

MEANING IS IN THE MAKING: A RELATIONAL ANALYSIS OF
GROUND STONE BELONGINGS ON THE LOWER COLUMBIA RIVER

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ABSTRACT

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Archaeologists often study Indigenous artifacts or belongings as static objects of classification, comparison, and interpretation often emphasizing style, form, and typology. This dissertation approached Lower Columbia River belongings as relational material culture that carried connections among past and present makers, materials, and technologies. With particular attention to ground stone production processes and carving traditions from the Lower Columbia River region (1000BC – AD 1875), this project asks: How can collaborative, low-impact archaeological methods document, renew, and extend relationships among people, practices, and places important to Grand Ronde history and culture? In doing so, this dissertation demonstrates that legacy collections remain important sites of archaeological research when approached through relational methods and with accountability to the communities and relationships that give those belongings meaning.

In partnership with cultural advisors from the Confederated Tribes of Grand Ronde Cultural Resources Department (CTGR), this research prioritized CTGR's generations of lived knowledge and community guidance into the study and curation of Tribal belongings.

Employing a low-impact research design and digital imaging techniques such as multispectral photography and reflectance transformation imaging, these methods provided a framework for reassociating surface modifications on ground stone with systemic and lived contemporary practices.

Drawing from Black Feminist and Indigenous scholarship, this dissertation used intersectionality and relationality as critical paradigms for examining belongings and interrogating archaeological practice. These approaches revealed how race, gender, and coloniality shape what was collected, how it was interpreted, and the connections to lived experiences today. This research treats belongings as living relations and active archives, envisioning a future grounded in responsibility to our communities, land, and collective liberation.

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"Solidarity is not inevitable; it requires intensive labor, intentional compassion, and love."

—*Dr. Kyle T. Mays*

DATA AVAILABILITY STATEMENT

The data used in this research was collected by Yoli Ngandali and various youth interns, Chachalu staff, and/or cultural advisors at the Confederated Tribes of Grand Ronde Cultural Resources Department. The base material and knowledge contributed by staff and cultural advisors are their own. Analysis and assertions are mine. Seek concurrence with the Tribe on any future analyses from these data. These data are potentially confidential due to its possible sensitive and ceremonial nature and therefore not available to the general public. Do not distribute, replicate, or use the images or data without mine and the Confederated Tribes of Grand Ronde Historic Preservation Office's written permission. To access these data please contact the Cultural Resources Department at chachalu@grandronde.org to submit a research request.

Dedicated to the people who see the positive, negative, and in-between spaces.

CHAPTER 1: *Legacy Archaeology*: A Call and Response to Action

“Let anthropology burn”. Black Lives Matter. #LandBack. Honor Missing and Murdered Indigenous Women (MMIW). This manuscript begins by naming the broader intellectual, ethical, and political commitments that shaped the questions, methods, and responsibilities of this work (BLM 2020; Flewellen et al. 2021; Ike et al. 2020; Jobson et al. 2020). These calls to action frame the conditions in which this research developed. These broader movements name long-standing demands for accountability, justice, repair, and transformation, including accountability to Black communities and intellectual traditions (Battle-Baptiste 2011; Franklin et al. 2020), the return of land, belongings, and knowledges (Tuck and Yang 2012), and justice for missing and murdered Indigenous women, girls, and Two-Spirit people (Million 2013; Lucchesi and Echo-Hawk 2018). In archaeology, these calls matter because the discipline has long shaped what gets remembered, collected, interpreted, and carried forward, which means our work must be socially justice-minded and accountable to Indigenous lands, collections, and the histories of descendant communities (Atalay 2006).

This introduction takes the form of a call and response, drawing from Black intellectual, musical, spiritual, and political traditions in which knowledge emerges through an exchange (Smitherman 1977; Wu and Yang 2013). Each call asks a simple question, and each response explains how this dissertation answers the call.

Call: What do we want?

Response: Accountability, justice, and redress.

Scholarship cannot continue as objectively separate from the worlds and cultures it studies. These movements demand accountability, and from an academic lens we have the ability to interrogate institutions built through dispossession, gendered and racialized violence, and the extraction of land, labor, bodies, and belongings (Ike 2024; Laluk et al. 2022; Thompson and Marek-Martinez 2021). Archaeology is entangled with these historical and contemporary traumas. It has helped produce collections, archives, classifications, and interpretations that continue to shape how Indigenous histories are remembered, accessed, and returned (Alexander 2006; Casey 2004; Colwell and Ferguson 2006) As Alexandra Warwick argues in “The Dreams of Archaeology” (2012) “...archaeology is not the simple recovery and understanding of the past, but the negotiation of objects into the present and the simultaneous negotiation of that present itself” (94). This dissertation begins from that premise, advocating for new ways to work with inherited collections, or legacy data alongside Indigenous communities.

This dissertation examines how we learn from stones and how meaning-making emerges beyond conventional archaeological interpretation. I focus on Lower Columbia River carved stones dating from approximately 1000 BC to AD 1875. I argue that these stone belongings continue to teach through traces of making, movement, interruption, and renewal. I use the term “belongings” instead of “artifacts” or “objects” because these materials remain connected to living people, ancestors, families, places, and responsibilities. This language shifts the focus from passive objects of study to tangible cultural materials with ongoing meaning as social and cultural agents, sources of information, and sources of healing for tribes (Gonzalez et al. 2018).

By drawing on tangible and intangible connections to Oregon and Grand Ronde histories, this dissertation develops a framework in which meaning-making emerges through relationships among people, places, and practices specific to the co-collaborators in the project. In this sense, *Meaning is in the Making* carries a double meaning. It refers to the production processes through which belongings were created, altered, circulated, and collected, as well as to the ongoing process of producing knowledge. This dissertation does not present a universal model for legacy collections in archaeology. It offers a situated and generative exploration of how archaeological practice can support cultural, artistic, and academic knowledge-making while opening new possibilities for collections research affected by removal, archival gaps, and uneven documentation (Mihsuah and Wilson 2004).

The stakes of this research connect to broader efforts in Black and Indigenous archaeologies to reshape archaeological practice and support Tribal sovereignty and community collaboration (Atalay 2006; Flewellen et al. 2021; Lippert 1997, 2008; Watkins 2000). The outcomes of this research are to share information learned from collections, develop strategies to reclaim and reinterpret these knowledges within a living context, and bring ancestral knowledge forward in time for its continued practice. This dissertation also offers principal investigators and museum curators an example of how to collaboratively engage legacy collections in ways that prioritize reconnection, care, and knowledge return extending beyond a NAGPRA strategy (Atalay 2019).

Call: What is the problem?

Response: Historical and contemporary harms.

Anthropology, and archaeology by extension, developed within settler colonialism and remains entangled with it. Mishuana Goeman (2011) describes settler colonialism as an ongoing occupation of Indigenous land, one that people continually picture, monumentalize, and enforce through the containment of Indigenous bodies and the glorification of a colonial past.

Anthropological research contributed to settler occupation through the production and circulation of racialized social hierarchies. These legacies continue to influence scholarship and institutional practice today (Deloria 1998; Marek-Martinez 2021; Simpson 2014).

Recent scholarship, including calls to “let anthropology burn”, reflects a growing recognition that anthropology and its subfields must confront these histories in order to expand the methodological and ethical foundations of practice. These calls further emphasize the need to critically examine how archaeological research design, field practice, and writing construct understandings of the past while making explicit our various roles in knowledge production (Acebo et al 2025; Warren and Barnes 2018; Colwell 2017; Franklin and McKee 2004; Joyce 2002; LaRoche 2011; Todd 2016; Tuck and Yang 2012). These movements, alongside social justice initiatives aimed at “un-disciplining” the field, align with Frantz Fanon’s (1952) concept of “collective catharsis,” which describes a process in which suppressed anger and emotion are expressed outwardly as a necessary release of accumulated structural violence and aggression (112).

Call: How do we answer these harms?

Response: Black and Indigenous interventions.

I use Black and Indigenous scholarship as intellectual and methodological tools for reshaping archaeological inquiry, research design, interpretation, and accountability. Cross-pollination among archaeology, Indigenous Studies, Black and Africana Studies, and other critical historical studies contributes to this process by reshaping archaeological inquiry through interdisciplinary engagement (Haber 2012; Joyce 2021; Laluk 2021; Schneider and Hayes 2020). The intentional incorporation of contemporary movements, including Black Lives Matter, #LandBack, and advocacy for Missing and Murdered Indigenous Women, into anthropological scholarship functions as a shared collective catharsis and sociopolitical expression, contributing to emerging discourses of historical reckoning that expose anthropology's colonial and exclusionary tendencies (Acebo et al. 2025).

Within this context, activist praxis in archaeology is a way of “doing science” that critiques the process of knowledge production while reclaiming it as rigorous and socially accountable scholarship (Atalay et al. 2016; Franklin 2001). The inclusion of Black diasporic scholarship, particularly Black feminist frameworks, extends this intervention by articulating an anti-racist archaeological praxis attentive to the interconnections among systems of oppression (Battle-Baptiste 2011; Collins 2000; Combahee River Collective 1982; Flewellen et al. 2021; Franklin and McKee 2004; Fryer and Raczek 2020; Hartman 2008; Sharpe 2016).

Although Black communities are not the focus of this study, Black feminist scholarship remains essential, offering critical frameworks that I argue should be engaged across mainstream archaeological research regardless of project scope. These initiatives and commitments continue

to shape the conditions that oriented this research, and I expand upon them in subsequent chapters.

Call: What do we do?

Response: Practice repair with Legacy Archaeology.

Archaeology and museum studies now face a curatorial crisis, increased repatriation responsibilities, ethical limits to excavation, and the ongoing need for Tribal consultation (Atalay 2020b; Daehnke 2017; Dumont 2021; Lippert 2008; Modzelewski 2012). These conditions make collections-based research increasingly necessary, especially when inherited collections require renewed documentation, care, and accountability to descendant communities (Frieman 2018). As a decolonial approach to building inter-intellectual futures, I present *Legacy Archaeology*. This approach reframes museum collections spaces as potential sites of ongoing research, resistance, and relationship-building. *Legacy Archaeology* asks archaeologists to refine and operationalize existing data, archives, and collections with humility, technical care, and relational responsibility. I designate these fragmented archives, museum collections, technical data, and community knowledges as resources that carry histories of harm as well as possibilities for redress.

I argue that museum collections are active sites of relation, memory, dispossession, repair, and possibility (Alivizatou 2012; Haakanson & Steffian 2010; Simpson 2018). The carved stone belongings examined in this dissertation carry histories of stone procurement, carving, use, deposition, dispossession, collection, curation, interpretation, and contemporary engagement. This project challenges the assumption that collections with undefined archaeological context or

provenience are analytically limited or unsuitable for archaeological study. Instead, this dissertation reconstructs, expands, and reactivates archaeological context into relational context through object life histories, collaborative interpretation, archival research, and technical imaging.

Call: How do we do it?

Response: With collaboration and care.

This project approached culture as something practiced, present, and living (Dean and Levi 2003; Haakanson et al. 2021). I examined the life histories of stone belongings from the Lower Columbia River and demonstrated how relational contexts were generated through collaborative research design and low-impact material analyses. In recognizing that archaeology contributed to the extraction and displacement of cultural belongings, this project intentionally engaged legacy collections to trace histories of removal and rebuild relational contexts in collaboration with the Confederated Tribes of Grand Ronde Cultural Resources Department (CTGR). Relational context required careful attention to how these belongings and archives were made, who they continue to affect, and how they may still support reconnection when approached with care. Through collaborative, low-impact archaeological methods, this project examined those histories while remaining accountable to Tribal authority, community knowledge, and the limits of what should be studied, photographed, interpreted, or published.

Call: Who am I?

Response: A guest, collaborator, and accomplice.

In order for me to go forth and do this research in a good way, I am taking this time to formally introduce myself, so you know who I am and where I come from. “In a good way” is an expression used by many Indigenous communities to denote a decolonized research agenda that honors tradition and multiple ways of knowing while acting with intention and respect (Gordan et al. 2025; Marek-Martinez and Gonzalez 2023; Rosebrough et al. 2017; Tuck and Yang 2021). My name is Yolona Helene Ngandali, a member of the Ngbaka Tribe from the Democratic Republic of Congo (DRC). I am of mixed Congolese and Scandinavian heritage. As of the writing of this dissertation, due to several cultural, economic, and political factors in my own life, as well as in my home community, I do not yet have the privilege of working with my own Ngbaka community on an archaeological project. I expect that to shift in the future.

However, I have developed long-term relationships and research partnerships with artists and community members at the Confederated Tribes of Grand Ronde (CTGR), and I approach this work as a guest and a lifelong learner. As a person who is not a Tribal member, I acknowledge my positionality and approach this work as an independent researcher and collaborator. I do not serve as a representative or interpreter of Grand Ronde knowledge systems. While this work was collaborative, what I present in this dissertation is not intended to interpret the cultural significance of Grand Ronde belongings or practices. All determinations of cultural importance or significance are the sole determination of the CTGR Cultural Resources Department. Instead, this research focuses on the manufacturing processes and historiographical contexts of ground stone, recognizing that cultural meaning and interpretation are sustained through community knowledge and protocol (Aluli-Meyer 2008). Anthropologists should not claim ownership of the knowledge we collect; we are caretakers and knowledge keepers for a

moment, yet we have a responsibility to share and expand that knowledge into a living context alongside communities (Haakanson 2018; Kretzler 2019).

In Ngbaka knowledge systems, decision-making is collective. This framework informed my approach to collaboration. We never make decisions alone. Like many Tribes and communities across the African Diaspora, decisions are made through consultation with ancestors, elders, youth, and adults as part of an intergenerational decision-making process (Morrison 1984). As a guest to Grand Ronde, I actively work to participate in, co-theorize, and co-create meaningful work alongside Grand Ronde. In doing this research, I prioritize local knowledge practices while also activating the power of global Black diasporic and Indigenous knowledge systems.

As a mixed-Black femme-presenting person, I also locate this research within traditions of solidarity activism and accomplice praxis (Barton 2021; Franklin et al. 2020). Feminist scholarship has long argued that personal and political standpoints shape knowledge production. TallBear (2017) emphasized that scholarship is strengthened through relational solidarity. This work required attention to how knowledge was produced, with whom, and what forms of accountability it required. As hooks and West (1991) note, “When intellectual work emerges out of the needs of the people, it brings us into greater solidarity and community” (164). This breaking bread model encourages a practice of sharing in the everyday ways people come together to participate in life’s moments and create new experiences grounded in compassion, acceptance, empathy, and understanding (hooks and West 1991). This framework demonstrates my intervention into the in-between spaces and intersections of art, historical struggle, and liberation. This dissertation functions as an emergent intellectual and methodological contribution to the ideological and material recalibration of archaeological practice. Coming

together in dialogical and intellectual form, we, as accomplices, have the opportunity to engage in relationality building and solidarity with the goal of collective liberation (Indigenous Action 2014; King et al. 2020).

Call: How is this manuscript structured?

Response: As a relational analysis.

In Chapter 2, I establish the ethnographic and archaeological conditions through which the Cultural Heritage Imaging Project emerged. I introduce the Confederated Tribes of Grand Ronde, the Chinookan Art Style, the colonial histories of the project, and the research questions that shaped this dissertation.

In Chapter 3, I draw from Indigenous, Black feminist, and Black diasporic intellectual traditions to highlight shared commitments to refusing colonial notions of reality, knowledge production, and material interpretation. I examine how tangible and intangible cultural heritage shape understandings of belongings as extensions of place-based cultural landscapes. These frameworks situate this dissertation within broader political and intellectual movements. I further develop a multitemporal and intersectional approach to material culture to better understand why archaeology must expand its concepts of agency, place, materiality, and context. The chapter concludes by introducing *Legacy Archaeology* as a restorative research model for working with inherited collections while remaining accountable to descendant communities, anti-racist commitments, and the ongoing tangible and intangible responsibilities of collections-based research.

Chapter 4 presents the results of applying low-impact methods to carved stone belongings from the Wapato Valley. I focus on how surface modifications document stone production, artistic tradition, and histories of movement and curation. I argue that multispectral imaging has the potential to become a standard practice for use-wear analyses and other forms of field and lab analysis.

Chapter 5 expands on these results through a relational analysis of stone from the Columbia River. I offer a situated and generative exploration of the life histories of stones affected by removal, archival gaps, and uneven documentation. Drawing from Black and Indigenous scholarship, I highlight instances of movement, use, and reuse from archaeological, archival, and community knowledge to re-story the archive.

Call: What terminology guides this work?

Response: Language grounded in relation, responsibility, and care.

- I. Throughout this manuscript, I use the term Indigenous peoples. I capitalize Indigenous to acknowledge nationhood and international recognition as a political status (UN 2007). When possible, I use specific Tribal names to reflect distinct cultural and historical identities. I use indigenous, as in indigenous archaeologies, when referring to methodological and theoretical frameworks, as well as to people or plants indigenous to an area (Smith and Wobst 2005a:14).
- II. The stand-alone term “art” is a complicated and historically embedded term that I try to avoid. Instead, I use Chinookan Art Style as a specialized form of knowledge and technology that articulates tangible and intangible practices specific to practitioners of the

style.

- III. Other people may use different terms or use “Columbia River Style” and “Chinookan Style” interchangeably, but for consistency I use Chinookan Style or Chinookan Art Style, following a suggestion raised by Bobby Mercier during the 2019 Artist’s Summit (Appendix B).
- IV. I use the term belongings or cultural belongings in lieu of “artifacts” or “objects” as an intentional ontological shift in the perception of cultural heritage. “Artifacts” are often framed as materials of the past, while belongings hold the status of tangible living materials important to communities today. Belongings hold life and meaning far beyond archaeological contexts and are not to be conflated with the NAGPRA-specific categorical definitions of “cultural item,” “object of cultural patrimony,” or “sacred object.”
- V. While NAGPRA remains critically important to the return of Indigenous cultural belongings, I do not conduct NAGPRA or compliance policy in this dissertation. Decisions regarding NAGPRA implementation fall within the sovereignty and authority of the Confederated Tribes of Grand Ronde, and my role in this research is designed to support, rather than duplicate or redirect, those efforts. For detailed analyses of NAGPRA and museum practices, see NAGPRA 1990; Lonetree 2012; Atalay 2012; Laluk et al. 2022.

CHAPTER 2: The Cultural Heritage Imaging Project (CHIP)

This research developed through a long-term partnership between the University of Washington Pacific Northwest Archaeology Lab and the Confederated Tribes of Grand Ronde Historic Preservation Office (HPO), as outlined in the Field Methods in Indigenous Archaeology (FMIA) research protocol (Gonzalez et al. 2018: Table 1; Gonzalez and Edwards 2020). This research was conducted in collaboration with Grand Ronde to carry out a research design appropriate to the goals of the CTGR Cultural Resources Department. From its inception, this project has prioritized care, stewardship, and knowledge return. The research was built with and designed for the various co-collaborators and advisors from the Grand Ronde community (Appendix A).

The Confederated Tribes of Grand Ronde (CTGR) includes more than 30 bands and tribes whose traditional and accustomed homelands span nearly all of western Oregon, some of northern California, and southwestern Washington. The largest communities in Grand Ronde include Kalapuya peoples from the Willamette Valley, Chinookan peoples from the Lower Columbia River, Molalla peoples from the western slopes of the Cascades, and numerous groups from the Rogue River Valley in southwestern Oregon (Lewis et al. 2013). Today, the diverse peoples of Grand Ronde maintained many pre-reservation practices and formed a new distinct community identity despite the forced removals from their homelands (Beckham 1990; Merrill and Hajda 2007; Kretzler 2023).

Figure 2.1 presents a map of the ceded lands and treaty agreements between CTGR and the United States government. Cession maps such as these are serve as critical instruments for Tribal governance, supporting the assertion of reserved treaty rights, the management of natural

and cultural resources, and compliance with federal and state regulatory frameworks. They also materially document the spatial extent of treaty relationships, reinforcing Tribal sovereignty and jurisdiction across both reservation lands and usual and accustomed territories. CTGR has approximately 5,400 enrolled members and the reservation is located in Yamhill County, western Oregon (CTGR 2025).

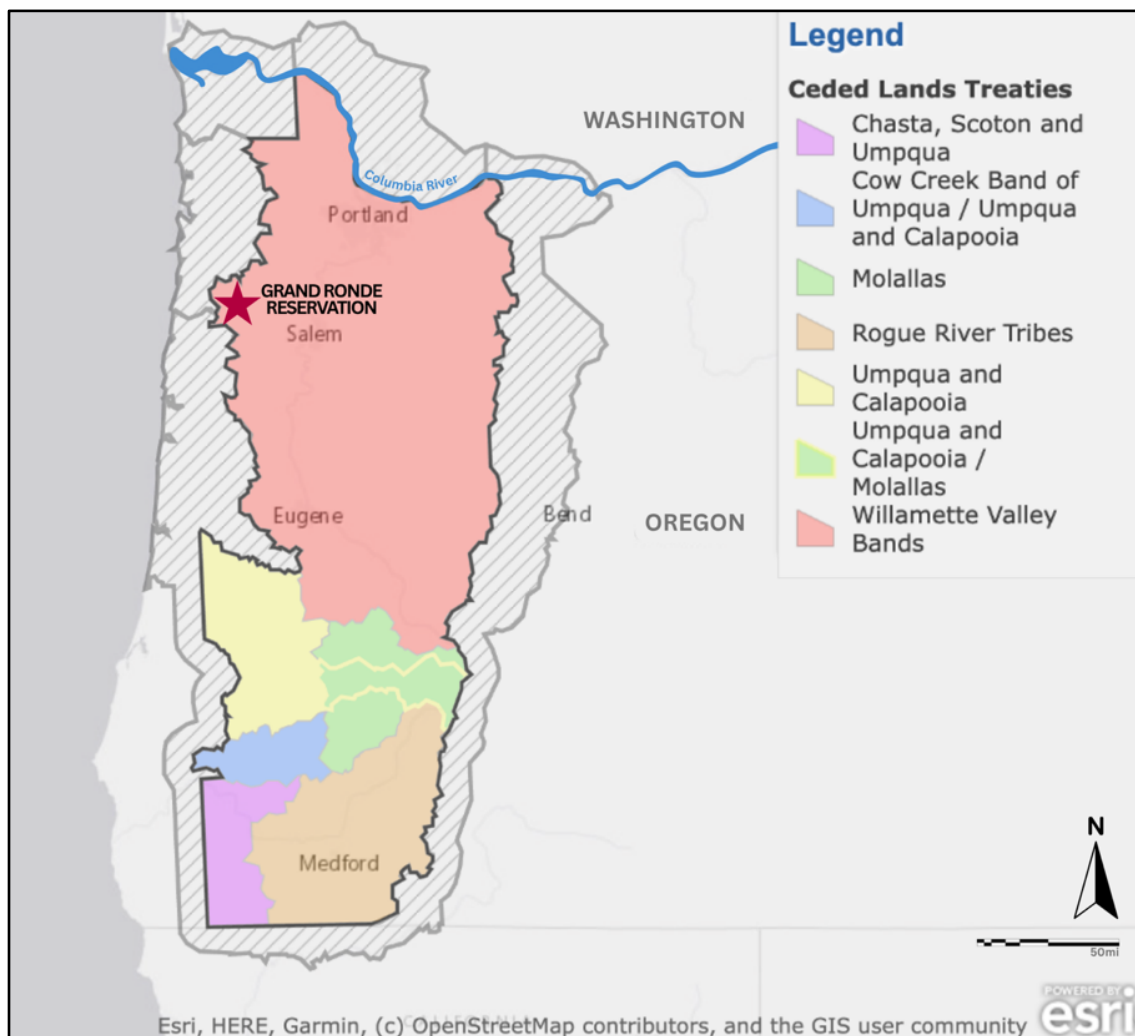


Figure 2.1. CTGR ceded lands treaties and usual and accustomed places map. Modified from CTGR THPO ESRI map.

The Cultural Heritage Imaging Project (CHIP) is a collections-based initiative that implemented low-impact archaeological methodologies and integrated Grand Ronde ways of knowing into the study and curation of Tribal belongings. This project examined carved stone belongings held in collections in Oregon and Washington (Table 1). CHIP combined digital imaging techniques, archival research, and collaboration with Grand Ronde artists and cultural advisors (Ngandali 2019; Ngandali and Craig 2023).

