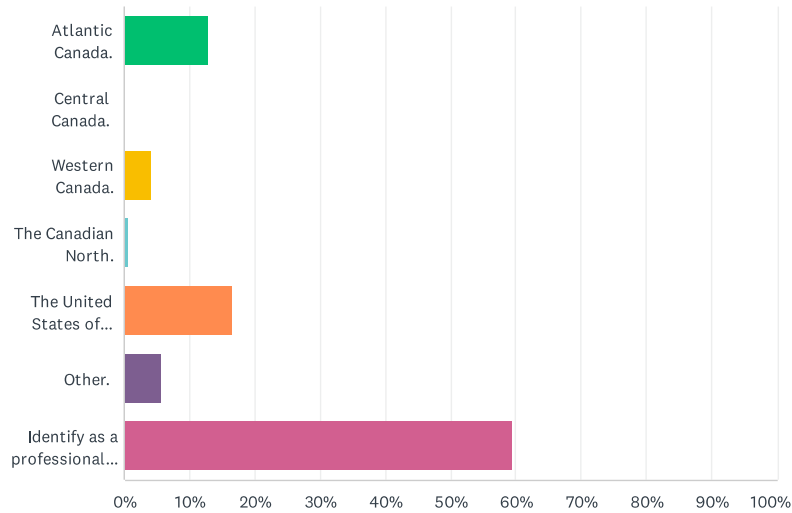
ANSWER CHOICES	RESPONSES	
Atlantic Canada.	13.04%	18
Central Canada.	0.00%	0
Western Canada.	4.35%	6
The Canadian North.	0.72%	1
The United States of America.	16.67%	23
Other.	5.80%	8
Identify as a professional archaeologist.	59.42%	82
TOTAL		138

Q10 What are your opinions surrounding the collaboration with private collectors and documenting their private collections?
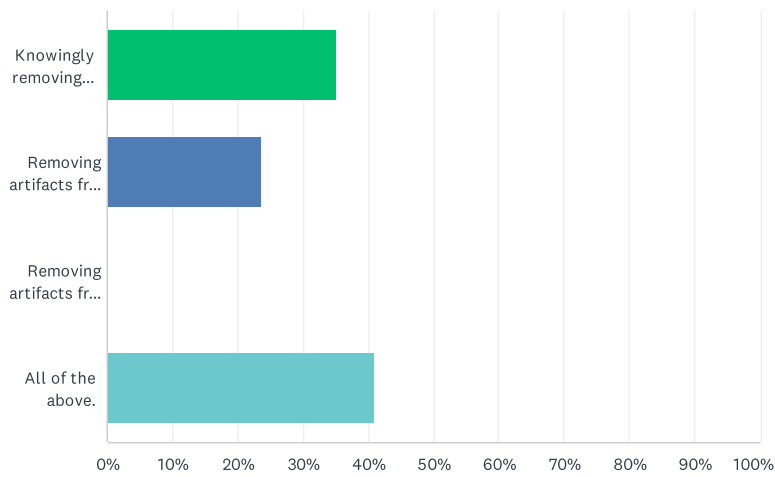
Answered: 174   Skipped: 3

ANSWER CHOICES	RESPONSES	
In favour of collaborating with responsible private collectors and their private collections.	94.25%	164
Not in favour of working with private collectors and their private collections.	5.75%	10
TOTAL		174

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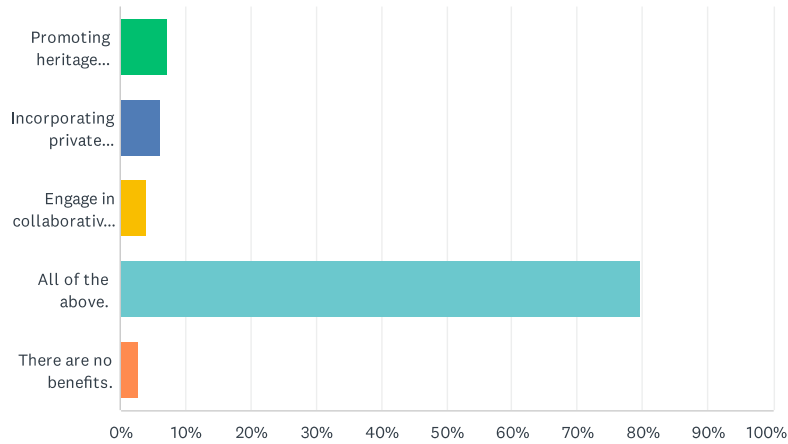
Q11 How would you define looting archaeological materials?

Answered: 173   Skipped: 4

ANSWER CHOICES	RESPONSES	
Knowingly removing cultural materials from registered archaeological or heritage sites in Provincial, State, Federal or Indigenous parks and other jurisdictions.	35.26%	61
Removing artifacts from their place of origin and not reporting your findings to an archaeological provincial/territorial/state regulator or the local jurisdiction.	23.70%	41
Removing artifacts from find spots that have possibly been disturbed from erosion or human development and are at risk of being lost and then reporting your findings.	0.00%	0
All of the above.	41.04%	71
TOTAL		173

Q12 What benefits do you believe there are in interacting with responsible private collectors?
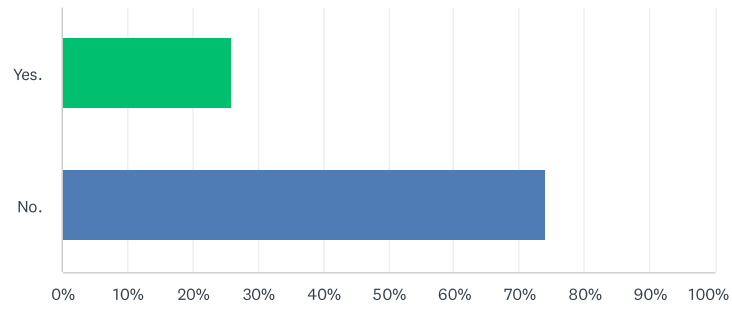
Answered: 177   Skipped: 0

ANSWER CHOICES	RESPONSES	
Promoting heritage stewardship.	7.34%	13
Incorporating private collectors into archaeological methodology or interpretation.	6.21%	11
Engage in collaborative participatory-based projects regarding the monitoring of archaeological and heritage sites.	3.95%	7
All of the above.	79.66%	141
There are no benefits.	2.82%	5
TOTAL		177

Q13 Are you in the possession of a private artifact collection?

Answered: 177   Skipped: 0

ANSWER CHOICES	RESPONSES	
Yes.	25.99%	46
No.	74.01%	131
TOTAL		177

Q14 What have you done/would you do if you come across archaeological materials?

Answered: 176   Skipped: 1

ANSWER CHOICES	RESPONSES	
Report your findings to the appropriate provincial/territorial/state archaeological regulator or appropriate jurisdiction.	62.50%	110
Leave it there.	18.75%	33
Remove artifact due to potential loss from natural elements or human development, and then report your findings.	14.20%	25
Remove artifact and keep it in your possession.	4.55%	8
TOTAL		176

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