This research builds on the understanding that relationships among people and place-based lifeways shape the roles and enduring significance of living cultural practice (Basso 1996; Burkhart 2019; Cruikshank 2005; Haakanson and Steffian 2009; Mussi 2024; Rose et al. 2011; Silko 1999; Simpson 2017). It investigates how Lower Columbia River communities communicated generations of lived knowledge through stone sculpture and considers the importance of museum collections in active knowledge creation. The study focused primarily on carved stone belongings, also referred to as carved stone, figural stone, mobiliary art, portable rock art, or stone sculpture, produced on Lower Columbia River between 1000BC and AD1875. Carved stone belongings are stone objects such as stone sculptures, figures, decorated bowls and mortars, paint pots, or other worked stone artifacts that show evidence of human modification such as pecking, grinding, incising, engraving, smoothing, or figural design. “Artifacts” are indicative of being materials of the past, while belongings hold the status of tangible living materials important to communities today. Belongings describe tangible remains associated with the people connected to ancestral and important places to Grand Ronde history and culture (Gonzalez et al. 2018).

Table 1 shows the archaeological and ethnographic collections included in CHIP, along with the collection locales and associated archaeological sites or accession areas represented in

this project. This research was built through multiple institutional collections, recognizing the dispersed nature of the project assemblage.

Table 1. Archaeological & Ethnographic Collections used in CHIP

Collection Locale	Archaeological site / collection area
Oregon Historical Society	Sauvie Island accessions
Clark County Historical Society	Grant House; Sauvie Island; Columbia River accessions
Fort Vancouver National Historic Site	Cathlapotle site (45CL1); Meier site (35CO5)
Burke Museum	Columbia River accessions
Chachalu Museum	Horner collection (partial); Rylander site (35CO2); accessions from across Oregon
Portland Art Museum	Sauvie Island; Columbia River accessions

The collections included in the analysis were selected through a combination of research focus, access, permissions, preservation conditions, and Tribal guidance. Some collections or assemblages informed the broader scope of CHIP, but they do not appear at the same level of detail in the manuscript because of shared decision-making about what could, or should, be shared. In this dissertation, I report only what was appropriate to publish and keep some findings generalized to respect Tribal authority, protect sensitive information, and leave space for forthcoming community-guided work.

This dissertation analyzed stone carving traditions of the Lower Columbia River and demonstrated how belongings remain embedded within ongoing relational, material, and cultural contexts. A substantial body of material culture remains yet understudied from this region. These belongings and collections are curated in the museums, while the knowledge within them

belongs to the descendent communities of the Lower Columbia River. This project contributed to ongoing efforts to reconnect material culture and knowledges that were dislocated or dispossessed.

When David Harrelson (Cultural Resources Department Manager; THPO), Briece Edwards (Manger, Historic Preservation Office), Travis Stewart (Director, Chachalu Museum; Artist), and Bobby Mercier (Cultural Advisor, Chachalu Museum; Artist) first helped shape this project in 2018, they emphasized the importance of cultural connections to *place* and the interrelatedness of Grand Ronde values of people and the practices conducted at *place* (Ball et al 2015; Basso 1996; Colwell and Ferguson 2006). These initial meetings and insights at the outset of this project shaped the material types I would be focusing on, the level of analysis, and the central questions guiding this dissertation and informed the collaborative direction of this research.

This dissertation documents the process of collaborative work, making evident the rigor of community-based participatory research as both a method of practice and analysis (Atalay 2012; Colwell 2016; Cornthassel et al. 2016; Strand et al. 2003; Two Bears 2022). Through CHIP, collaboration shaped the research design, the selection of belongings for documentation, the development of imaging priorities, interpretation, and dissemination. The project required sustained communication with CTGR staff and partners, while paying careful attention to community priorities as they emerged throughout the work. The rigor of this work is elaborated thorough the technical, ethical, and relational forms of community-based practice. It depended on careful listening, documentation, consultation, and interpretative restraint.

They verbalized that study of Chinookan mobiliary art was untapped through an archaeological eye. They further explained that most belongings held in museums have general

provenance, or source attribution, explaining that the stylistic component attribute of objects and locational attributes do not need to be perfectly linked in order to be important to community.

They suggested that ethnohistorical archives should be reviewed, posing questions like: Why is it that Columbia River Style, isn't as well represented and studied as further Northwest Coast formline art? What is the connection between personal adornment and large adornment? If the belonging has use wear, does that make it ceremonial? Is there evidence of Sauvie Island as a guest place? Furthermore, they shared with me that I should be hesitant in the naming and interpreting of significance. Although the Columbia River style is evident on stone, bone, wood, and basketry, we decided that stone would be most appropriate at this level of analysis because of the Tribe's ongoing efforts to revitalize the artistic, wood and stone carving traditions. The Tribe was ready to allow me to survey the curatorial landscape for these items and engage on a deeper level with the stones.

Research Questions

This research benefited from following the main principles of Indigenous archaeologies, long term reciprocal relationships, shared authority and holistic epistemologies of knowledge creation; weaving Indigenous and Western knowledges together (Atalay 2006; Kimmerer 2013; Rubertone 2008; Smith and Wobst 2005). I use the term 'we' to denote our shared research strategy or approaches and the term 'I' to denote my specific role within the larger collaborative project. This dissertation addressed the following primary and secondary questions:

Primary Questions

- I. How can collaborative, low-impact approaches to archaeology deepen our understanding of life histories of Lower Columbia River belongings?
- II. What new interpretive possibilities emerge when archaeological inquiry privileges relationality?

Supporting Questions

- i. What are the culturally appropriate ways to bring museum collections back into a living context with, and for, the Grand Ronde community?
- ii. How does the digital imaging of belongings support cultural continuity and art revitalization efforts?
- iii. How are Lower Columbia River mobiliary stone sculptures and carvings embedded in ongoing cycles of reuse, movement, and memory?

To address these research questions, I employed a low-impact methodological framework that integrated indigenous archaeology, community based participatory research (CBPR), and collections-based material analyses (Figure 2.2). At its core, this framework was grounded in commitments to sovereignty, Indigenous epistemologies, and reciprocity, situating this research within the priorities and authority of CTGR.

Within this approach, knowledge production was carried out as a relational and iterative process, emerging through sustained engagement with CTGR staff, artists, and other community members. These relationships were not limited to the formal project period but were grounded in earlier phases of community engagement. Foundational relationship building began while living

in residence on the Grand Ronde reservation each summer while I was serving as crew leader for the Field Methods in Indigenous Archaeology (FMIA) field school between 2016-2019. This extended timeline of engagement supported continuity of a working relationship of trust and community needs were more easily identified.

Community-based principles further shaped the project as a long-term collaborative undertaking in which community needs and priorities were incorporated at the outset of the research design (Gonzalez et al. 2018; Atalay 2012). The cultural advisors on this project, David Harrelson (Grand Ronde Cultural Resources Department Manager), Travis Stewart (Director, Chachalu Museum; artist), and Bobby Mercier (Cultural Advisor, Chachalu Museum; artist), and Stephanie Craig (Former Collections Manager; weaver), and others helped me to develop research questions and protocols for engaging with sensitive materials. Together, these methods enabled this analysis of cultural materials while supporting a form of archaeological practice that remained technical and responsive to community-defined standards of care (Ngandali and Craig 2023).

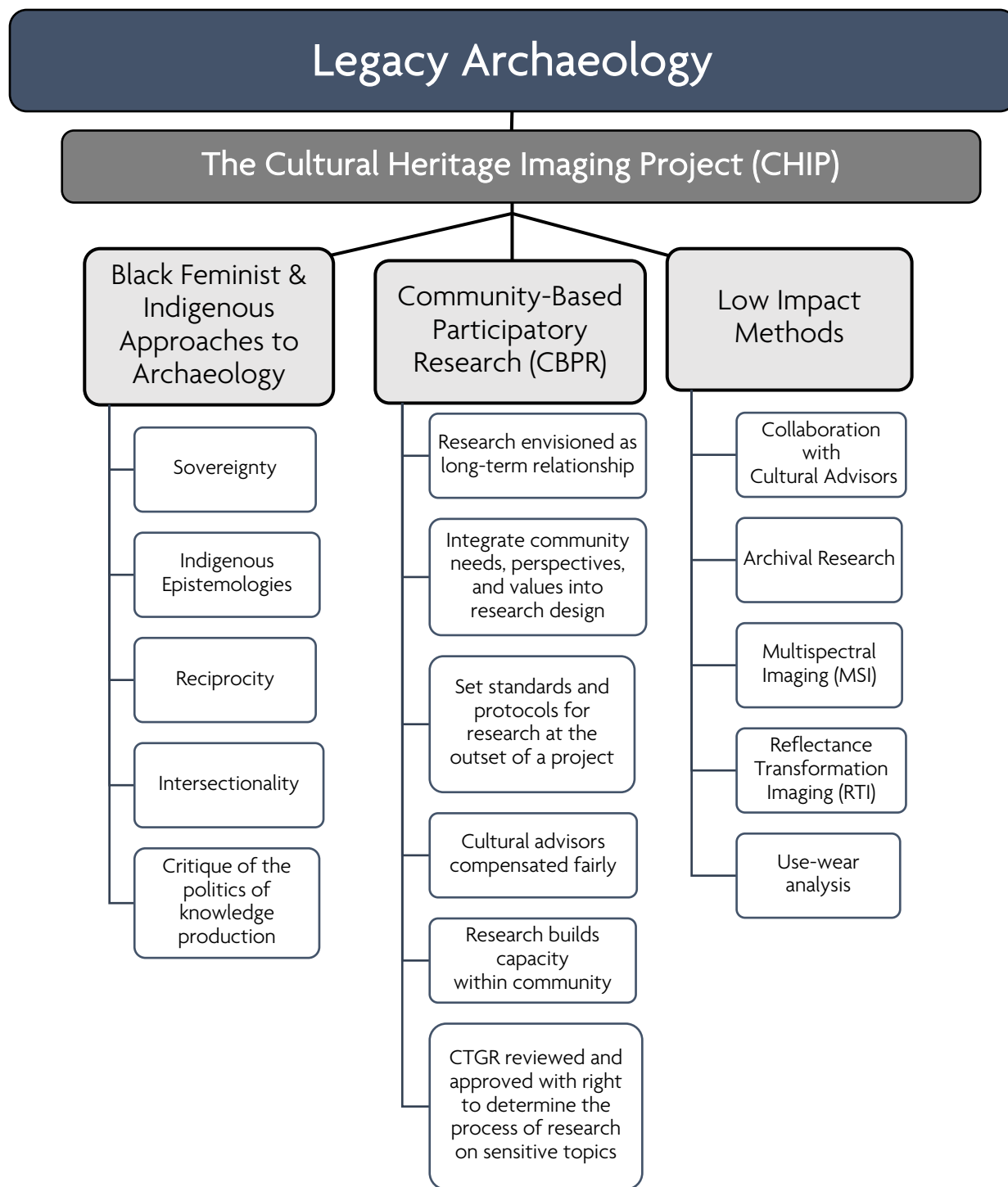


Figure 2.2. The Cultural Heritage Imaging Project (CHIP). CBPR approach modified from Gonzalez et al. 2018.

Low- Impact Methodologies

As part of the community-based research protocol that recognized the Tribe's authority and control over the research process, I employed a low-impact methodological framework for this dissertation. Low-impact methodologies refer to approaches that minimize physical disturbance to cultural belongings while prioritizing community guidance and Tribal authority from research design from implementation and through to dissemination (Atalay et al. 2014; Gonzalez 2016; Gonzalez et al. 2006; 2018). This framework builds on work developed through the Field Methods in Indigenous Archaeology (FMIA) field school at Grand Ronde which ran from Summer 2015 – Summer 2019. Having taken part in FMIA since 2016, I adapted that model to accommodate a collections-based project.

This research employed a collections-based, low impact methodology that applied Grand Ronde guidance, values, and cultural protocols in the study of their material culture. Methods included collaboration with cultural advisors, archival research, archaeological use wear analysis, and digital imaging techniques such as multispectral photography (MSI), Reflective Transformation Imaging (RTI), and false-color imaging.

Working with ethnological collections, presented several challenges. First, collection managers are responsible for persevering cultural material in perpetuity, requiring non-destructive analytical approaches. Second, the belongings under study had potential to be sacred or ceremonial. Third, many of the belongings were accessioned into the collections through amateur excavation or donation, often with limited archaeological context. This concept expanded the design of this project from that of context-as-location to that of context-as-relationship. This means that belongings, no matter the archaeological context, remain embedded within ongoing relational, material, and cultural contexts and associations.

The low-impact methods addressed these challenges in three ways. First, the digital imaging techniques I employed were non-destructive and did not require any change to the physical nature of the stone. Second, when working with potentially sacred belongings, protocols developed in collaboration with cultural advisors guided the handling and interpretation, recognizing that there are a potential and an increased risk for spiritual disturbance which furthers the need for culturally appropriate engagement (Haakanson & Steffian 2010; Laluk 2021). Protocols deemed appropriate for publication are discussed in Chapter 3 and 4. Third, the limitations of archaeological context opened space for this project to expand beyond Western archaeological knowledge production. For many Tribal communities, artifacts or belongings are manifestations of the relationships among histories, ancestors, cultural landscapes, and cultural practices (Coulthard 2014; Cruikshank 2005; Kretzler and Gonzalez 2023; Watkins 2000). These relationships are alive and relevant to contemporary daily life. Within this framework, archaeological context, while useful for certain research questions, was not the primary driver for selecting belongings or collections in this study. Rather, my role in this research was oriented toward capacity building, supporting the development of tools, methods, and institution-to-institution relationship building that may or may not be taken up by Tribal partners as they see fit. This work was not intended to function under NAGPRA as cultural item identification or cultural affiliation determinations. The decisions regarding such processes remained under the authority of CTGR and are pursued at their discretion.

Collaboration with Cultural Advisors and Artists

The research process began with identifying community priorities, including interests in historical art production, reconnection with museum collections, and art revitalization.

Throughout the life cycle of this dissertation, I participated in events and celebrations in community, listening sessions and check-ins, and workshops at Chachalu Museum and Cultural Center. These engagements introduced my work to the broader Grand Ronde community and was a way for artists and community members to solicit feedback on my research process and remind me which aspects of the work to report or not. As Tuck & Gaztambide-Fernández (2013) affirm, “The academy does not need to know and dissect each part”. As a researcher and an extension of the academy, I asked for guidance from cultural advisors in many stages along the way to better understand which ideas/belongings/knowledges/most things uncovered in this community-based inquiry process do not need to be reported in this manuscript or other academic settings.

I was able to meet many people whose feedback shaped the direction of this research. These exchanges strengthened the relationships between museum collections, like the Oregon Historical Society and the knowledge holders within the CTGR community. These research relationships were important for a respectful, collaborative, and most importantly, a community-guided decision-making process. The specific “tolerances of disturbance” and appropriate mitigative protocols regarding a collection or assemblage of belongings was the purview of Grand Ronde and not of archaeologists, like myself, so considering the new NAGPRA regulations, consent from the CTGR Cultural Resources Department was required in order to conduct research on these collections (U.S. Department of the Interior 2023).

Archival Data Gathering

Archival research complemented this analysis. I examined ethnological publications, settler journals, General Land Office (GLO) maps, policy documents, Bureau of American

Ethnology materials, newspapers including *The Oregonian*, and other ethnohistorical sources. These records provided additional interpretive context for understanding the historical conditions that shaped the dispossession of cultural belongings and their subsequent movement across institutions, collections, and time.

Early ethnographic documentation of Columbia River and other Pacific Northwest communities included the work of Franz Boas, Edward Sapir, Leo Frachtenberg, Melville Jacobs, George Gibbs, and others who recorded language, oral traditions, and cultural practices across the region (see Boas 1894, 1901; French 1958; Gibbs 1863; Jacobs 1936, 1945, 1958; Kenoyer 2017; Sapir 1907; 1909). Later scholarship drew on these records to examine the cultural geography, mobility, social organization, place names, and seasonal population movements of people along the Lower Columbia River (Boyd 2011; Boyd and Hajda 1987; Ellis 2013; Ellis et al 2013; McArthur 1927; Saleeby and Pettigrew 1983, Zenk 1990, 1994; Zenk et al. 2013; Zenk 2008).

I evaluated ethnohistorical and ethnographic sources for any possible information regarding raw material procurement, artistic production processes, and social interactions of art producers along the Columbia River. I used selected archaeological legacy data to locate and identify decorated ground stone belongings from secure archaeological contexts, allowing for a tertiary comparison with collections that had limited or undocumented provenance. The goal of this archival work was to gather historical, ethnographic, and archaeological literature to supplement the relational life histories analyses expanded upon in Chapter 5 of this manuscript and in forthcoming articles and essays (Table 2).

Table 2 outlines the archival goals used in CHIP and identified the major categories of archival inquiry that supported the relational analysis. These categories helped to organize

archival work around the people, institutions, and documentary records gathered and shaped the collection histories, provenance, and interpretive contexts of the belongings.

Table 2. Archival research process used in CHIP.

Archival Goal	
Biographical Research	Documented biographical background about donors, informants, and field collectors to help identify people involved in collecting, interpreting, and transferring belongings over time.
Collection Histories	Traced the accession, transfer, exhibition, loan, and exchange records across institutions. This provided information about how belongings moved through museum systems and how they were documented, displayed, or reclassified.
Provenance Research	Integrated archival, archaeological, and community-guided data to reconstruct available information on origins, movements, histories of belongings and any partial provenance documentation.

Technical Imaging

This research employed digital and multispectral imaging methods to examine art production and surface modification. Multispectral photography served as the primary imaging approach, while false-color processing and Reflectance Transformation Imaging (RTI) were used to test whether different forms of technical visualization could improve the perceptibility of artifact modifications, including carving, pecking, and grinding.

These tools enhanced the visual interpretation of pigment and carving distribution on the belongings. Morphological differences in surface modifications provided insight into carving practices and production sequences. Technical imaging also supported the differentiation between natural and culturally modified surfaces. Interpretations and recommendations for more

detailed analyses were developed in collaboration with Grand Ronde staff, artists, and cultural advisors.

Project Timeline

I first started this research in 2018, with the goal of developing a community-based participatory archaeological research practice grounded in culturally relevant and intellectually rigorous research that is in service of, and in benefit to, the Confederated Tribes of Grand Ronde (Atalay 2012; Watkins 2000). The purpose of this long-term engagement was to expand our understanding the varied the life histories, meanings, and ongoing relationships of the Columbia River, or Chinookan art style.

Over the years, coming into respectful relation has taken many forms. This work included facilitating workshops, co-authoring essays, attending ceremonies at the plankhouse, and volunteering to setup at community events such as the Contest Powwow. I also spent time working with tribal youth, sharing photographic methods and discussing how imaging technologies can be used to support cultural knowledge and documentation. These engagements extended beyond formal research activities and involved showing up consistently, participating when invited, and being present in ways that supported relationship building and trust over time. As a researcher who is not a Grand Ronde Tribal member, I have learned to navigate when to step forward and when to step back. This processes of learning and unlearning supported the development of equitable and accountable relationships (Tallbear 2019). I expand on the process of intersectional relationship building and collaborative practice in Chapter 3.

In 2018, following two years of working as a graduate student crew leader for the FMIA archaeological field school, I spent some time doing photography at the Chachalu Museum and

Cultural Center with Izaiah Fisher, a Grand Ronde youth intern. We spent many hours refining aspects of the multispectral photographic standardization process, which then led to a workshop on these techniques I later facilitated with Nick Labonte (Former Collections staff and Grand Ronde Artist) at the Grand Ronde History and Culture Summit.

The Chachalu Museum and Cultural Center outline its mission on its website as follows: “The mission of Chachalu Museum and Cultural Center is to collect, curate, preserve, organize, document and interpret cultural materials, understandings and values reflective of the Confederated Tribes of Grand Ronde and its’ rich culture. Chachalu will strive to promote amongst the Tribal community and general public an understanding of its’ Tribal history, language and current practices through education, exhibits, research materials, publications, and other educational activities” (Chachalu 2025).

In 2019, I led an additional workshop and demonstration on multispectral photographic methods at the Grand Ronde Artists’ Summit. These workshops helped establish relationships with cultural experts and artists who were not employed by the Tribe and created space for broader conversations about artistic practice. Bobby Mercier invited me to join the artists’ circle, where participants discussed the meanings, uses, and limits of terms such as Chinookan or Columbia River art.

During these conversations, participants raised several important questions. What exactly is Chinookan or Columbia River art? Is that the best language to use? What opportunities for collaboration are available? How can people support one another? What do artists need? One answer came through clearly: artists needed funding, access, and opportunities to work directly with collections (Appendix B).

One moment that stood out was a conversation about museums and the importance of direct engagement with belongings. Bobby shared that artists needed to visit museums, sit with the pieces, and allow the pieces to show how they were made. He emphasized the need to look closely at each part, including the marks, forms, surfaces, and working traces, and to learn from the stones themselves. In his words, many pieces in museum collections could “show the way.”

This conversation clarified why direct collections access mattered to the project. In-person engagement allowed artists to study details that catalogues, photographs, and 3D models could only partially represent. Weight, scale, surface texture, tool marks, polish, and carving depth all carried information about artistic process. These material details made choices, gestures, and sequences of production visible. They also showed how museum collections remain connected to contemporary practice, because the belongings continue to teach artists how forms were made, carried, remembered, and renewed.

Between 2019-2023, Grand Ronde artists Bobby Mercier, Travis Stewart, Nick Labonte, Brian Krehbiel, Stephanie Craig, and various UW students travelled with me to several museum collections, most notably, Oregon Historical Society, Fort Vancouver National Historic Site, and the Burke Museum to take photos, make connections and visit the stones. Their expertise and presence provided this project with critical knowledge about how belongings seen in the collections are connected to their history and ancestral practice. Close study of carving practices and decorative forms showed how artists identified connections between ancestral belongings and contemporary making. Their participation in this project also shaped the curation protocols needed to support future research, access, and care (Flynn and Hull-Walski 2001).

In 2019, I received pilot funding from the University of Washington Department of Anthropology, the UW Center for American Indian and Indigenous Studies (CAIIS), and the

UW Quaternary Research Center (QRC) to conduct preliminary analyses for this dissertation. This support allowed me to develop, test, and refine non-destructive digital imaging methods at Chachalu Museum and to travel with cultural advisors to the Oregon Historical Society and Fort Vancouver National Historic Site Museum collections for preliminary documentation. The aim was to survey ground stone assemblages at these institutions, assess the usefulness of technical imaging for future analysis, and build relationships with curatorial staff. This early stage was critical because collaborative research depends on time, repeated engagement, and trust-building. The pilot work created the conditions for later access, shared interpretation, and the development of research protocols we used for the technical imaging workflows.

In 2020, I received support for Grand Ronde artists Nick Labonte, Brian Kriebel, Bobby Mercier, and Teal Reibach (artist), to continue remote research and creative work from their homes and workshops during COVID-19 travel restrictions. Although in-person collections visits were not possible, this support allowed the project to sustain collaboration, maintain relationships, and continue conversations about artistic practice.

In 2022, I received the Wenner Gren Engaged Research Grant and the Social Science Research Council's International Dissertation Research Fellowship. During this phase of fieldwork research, I lived for a few months on the Grand Ronde reservations at the Spirit Mountain Lodge and Casino conducting research on the Chachalu Museum internal collections and belongings on loan from the Portland Art Museum.

Living in and near community was critical to this research. I was able to establish and maintain good relations and connections with Chachalu staff. Living in community refers to the lived experiences and associated responsibilities that come with residing on the reservation and actively participating in everyday life (Gonzalez 2016; Gonzalez et al. 2018). At this time, I was

attending Powwows, and ceremonies at Achaf-Hammi, the Grand Ronde plankhouse, as well as the First Salmon ceremony, and other community events. Living in community was necessary for building deeper research relationships and personal friendships, which mattered to me both personally and professionally. As hooks and West (1991) wrote, “Friendship makes certain forms of vulnerability possible, certain forms of interrogation possible” (4). Living on the reservation and near community supported forms of intimacy, accountability, and everyday presence that can be difficult to sustain within conventional academic research.

During this phase we conducted on-site research on belongings held in local museums and repositories in Oregon and Washington such as Clark County Historical Society, Vancouver, WA; Oregon Historical Society, Portland OR; Fort Vancouver National Historic Site, Vancouver, WA; and Chachalu Museum, Grand Ronde, OR. While focused primarily on carved stone belongings during collections visits, other collaborators brought their own research interests and expertise to the space. The limited time available at each institution required us to share collections access carefully and equitably. For example, my research focused on stone, while Nick focused on Columbia River wood and horn feasting plates, spoons, and bowls. Bobby and Brian were especially interested in wood canoe models and paddles. We therefore made time to view, photograph, and learn more about those belongings as part of the broader collaborative process.

This shared approach reflected the intentionally organized priorities of CHIP, creating opportunities for each collaborator to engage with the belongings most relevant to their interests while also supporting collective observation and discussion across varied material categories. Some of this research later informed new creative projects for the artists, demonstrating how museum access supports cultural connection and the renewal of artistic practice.

Salvage Ethnography and The Big River

The Lower Columbia River region encompasses a stretch of the Columbia River, or Big River, in what is currently known as Oregon, extending from The Dalles to the river's mouth at the Pacific Ocean (Hajda 1984; Matson and Coupland 1994). Today, the Columbia River is often treated as a political boundary that separates Washington and Oregon. Historically, however, the river functioned less as a border than as a major waterway and canoe-based travel route that connected people, places, and communities. This river system has long served as a corridor for movement, exchange, and cultural interaction among diverse Indigenous peoples.

Chinookan peoples occupied territories from The Dalles to the mouth of the Columbia River. Scholars often distinguish Lower, Middle, and Upper Chinookan peoples based on linguistic and cultural differences (Hajda and Sobel 2013; Johnson 2013; Minor and Burgess 2009). Chinookan dialects spoken in villages near the mouth of the Columbia River are referred to as Lower Chinook. Kathlamet, or Middle Chinook, refers to dialects spoken from the upper reaches of the Columbia River estuary to the Portland Basin, including the areas surrounding Willamette Falls and the lower Clackamas River (Zenk et al. 2016:9–10).

The Columbia Basin spans a large swath of the Pacific Northwest, but within this broader landscape, lies the Wapato Valley. It emerges as a significant cultural and economic landscape in the Lower Columbia River Region, as illustrated in Figure 2.3. There is evidence of human habitation in parts of the basin dating back over 10,000 years (Aikens 1993; Aikens et al. 2011).



Figure 2.3. Map of the Lower Columbia River region showing the general location of sites mentioned in CHIP.

Although there are ample number of accounts which tend to generally describe Columbia River peoples as a decentralized body of semi-permanent villages with far reaching trade and exchange networks, there exist several gaps in the Western understanding of pre-nineteenth century regional interactions and exchange on the Lower Columbia River (Boaz 1894; Boyd and Hajda 1987; Hajda 1984; Ray 1927, 1938; Saleeby 1983; Silverstein 1990; Sobel, Ames, and Losey 2013). Boyd and Hajda (1987) report at least 16 Multnomah and Clackamas villages in the Wapato Valley named in Lewis and Clark's journals (Moulton 1983; Thwaites 1904-1905).

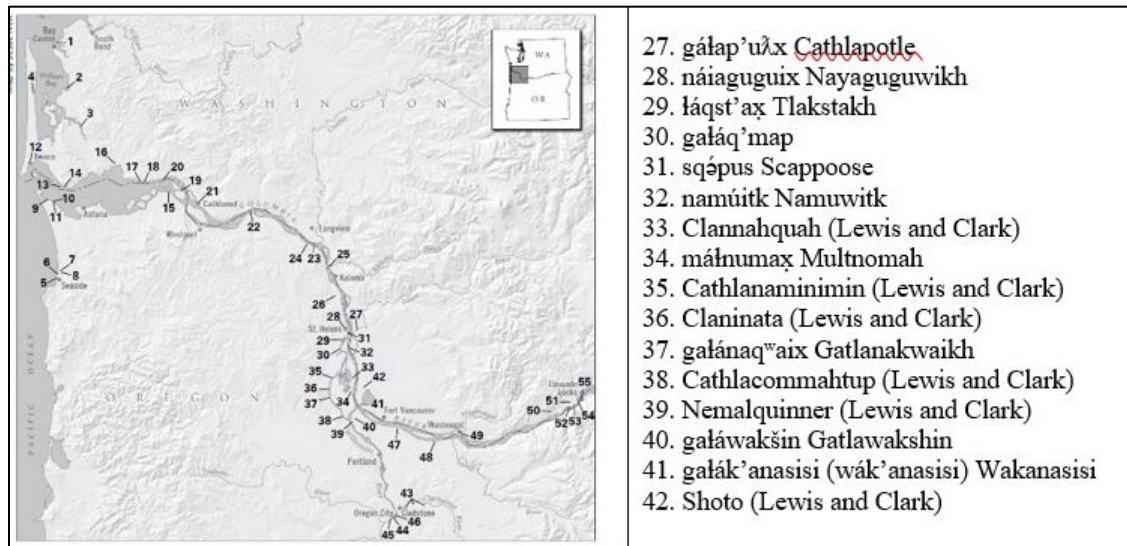


Figure 2.4. Best-documented Lower Columbia Villages (Wapato Valley). Sites 27-42 compiled and modified from Zenk et al. 2016.

Speakers that lived more permanently away from the Columbia River corridor, including communities in the Willamette Valley, also participated in artistic traditions associated with the Columbia River or Chinookan art style (Johnson 2013:199). These shared artistic practices and material culture suggest an extensive system of social and cultural exchange system across the region. Kinship, marriage, and trade relationships connected these multi-cultural communities across a large geographic area (Darby 2002; Ellis 2013).

Beginning in 1830, epidemic diseases devastated Native communities along the Columbia River, with malaria spreading from Fort Vancouver through the Lower Columbia region and recurring in annual outbreaks (Daehnke 2007; Boyd 2013; Wilson et al 2017; Welson and Langford 2011). Middle Chinookan peoples of the Portland Basin, including communities from Sauvie Island, experienced a population decline by the 1850's of up to nearly 90% of their people (Boyd 1999). Survivors joined villages within their familial kinship networks, moved to coast, or sought refuge in the mountains (Boyd 1999: 91). In 1856, Joel Palmer, superintendent

of Indian affairs for the Oregon Territory, ordered the removal of the remaining Middle Chinookan people from Wapato Valley to reservations. Most were removed to the Grand Ronde Reservation (Daehnke 2007).

Today, descendants of Chinookan communities live within urban cities, suburban towns, and reservations in Washington and Oregon. These communities include members affiliated with the Chinook Indian Nation, or are enrolled with federally recognized tribes such as Shoalwater Bay Tribe, Quinault Indian Nation, The Confederated Tribes of Grand Ronde, Yakama Nation, Warm Springs, and the Cowlitz Indian Tribe (Boyd et al 2013).

Historically these communities experienced a significant diminishment to Tribal land holdings. The Donation Land Claim Act of 1850 distributed land tracts to Euro-American settlers, which accelerated settler occupation in the region. This process, combined with the decline in the Indigenous population caused by epidemic disease, contributed to major shifts in settlement patterns across the Lower Columbia and Willamette Valley. Many areas were settled, including Sauvie Island, by Euro-Americans by the mid 1850s (Spencer 1950; Lewis 2014).

As disease, colonial violence, displacement, and dispossession transformed the Columbia River communities, through the late eighteenth and nineteenth centuries, a profound change of traditional interactions with past landscapes and ecosystems led to a devastating decline in art knowledge over the last 150 years. Many artists with specialized knowledge of craftwork partially diminished following the introduction of epidemic diseases (Boyd 1999; Johnson et al. 2013). Additionally, restrictions on access to religious practices, places, and objects remained in effect until 1978 when the American Indian Religious Freedom Act passed (AIRFA 1978). Many knowledgeable teachers and skilled artists died, taking their skills and knowledge with them. Despite the abrupt decline of Native artists along the Columbia River, many contemporary

Chinookan artists assert their continued presence and have worked to revitalize Chinookan artistic traditions and maintain connections to ancestral practices.

Salvage ethnography emerged as a dominant anthropological approach amidst the dispossession of lands and forced removal of people, between roughly the 1840's and the 1890's a movement by Euro-Americans largely to "save" or "salvage" information about indigenous societies began to gain endorsement by the US government and other burgeoning natural history institutions (Curtis 1911; Stahn 2023). In the minds of Euro-Americans cultural objects were "at risk" and actions to collect progressed from that of a curiosity, to a duty-bound control of cultural patrimony, reinforcing colonial narratives that ignored continuity and resilience of lifeways.

Several early anthropologists adopted Eurocentric evolutionary frameworks that ranked societies along a presumed progression from "primitive" to "civilized" (Deloria 1998; Morgan 1870, 1877). These frameworks positioned Indigenous peoples and their histories as objects of study, making detached and supposedly "objective" analysis possible within the discipline. By the late nineteenth century, some anthropologists began to challenge unilinear models of cultural evolution and instead emphasized cultural growth, movement, and historical development as particular to each society. To further examine these intellectual conditions, I turn to an excerpt from Franz Boas, often described as the "Father of American Anthropology", in the *Memoirs of the American Museum of Natural History Jesup North Pacific Expedition*, dated June 16, 1898.

The language is important:

"We are still searching for the laws that govern the growth of human culture, of human thought; but we recognize the fact that before we seek for what is common to all culture, we must analyze each culture by careful and exact

methods, as the geologist analyzes the succession and order of deposits, as the biologists examines the forms of living matter. We see that the growth of human culture manifests itself in the growth of each special culture. Thus we have come to understand that before we can build up the theory of the growth of all human culture, we must know the growth of cultures that we find there and there among the most primitive tribes of the Arctic, of the deserts of Australia, and of the impenetrable forests of South America; and the progress of the civilization of antiquity and of our own times. We must, so far as we can, reconstruct the actual history of mankind, before we can hope to discover the laws underlying that history" (4).

There are many that have argued that Boas was not as anti-racist as he may have appeared (Blackhawk and Wilner 2018; Carlson et al. 2021; Baker 2021; Mullings 2005). Boas and other late nineteenth century perpetuated colonial exploitation in the name of “discovery”. Aiming to discover universal laws or traits that underly all cultural and social behavior. While Boas has been praised by modern anthropologists for his separation of scientific racism and the evolution of culture, arguing for a historical particularism, with cultural societies no longer developing or emerging as a product of biological constructs, there is still a wealth of problematic themes to which we are still reckoning with today. In Audra Simpson’s essay, *Why White People Love Franz Boas; or, The Grammar of Indigenous Dispossession* (2018), she takes a deeper consideration of Boas’ legacy and his inability to see Indigenous sovereignty thus treating his informants and the people he studied as objects of study rather than contemporary

political representatives. The compounding costs of social science inquiry in this way persists as the diminution of Native Nations to cultural minorities and second-class citizens.

In the book *Savage Kin*, Bruchac and Zobel (2018) show how Boasian anthropology depended on Indigenous intellectuals whose labor made ethnographic knowledge possible. The accepted norms to which anthropological practice was conducted, could at best be called opportunistic and exploitative in comparison to today's standards of Indigenous-led research (Wilson 2008; Harris 2005). In an attempt to document and collect, prominent ethnographers suppressed their mindfulness of their relationships with their Indigenous "informants." For example, in the *Wishram Texts* by Edward Sapir (1909), Sapir described his informant Louis Simpson, as Wishram elder who spoke Chinook jargon, and his field interpreter Pete McGiff.

"Pete McGuff, on the other hand, may serve as a type of the younger generation of Indian, though only a half-blood (his father was a negro, his mother is a full-blood Indian). Having lived much of his life with the Wishrams, he speaks their language fluently, though long contact in early life with the Cascades Indians on the Columbia is responsible for a number of un-Wishram phonetic peculiarities that the linguistic material obtained from him exhibits (XII).

There remains much to unpack with this statement, first of all, the relationship between African Americans and Indigenous people on the Columbia River, but also the multi-cultural social relationships across the region between the Upper and Lower Columbia River. This statement also speaks to the multi-lingual expertise of Pete and other Indigenous people at the

time. Sapir goes on to account that Pete learned how to conduct the phonetic method of translation and would obtain oral traditions and ethnological specimens, serving as the primary bridge between the ethnographer and the Wishram people. As lead interpreter, data collector, Sapir could not have completed this work without Pete, yet is not listed as a co-collaborator, co-author, even though he recognized Pete as having “remarkable intelligence and he has been of the greatest help to me...”(XII).

The actions of early ethnographers and anthropologists led to mass dispossession of cultural belongings, clothing, languages, bodies, and sacred objects, many of which were collected and instrumental in the formation of the U.S. National Museum and other institutional archival holdings. Through practices thinly veiled as “safekeeping” and “curation”, archaeological and anthropological collecting converted Indigenous belongings, knowledge, and expressive traditions into institutional holdings. These materials were reclassified as books, documents, recordings, interviews, films, and other tangible collectible objects (Littletree et al 2020) Vine Deloria Jr. calls this “a mass of irrelevant information” (1969:82).

Museums and repositories, through large-scale collecting and documenting, accumulated Indigenous material wealth under the assumption that Indigenous lifeways were disappearing. Ethnographers, collectors, and archaeologists, often removed belongings through coercive exchanges, unauthorized exaction, or outright theft in order to send material to museums and other research institutions (Clifford 1988; Colwell 2017; Lonetree 2012). These actions further separated long-connected communities from their material culture, scattering belongings across numerous museums and repositories in North America and beyond.

This *logic of elimination* reinforced through settler record-keeping practices, supported by the Bureau of American Ethnology and other institutions (i.e., U.S. Geological Survey,

National Museum Department of Anthropology, Harvard University Peabody Museum, Field Columbian Museum, and the University of California, Berkely). Patrick Wolfe (2006) described settler colonialism as a structure organized through the logics of elimination and genocide, with the goal of erasure of a people for the benefit and replacement of the settler. Wolfe argued, “The primary motive for elimination is not race (or religion, ethnicity, grade of civilization, etc.) but access to territory” (388). This framework clarified how dispossession, physical removal, assimilation, and cultural genocide and erasure functioned as a strategy within settler colonial projects (Moreton-Robinson 2015; Veracini 2011).

These histories expose the importance of Land Back movements and restitution efforts. As Pieratos et al. (2021) discuss, Land Back has circulated as both a political demand and broader narrative of Indigenous recovery and restitution. I call attention to Land Back here to clarify the political commitments and responsibilities that guide this work. This dissertation aligns with that call because archaeological practice has the capacity to support Indigenous sovereignty, stewardship, and accountability to the ongoing harms produced by settler colonial logics.

Some issues in Columbia River ethnohistorical documentation are that anthropologists and colonial administrators often divided the multiethnic peoples in the Pacific Northwest into culture areas by circumscribing clusters of cultural traits primarily based on language (Kroeber 1939). Those actions were deeply inappropriate because Columbia River peoples were always multicultural and multilingual. Such classification and determinations critically undermined and overlooked the complexity and dynamism of the multiethnic relationships and intercommunity interactions in the region. By disregarding the important social ties and relations among Columbia River multiethnic groups, these ideas and actions consequently perpetuated the notion

that the traditional systems of interaction and exchange in the past were static, primitive, and doomed to extinction (Boyd et al. 2013; Stern 1988). Despite the systematic efforts to erase indigenous lifeways and separate communities from their tangible and intangible cultural heritage, these communities continue to maintain historically and culturally rooted relationships to land, knowledge, and cultural practice (Vizenor 2008). Gerald Vizenor has been particularly instrumental in this work towards articulating Indigenous survivance, emphasizing active presence, resistance, and continuity rather than narrative of disappearance. Vizenor (1998) writes,

“Survivance, in my use of the word, means a native sense of presence, the motion of sovereignty and the will to resist dominance. Survivance is not just survival but also resistance, not heroic or tragic, but the tease of tradition, and my sense of survivance outwits dominance and victimry” (93).

In conversation with this work, Kyle Powys Whyte (2017) reframes Indigenous knowledge as future-oriented rather than solely historical reference or rooted in the past. Additionally, Ian Kretzler (2020) centers Native presence framing archaeological research as an active counter to settler colonialism and its logics of elimination. These scholars position knowledge systems outside of the static portrayals of Indigenous culture that still pervades archaeological practice (Acebo 2025). This survivance-based perspective is particularly useful on the Lower Columbia River, where carving practices and relationships to place have persisted and evolved across generations despite colonial disruption. For this project, such a framework is an important foundation for how we read between the lines in archival research and how we

produce archaeological knowledge in the present. Survivance allows us to approach belongings as part of ongoing systems of cultural and artistic practice instead of remnants of past processes and peoples.

The Columbia River, or Chinookan Art Style

The Chinookan Art style is distinctive to the Lower Columbia River Region has persisted as recognizable artistic tradition despite its development within a major multi-cultural trading network (Hajda 1984). The name Chinook refers broadly to peoples who spoke languages belonging to the Chinookan language family (Aikens et al. 2011; Boyd et al. 2013; McPherson Smith 2004). Along the Columbia River, Chinookan visual traditions developed withing complex social landscapes characterized by mobility, exchange, and long-standing relationships among neighboring communities.

Chinookan art is often associated with social and ceremonial meanings including references to guardian spirits, human and animal transformational images, concepts of mind and body regeneration, rib motifs, and distinctive face form types (Johnson and McIsaac 2013; Wingert 1974). In Figure 2.5, the figure is a modern rendition of the Chinookan style. The artists and carvers use these elements of style today, inspired by belongings to prompt memory and re-learn the Chinookan art style.

Ethnographic and archaeological examples exhibit geometric shapes, anthropomorphic and zoomorphic representational images. These stylistic elements share some formal similarities with Coast Salish artistic traditions in Washington and, to a lesser extent southern British Columbia, while maintain distinct regional characteristics (Bunn-Marcuse and Wright 2013; Carlson 2011; Holm 2015; Johnson 2014; Johnson and McIsaac 2013:203).

The Chinookan art style is a way of doing, a practice, which connects the past to the present day. Interpretation of these designs are best understood in collaboration with cultural experts, artists, and community knowledge holders, whose perspectives are essential to understanding the meanings and uses of these visual traditions (Begay 1997; Haakanson 2018). Such collaboration is important because their meanings are tied to histories, familial knowledge, ceremonial contexts, cultural landscapes, and artistic practices that are held knowledge of descendant communities. Working with cultural experts and artists reinforces that these interpretations are not just supplementary sources of information used to corroborate archaeological data. They are living visual and material traditions that need to be in relationship with their descendants from the places they emerged.

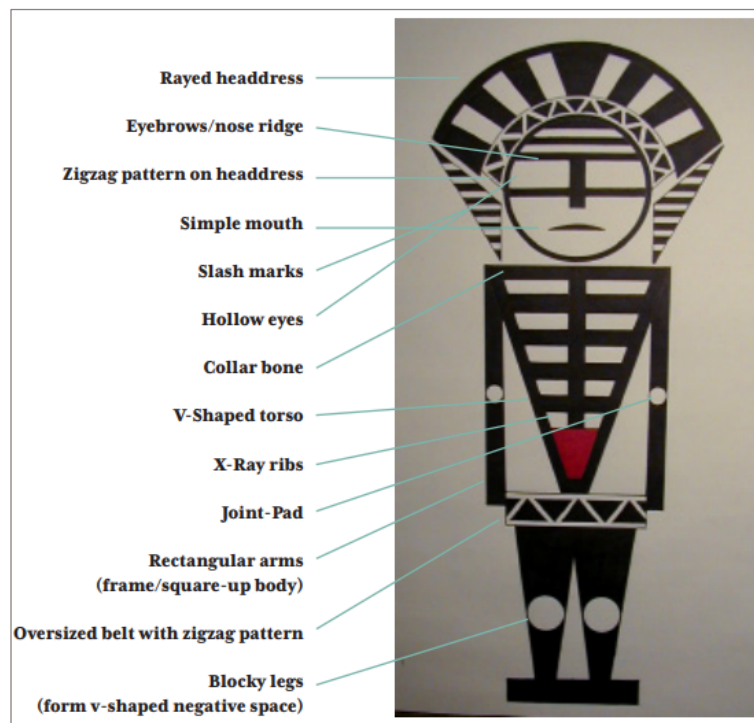


Figure 2.5. Artist's guide to the Chinookan Art Style (Modified from Greg Robinson 2021).

Much of Chinookan imagery is associated with encounters with spiritual beings, often referred to as Tamanawas, or guardian spirits (Johnson and Daehnke 2017). These relationships are frequently expressed through tangible representation of power. The geometric motifs, anthropomorphic and zoomorphic imagery, and transformational compositions that have double imagery. Archaeologically recovered objects common feature geometric elements such as zig zags, triangles, concentric circles, and more bold line work. Some zoomorphic motifs, for example owl or frog, originate from oral tradition. Owl is the bringer of fire, Frog is associated with creating the first net, while others referencing individual spiritual experiences or personal power. The combination of anthropomorphic and zoomorphic imagery on a single object may indicate transformation or regeneration, concepts widely document throughout the Pacific Northwest (Carlson 2011).

The geographic extent of the Chinookan style spans from the mouth of the Columbia River inland to The Dalles region (Butler 1957; Peterson 1978; Johnson et al. 2013). The Lower Columbia River has long been characterized by cultural diversity, and artistic traditions developed through sustained interaction, exchange, and integration among communities. For this reason, Chinookan style is best understood as a relational and place-based visual tradition, shaped through shared practices as well as local histories, materials, and forms of making.

Columbia River stone carving traditions represent one of the longest-standing forms of large-scale basaltic stone artistic practice in the Pacific Northwest, and perhaps in North America (Seaman 1967). Extensive looting and collecting during the nineteenth and twentieth centuries disrupted the archaeological and cultural contexts of many Chinookan belongings. These processes separated belongings from their original locations, communities, and knowledge

systems, making provenance research, archival analysis, and collaboration with contemporary art practitioners both challenging and necessary.

Many museum collections in Oregon and Washington reflect these colonial histories of removal, dispersal, and institutional classification. Contemporary efforts to reconnect Chinookan belongings to place, practice, and community often involve visiting museum collections, conducting archival research, and engaging in community-based interpretation. This process remains ongoing, because the work of reconnection depends on careful documentation as well as relationships with the artists, cultural experts, and communities who continue to carry these visual and material traditions forward. In the next section I situate the development of this artistic tradition within the broader archaeological landscape of the Lower Columbia River, including the Wapato Valley, where many of these practices emerged and persisted through time.

A Brief Archaeological History of The Wapato Valley

Archaeological research in the Lower Columbia River Valley has often been organized into broad periods that reflect shifts in research practices, institutional priorities, and regulatory frameworks. These include the Early Amateur Period (contact – 1923), Early Professional Period (1924-1950), the Reservoir Survey Period (1951-1965), and the Recent Periods (1966-1990) and the Developed Professional Period (1990-Present). For the Wapato Valley, particularly Sauvie Island, Dailey (2021) provides a detail overview of archaeological research and historic preservation, emphasizing the importance of both tangible and intangible cultural resources in understanding the island's cultural landscape. These developments provide an important archaeological context for understanding carved stone and ground stone belongings from the Wapato Valley and surrounding Lower Columbia River Region.

The Lower Columbia River experience significant social, political, and economic transformations during the Pate Pacific Period (AD 200 - AD 1750). Residential and village sites from this period suggest broad regional similarities in material culture (Sobel, Ames, and Losey 2013: 31). These similarities included large plankhouse communities that experienced stable village life (Ames and Sobel 2013; Ames and Shepard 2019). Studies reported semi-formalized household organization, interior and exterior activity areas, and productive ecological habitats (Ames et al. 2019). The Wapato Valley was especially productive because it supported a broad range of plants and animals, especially salmon, wapato, various waterfowl, and other wetland and riverine resources. Some researchers have also suggested that the Chinookan art style may have developed at this time (Ames and Maschner 1999; Aikens et al. 2011).

Table 3. Select archaeological sites with carved stone listed.

Regional cultural period	Approximate dates	Wapato Valley cultural period	Major Sites with mobiliary art
Early Modern	AD 1500 – AD 1850	Early Modern	Marybell (35MU9) Bachelor Island (45CL43)
Late Pacific	AD 500 – 1500	Multnomah Phase	Cholick (35MU1) Malarkey (35CO4) Meier (35CO5) Cathlapotle (45CL1)
Middle Pacific	2000 BC – AD 1	Marybell Phase	Ave Q (35CLT13) Par-Tee (35CLT20) Decker / Rylander (35CO2)
Early Pacific	4000-2000 BC	--	Palmrose (35CLT47)

Much of the earliest archaeological work in the Wapato Valley emerged through amateur collecting and excavation. In the Portland Basin, collectors and advocational archaeologists documented sites uncovered large quantities of material, often with limited systematic recording at modern standards (Smith 2006; Sobel 2004; Martinez 2019). Collectors such as R.F. Jones, Seaman, and Strong documents some of the first Columbia River Collections, yet these efforts frequently prioritized object recovery over contextual recording or Tribal consultation (R.F Jones 1972; Seaman 1967; Strong 1967). As a result, many artifacts or belongings entered into private collections or were accessioned into intuitional repositories with limited archaeological documentation.

Organizations such as the Oregon Archaeological society (OAS) later introduced more formalized approaches to excavation and recording, and public education (Foreman 1977); OAS (1979; Hibbs 1974). These efforts improved documentation in some cases, but they still operated largely outside of formal relationships with Tribal Nations in the region. Issues remained including incomplete reporting, loss of contextual information, the curation of objects in private collections (Hibbs and Starkey 1974; R.F. Jones 1972). Since the 1970s, the OAS has shifted towards a stewardship model forced on public outreach initiatives (Butler 2007; Dailey 2021).

Professional archaeological investigation in the Wapato Valley expanded in the 1970s and 1980's. Richard Pettigrew from the University of Oregon (1987) developed a cultural-historical chronology for the Wapato Valley through excavations at several Sauvie Island sites. There are several major sites in the Wapato Valley that have shaped the archaeological interpretations over the years. Sites such as Cholick (35MU1), Pumphouse (35CO7), Lyons (35MU6), Merrybell (35MU9), Decker site (35MU02), Meier (35CO05), Cathlapotle (45CL1), village sites on the Lower Columbia River occupied between 1000 BC and AD 1830 with carved

stone belongings that have documented archaeological context (Hajda 1984; Pettigrew 1987; Zenk et al. 2016). Archaeologists at University of Washington conducted archaeological investigations at the Kersting site (45CL21), and Dunnell completed survey in the Vancouver Lake area, and the Sunken Village site complex on Sauvie Island was conducted by Dale Croes (Croes 2007, 2009; Fagan 2004). Kenneth Ames from Portland State University excavated the Meier site (35CO5) from 1987-1991 and it became of the largest archaeological investigations in the Wapato Valley (Ames et al. 1999; Hamilton 1994; Sobel 2009). Ames also led excavation for a neighboring village site named Cathlapotle between 1991 and 1996; among others in the Portland Basin and beyond (Ames et al. 1999; Ames and Sobel 2009).

The Lower Columbia River also contains substantial archaeological and ethnographic information associated with maritime trade from 1792 to 1811 and the land-based fur trade from 1811 to 1860. The Hudson's Bay Company established Fort Vancouver in 1824 and operated there through 1860, as Euro-American settlement increasingly transformed the region (Martin 2006; Minor and Burgess 2009).

These histories matter because they shaped the archaeological record, the institutional archives, and the museum collections through which the Lower Columbia River has often been studied. Trade, settlement, collecting, and museum classification changed the relationships among belongings, places, and communities. For this reason, the next chapter turns to Black and Indigenous intellectual traditions as necessary frameworks for interpreting legacy collections with greater accountability. These traditions provide tools for examining colonial knowledge production, centering Indigenous sovereignty and community authority, and situating archaeological practice within broader struggles over land, memory, care, and repair.

CHAPTER 3: Diverse Intellectual Spaces: Black and Indigenous Scholarship

Museums and other cultural institutions have long shaped public representations of Indigenous people, often through categories produced by colonial collecting, salvage anthropology, and institutional control (Ames 1992; Singleton 1997). This dissertation responds to those histories by asking how archaeological practice can support relationship, accountability, and Indigenous authority in the study of museum-held belongings. This chapter introduces *Legacy Archaeology* as a restorative approach to inherited collections and the relationships they continue to hold. I bring together Black Feminist theory, nonhuman agency, and future-oriented archaeological practice to examine how collections-based research can account for access, identity, authority, to see stones as witnesses and teachers to complement the ongoing responsibilities of this work. Drawing from Black and Indigenous intellectual traditions, I argue that decolonized and Indigenized archaeological practice must center Indigenous epistemologies, land, sovereignty, and community authority. I then extend these commitments through a place-based framework that understands belongings as tangible expressions of intangible worlds and as materials that carry histories of making, movement, interruption, and renewal. These theoretical commitments provide the foundation for the analytical chapters that follow.

Legacy Archaeology

Black and Indigenous epistemologies are reconceptualizing how archaeology is conducted ethically, methodologically, and theoretically. Yet we are faced with a grave truth about the anthropological discipline as a whole. Black and Indigenous humanity has too often gone unrecognized, un-respected, and uncelebrated (Vargas 2018). This chapter calls to

incorporate Black and Indigenous ways of knowing towards the operationalization of a new, restorative, and future-oriented archaeological practice.

Flewellen et al. (2021) described anti-racist archaeology as a site of radical theorization. This framing matters because anti-racist archaeology pushes the discipline beyond internal reform, asking archaeologists to work across Black studies, Indigenous studies, and community practice in order to expand the epistemological legacies available to the field. For Black and Indigenous people to be fully present, human, and authoritative in the production of archaeological knowledge, we must continue to outline the ethical, intellectual, and material conditions to which we can *be*. Our futures lie within the creation of being ourselves fully (Cornum 2023).

To be fully human in the present and into the future is a decolonial demand. As Frantz Fanon wrote that, “Decolonization, which sets out to change the order of the world, is, obviously, a program of complete disorder (Fanon 1963:36). In this sense decolonization requires a willingness to unsettle inherited disciplinary structures, including the forms of expertise, ownership, classification, and authority that have previously shaped the discipline. For archaeology, this means unapologetically building a future that honors what came before while also creating space for new forms of theory, method, and relation.

The Akan concept of Sankofa offers one way to think about return as a future-oriented practice. Sankofa is often understood through the teaching that “it is not wrong to reach back for what you have forgotten” (Orofi-Ansa 2004). In archaeology, this concept encourages a return to the past in order to shape more accountable present and future practices. Sankofa can call people back to ancestral knowledge, stories, materials, and ways of making (Jackson 2020). Here, I use it in the framing of *Legacy Archaeology* to invite archaeologists to return to inherited collections,

archives, and materials with an intentional commitment to dismantling the structures of domination and control that continue to harm Black and Indigenous communities.

Despite these commitments, there remains a clear disconnect between organizations that invoke “decolonization” and those willing to engage in the direct actions required to build a decolonized or Indigenized practice. Institutional statements often align archaeology with racial equity and justice by condemning anti-Black and anti-Indigenous violence and calling for a transformed discipline. Since 2020, many institutions have issued statements in favor of Black Lives Matter and broader racial justice movements, yet fewer have made the structural changes necessary to redistribute authority, resources, access, and decision-making power. These statements have value, but statements alone do not change the structures of authority, access, and control needed for a decolonized practice (Ngandali and Craig 2023; Tuck and Yang 2019, 2021).

Archaeology still has much to learn from Black and Indigenous scholars. One reason some decolonization movements have not yet pushed archaeology in a fundamentally new direction is that we have not yet alienated and unsettled the comforts of the settlers and those who have failed to divest from settler ideas of futurity (Tuck & Gaztambide-Fernández 2013). I agree with this statement from Tuck and Gaztambide-Fernández because when decolonization language becomes institutional, abstract, or theoretical language alone, it preserves power imbalances within organizations (Ngandali and Craig 2023). Under the guise of a decolonization framework, institutions may name colonial harms while leaving the structures that produced that harm largely in place.

For these changes to advance and endure, archaeology needs more than revised methods. It requires an accountable practice capable of sustaining relationships after the research ends.

Commitments to redressing colonial violence must be tied to restoring existential integrity through the remembering of noncolonial and other ways of being in the world, a process Ndlovu-Gatsheni and Ngũgĩ wa Thiong'o describe as "re-membering" (Ndlovu-Gatsheni 2021; Thiong'o 2009:88). Re-membering forms part of a broader practice of redress, refusal, and repair. It works against colonial violence by restoring severed relations and pursuing a shared yearning for wholeness and healing (Harteman 2019; Richardson 2023; Thiong'o 2009).

I build *Legacy Archaeology* from this intellectual and ethical ground. As I define it, *Legacy Archaeology* is a restorative theoretical and methodological approach for working with inherited collections, archives, technical data, and other legacy materials, especially those shaped by colonial collecting, institutional classification, and disrupted relationships among belongings, people, and place. It asks archaeologists to return to collections with responsibility, to document what can still be learned, to acknowledge what has been broken, and to support the context-sensitive conditions through which belongings can continue to teach.

This framework also claims space for future-oriented archaeological practice. As Gonzalez et al. (2006) argue, an archaeology for the seventh generation seeks the sustainability and longevity of cultural integrity and vitality. I place *Legacy Archaeology* within this future-present-past intellectual tradition, alongside archaeology for the seventh generation (Gonzalez et al. 2006), Sankofa (Orofi-Ansa 2004), wake work (Sharpe 2016), and the work of the Association of Black Anthropologists and the Society of Black Archaeologists (Odewale et al 2018). Together, these traditions provide the theoretical, ethical, and relational infrastructure for archaeological work that is grounded enough to be accountable to repair, cultural continuity, and futures already being imagined, remembered, and practiced.

This dissertation has taken seriously what it means to work with collections, archives, technical imaging, and inherited data while remaining accountable to the communities whose ancestors, belongings, and knowledges made those records possible. I use the term *Legacy Archaeology* to name this practice (Figure 3.1). The word legacy carries multiple meanings that matter for archaeology. It can refer to something transmitted from an ancestor, predecessor, or the past. It can name inheritance, birthright, patrimony, or forms of reparative support. It can also describe older systems, records, and institutional structures that now require transformation. In this dissertation, legacy names both the burdens of inherited archaeological practice and the possibilities created by returning to collections with care, responsibility, and imagination.

We all have a responsibility to create an anti-racist archaeology. Black and Indigenous scholars, along with their accomplices (Dunnavant et al. 2020), are actively building anti-racist theories and methods that articulate the legacy of Black scholarship. They prioritize multiple ways of being, and the relationship among archaeology, identity, and relational accountability. This work reimagines what archaeology can and should be (Flewellen et al. 2021; King et al. 2000; Watson 2020). Breaking from standard archaeological discourse also requires non-Black and non-Native accomplices who share a commitment to confronting the racist ideas through which the discipline has operated. This commitment expands archaeology through a generative recollecting of knowledge.

Progressing interdisciplinary traditions toward Black and Indigenous scholarship also moves us toward what Tiffany Lethabo King (2000) calls *Otherwise*: something else, something to the contrary. It is a form of counter-storytelling that expands the space in which theory can be made (Pratt 2020; Richardson 2023; Ulysse 2019). To address this tension and build another bridge toward the *Otherwise* within critical social theory, *Legacy Archaeology* offers a restorative term

and framework for working with inherited collections, archival fragments, technical records, and community knowledge while still remaining grounded in archaeological practice.

Legacy Archaeology takes shape through a relational ethic. As Navarro and Roberson (2020) suggest, radical kinship aligns with a practice of relationality rooted in Indigenous knowledges, radical womxn of color, and decolonial or transformative love. Decolonial love, in this discourse, attempts to unmoor the silences that condition our contemporary moment (Walcott 2020). These ideas matter for *Legacy Archaeology* because inherited collections hold relations, absences, interruptions, and possibilities for repair. When we attend to the silences that surround belongings, new forms of care and accountability can emerge. In this dissertation, the living contexts to which these belongings' life histories emerge are exemplary of this restorative approach. Here, I participate in that decolonial love by unmasking, unearthing, and reworking the logics and conditions through which ethnographic and archaeological research has been conducted in the past, while simultaneously allowing contemporary collaborative interpretations to shape the directions of archaeological research.

Legacy data are already a known category in the archaeological discipline (Allison 2008; Kintigh 2006). Many archaeologists analyze legacy data within GIS or other digital environments to answer specific questions about social behavior, landscape use, and the organization of social space (D'Andrea 2024; Heilen and Manney 2023). *Legacy Archaeology* expands this use of legacy data into a broader theoretical and methodological framework for restorative collections-based archaeological research. It brings inherited collections, archival fragments, technical data, and community knowledge together into association while remaining accountable to the relationships, harms, and responsibilities these materials carry.

Academic archaeology has long privileged field-based research as the primary site of knowledge production. Yet the future of the discipline also requires a deliberate shift toward collections-based models of research, especially as archaeology faces a growing curatorial crisis, digital preservation challenges, and the inevitable ethical limits of continued excavation. As archaeologists return to legacy data and collections based work with new questions emerging from descendant communities, methods for relational analysis, legacy collections can become central to future archaeological knowledge production that remembers, honors, repairs, and builds *Otherwise* (D’Andrea 2024; King et al. 2000).

Legacy Archaeology is:

A restorative theoretical and methodological approach for working with inherited collections, archives, technical data, and other legacy materials.

Accountable to descendant communities, anti-racist commitments, and the tangible and intangible responsibilities created by collections-based research

Especially concerned with materials shaped by colonial collecting, institutional classification, and disrupted relationships among belongings, people, and place.

Of, or relating to, a previous or outdated system

Includes photographic archives, site plans and maps, primary documentary records, grey literature and historical reports, obsolete digital data, etc.

Something transmitted by or received (stored knowledge) from:

- Ancestors
- Community memory
- Research predecessors
- The past

A gift by will, especially of belongings, money, or other personal property as:

- Bequests
- Reparations
- Repatriation
- Financial equity

Birthright, inheritance, patrimony, special status

- Ancestral responsibility
- Cultural or familial inheritance
- Responsibilities carried forward through collections-based research

Figure 3.1. *Legacy Archaeology* schema as defined by author.

The tools available for reanalyzing legacy data have far-reaching implications for anthropological practice (Marsili and Hassam 2025). With *Legacy Archaeology* as the foundation

for analyzing legacy data and collections, we can position past historical violences and the ongoing structures that shape our present moment side by side and in conversation with each other in interesting ways. Archaeology thus becomes more expansive to include the wakes of slavery, settler colonialism, and institutional power which ripples into the present moment.

In doing this work, I found myself embedded in the institutional histories of the University of Washington's Department of Anthropology. I had to confront the legacy of archaeological practice within the same institution where I was trained. Leslie Spier, an early ethnographer and founder of the department, remains implicated in this history, regardless of the intentions that may have shaped his work. As a student of Franz Boas, Spier carried forward a disciplinary legacy that moved through his scholarship, his collecting practices, and the institutional structures that followed. This proximity made the critique personal as well as disciplinary.

Much anti-racist scholarship involves speaking truth to power (ABA 2020). It also involves speaking truth to peers and confronting the racist ideologies that shaped anthropological practice. In 2019, when the Chachalu Museum launched a new exhibit titled *Witness*, the exhibit used contemporary photography, historical context, and 3D technologies to tell the story of the sacred meteorite Tomanowos. Along one wall, the exhibit included a handwritten excerpt from a non-Native collector of Grand Ronde baskets and material culture. Rochelle, the museum interpreter at the time, described the man, like many anthropologists and amateur collectors, as having "collector's sickness." That phrase stayed with me because it names the legacy this dissertation engages. The sickness of collecting was a desire to gather, possess, classify, and extract belongings and knowledge. It drove much of ethnology and became foundational to anthropology (Stahn 2023). Rochelle also described this kind of written information as

“bittersweet.” It was bitter because anthropologists often represented Grand Ronde ancestors through overtly racist and sexist language. It was sweet because ancestral practices still lived between the lines of colonialist writing. Dian Million (2011) argues that people whose histories are at stake must be able to speak from and about those histories because their emotional force continues to live in bodies, families, communities, and lands. These histories shape who people become. They are carried through memory, grief, survivance, and place, and they require a return to the past as part of any effort to understand the present. For this dissertation and *Legacy Archaeology* more broadly, this means recognizing that colonial violence is inherited across generations and remains embedded in the land, belongings, and archives.

The concept of anthropological research as a bittersweet sickness stayed with me. As I gathered data for this dissertation, that taste kept returning. Gabrielle Miller speaks to this in “Anti-Racist Archaeology: Your Time Is Now,” writing that “while our white counterparts have the already arduous task of conducting research, teaching and publishing, we as Black academics are doing all of this and also carrying the weight of the sins of colonialism” (Ike et al 2020:14). The archives hold both knowledge and harm, not just held in the past through written documentation, but also entangled with present at the same time.

In “Salvaging the Salvage Anthropologists,” Warren and Barnes (2018) explain that outsiders approached Native communities during periods of tremendous loss and genocide. The archival record now holds some ancestral wisdom, including knowledge about the secret and sacred, that can still speak to descendants. Those with some understanding may help guide the next generation. The study of colonial and neocolonial texts can therefore become a meeting place for traditional knowledge when those texts are read through a critical lens that avoids reproducing settler colonial beliefs and assumptions (Warren and Barnes 2018).

For example, in Wishram Texts, Edward Sapir (1909) described his consultant Louis Simpson as “implicitly believing in the truth of all the myths he narrated, no matter how puerile or ribald they might seem” (xi–xii). This description is revealing. Sapir recorded Simpson’s knowledge while framing that knowledge through colonial judgment. To describe oral tradition as “puerile” treated it as childish or intellectually shallow. This reflected the authority that early ethnographic scholarship often gave to “white man’s rationalism” over Indigenous knowledge.

This is the bittersweet tension between archaeologists and the histories and archives they study. These texts can be valuable because they preserve stories, names, places, and forms of knowledge that may still matter to descendant communities. At the same time, they were often written through colonial assumptions that distorted the people and knowledge they claimed to document.

Nineteenth and twentieth-century anthropologists often compiled these texts, but the written record cannot fully preserve the presence of the storyteller in the way oral traditions and in-person storytelling can (Tolson 2014; Vansina 1985). Written texts cannot fully capture tone, gesture, pauses, emotion, setting, or the relationship between speaker and listener. Without those elements, the depth of the story is limited (Archibald 2008:17; Cruikshank 1990; Robinson 2020).

Engaging these archives require careful attention to how they were made, who they continue to affect, and how they may still support reconnection when approached with care. In this dissertation, I continue to ask myself: how am I implicated as a researcher in this history of extraction, and what can I do about it? This question turns the discussion toward the Indigenous theoretical frameworks that guide this dissertation. These frameworks ground *Legacy Archaeology* in land, sovereignty, relationality, and community authority. They show why legacy

collections must be approached through responsibility. That responsibility extends to ancestors, belongings, people, and place. From this foundation, *Legacy Archaeology* becomes a practice of repair and return. It also becomes a way to interpret legacy data with care within broader Indigenous intellectual traditions.

Indigenous Archeology and Sovereignty

This project is inspired by Indigenous communities and the decolonizing movements in museum studies and archaeological research (Atalay 2012; Lonetree 2012). A decolonized and community-based project requires more than the inclusion of Indigenous perspectives within existing research structures (Anderson et al. 2025). It requires researchers to design research alongside descendant communities. Archaeological data, museum records, and legacy collections can then be reinterpreted through the knowledge systems, priorities, and responsibilities of the people to whom they belong (Smith 1999). Such work challenges the role of museums as gatekeepers of knowledge and supports Indigenous communities in reclaiming authority over their histories, belongings, and cultural futures (Askren 2011; Gonzalez et al. 2018; Haakanson 2018; Silliman 2014; Vizenor 2008).

A key model for the foundation and implementation of the frameworks for this dissertation came from Chachalu Museum and Cultural Center's 2018 exhibit the "Rise of the Collectors". The Confederated Tribes of Grand Ronde became the first Tribe in the United States to receive a one-year collections loan from the British Museum. During the loan, Chachalu temporarily welcomed home belongings collected between 1870 and 1910 by Reverend Robert Summers and Dr. Andrew Kershaw. Kershaw lived on the Grand Ronde Reservation for twenty years as a physician and later a superintendent of the Grand Ronde Agency. Summers and his

wife, Lucia, traveled extensively collecting belongings, recording observations, and gathering plant materials. These collections became part of the British Museum, where they remained for over 100 years (Hasty et al. 2022).

The Chachalu exhibit reframed these belongings through Grand Ronde knowledges demonstrating cultural authority and the renewed relationships gained from this loan. As CTGR Cultural Resources Department Manager David Harrelson stated, “This exhibit is about reclaiming our ancestor’s belongings as living objects”, (Parks and Surowidjojo 2019). These belongings unlocked a wealth of ancestral knowledge within the community. Tribal curators and staff worked with British museum collection managers to increase awareness of each item and update the museum’s records. Tribal staff 3d scanned and photographed each belonging in an effort to retain the most detailed record possible for future use. These records continue to support storytelling, artistic practice, and cultural education. The exhibit demonstrated that museum collections can hold tangible and intangible knowledges when they are connected to community practice and cultural memory.

The return of the belongings to the British Museum after the one-year loan also revealed the limits of temporary access. Community members were able to study, photograph, and learn from the belongings, but museum policies continued to regulate how they could be handled. When representatives from the British Museum returned to collect the items, it was a solemn day for the community. For months following the return, the spaces to which the belongings were exhibited were now empty. The staff intentionally left the didactic or museum label in place next to empty space to express the feeling of yet another removal of the belongings from their care. Despite the physical removal of the belongings back to the British Museum, Grand Ronde artists were nonetheless able to recreate traditional designs based off the Summer’s collection. As a

tribal lending institution, the Chachalu Museum asserts sovereignty by telling its own stories through collaborative research and exhibits. The exhibit, and later empty exhibit space, became a statement of authority. Grand Ronde people are still here and have the right to their own stories on their own lands.

This dissertation builds from that model of collections-based learning. It understands museum-held belongings as sources of both tangible and intangible knowledge. Chachalu successfully learned from the Summers' collection, created a public exhibit, recreated new pieces, and reintegrated these knowledges back into Grand Ronde-specific cultural art creation practices and protocols.

This matters because indigenous epistemologies are systems of knowledge, relation, and practice that shape daily life and cultural responsibility (Marek-Martinez 2021). When the archaeology recognizes the authority of these knowledge systems, it becomes possible to create research practices grounded in shared authority, co-learning, and reciprocal responsibility (Atalay 2012, 2019; Colwell-Chanthaphonh et al. 2010; Kimmerer 2013; Silliman 2008)

Following the ontological turn in anthropology, an increasing number of projects have begun to engage in non-colonial frameworks that see the world as different ways of being (de la Cadena 2010; McNiven 2016; Viveiros de Castro 2004; Zubrzycki 2017). Mario Blaser and Marisol de la Cadena critique the Western hegemonic assumption of a singular objective reality, grounding a political ontology within the Pluriverse (2018). By engaging with these Pluralisms, by shifting to an ecology of practices model in archaeology, we can create new approaches to produce archaeological knowledge that is more meaningful to descendant communities while also reducing harm in the interpretative practices they engage (Atalay 2020a; Gonzalez 2016; Laluk 2021; Little and Shackel 2014; Million 2009; Wai Wai 2024). Unlike traditional Western

research models that generate knowledge about a community, collaborative and Indigenous approaches to archaeology offer theoretical and methodological tools for generating community-driven research designed with, and for, Native communities (Atalay 2006; Bruchac et al. 2010; Colwell-Chanthaphonh and Ferguson 2008; Nicholas 2019; Nicholas and Andrews 1997; Silliman 2008, 2014; Smith 1999; Smith and Wobst 2005; Watkins 2006). It is essential and important to me that my theoretical and methodological scholarship are continuously in support of the communities I work with so when we are in shared spaces, we have already established a research environment of shared authority (Atalay 2012; Smith 1999; Strand et al. 2003; Colwell 2016; Gonzalez et al. 2006; Wilson 2008).

Collaborative Authorship

The rest of this chapter builds more theoretical contexts for *Legacy Archaeology* through Black Feminist archaeology, nonhuman agency, and place-based archaeological practice. Black Feminist scholarship emphasizes intersectionality, reflexivity, and the unequal conditions of knowledge production. A nonhuman agential view of material culture helps me approach stones encountered in the collections as teachers and witnesses, whose carved surfaces, motifs, and histories continue to teach. Place-based approaches ground this work in land, sovereignty, community authority, and the responsibilities that come with working as a guest.

My dissertation involved Tribal members at all phases of the research. Together, we are co-learners and co-teachers in this whole research process. Their expertise provided in depth critical knowledges about how carving practices are connected to their history, stories, and understandings of place. Working with, and for, Indigenous communities is something that is accomplished with long-term reciprocal relationships (Atalay 2008, 2012; Norder 2007). The

knowledge itself generated and remembered from these kinds of generative practices are important. Integrating knowledge from outside of archaeological scholarship, such as Indigenous Studies supports ways of seeing and investigating the world that refuses tropes of Indigenous people as relics of the past and decenters non-Native people in the creation and maintenance of knowledge about them.

In the following section I include a version of “Rediscovering with Intent and Purpose: An Indigenous Archaeology” Originally published in the SAA Archeological Record (Ngandali and Craig 2023). Chip Colwell, while serving on the Society for American Archaeology’s Decolonization Task Force, reached out to me to contribute to the SAA Archaeological Record. As part of the work of the SAA Decolonization Task Force, a special column in The SAA Archaeological Record was created to foster dialogue about the need for and impact of decolonization in the field. The prompt was, how you would approach and advocate for decolonization in this area of the field? The task was to write it in an incisive, forward-looking, and accessible way. At the time I was living and working on the reservation in the Chachalu Museum collections. I reached out to Stephanie to join me on this issue because Indigenous co-authorship is an important form of collaboration that directly supports shared authority, accountably, and ethical knowledge production. It moves beyond consultation and recognizes that collaboration happens at the level of research design, interpretation, and dissemination. In authoring this paper together, we became close friends and research partners. In the following section, I present the unabridged essay.

Rediscovering with Intent and Purpose, An Indigenous Archaeology

Ngandali, Yoli and Stephanie Craig. 2023. Rediscovering with Intent and Purpose an Indigenous Archaeology. *The SAA Archaeological Record*. 23:5-9.

Within the archaeological community, departments, organizations, and advocates publicize statements of allyship with increasing frequency. Through such statements, individuals and groups align themselves with racial equity and justice, condemning anti-Black and anti-Indigenous violence, and furthermore rallying for a decolonized archaeological discipline. Nonetheless, there seems to be a disconnect between organizations that refer to commitments to “decolonization” and those committed to direct actions in engaging with a truly decolonized and/or Indigenized practice. Although many people and organizations supportive of efforts in decolonization may have good intentions, decolonizing archaeology requires an interventionist approach and a deep, critical understanding of sovereignty while simultaneously engaging with imperialism and colonialism through resistance and restitution.

In recent years we have noticed increases in under-researched and disingenuous land acknowledgments, in activism signposting through performative allyship, and in tokenizing Indigeneity and other BIPOC identities. These trends lead to unproductive impact, inauthentic change, and social gain to people from non-marginalized groups. While acknowledgment of struggle and alignment with Black and Indigenous values are important steps forward, there is a danger here of actively contributing to the extraction of knowledge and reproducing further harm to marginalized communities. Instead, we look to intentionally and purposefully rediscover an archaeological discipline rooted in Indigenous values, knowledge systems, and community-based methodologies.

As Eve Tuck and K. Wayne Yang note, “Decolonization doesn’t have a synonym” (2012:3). For those truly committed to our collective liberation, we need a working knowledge of decolonization and examples of it that can transform archaeological practice. We see decolonization as undoing colonial impacts and internally reevaluating assumptions and beliefs. In doing so, we call for greater acknowledgment that undertaking a decolonized archaeological practice alongside an Indigenous or historically marginalized community is not something to be done lightly nor as a stand-in for Diversity, Equity, and Inclusion (DEI) initiatives. Used in this way, decolonization fails to become a process of ontological and methodological separation from one’s colonizers and Western ways of knowing and engaging with material culture. Instead, it becomes a way of reconciling or softening power imbalances within organizations—ultimately missing the mark under the guise of a decolonization framework.

The SAA Task Force on Decolonization (TFD) has recently identified key areas for consideration and intervention within the discipline of archaeology (Lippert et al. 2021). The TFD is planning ways to organize and provide access to resource materials, and in this article, we offer to amplify the TFD’s message of engaging a decolonized practice and give examples of community-led and heart-informed work through the centering of Indigenous ontologies, land, and sovereignty. This work builds on what is referred to as heart-centered practice, which foregrounds an ethic of care and a commitment to relationality (Davidson and Brandon 2012; Lyons and Supernant 2020; Marek-Martinez 2021; Marek-Martinez and Gonzalez 2023; Nixon 2020). This article is in no way a manual or guide to decolonization but rather a reminder to approach the ways in which we conduct our research relationships with intention and purpose.

We, the authors, recognize that coming into and maintaining respectful relationships with Indigenous communities and their belongings is one way forward. The Chachalu Tribal Museum

and Cultural Center showcase the diversity and flexibility required for decolonizing approaches.¹ Located on the Grand Ronde Reservation in western Oregon, approximately 60 miles southwest of Portland, Chachalu is more than a place to house artifacts and records.² It is a place where the story of Grand Ronde is shared and maintained (Figure 3.2). The mission of Chachalu and the Cultural Resources Department of the Confederated Tribes of Grand Ronde is to identify, protect, preserve, restore, procure, and manage the cultural collections and belongings found throughout the Confederated Tribes' ceded lands and areas of interest, as well as support a healthy community by facilitating dialogue, maintaining continuity, and providing protection of tribal lifeways for the benefit of future generations.



Figure 3.2. Chachalu Museum Tribal Museum and Cultural Center exhibit space. Photo courtesy of Chachalu Museum.

I, Stephanie, on my mother's side am Kalapuya, Rogue River, Umpqua Chinook, and enrolled at the Confederated Tribes of Grand Ronde; on my father's side, I am white; I'm a seventh-generation traditional basket weaver, owner of Kalapuya Weaving and Consulting, and the former Collections registrar for the Chachalu Museum and Cultural Center. I chose this career path to help authentically tell our own stories for our own people. We still have the traditional knowledge. It's in our DNA, and its intergenerational knowledge that needs to be heard.

I, Yoli, am a member of the Ngbaka tribe from the Democratic Republic of Congo, and in doing this work as a non-native Indigenous archaeologist and independent researcher on the Cultural Heritage Imaging Project (CHIP), I work alongside the Cultural Resources Department. CHIP is a collections-based research project that implements low-impact archaeological methodologies that integrate Grand Ronde ways of knowing into the study and curation of tribal belongings.

We determine how belongings are to be handled across the life of the research project through the stages of research, from design and interpretation to collections management, exhibition, and outreach. Integrating Indigenous values into our research process is how we expand beyond Western ways of knowing and understanding the past.

Centering Indigenous Ontologies

We as a discipline need to raise the standard of care for material culture by including Indigenous ontologies in archaeological and museological research, thereby providing responsible stewardship of Indigenous collections. An example of this practice from our own work is our relationship with material culture. We use the term “belongings” in lieu of “artifacts”

or “objects” as an intentional ontological shift in the perception of cultural heritage (Schaepe et al. 2017). “Artifacts” are indicative of being materials of the past while “belongings” hold the status of tangible living material culture intrinsically connected to past and present human relationships. For Indigenous people, cultural belongings are not just “relics,” “artifacts,” or simply “art.” Belongings hold life and meaning far beyond archaeological contexts.

Archaeologists often observe artifacts as passive data points, anonymous objects, or inert materials that are subsequently reduced to phases of manufacture, use, and discard. In this Western way of knowing, artifacts are studied as objective “things” rather than how they are enduring social and cultural agents and sources of information and of healing in tribes (Atalay 2019).

We encourage embodying a different mindset, values, and way of thinking about and engaging with belongings. Consider that everything is living, and everything has a spirit. In museum collections, most belongings or holdings come from the land or water. They were once and in many respects are still alive, and they have given their lives to us and for us to live, thrive, and create. Basketry is made of plants or animal fibers; tools are made from animal bones, wood, and stone. Traditional foods and ceremonies are offered to give thanks to the land, to the water, to plants, and to others (Armstrong 2020). We live with the land and water, and as the land and water provide us nourishment to sustain our bodies and feed our spirits, so we in return take care of the land and water, for it will take care of us in the future, as it has in the past, and as it does in the present. Belongings are extensions of these values, and they connect us to our grandparents, great-grandparents, and countless other family members, as well as our culture, spirituality, and way of life.

Museums and cultural institutions have the power to educate and create authentic change by informing people how to look at and understand the world around them (Bedford 2014; Foley and McPherson 2000). We have noticed that many institutions are “sterile,” and we advocate moving toward having collections that are more “fluid”—those where items are not stored in closed containers and where items are regularly rotated through displays, for example. Museums could also allow community members to touch belongings (gloves optional), to feel them not only for themselves but for the belonging itself, when safe and appropriate. Belongings are meant to be used, to be sung to, and to be checked out and used in ceremony. They deserve a chance to be active members of the life and lives of descendant communities. The ways in which we create authentic change in relation to material culture also concerns land and place-based responsibilities.

Centering Land

Returning land is one of the most significant acts of decolonization. Museums and archaeological organizations have opportunities to engage in restitution and reparation actions, but there is no true reconciliation without the return of stolen land. Land Back is a political, organizing, and narrative framework specific to Indigenous people that advocates for putting Indigenous lands back in Indigenous hands.³ Simple land acknowledgments do not absolve settler colonial privilege, and they require accountability and action on the part of institutions benefiting from stolen land.

We understand that return of land is not a simple undertaking, but we can begin this process by contributing to the restoration of cultural landscapes and heritage sites (Acadabo and

Martin 2020). Partnering with local and regional Indigenous communities and tribes allows for the land and space to be tended to, prayed over, and put back to use by the original people, the stewards of the land. This practice enriches our knowledge of the diverse cultural history of the land, and it cultivates and strengthens our relational responsibilities to each other and the land. We are still here and have the right to tell our own story on our own land.

Within the Grand Ronde community, the ways in which we establish ties to particular areas of importance is through building relationships and partnerships with cultural and noncultural museums built on ceded and traditional homelands. In doing this partnership-building with museums and archaeological organizations, we are beginning the process of unsettling and remapping the archaeological and curatorial landscape by reestablishing and maintaining material and memory connections to Grand Ronde's homelands and heritage—ultimately contributing to the principles of the Land Back movement (Figure 3.3).

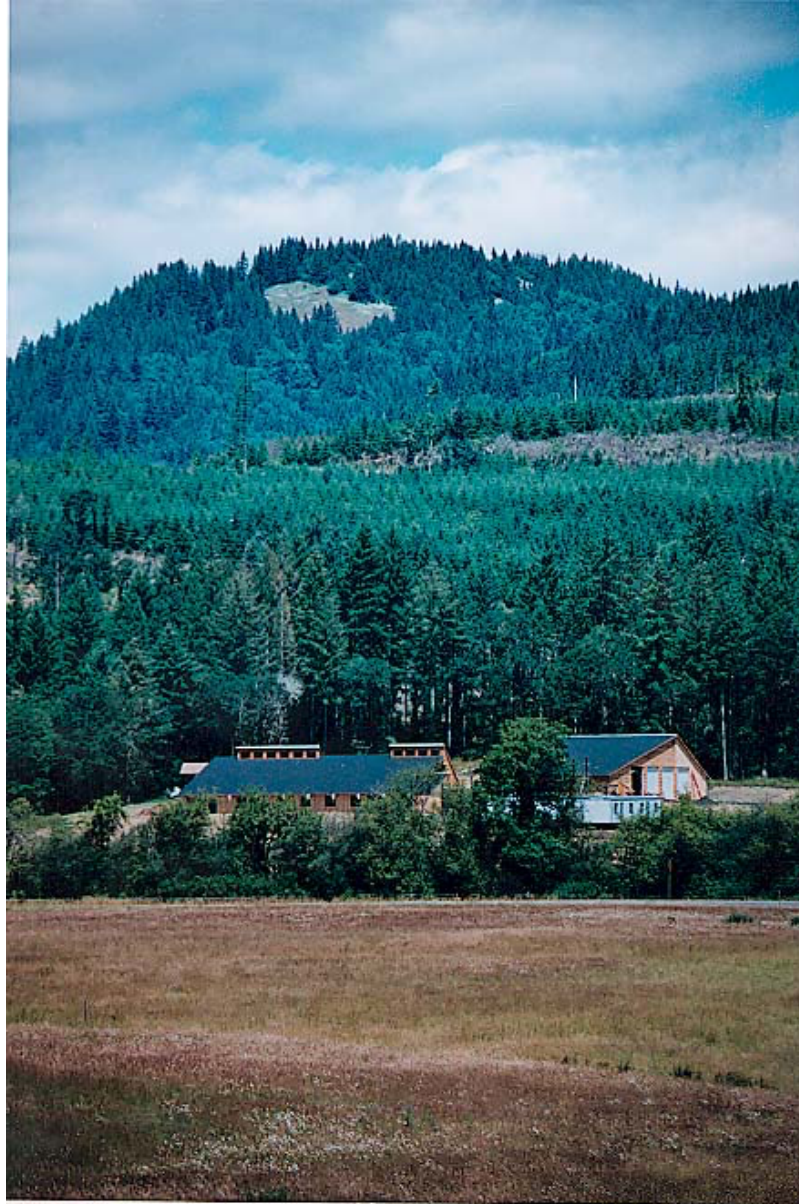


Figure 3.3. Looking toward Spirit Mountain on the Grand Ronde Reservation. Photo courtesy of Chachalu Museum.

We encourage bringing in community members and student researchers to come and study, research, and handle their ancestors' belongings, which allows for accountability and a respectable ethical practice of being a good neighbor and steward. We advocate for funding an Indigenous or tribal liaison who has knowledge of tribal protocols. These actions bridge the gaps

between tribes and institutions, contributing to shared decision-making and authenticity that has the potential to transform the collections into place-based sites of resistance, remembering, and reconnection. Healing history heals the land.

For those of you who are new to restitution or are unsure of where to start for embracing Land Back philosophies, we would urge you to start by considering how are you, your organizations, and institutions tied to settler colonialism through oppression and dispossession? What are the histories of removal? Where are the contemporary points of conflict within these discourses? And what will you do about it? In implementing these questions and principles into practice, they have the potential to contribute to an organization or museum's decolonizing initiatives. Philosophies of restitution and ontological shifts are good starting points for a decolonized practice; nevertheless, the most critical aspect of this work is the centering of Indigenous sovereignties in the research process.

Centering Sovereignty

Whether it is recognition of formal tribal sovereignty through treaty and policy, or Indigenous sovereignties regardless of nation-state recognition, we have the opportunity to realize and actualize futures for our discipline—futures that actively recognize and center sovereignty. As a tribal lending institution, the Chachalu Museum asserts sovereignty by telling its own stories through collaborative research and exhibits. Since the inception of the Cultural Heritage Imaging Project (CHIP), it has been relevant to, developed with, and designed for all of the co-collaborators while contributing to community needs and goals. Our protocol prescribes Grand Ronde's authority and control over the research process, and the Cultural Resources Department shares all final decision-making authority over photos, other media, and

interpretation. More specifically, this department determines the contexts in which I (Yoli) can and cannot show, touch, or interpret belongings. One way we recognize and center sovereignties within this project is through the following principles of community-based archaeology (adapted from Gonzalez et al. 2018:Table 1).

1. Community works in partnership with the Cultural Resources Department to set standards and protocols for research.
2. Research goals integrate community needs and perspectives at the outset of a project.
3. Community members are compensated for their time and work at levels consistent with other paid research consultants. Grand Ronde and other tribal and Indigenous students are provided with stipends to offset cost of attendance and participation in events and activities.
4. The Historic Preservation Office and Cultural Resources Department have the right to determine how to share and/or disseminate the results of research. All resulting research outcomes, as well as grant and funding applications, are reviewed and approved by these entities.
5. Community has the right to determine the process of research on sensitive topics.
6. Collaboration is envisioned as a long-term relationship. Research partners are thus committed to finishing all projects, as well as assisting with related needs beyond the life of any particular project.
7. Research methods are developed in accordance with community perspectives and values.
8. Research contributes to the capacity of a community to manage its cultural resources.

Over the past few years, we have seen an increase in genuine efforts to engage with Indigenous communities. But we have seen an even sharper increase in performative allyship, hollow declarations, and surface-level investment in decolonized practice. Decolonization is so much more than this. Decolonization within archaeological practice is not a buzzword, DEI initiative, or a metaphor. It's time to rediscover and reimagine with intent and purpose an archaeology rooted in Indigenous values, philosophies, and knowledge systems. If you find yourself thinking that this is too large of a change, or if your organization would never support a decolonized practice, or if you're the only one doing this work, then please ask yourself, what am I or what are we prioritizing, really? What are the interventions you can make in your own practice, even if you don't work with an Indigenous community? We hope this short article has reminded you how individuals, departments, organizations, agencies, and institutions may be able to assess their own research strategies and change policies and practices accordingly. Together, as researchers and stewards of material culture, we have the ability to enact long-lasting change within our discipline.

Notes

1. <https://www.grandronde.org/history-culture/culture/chachalu-museum-and-cultural-center/>, accessed September 1, 2023.
2. <https://www.grandronde.org/>, accessed September 1, 2023.
3. <https://landback.org/>, accessed September 1, 2023.

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Black Feminist Archaeology as Critical Archaeological Practice

Archaeology is a practice of interpretation that is shaped by relationships, power, memory, and material presence (Wylie 2000; Battle Baptiste 2011; Smith 2006). In order to be attentive to these interpretations, researchers need theoretical frameworks that can account for positionality and lived experience. This section argues that Black feminist theory offers archaeologists a critical framework for building more accountable, reflexive, and relational research practices. I speak from my experiences as a mixed-Black femme-presenting archaeologist working alongside Indigenous communities in the Pacific Northwest. Pulling from Black diasporic traditions, anti-racist archaeology and intersectionality (Crenshaw 1991; Collins 2000; Franklin et al. 2020; Kendi 2019; Rivera et al. 2022), I consider how Black Feminist scholarship can activate and add multi-dimensional lived experience to *any* archaeological research project.

This reflexive approach created new spaces for challenging Western classification and interpretation (Kishimoto 2015). It also opened ways to speak with and alongside material culture, connecting past and present human and nonhuman bodies through care, accountability, and shared responsibility (Allen 2021). This research allowed me to explore diverse intellectual spaces for understanding and challenging Western systems of classification and interpretation. Low-impact approaches created new interpretive possibilities, expanding the productive spaces to interrogate the relational contexts that arise from community-based work. Incorporating lived knowledge and experience into archaeological and museological practice offered one pathway for making archaeology more accountable to descendant communities and their intersectional identities. Some museums have begun to take up this work by creating space for community knowledge, collaborative interpretation, and more relational forms of care (i.e. knowledge

families at the Burke Museum of Natural History and Culture). Yet still, more work remains to be done. Archeologists, anthropologists, and museum curators can continue to reimagine museums as places that support meaningful experiences and fostering diverse knowledge systems (Morin 2014).

Anthropology has long depended on collaboration, although through the intellectual labor of Indigenous collaborators was frequently obscured. Indigenous individuals worked as guides, interpreters, artisans, procurers, translators, and knowledge holders. These relationships complicated the boundaries between anthropologist and informant, kin and outsider, collector and collected. Some anthropologists maintained social and intellectual distance in the name of objectivity, while others developed close relationships with Indigenous communities through long-term engagement.

The Boas-Hunt collaboration, for example, demonstrated that anthropological knowledge was often co-produced through Indigenous expertise, translation, interpretation, and intellectual labor. Indigenous intellectual labor was sometimes obscured or unevenly credited by the authority of the anthropologist (Briggs and Bauman 1999; Bruchac and Zobel 2018). Zora Neale Hurston's ethnographic practice similarly unsettled and extended this critique, in a different but related direction. As a Black woman anthropologist and folklorist, Hurston unsettled the divide between insider and outsider, writing and working within Black community in the American South and the Caribbean (Hurston 1935; Nwankwo 2003). Taken together, these examples show that anthropological knowledge, even in the late 19th and early 20th centuries, have depended on relationships, lived experience, and community expertise. Yet the people whose knowledge made that research possible were often denied recognition as intellectual equals. Their contributions were often hidden by colonial power relations and documentation practices.

Intersectionality provided an important framework for attending to these issues. Developed by Black feminist scholars, intersectionality describes how Black people, and specifically Black women, inhabit multiple positionalities at once, including race, gender, sexuality, ableness, class, and nationality, and other social locations (Crenshaw 1991). Black Feminist scholarship has shown that oppression operates through interlocking structures of power and cannot be understood through a single social category alone because oppression has never operated solely along racial divides (Collins 2000).

In archaeology, intersectional approaches have been especially important for examining how inequality shaped past and present social worlds. Archaeological scholars has used intersectionality to study marginalized people, especially in historical archaeology through work on race, gender, labor, sexuality, class, and power (Agbe-Davies 1998; Battle-Baptiste 2011; Casella and Fowler 2005; Franklin 1997a, 2001; Franklin and McKee 2004; Voss 2008; Voss and Casella 2012; Wilkie 2003). These studies demonstrated how intersectional analysis could reveal the layered and relational nature of oppression, identity, and lived experience in archaeological interpretation.

Collin's concept of the matrix of domination further helped me conceptualize how intersectional oppressions were organized across different domains of power. Structured through institutional, disciplinary, hegemonic, and interpersonal forms of power (Collins 2000), the matrix of domination is a way to examine how power operated and operates within museums, archaeological practice, and collaborative researcher. For archaeology and museum work, this means that the positionality of the researcher, the community (in whatever configuration the community is set), and the theoretical framework directly shaped the questions we asked, the

people and materials included, the distribution of authority, and the ways in which the research was presented and disseminated (Smith 2012; Wylie 1992, 2000).

The entanglement of our anthropological and community experiences matter because knowledge production is and was never neutral. The authority granted to anthropologists, museums, and archives has always been shaped by race, gender, class, citizenship, and colonial power. These structures determined who was treated as a researcher, who was treated as a source, whose knowledge was cited, and whose labor was silenced in the archive. I now turn to how these layered forms of power shaped my dissertation research.

In this dissertation, I use intersectionality to consider the varied identities, roles, responsibilities, and positionalities of the people involved in CHIP. Intersectionality helped clarify that collaboration was never a neutral or objective process. Decisions about access, interpretation, documentation, and representation were shaped by the ongoing social relations, institutional histories, community priorities, and the responsibilities carried by each participant in the project and the identities of each person involved. When we ignore differences within groups can reproduce tensions among groups.

These frameworks were especially relevant to CHIP because CTGR includes more than thirty and Tribes and bands who's traditional and homelands accustomed places span nearly all of Western Oregon, portions of northern California, and southwestern Washington (CTGR 2025). This diversity means that questions of access, representation, and interpretation required careful attention. Issues could emerge around who had access to particular collections, who participated in research, and which forms of expertise were recognized, and how belongings were understood within broader community contexts. Within CHIP, some participants identified as artists, carvers, makers, knowledge holders, or community members. While others engaged

the collections through different responsibilities and relationships. These varied roles created additional interpretive dimensions and showed how the project approached belongings, documentation, and collaborative analysis.

Recognizing these differences strengthened the project. Learning from one another and leaning in the strengths of each participant made it possible to recognize both individual and collective responsibilities toward cultural heritage stewardship. In this way, intersectionality supported a more careful understanding of collaboration as a lived and experienced practice shaped by community diversity and shared responsibility towards stewarding cultural heritage.

In doing this collaborative work, I was able to identify these intersections early in the research process. When tensions arose, intersectional reflexivity helped me ask a series of practical and ethical questions: Was this issue structural? interpersonal? Not my business? Was this a matter that required me to listen, step back, or seek guidance? These questions were especially important because my position shaped how I was able to participate in the project. As a mixed-Black femme-presenting academic who lived in and engaged with community during the summers, I occupied a particular relational position. Grand Ronde community members, cultural advisors, museum staff, and other collaborators engaged with me through that position. A Grand Ronde community member, an elder, a person with family ties to specific collections would have experienced the research library, museum vaults, and archival materials, for example, differently than I did.

These differences are visible in the organization of access. The Grand Ronde research library curates confidential documents that are only accessible to Grand Ronde community members. As someone who is not Grand Ronde, I understood that those materials were outside of the scope of what I could request or expect to view. Also, in some computer databases,

permissions the research librarian grants access based on familial identity even within the Tribe. Acknowledging and respecting differences in access and identity within the project was part of the ethical structure of the work. When a community creates boundaries, especially a Tribal community, it upholds authority and sovereignty over the conditions of research. Indigenous data sovereignty affirms the rights of Indigenous Peoples and Nations to govern the collection, ownership, access, interpretation, and use of data created by or about them (Tsosie 2019). Multiple and conversations across the research design and structure around access, interpretation, photography, handling, publication, and circulation were part of the method itself. Staying accountable to these boundaries prevented the research from treating community knowledge, cultural belongings, images, stories, or relationships as open data. This approach aligned with the CARE Principles for Indigenous Data Governance, which emphasize collective benefit, authority to control, responsibility, and ethics in research involving Indigenous communities (Rainie et al. 2017).

These same principles applied in field and collections contexts. For example, there is a non-Native owned farm near the reservation home to dozens of 2-3-foot-tall stone phalluses. When visiting this traditional cultural property, Grand Ronde Tribal members explained the gendered protocols associated with handling these stones. Women can handle and touch the stones, although they were also told that doing so carried the possibility of pregnancy. In keeping in line with these protocols, young women who touched the stones were made aware of these teachings and the responsibilities attached to those actions. This example demonstrates the power of the stones within community and how collaborative archaeology requires attention to specific kinds of knowledge and embodied practice.

Additionally, at Sauvie Island, these questions shaped how ground stone bowls, mortars, and pestles were interpreted. These belongings were associated with food processing, ceremonial and religious practices, trade, and Indigenous ecological knowledge. They were used in both ceremonial and utilitarian contexts by men and women, reflecting multiple forms of knowledge and embodied practice. They also materialized relationships to food systems, ceremony, exchange, and ecological stewardship within some landscapes that continue to be regulated through colonial land policies.

Intersectional reflexivity strengthened collaborative archaeological practice by helping identify how access, authority, identity, gender, protocol, and responsibility shaped the research process. In CHIP, I applied intersectionality as a practical method for making decisions, responding to tension, and clarifying accountability. It helped me to understand when to speak, when to ask questions, and when to defer to cultural advisors. It also helped the project remain attentive to the different responsibilities carried by numerous artists, cultural advisors, students, museum staff, and community members.

Long term partnerships with Tribal and descendant communities require regular clarification of roles, expectations, and responsibilities across the life of the research design. Academic timelines, institutional policies, community timelines, and cultural protocols often operate through different forms of urgency and obligation. When tensions arose, intersectional reflexivity offered a way to return to the collaborative time to shared values. Asking yourself questions such as, “What is my positionality within this project?”, “What power dynamics are shaping this decision?”, and “Who is most affected by the choices I make?” helped guide more accountable practice. When we looked for shared values, such as the care for cultural belongs or

community wellbeing, that tension transformed into a productive space for ethical reflection and stronger research practice in the long run (Dring et al. 2019).

This structure placed cultural protocol, community authority, and contextual knowledge and care for belongings at the center of the process. Given the multiple roles and power relations at play within this (and any) project, intersectionality required us to reflexively situate ourselves to better be accountable to the context-sensitive care the belongings need. There are several non-Native staff members at the CTGR Cultural Resources Department and the shared values of care for cultural resources continually bring people together. As Briece Edwards has stated, this work involves learning how to “advocate for the resource”. My role in CHIP was one part of the larger story that Grand Ronde wanted to share about Chinookan art, and the CTGR staff and cultural advisors shaped the terms of that story. The CTGR staff and cultural advisors determined who had the right to tell particular stories, and when, how much could be shared, which belongings I was allowed to study, and which materials should remain undisturbed (Appendix G).

CHIP required archaeological interpretation to move through relationships of responsibility. Grand Ronde-specific research protocols shaped the interpersonal and ethical spaces of the research process as well as the temporal framework of the project. The relationship between archaeology and the past become one of “multiple-ness” of time, place, and performance (Attfield 2014). When we think of the stones as offers one way to use archeological data to address present-day needs within descendant communities (Flewellen 2024). Alicia Odewale’s, *Black Heritage Tree Project*, for example, maps trees known as heritage or spirit trees using their presence as living witnesses to centuries of Black history and resistance. This project demonstrates how landscapes remain alive with history and how nonhuman beings can hold memory in ways that exceed written archives. Flewellen (2024) similarly examines coral

stone building on St. Croix as material witnesses to the biophysical afterlife of slavery. These palimpsests of the past call attention to the multiplicity of temporalities of materials and how objects and environments hold the histories and residues of colonial violence, endurance, and transformation.

These approaches helped me think more carefully about presence, materiality, and witnessing in relation to cultural belongings. The concept of “witnessing” was introduced to me at the 2019 Chachalu Museum exhibited called *Witness*. In this dissertation I use witnessing to build on the studies of nonhuman agency and to consider the possibility that Tamanawas and other cultural belongings, such as the power figures, may serve as witnesses to cultural practices, political movements, and relational histories through time. Witnessing, in this sense, describes a relation of presence, responsibility, and response. It asks researchers to consider what belongings may have “seen”, what histories they carry, and how they continue to share the relationships among people, communities, and places.

Patricia Hill Collins reminds us that when we commit to truth, it requires a politics of empathy and a commitment to social justice (Collins 1990). This principle was central to how I came to understand witnessing in collaborative archaeological practice. Bearing witness required more than observing or documenting. It required allowing the truths of others, both human and nonhuman, ancestral and contemporary, to have an impact on the research process. Mutuality was grounding in respect, the capacity to speak honestly, and the willingness to be changed by scenarios we encountered. In this way, intersectionality, witnessing, and collaborative archaeology worked together to create a practice in which difference could deepen accountability and strengthen relationships.

Stones as Teachers and Witnesses: Nonhuman Material Agency

In questioning Western notions of agency and expertise, we can begin to visualize a future for Columbia River art revitalization which is inspired by collections from the past, reestablished today in a living context, and carried forward through continued practice (Askren 2011; Deloria et al. 2018; Hickey 2019; Melchor Quick Hall 2019). This section argues that stone belongings can be understood as active presences within cultural, political, and archaeological life. Drawing from archaeological theories of agency, Indigenous knowledge systems, and materiality studies I consider how stones may serve as witnesses and teachers whose presence shapes past and present relationships.

Agency theories provide one way to examine these relationships. In archaeology, agency has often referred to the capacity of individuals and groups to act within and among social worlds that are constrained and enabled by social choices. Agency refers to the action of individuals in their daily practices and how these strategies interact with objects, landscapes, and societal structures. Agency theory is framed by a dialectic relationship between society, material culture, and the individual. Drawing on Bourdieu's theory of practice, archaeologists have examined how people use daily routines, embodied knowledge,

Bourdieu (1977) showed that people respond differently to comparable situations and use behavior, beliefs, and institutional resources to reproduce or transform social life (Johnson 2010:108; Trigger 1989). Material culture reflects human agency and intentionality, while also helping construct and challenge social realities (Knappet and Malafouris 2008). Agency can therefore be understood as a dialectic between individual action and broader social structures (Foucault 1970; Trigger 1989). The object studied, as well as the underlying systems to which the knowledge is produced, became important factors for considering agency of humans in the

past. Bruno Latour and Alfred Gell (Miller 2006) understood the importance of objects as agents but took it a step further by arguing that scholars are anthropocentric (Latour 2005; Gell 1998).

Artifacts cause actions, produce consequences, and participate in social life. Scholars such as Latour and Gell questioned the assumption that human intention alone drives relationships between things and society, blurring the boundaries between people as subjects and artifacts as objects (Mills and Walker 2008). From this perspective, things, materials, and landscapes shape how people perceive, inhabit, and move through the world (Olsen 2003). Although objects do not have intentions in the same way people do, they can still prompt human action, structure behavior, and transform social relationships (Mills and Walker 2008).

Human behavior is shaped by artifacts, buildings, landscapes, and the natural environment. By examining materiality and human engagement with objects, archaeologists can better understand how people perceived, used, and related to objects in the past (Battle-Baptiste 2011; Trigger 1989:473; Joyce 2002). Materiality refers to physical engagement with the world (Dudley 2012). It is a medium through which people insert themselves into the fabric of that world and constitute culture in embodied and external forms (Meskell 2004). While an object-centered analysis is a valuable tool for understanding things (Bauer and Agbe-Davies 2010 ; Bradley 1990; Gosden and Marshall 1999; Kopytoff 1986), it is not usually how indigenous people view belongings in practice. In building on agency theories, as well as ideas of a “multi-species ethnography”, anthropological approaches to human and their relations to non-human or other-than-human organisms can be added to the conversation, rethinking the human-object relationship in different ways (Boivin 2008; Rosiek et al. 2020). Nonhumans as agential beings engaged in social and material relations can shape human lives and for many indigenous people, objects implicate places beyond their production locales and are tools for place-making and

knowledge-sharing. Object agency explores the idea that objects are not passive items but actively participate in shaping human and social relations. In that way, stones are agents that can tell a story of people, practices, and places of today and of the ancestors.

Materiality studies extended these questions by examining how objects, buildings, landscapes, and materials participate in social life (Meskell 2004). “Things” shape human experience by organizing movement, perception, memory, attachment, and obligation (Gell 1998; Latour 2005; Olsen 2003; Mills and Walker 2008). The objects or belongings do not hold human intentions, but nonetheless they can be understood by their effects in communities. For example, the ways in which belongings bring people together, invite care, conversation, alter social relations, and even restrict access, demonstrating their importance and roles in communities.

This perspective matters for Indigenous and museum studies because many Indigenous knowledge systems understand belongings, places, animals, ancestors, natural forces, and other-than-human beings as part of living relational networks (Littletree et al. 2020; Tallbear 2019). Museum and Western disciplinary traditions have often treated cultural materials as objects to classify, display, or analyze. Bruchac (2022) pushes against this approach by asking how belongings continue to participate in social relations across time and space, even when held in museums. This question shifts attention to how belongings move through relationships with other beings, materials, places, and people across their life histories.

Tomanowos offers a powerful example of stone as a witness, teacher, and political actor. His history connects deep geological time, Clackamas Chinook traditional cultural landscapes, museum collecting, NAGPRA, and the ongoing government-to-government relationship between CTGR and the American Museum of Natural History. Through Tomanowos, stone becomes a

way to think across multiple scales of time, from his journey to earth, to his transportation by Missoula floods, colonial removal, legal negotiation, and now in its role in contemporary Tribal education, and history.

To tell this story, I return to the Columbia River. The Columbia River carries a geological history shaped over millions of years through volcanic activity, tectonic movement, glacial processes, and fluvial change (Evarts et al. 2009). These histories are documented through both oral histories and Western geological science. Among the most dramatic geological events in the region were the Missoula Floods. Approximately 13,000-15,000 years ago, the failure of ice dams near the Clark Fork River drainage released immense volumes of water from Glacial Lake Missoula into the Columbia River Basin (Bourdeau 2004). These floods reshaped the regions landforms and created the conditions through which Tomonowos came to rest within the Willamette Valley.

Tomanowos is scientifically understood as an iron meteorite, likely from the core of an ancient planetary body that broke apart long ago. It may have first landed far north of Oregon before being carried into the Willamette Valley by ice and floodwaters (Benito 2003). Through the force of the Missoula Floods, he moved into the Pacific Northwest and came to rest in the homelands of the Clackamas Chinook peoples, who are among the communities represented within the Confederated Tribes of Grand Ronde. For CTGR Tomanowos has always been a protector and important entity for the Tribe (Lewis 2024). Water collected in the depressions of his surface was understood to hold cleansing and healing qualities and his resting place was a significant cultural site.

In the early twentieth century, miner Ellis Hughes removed Tomanowos from ceded Tribal land that was then held by the Oregon Iron and Steel Company. Through judicial order,

Oregon Iron and Steel reacquired Tomanowos in 1905. He was later purchased by New York philanthropist Mrs. William E. Dodge, who donated him to the American Museum of Natural History in 1906 (Capi 2019). Tomanowos has remained on display there since that time. In 1999, Grand Ronde sued the museum, citing NAGPRA for his return, and the museum countersued. Eventually, in 2000, the parties reached an agreement that allowed Tomanowos to remain at the museum while establishing an ongoing relationship between Grand Ronde and the institution. Each year, CTGR students and representatives maintain this relationship through ceremony, education, and museum programming. The agreement also states that if Tomanowos is ever removed from display, he will be returned to Grand Ronde. The agreement also states that if he is ever taken off display, he will be returned to Grand Ronde. Travis Stewart explained, “[Tomanowos] serves as a witness to preserve our culture. I like that it continues to touch lives to this day, not just here, but throughout the world” (Capi 2019).

Grand Ronde’s 2019 exhibit *Witness* provides an important framework for understand how Tomanowos’s knowledge is conceptualized (Figure 3.4). He is an entity that protects and preserves knowledge. He is preserving both Western and Indigenous knowledge. Western scientific knowledge through research on meteorite age, composition, extraterrestrial matter of the galaxy and planetary formation. At the same time, Indigenous knowledge can explicate ceremonial practice, the history of Sky People, and his body's sacred qualities and power. By attending to Tomanowos’s power, it becomes possible to understand culturally significant stones and belongings as active presences within social, political, and interpretive life. He is an agent capable of influencing and shaping the human experience. Travis has stated before that Tomanowos continue to touch lives.



Figure 3.4. University of Washington Field Method in Indigenous Archaeology (FMIA) students at the opening of “Witness” exhibit at Chachalu Museum.

This understanding of stone agency building from archaeological discussion of materiality and practice. Bourdieu’s theory of practice demonstrated how objects, social arrangements, and material categories helped condition human action and social learning (Bourdieu 1977; Meskell 2004). The placement of Tomanowos in a museum gallery, the protocols surrounding Tribal visits, and the agreement governing his future return all demonstrate how stone can structure human action, institutional responsibility, and political relationships.

Bruchac’s work on animacy helps clarify why Indigenous belongings cannot be fully understood through museum or archaeological categories of objecthood alone. She argued that Indigenous belongings may carry forms of power that exceed symbolic meaning or human-assigned interpretation. They can operate as messengers, diplomatic participants, and beings capable of communicating across time, place, and distance (Bruchac 2022). Even when removed from their original communities and held within museums, such belongs may continue to hold

multiple presences, histories, and relations. Bruchac (2022) also emphasized that museums are increasingly being asked to consider what exactly do objects do in the world? How are they acting as social participants, and how do they influence curators even when curators do not fully perceive their animacy (72)?

Object agency explores the idea that objects actively shape human social relations (Rosiek et al. 2020). When this concept is placed in conversation with Indigenous knowledge systems, Tomanowos can be understood as an active participant who witnessed space, past and present ceremonies; inspired many artists and researchers. He is currently place-making and knowledge-sharing through his experiences. While he doesn't have official "rights of personhood" in Grand Ronde, his story opens up important conversations about material culture, legal recognition, Indigenous access, and the responsibilities museums carry toward archaeological and ethnographic collections. This conversation also resonates with the Yurok Tribe's recognition of rights of personhood for the Klamath River, which offers another example of Indigenous legal and political frameworks centered on more-than-human relations (Thompson 2020).

This view of belongings as teachers and knowledge holders also aligns with Bobby Mercier's reflections on museum collections in Chapter 1 and Bonnie Devine's sculptural exhibit *Letters from Home* (2008). In that exhibition, Devine asked viewers to consider Precambrian stones from the Serpent River First Nation as elders. She framed casts of these stones as texts, and viewers were encouraged to learn how to read their lessons. This collapsed the divide between deep time and the present and brought that knowledge back into relation (Hickey 2019).

Recent Indigenous Museum scholarship has raised similar questions about animacy, personhood, and the knowledge held by belongings. Ahtone et al. (2025) question

anthropocentrism by asking, “How does acknowledging and engaging with objects as animate beings—recognizing them as relatives and respecting that they carry a form of peoplehood—expose the knowledge they hold and carry, knowledge that is otherwise invisible and unrecognized?” (3). Their question is central to *Legacy Archaeology*. I argue that when inherited collections are approached only through typology, cataloging, or institutional history, their relational, ceremonial, political, and instructional capacities can remain difficult to see. When they are approached as living belongings, part of a living context, they can help shape archaeological practice itself.

Through Tomanowos and other culturally significant stone belongings, this section argues that stone functions as witness, teacher, and political actor. These belongings hold traces of creation, movement, removal, exhibition, and ceremony. They continue to shape present relationships and future possibilities.

The carved stone belongings in this dissertation also function as witnesses. Their surfaces record more than manufacture or use. They hold evidence of touch, carving, grinding, weathering, reuse, collection, labeling, repair, storage, and renewed study. In this sense, the stones witnessed multiple worlds: the worlds of their makers, the landscapes from which they came, the colonial conditions that displaced them, and the contemporary relationships through which they are being brought back into view. Their witness is carried through material traces, but also through the questions they ask of archaeologists, museums, and descendant communities.

Approaching these stones as witnesses changed how I understood the collections I studied. The belongings provided data for archaeological interpretation, but moreover, they shaped the terms of interpretation by requiring attention to surface, place, protocol, absence, and care. Their worn edges, altered forms, repeated motifs, residues, and hidden histories asked us to

read them through relation. Within *Legacy Archaeology*, this means that stone belongings are active participants in the work of remembering, repairing, and carrying knowledge forward.

Place-Based Archaeological Practice

Place-based archeological practice offers one way to connect collections-based research to Indigenous lands, histories, and responsibilities. Earlier landscape archaeology, mostly up until about the 1980's, used data on population levels, climate, land use patterns, technology, settlement patterns and the organization of space to gain a systemic perspective on human behaviors and their adaptations to environmental pressures (Gkiasta 2008). These archaeological interpretations of landscapes were robust but seemed to place cultural activities solely within a container of a neutral physical environment. Similar to how artifacts are seen as inert objects that merely reflect human behavior, landscape too, was just a container for actions to happen within a space. It wasn't until the introduction of postmodern thought in archaeology that changed the face of landscape archaeology and called particular attention to the need to evaluate cultural symbolism and personal experience of an individual or community in relation to social and spiritual perceptions of their natural environments (Anscheutz et al. 2001; Tilley 1994).

Richard Bradley (2000) investigated natural and unaltered features in European landscapes. He focused on caves, mountains, springs, and rivers. He used a comparative and integrative approach to analyze the spatial structures of natural features across the landscape. He considered why the landscape was meaningful to prehistoric populations and how cultural significance can be determined, even with a lack of oral histories. In another example, Tim Ingold (1993) took a "dwelling perspective". He argued that concepts like "meaning" and "lived context" were visible in the archaeological record, which helped reframe the landscape as

meaningful, lived, and co-constituted. This helped archaeologist shift away from the idea that landscape is a natural container to which agents move within.

In landscape archaeology, culturally constructed landscapes, described as social, symbolic, sacred, ritual, mythical, ethnic, or aesthetic, are framed within the physical geography but are also transformed by human actions. Shared cultural values and memories shape the group's conceptualization of the landscape and the people living in these landscapes perpetuate their social and cultural identity by carrying out ritual behavior in particular places (Anuscheuetz 2001). Archaeologists have modeled landscape enculturation by organizing their data around lived context, social interactions, and symbolically reconstructing spaces, looking for patterns of similarity and dissimilarity in the past by using idealized cognitive spatial models or maps derived from ethnographic materials.

A critical component of CHIP's research design was place-based learning. For Grand Ronde, history is situated in the landscape. It is witnessed and experienced today through tangible and intangible worlds. The intangible elements of worldviews such as oral tradition, sacred landscapes, ecological knowledge and experiences, are translated through culture and experiences. The tangible elements are symbolized as tangible representations of the intangible world. Grand Ronde and other Indigenous communities now characterize these practices within Cultural Resource Management frameworks and are known as Traditional Cultural Properties (TCP), Intimate Ecological Knowledge (IEK), and Sacred Landscapes (SL). These categories help communicate Indigenous relationship to place for regulatory process, but do not contain the full meanings of those places to community members. Figure 3.5 presents model created by Briece Edwards the Manager at CTGR's Historic Preservation Office. It represents how the past informs the present through tangible and intangible practices. This process supports the

identification of Tribally-defined and Tribally-specific places and resources. This model also applies to belongings, because the belongings themselves are tangible representations of experience, oral tradition, sacred landscapes, and ecological knowledges.

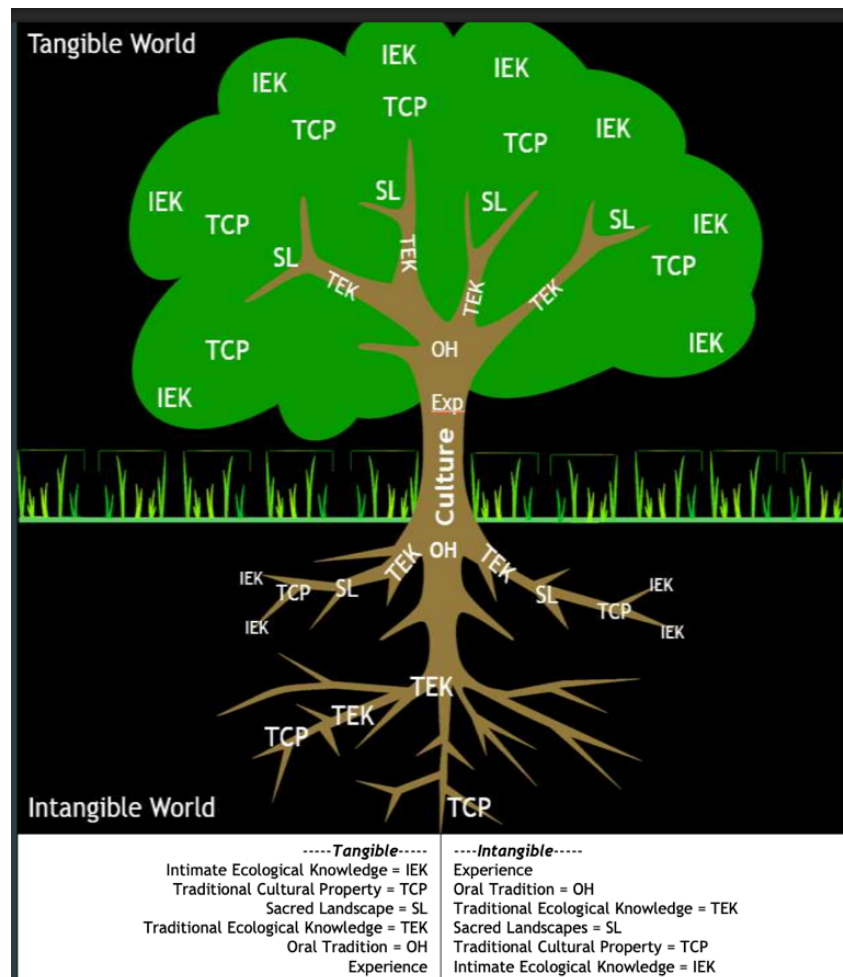


Figure 3.5. Tangible and intangible worlds. Approaches to identifying practice (Edwards 2018).

This dissertation used a place-based framework that provided context, with Grand Ronde's right to refusal (Appendix G), for disseminating some of the tangible and intangible relationships and practices that are imbedded in the sustaining of community traditions and past land or resource use (Edwards 2018). Place is a concept that expresses how members of a

community express and understand their world, how they interact with that world in the form of stories, areas of seasonal cultural activities, village sites, locales of raw material procurement, places of creation, and most importantly how knowledge is taught and communicated between generations (Basso 1996; Martinez 2006). Space and Place are simultaneously produced as lived, conceived and perceived landscapes that are living and interactive parts of modern identity. By looking at contemporary indigenous groups' cultural practices and the ways in which belongings are parts of Grand Ronde's tangible and intangible worlds, we can more clearly understand past and future use and its value to community (Ball et al. 2015).

In this dissertation analysis, carved stone belongings, or mobiliary art, such as those that are held in ethnographic collections, implicate places beyond their production locales and thus become "pieces of place". This framing draws from the idea that parts of the landscape, including carved stone belongings, maintain direct spatiotemporal links to the land (Bradly 2000; Bauer and Agbe-Davis 2010). These belongings are bodies of local knowledge and can be conceptualized as an extension of the place-based cultural landscape (Agbe-Davies and Bauer 2016). With this framework in place, I now turn to low impact methods and their results. I used multispectral imaging and other techniques to examine how traces on stone surfaces communicate the tangible and intangible worlds.

CHAPTER 4: Low-Impact Methods: Multispectral Imaging Results and Implications for Legacy Archaeology

Aims and Methods

How can collaborative, low-impact approaches to archaeology deepen our understanding of belongings with provenience and provenance issues? To answer this question, I used a low-impact research strategy that combined legacy data, archival research, use-wear analysis, and technical imaging, including multispectral imaging, Reflectance Transformation Imaging, and false-color imaging. These methods documented surface modification variability on Columbia River stone belongings from museum collections.

This chapter presents the results of technical imaging applied to carved stone from the Wapato Valley. The goal was to evaluate how non-destructive imaging methods enhanced the detection and interpretation of surface variability in fine-grained volcanic stone. This study was situated within a collections-based analytical framework in which ethnographic collections were examined through complementary non-destructive and minimally invasive methods. This low-impact methodology included collaboration with cultural advisors, archival research, and digital data gathering through technical imaging (Table 4). Together, these methods supported the documentation of surface modifications on carved stone belongings.

I used established use-wear methods to examine the belongings for evidence of wear, modification, and surface variation (Adams 2014; Stemp et al. 2016; Cosentino 2015c). I then extended these methods through digital imaging approaches, including multispectral imaging, false-color imaging, and Reflectance Transformation Imaging. These methods produced complementary visual and analytical data that recorded surface features under different wavelengths and lighting conditions.

This chapter first introduces the history of Chinookan stone sculpture on the Lower Columbia River. Technical imaging, especially MSI, was well suited to this analysis because it provided a non-destructive way to examine subtle surface variation on carved stone that had been difficult to see through standard visual inspection or conventional photography. By recording how stone surfaces responded under different wavelengths and lighting conditions, MSI helped document surface features related to carving, handling, use, reuse, and other stages in the belongings' life histories.

This chapter also considered how MSI offers a technical method for visual analysis while remaining attentive to care, accountability, and the ongoing relationships these belongings hold. I discuss the opportunities and challenges of low-impact methods for use-wear analysis in museum collections and consider the potential for MSI to become standard practice for use-wear analysis and other collections-based research.

Table 4. Low-impact approaches used in CHIP.

Method	Description
Collaboration	Cultural advisors, research interns, and community members came with me to the collections to guide research questions, interpretive priorities, and cultural protocols.
Archival Research	Reconstructed collection and accession histories, includes exhibition history, loans, and trades with other institutions.
Technical Imaging	<i>Multispectral Imaging (MSI)</i> – Examined surface variation across visible, ultraviolet, and infrared wavelengths <i>False-Color Imaging</i> – Enhanced subtle differences in material composition, surface treatment, and modification. <i>Reflective Transformation Imaging (RTI)</i> – Documented fine-scale topography, textures, and wear traces using light angles.

Photogrammetry – Created 3d models to be document form and surface texture.

Use Wear Analysis	Identified and documented evidence of surface variations and modifications due to production, use, and re-use
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Carved Stone Sculpture of the Wapato Valley

The Chinookan art style is a complex regional artistic tradition expressed across multiple materials including wood, stone, bone, horn, and antler. The style included geometric forms, anthropomorphic figures, and zoomorphic elements, and it appeared on adze handles, bowls, canoes, clubs, cups, spoons, digging stick handles, pipes, and other stone mobiliary art (Johnson et al. 2013). Within the stone carving tradition, Chinookan belongings were pecked, carved, polished, and painted and these techniques appeared on both utilitarian and ceremonial items. Known forms included standing stones or power figures, bowls, mortars, paint cups, pestles, mauls, and other handheld or mobiliary art. Together these mobiliary and monumental stone forms reflected a sculptural practice to which land, family, social relations, and personal power were materially expressed.

It is not possible to know with certainty what specific motifs and designs meant to the people that produced them. However, it was possible to document formal, technical, and surface-level details that pertained to modification, use, and change over time. These observations helped identify patterns in Chinookan carved stone production and use.

The abundance of basalt in the Columbia River Region also matters because carved stone production was connected to the geological and cultural landscape (Wells et al. 2020). Basalt outcrops, river cobbles, and transported stone material formed the raw materials of the Columbia

River Basalt Group to which Chinookan makers created their materials (Bourdeau 2004; Evarts et al. 2016, O'Connor 2004). The use of basalt there for is linked to raw material sources, riverine movements, and place-based knowledges of material properties and their locales whether private, public, or ceremonial. The stone sculptures of Sauvie Island were the most massive examples of this tradition and have been interpreted as objects of high symbolic significance (Butler 1957; Seaman 1967; Wingert 1952). Read together, their scale and modification suggest that Chinookan stone traditions required both practical knowledge of stone working and a sustained relationship to the land, protocols, and histories that story that land.

The Persistent Problems of Provenience and Provenance

The persistent problems of provenience and provenance shape how archaeologists work with museum collections (King et al. 2019; Voss 2012). Incomplete provenience can separate belongings from the place-based knowledges from where they originated, while incomplete provenance can obscure the histories of collection, transfer, and access. For Black and Indigenous archaeologies, these gaps carry historical and ethical weight to which archaeology is well suited to address (Agbe-Davies and Bauer 2016; Atalay 2006; Battle-Baptiste 2011). Attending to archival silences, lived histories, and the material traces of past activities on the stones themselves offered one way to work within these limits without accepting ethnographic collections as detached from the archaeological record and thus no longer capable of generating archaeological knowledge (Hartman 2008).

The massiveness or scale of the Columbia River Stone was remarkable. Many of the forms often described as standing stones, power figures, welcome figures, or stelae were often characterized as anthropomorphic or zoomorphic design elements. In village contexts, some of

these stones would be standing upright within or outside of the longhouse, while others may have marked ritualized or ceremonial landscapes (Stewart 2022; Mercier 2022). Many of the sculpture were also originally painted, and several still exhibited traces of original pigments, when Wingert documented them in the mid-twentieth century (Wingert 1952).

More than a century of amateur collecting on the Lower Columbia River created a significant problem of provenance and provenience. Even during early amateur and professional archaeological projects, highly valued artifacts were privately kept (Butler 2007). Some stone pieces were exchanged, donated, transferred, or gifted to museums with little to no information about their original locations, contexts, or histories of movements (Redman 2021). Some OAS members are still working to recover archaeological collections from the early years of collecting (O'Grady et al. 2022). Collectively, this uneven documentation has made regional interpretation of stone sculpture a challenge. The history of amateur and professional archaeological work has built up a cultural synthesis for the area that does not yet have been completed. Because of these limitations in the archaeological evidence, with several of the more ornately carved pieces in private collections, an attempt to analyze their collective significance is challenging.

Some stone carvings may have been removed from burial or other sensitive contexts, while others were reportedly found eroding from the banks of the Columbia River, recovered from farm fields, or disturbed during early nineteenth century road construction and other urban development (Butler 2007; Martinez 2019). These varied histories of recovery created interpretive and ethical challenges. In some cases, the belongings may be culturally significant items, funerary objects of patrimony, but limited documentation made it difficult to decipher these histories with certainty. Although the collections, to some archaeologists, may be undesirable for study, CHIP instead took on the challenge to document what was still materially

visible while also recognizing what had been obscured by collecting, displacement, and incomplete records.

Earlier researchers made broad claims about the spatial distribution, stylistic variation, and regional significance from an art historical framework (Hegmon 1998). Several of the researchers into stone sculpture have made generalized statements concerning intra-regional spatial distribution and stylistic comparisons (Butler 1957; Strong 1967; Steward 1927). Strong's (1967) analysis of Sauvie Island stone sculpture compared the "skeletal accentuations" of these sculptures with the bedrock petroglyphs found along the Columbia River. Wingert's (1952) exhibition "Prehistoric Stone Sculpture of the Pacific Northwest" exhibited at the Portland Art Museum in 1952, was one of the first treatments of Lower Columbia River stone sculpture as a regional corpus. These studies established the style as an important foundation for comparison, but they were also shaped by the limits of their time, including limited technical documentation and the lack of Indigenous voices in the process.

Multispectral imaging offered one way to return to these collections with new questions and low-impact methods. MSI records how stone surfaces respond under different wavelengths and lighting conditions, so it allowed for a more detailed recording of surface variation, pigment traces, weathering, polish, tool marks, and other surface modifications. For this project, MSI provided a technical method for reassessing legacy collections while remaining attentive to the cultural relationships, incomplete histories, and ongoing responsibilities of working with these unique and rare belongings.



Figure 4.1. OrHi9562. Rock carvings, mortars, and net weights from Sauvie Island. OHS Research Library.

Advances in Multispectral Imaging

Advances in technology have made multispectral photography an increasingly accessible and effective method for documenting archaeological and ethnographic collections. Multispectral imaging has been applied across a wide range of disciplines including remote sensing, forensics, biomedical research, agriculture, art conservation, and cultural heritage documentation (Verri 2009). In general, multispectral imaging involves collecting and combining images over multiple discrete wavelength bands. Multispectral systems typically use a limited number of bands often between three and fifteen, while hyperspectral imaging may capture dozens or hundreds of more narrow spectral bands (USGS 2022). In MSI, researchers illuminate objects with light sources tuned to specific wavelength ranges and then record how the object surface responds under those conditions.

Wavelengths, represented as λ , is most often measured in nanometers (nm), where 1 nm = 10^{-9} meters. The visible spectrum is considered to range from approximately 400 nm, perceived as blue light, to 700 nm perceived as red light. Wavelengths that are shorter than this

range fall within the ultraviolet region $\lesssim 400$ nm, while wavelengths that are longer than visible light fall within the near infrared $\gtrsim 700$ nm (Figure 4.2).

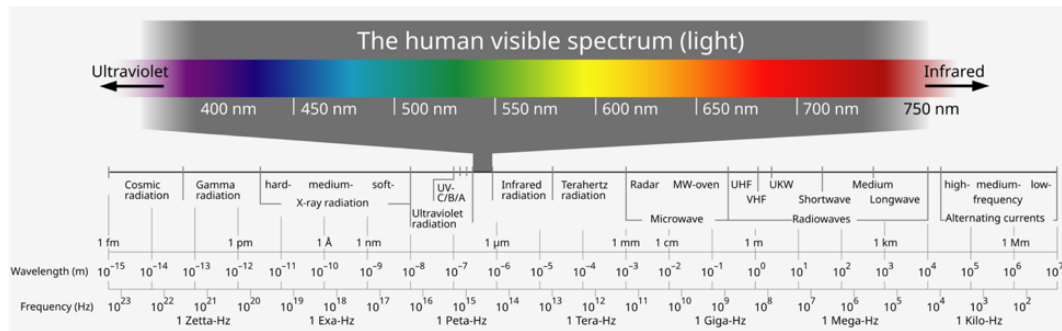


Figure 4.2. The electromagnetic spectrum. CC BY 4.0

Light-emitting diodes (LEDs) are among the most commonly used illumination sources for multispectral imaging because they can be selected or filtered to produce specific wavelength bands (Shrestha and Hardeberg 2013). For cultural heritage applications, LEDs are useful because they allow researchers to control illumination conditions while limiting heat exposure. Compared with incandescent or fluorescent lighting, LED sources operate at relatively low temperatures, reducing the risk of damage to fragile cultural belongings, thus contributing to the low-impact methodology of this project (Easton et al. 2011).

One advantage of multispectral imaging is its flexibility. Imaging setups can be tailored to specific research questions and integrated with other analytical approaches such as visual examination, technical photography, material characterization, spatial analysis, and microscopy. By capturing information beyond the visible range of human vision, multispectral imaging allows researchers to identify subtle material differences and surface features across the

electromagnetic spectrum (George et al. 2004). These capabilities have led to a wide range of application across scientific and cultural heritage fields.

Some of the earliest multispectral imaging systems were developed for satellite-based remote sensing. The original LANDSAT1 satellite launched in 1972, included visible red and green channels as well as two discrete near-infrared (NIR) bands (Wulder et al. 2022).

Contemporary LANDSAT satellite imaging has exponentially expanded the number of available spectral bands, increasing the range of environmental and surface analyses that can be conducted from remotely sensed data (USGS 2022). Other hyper-spectral systems include hundreds of narrow spectral bands allowing for more detailed material characterization and spectral analysis than standard MSI systems.

Multispectral imaging is also widely used in forensic science because it provides a non-destructive and cost-effective method for examining evidence while preserving the integrity of the subject (Ilişanu et al. 2023). In forensic contexts, these techniques have been used to analyze fingerprints, bloodstains, inks, powder residues, and documents in both field and laboratory settings. These applications demonstrate the value of MSI for detecting surface features and material differences that may not be visible under standard lighting conditions.

In museum conservation and art historical research, multispectral imaging is used to identify pigments, map polychrome surfaces, enhance faded documents, and support conservation and authentication decisions (Costantino 2015; Costantino and Stout 2014; De Certeau 2002; Dyer 2017; Østergaard 2009). Researchers have applied MSI to view and interpret ancient papyri, documents, and paintings, where infrared imaging can reveal differences in inks, pigments, underdrawings, repairs, and surface treatments that are not visible in standard photography (Costantino 2014a; Haldane et al. 2010). Some specialized cultural heritage imaging

system uses more than a dozen multispectral bands to detect, enhance, and map evidence of retouching alteration or material variation in works of art (Davies 2020).

Low Impact Methodology

In this study, I applied technical imaging principles to questions and goals regarding manufacture, surface modification, and the documentation of carved stone belongings (Figure 4.3). This study applied use-wear analysis and multispectral imaging to document manufacture, surface modification, and visible traces of use on carved stone belongings from Wapato Valley. The objective was to evaluate how MSI, false color, RTI, and close visual examination could support the recording of surface variability on fine-grained volcanic stone. I focused on documenting carving features, identifying areas of possible pigmentation and anomalies. This research did not seek to chemically identify residues but kept record for to be expanded upon for future analysis if additional testing was requested by CTGR. In this way, the study produced a low-impact visual and analytical record that supported comparison across multiple bands while preserving the possibility of more targeted research in the future.

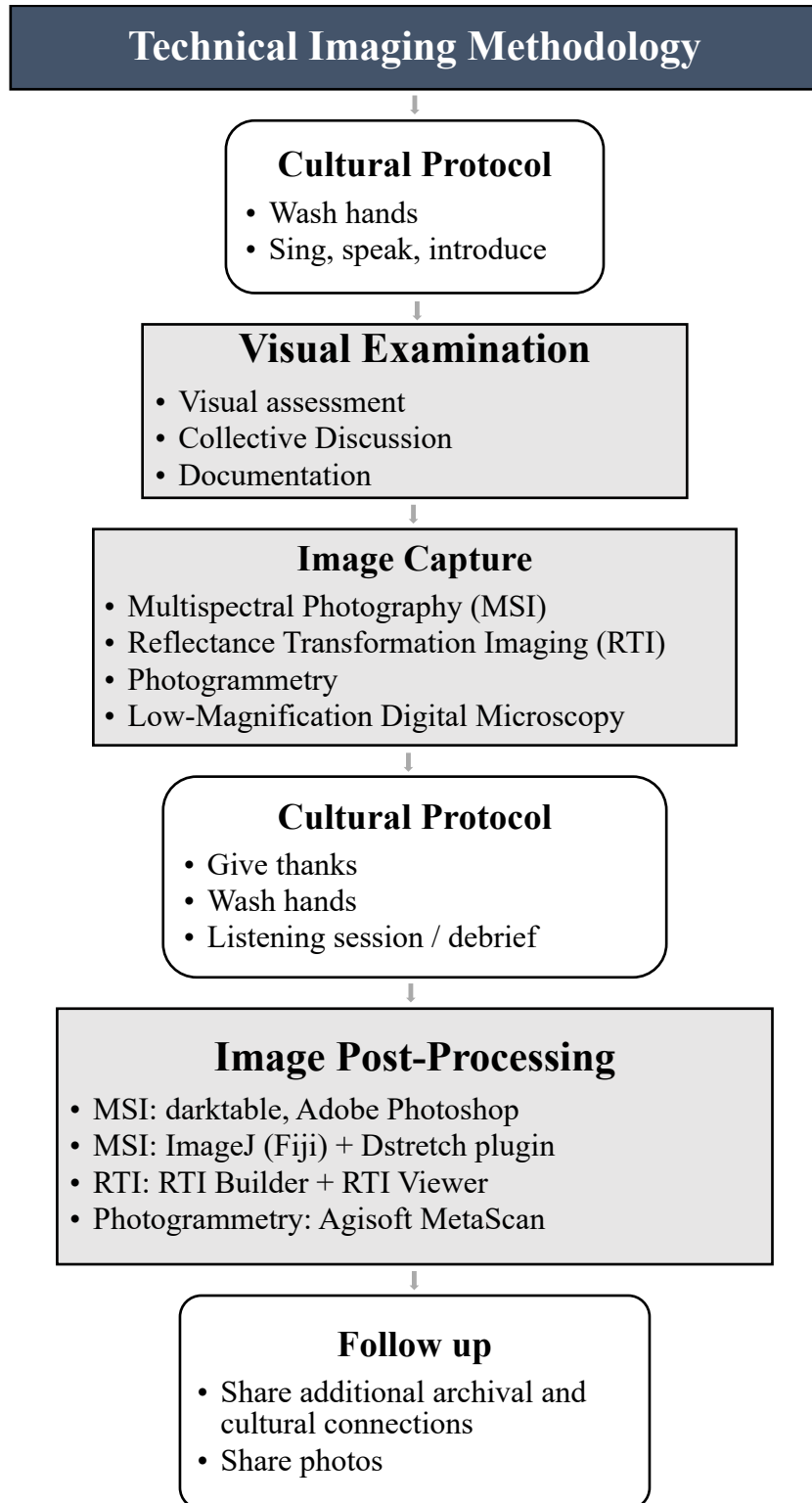


Figure 4.3 Technical Imaging Methodology; Workflow Diagram

For each belonging, I recorded a standardized set of descriptive and visual observations before and during technical imaging. These observations included measurements, object form, material, visible carving or shaping techniques, areas of polish or abrasion, possible pigment or residue, and other surface features that could be compared across multispectral bands or other imaging conditions (See appendix E). This initial documentation created a baseline for evaluating how each imaging method changed the visibility of surface details. It also helped identify areas of interest for closer examination, such as worked surfaces, or regions of interest where color, texture, or reflectance differed from the surrounding stone. I approached each image as a documented analytical choice shaped by lighting, angle, scale, and framing. These choices made it possible to compare across visible, ultraviolet, and infrared outputs while keeping track of the specific features that guide interpretation and delineation of features.

Collaborative Practice

This research followed a low-impact, collaborative workflow designed to integrate technical imaging with appropriate cultural protocols while in the collections. The process typically began with asking cultural advisors or community members whether they would like to come with me to the collections or participate in a follow up session later. Before accessing the collections, we washed our hands, this practice removed oils from the skin and also served as a form of preparation and protection. Clean hands and a clear mind are important and respectful ways to prepare for engaging with belongings that may have ceremonial, ancestral, or cultural significance.

When community members visited the collections for the first time, they sometimes offered a song, spoke to the belongings, or addressed the spirits of the ancestors, where

appropriate. Even when cultural advisors were not present during collections visits, I continued to introduce myself to the belongings and washed my hands before and after handling or examination. These practices shaped the research environment and helped ensure that technical imaging did not progress as a detached or purely extractive process, but rather as an intentional practice of connection and respect.

Visual examinations followed these preparations. When cultural advisors were present, this stage often included discussion about whether a belonging was affiliated with them in some way personally, or Grand Ronde generally. If advisors had familial connections or stories to share and whether the belonging was appropriate to photograph. Image capture then included MSI, RTI, and in some cases, photogrammetry, depending on available time, collection conditions, and the needs of the particular visit. Cultural advisors who came to the collections often had their own research interests beyond carved stone, and at times we worked independently on different aspects of the museum collections while remaining in conversation about the materials.

Archival Data Gathering

Provenance has traditionally been defined as “the origin or source of something” or as “information regarding the origins, custody, and ownership of an item or collection” (Pearce-Moses 2005; Voss 2012). In archival practices, the creator or collector is sometimes credited with the provenance information. The reason why researchers collect provenance is to protect the evidentiary value of records and make visible the actions, movements, functions, and activities conducted on said object (Duff and Harris 2002).

However, traditional concepts of provenance often privileged the record or object itself being described rather than the people documented, implicated, displace, or otherwise connected to that record. In this study, the provenance research used to identify gaps, silences, inconsistencies, and partial traces of movement between Indigenous homelands, private collections, museums, and contemporary contexts. More about the many stories and relations that emerge on this are outlined in Chapter 5.

In the work conducted alongside CTGR, archival research was part of a broader processed of reconnection. We worked with these belongings to learn from them, to understand their material histories, and to support their return to community knowledge systems were possible. Although these collections did not always retain the kinds of archaeological context that we would expect form a controlled excavation, they still carried information that could support Tribal research priorities, cultural sovereignty, and future care for museum collections.

Technical Imaging: Image Capture, Processing, and Integration

I implemented a multi-spectral imaging photographic approach by capturing images at different wavelengths along the electromagnetic spectrum (Webb et al 2018). This methodology was combined with complementary digital techniques such as Reflectance Transformation Imaging (RTI), and false-color imaging. I applied multispectral imaging to 42 stone sculptures, standing stones, mortars and pestles, and other ground stone implements such as mauls and net sinkers (Table 5).

Table 5. Scope of Technical Analysis

Task	% of Assemblage	Number of Belongings	Approach
UV survey pass of entire ad hoc ground stone assemblage(s)	100%	280	Pass of UV light over all ground stone bowls, mortars, pestles, mauls, net sinkers, sculptures, paint cups, manos, misc.
Ground stone sample for technical imaging and partial use wear analysis	20%	56	Including anything identified as being of interest during UV Pass; or selected specifically by CTGR staff to undergo additional photography
Full-suite Multispectral (MSI) Image Capture	15%	42	Ultraviolet (UV) / Visible (VIS) / Near-infrared (NIR)
Reflection Transformation Imaging (RTI) Image Capture	~1.4%	4	Anthropomorphic and Zoomorphic Figures
Photogrammetry	~2%	6	Zoomorphic Figures, Decorated Bowls and Mortars, and Carved Stone Sculptures
Full use-wear analysis	~4%	12	Zoomorphic and Anthropomorphic Figures, Carved Stone

The table summarizes the multi-stage technical imaging workflow used to document the ground stone assemblage. The analysis began with abroad ultraviolet survey pass of the full ad hoc assemblage. The assemblage was created by research request. Any ground stone object from the museum of repository was pulled by a museum curator or collections assistant. The first UV step was designed as a rapid, non-destructive visual screening process. During this stage, UV light was passed over each ground stone pulled from the assemblage which included stone bowls, mortars, pestles, mauls, net sinkers, figural sculptures, paint cups, and other miscellaneous ground stone in the collection connected to Lower Columbia River Region. The goal of the UV pass was to flag any features that were not readily visible under standard lighting,

including possible residues, staining, evidence of repair, pigment, and other differential weathering. These initial surface modifications warranted additional documentation and further imaging.

After the UV survey, I selected a smaller analytical sample of 56 belongings or 20% of the assemblage for more in-depth and detailed technical imaging and analysis. The sample was not designed as a statistically representative sample of the full assemblage. We selected the samples based on observed surface characteristics, collections access, and collaborative priorities. This sample included belongings that showed areas of interest from the UV pass, but as well as belongings that were selected in consultation with CTGR staff for additional photography and in-depth documentation. This second stage was helpful to narrow the scope of analysis from a broad assemblage-level screening to a more focused documentation of objects with surface features that may be relevant to CTGR history and culture.

A subset of 42 belongings, or 15% of the assemblage underwent full-suite multispectral image capture. This stage produced scientific photographic records under ultraviolet, visible, and near-infrared conditions. The purpose of the full-suite MSI was to record how the surface of the belongings responded across multiple wavelengths of light to compare features that appeared, disappeared, or changed visibility under different light emissions and camera filters (Table 6).

Table 6. Multispectral Techniques used in CHIP

Technique	Excitation Source / Range	Captured Range	Detection / Capacity
Ultraviolet Fluorescence (UV-FL)	320-385 nm	400-700 nm	Differentiated materials with similar visible properties, but different fluorescence responses. Supported visualization of residues, pigments, and other surface modifications, and possible organic compounds when present.
Infrared Reflectography (IRR)	400-700nm and/or 700-1000nm	720-860nm	Supported detection of surface variation, pigmentation of carbon-based materials, differences in infrared absorption or reflectance, depending on the properties of the material.
Visible (VIS)	400-700 nm	400-700 nm	Provided a standard photographic record of the belongings under visible light illumination. Supported comparison with MSI, false color imaging, and RTI.
Visible Induced Luminescence (VIL)	400-700 nm	800-1000 nm	Supported detection of material that absorb visible radiation and emit infrared luminescence, including some pigments that were present.

I captured images using a modified digital camera sensitive to the spectral range of 360-720 nm. The camera was professionally modified by removing the internal infrared and ultraviolet blocking filter and replacing it with full-spectrum glass. This modification allowed ultraviolet, visible and near-infrared wavelengths to reach the camera sensor. External filters and

controlled lighting conditions were then used to isolate specific wavelength ranges during image capture. I used a series of camera filters to acquire images in three, sometimes five, spectral bands, including ultraviolet, visible, and near-infrared range, because 530-900 nm overlaps visible green/red and near infrared rather than representing near-infrared as a stand-alone band.

Figure 4.4 shows camera filter transmission curves for the technical imaging system used in this study. The x-axis shows wavelength in nanometers, while the y-axis shows the percentage of light transmitted through each filter. The curves indicate the portions of the electromagnetic spectrum recorded during ultraviolet, visible, and near-infrared imaging. These data provide a reference for understanding how each filter isolate the spectral response across the different spectral bands.

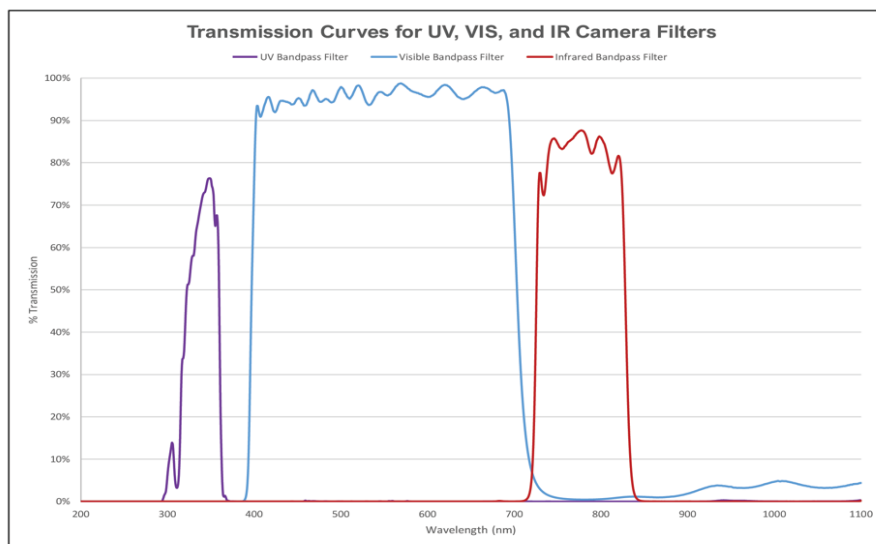


Figure 4.4. Transmission curves for ultraviolet (UV, 320-385nm), visible (VIS, 400-700 nm), and near-infrared (NIR, 720-860nm) camera filters.

The equipment setups for MSI and RTI were varied and dependent on the size, weight, and form of each belonging. Many Chinookan power figures and stone sculptures large, required floor-based setups rather than small-object copy stand arrangements (Figure 4.5).



Figure 4.5. Conducting RTI photography with Sophie Glass at Oregon Historical Society. Lights are off during image capture.

I used several digital image-processing programs to prepare, manipulate, and analyze color-band distributions across the electromagnetic spectrum. Post-processing of the multispectral dataset included Adobe Photoshop, Adobe Illustrator, and open-source programs, such as RTI builder, RTI viewer, Darktable, and ImageJ/Fiji. RAW images were selected, metadata recorded, selected files were white balanced, and image files were exported as 16-bit TIFFs in Darktable 5.4.1.

Results: Near-Infrared Reflectance (NIRR)

Near-infrared reflectance (NIRR) photography detects differences in surface response based on the absorption and reflection of infrared wavelengths (Cosentino 2015). In this setup, specialized camera filters blocked visible and ultraviolet light while allowing near-infrared light to pass through the lens, approximately between 720 and 860 nm (Figure 4.6-4.8). In conservation, NIRR can reveal later paints or surface additions when they absorb or reflect infrared differently than original pigments. In archaeological contexts, NIRR may help differentiate traditional ochres from historic paints or other later surface materials (Ngandali 2019).

For this study, near-infrared image data were collected with a Sony A35 SLT modified digital camera fitted with a standard infrared bandpass filter of approximately 720 nm. The objects were illuminated with infrared lights emitting at approximately 850 nm. Images were post-processed in Adobe Photoshop using grayscale and channel mixer adjustments.

NIRR was especially useful for examining the production processes of carved stone belongings. Under near-infrared imaging, incised lines, gouging, and overlapping modification events became more legible. This made it possible to observe the directionality of tool movement, differences in line depth, and areas where surface modifications intersected or overlapped. As a result, NIRR contributed to the documentation of carving sequence, surface treatment, and possible reworking across selected belongings.

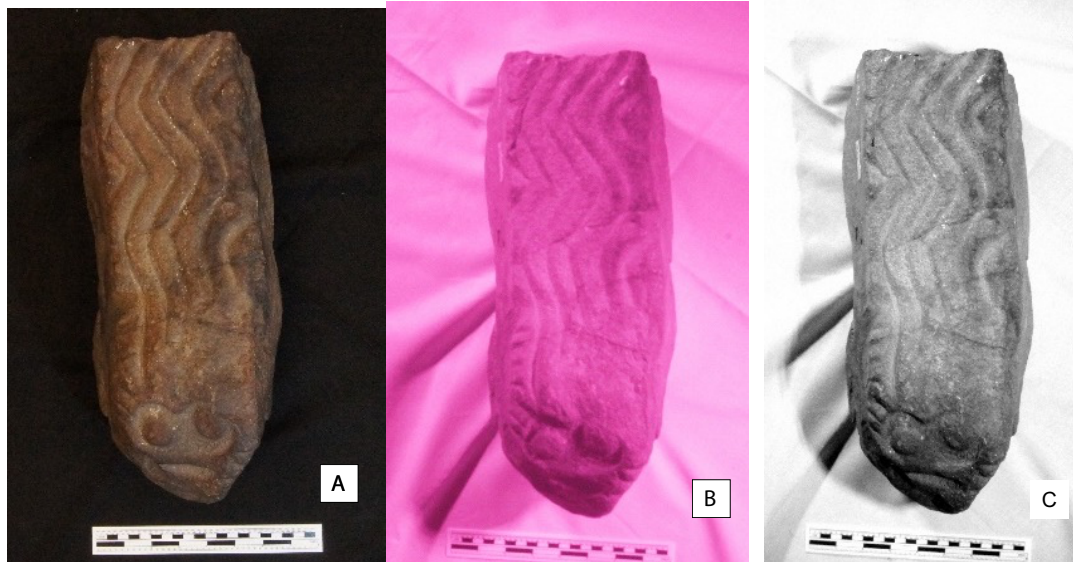


Figure 4.6. OHS #2526; carved stone, possibly zoomorphic (a) VIS (b) Near infrared reflectance (NIRR, ~720 nm) unprocessed and (c) post-processed images in blue channel.

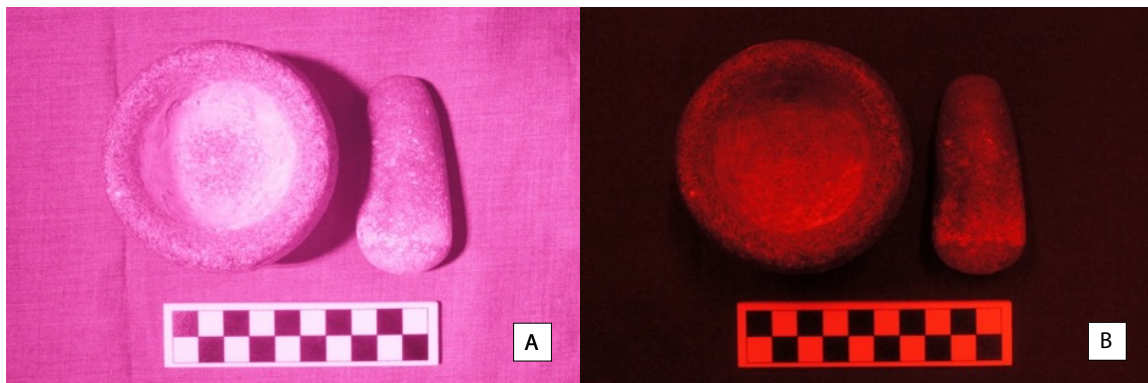


Figure 4.7. CTGR 2008.003.098, a mortar and pestle, in the NIRR image set: panel (a) unprocessed NIR image, and panel (b) near-infrared reflectance (NIRR, ~720 nm)



Figure 4.8. OHS #2531; Multispectral imaging set; zoomorphic figure (a) Ultraviolet image (UV, 320 nm), unprocessed; (b) Near-infrared reflectance image (NIR, 720 nm), unprocessed; (c) visible light image (VIS) unprocessed; (d) near-infrared image post-processed. All images represent individual spectral bands captured as part of multispectral image stack.

Results: Visible Photography (VIS)

Visible Photography is visible to the naked eye is especially important for documenting close details and full color visualization for true-to-life color inspection and examination. A normal RGB image has three wavelength bands when taken within the standard visible range (400-700nm). When used in conjunction with technical imaging approaches such as False Color Imaging and Reflectance Transformation Imaging (RTI), expands the possibilities for more lines of evidence and therefore more robust visual image analysis.

Photography visible to the naked eye is especially important for documenting close details and full-color visualization for true-to-life color inspection and examination. A normal RGB image has three wavelength bands when taken within the standard visible range (400-700nm). Visible photography, when used in conjunction with Technical Imaging approaches such as False Color Imaging and Reflectance Transformation Imaging (RTI), expands the possibilities for more lines of evidence and therefore more robust visual image analysis. Decorrelation stretch, a post-processing image enhancement technique first used in satellite remote sensing, has applications for archaeology and rock art studies (Mark and Billo 2022; Gillespie et al. 1986). False-color imaging using decorrelation stretching improves visualization of difficult-to-see materials. I use color rendering tools used to exaggerate or accentuate images by changing the color space from RGB to LAB or other spaces (Alley 1996; Catacora 2010).

Visible light photos in this series are standard visible photographs taken with a Canon 70D DSLR camera with an LED emission light source and visible light bandpass filters. All Microscopic photos were taken in visible light with an Amscope 3.5X-90X Trinocular Stereo Microscope with a 4-Zone 144-LED Ring Light and USB Camera.

I found that for the basaltic stone to which many of the Columbia River stones are made, they are challenging to photograph in visible light. The inclusions within the raw material, or faint incisions upon the surface of the stone made is difficult to identify motifs let alone manufacturing processes. To work around that I was able to use angled light at increments between 30-60 degrees to bring out the pounding, pecking, or incisions present in visible light.

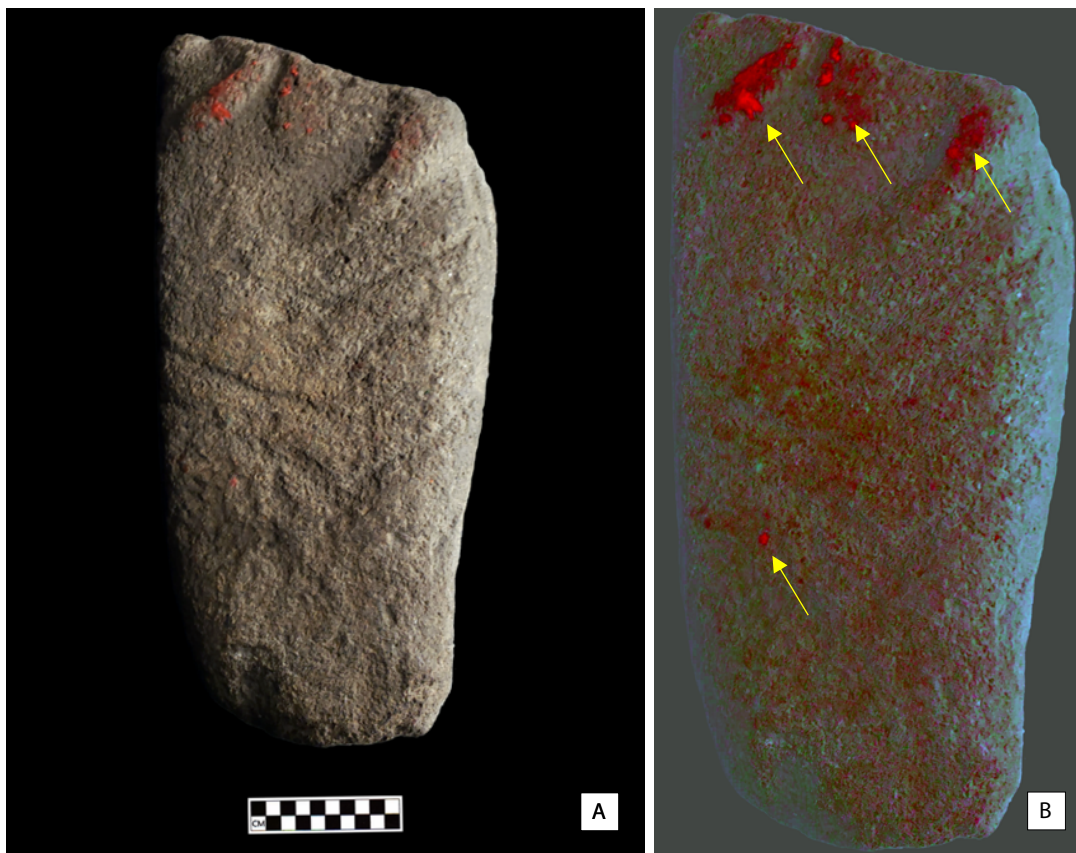


Figure 4.9. OHS #2527; False color enhancements. Yellow arrows point to areas of interest (a) visible (b) False Color LAB enhanced.

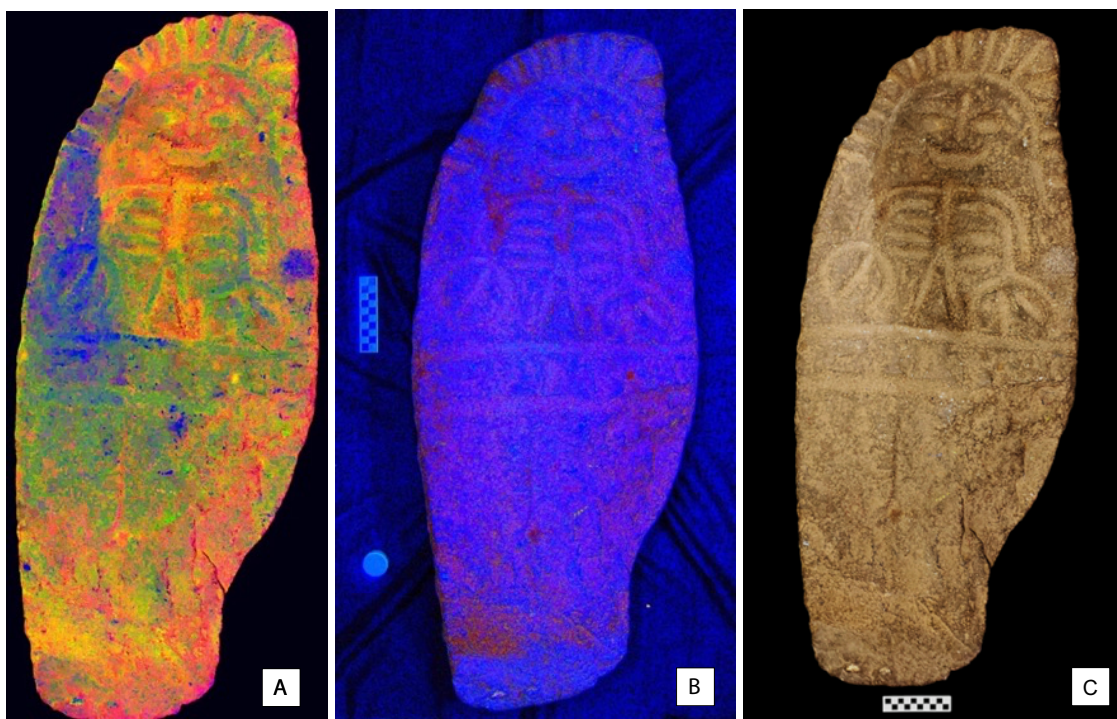


Figure 4.10. OHS #2532, an anthropomorphic standing stone, with false-color enhancements. Panel (a) YBK-enhanced image at scale 30 (b) LAB-enhanced image at scale 15 (c) visible light image.

Results: Reflectance Transformation Imaging (RTI)

Reflectance Transformation Imaging (RTI) is a raking-light photographic technique used to examine surface morphology at a macro scale (Díaz-Guardamino et al. 2015; Giachetti et al. 2018). RTI is a computational imaging method that captures an object's surface shape and color and allows the surface to be interactively re-lit from multiple directions. It also permits mathematical enhancement of surface shape, color, and reflectance properties, making it possible to visualize surface information that may not be apparent during direct visual examination (CHI 2014; Webb et al. 2018). In this study, RTI was used to examine variation in surface treatment, incising, edge modification, pecking, polishing, and other surface traces on carved stone belongings.

RTI and other technical photography methods were important for documenting surface morphology and assessing subtle differences in treatment across the assemblage. Low-angle lighting made shallow features more visible, including striations produced by grinding, carved or etched lines, pecked surfaces, polished areas, and possible traces of painting or residue. This method helped identify the direction, condition, and relative depth of surface modifications. RTI was especially useful for evaluating whether observed anomalies represented actual surface relief or optical effects caused by lighting, mineral inclusions, or specular reflection.

For each RTI model, I photographed the belonging from a fixed camera position while changing the angle of illumination. I used a Canon 70D DSLR with an off-camera flash, RTI Builder, and RTI Viewer. Each rendering was created from approximately 85–100 images. Two glossy black spheres were placed within the photographic environment during image capture. These spheres recorded the position of the light source across the image sequence and allowed the software to calculate the changing direction of illumination.

In RTI Builder, the image sets were aligned, cropped, and processed using algorithms that map light position and surface reflectance. The resulting files were then opened in RTI Viewer, where the light could be moved interactively across the surface. This allowed the same carved area to be examined under multiple lighting conditions without additional handling of the belonging. Figures 4.11 and 4.12 show RTI renderings produced in RTI Viewer, with three or four different specular angles displayed for each image set. These renderings are a representation of the enhanced surface orientation, scale, curvature, and shallow modifications across the stone surface. The pictures are digitally stacked images, representing different angles in an interactive program that interactively renders various light enhancement modes. Used for highlighting evidence of carving and other surface modification.



Figure 4.11. RTI rendering of OHS #2531; diffuse color = 50, specularity = 70, and highlight size = 120.



Figure 4.12. RTI rendering of OHS #2532. Panels A–D represent four different specular angles generated in an interactive visualization program using varied light enhancement modes. The rendering settings were diffuse color = 50, specularity = 70, and highlight size = 120. The exaggerated shading helped depict surface orientation, scale, and curvature in the stone.



Figure 4.13. OHS #2532; RTI Rendering; Diffuse color 100; Specularity 100; highlight size 1. Anomalies circled in yellow.

While these anomalies were interesting, they may have resulted from mineral inclusions that produced a high amount of specular reflection. For this reason, it was important to ground truth and cross-reference each anomaly using RTI and other visual examination methods (Mudge et al. 2008). RTI was useful because it allowed the surface to be examined under changing virtual light positions. The features that appeared prominent in a single image could therefore be

evaluated through raking light, specular enhancement, and close visual comparison with other photos as well. If an anomaly changed or disappeared when I changed the angle of the light direction, it was more likely related to mineral reflectance or capture conditions. If it remained visible as a consistent depression, ridge, incision, or raised surface, it was more likely to represent a physical modification. RTI-based comparison helped reduce overinterpretation and supported a more cautious classification of surface traces but was a time-consuming technique to capture and process.



Figure 4.14. OHS #2526; RTI rendering; Carved Stone, close up of possible reworked surface near the “face”.

Results: Ultraviolet Reflected (UVR) and Ultraviolet Florescence (UVF)

Ultra-violet fluorescence (UVF) and ultraviolet reflected photography (UVR) are distinct multispectral imaging techniques used to examine material surfaces under ultraviolet

illumination. In this study, both techniques were used to visualize surface modifications within the ultraviolet range of 320–385 nm. UVF records visible fluorescence produced when a material absorbs ultraviolet radiation and re-emits energy as visible light. This response can help distinguish surface materials that appear visually similar under normal light but differ in composition (Cosentino 2015). In conservation, UVF has been used to identify retouching, adhesives, coatings, and aged surface materials through differences in fluorescence color and intensity (Webb et al. 2018; Cosentino 2014). In archaeological applications, UVF may also reveal mineral inclusions, including quartz, calcite, mica, or other fluorescing minerals within stone.

UVR records ultraviolet radiation reflected from the object's surface. This technique captures differences in ultraviolet reflectance across the belonging's surface and can reveal scratches, coatings, pigment differences, sun damage, and other trace evidence that may be less visible in infrared or visible light imaging (Davidhazy 2006). UVR was especially useful for comparing carved surface depth and differential surface response. In Figure 4.15 the unprocessed UVR image is shown alongside an unprocessed visible light image. The UVR image made the facial features legible in a different way and suggested variation in the depth of the carved elements (Figure 4.15). The midline nose bridge appeared more deeply carved than the eyes.

During collections-based imaging, ultraviolet light was also used as a survey tool. Each belonging was examined under UV illumination, and areas of visible fluorescence were recorded. Because this project followed a non-destructive methodology, no scratch tests were conducted to confirm raw material. Basalt and pumice were the most common stone types in the assemblage. These materials do not typically fluoresce on their own, although fluorescence may occur where vesicles or inclusions contain minerals such as fluorite, quartz, mica, or calcite.

Post-processing was completed in Adobe Photoshop using channel selection, channel mixer adjustments, and level adjustments. For UVF and UVR image sets, the red, green, or blue channels were isolated depending on which channel produced the clearest contrast. In some cases, the blue channel enhanced tonal differences between shadows and highlights (Cosentino 2015). In other cases, the red channel preserved more overall signal, although it sometimes produced less contrast. The strongest near-UV image was therefore selected case by case, depending on the visibility of surface features, residues, and carved details.

Ultraviolet imaging was especially effective for documenting modern surface modifications. Several residues fluoresced in orange, green, yellow, and white hues, suggesting the presence of binders, pigments, adhesives, or other surface materials. Although residue analysis was not conducted, UVF helped identify areas of possible modern glue, label residue, paint, or curatorial alteration. Polyurethane-like glues fluoresced white under UV light, making repair histories and past labeling practices more visible (Figure 4.18-4.19). These observations contributed to the reconstruction of each belonging's curatorial history and helped distinguish possible ancient surface traces from later museum-related modifications.

Across the assemblage, UVF and UVR were most useful when compared with visible and infrared image sets. A feature that appeared prominent in UVF or UVR was therefore treated as an area of interest, not as confirmed evidence of residue, pigment, or alteration. Each anomaly was compared against the visible light, infrared, and processed channel images to assess whether it persisted across bands, changed in intensity, or disappeared under different lighting conditions. Features that appeared only in one image set may reflect irregular surface geometry or photographic capture conditions, while features that remained visible across multiple imaging

modes were more likely to represent a stable surface modification. This comparative process helped reduce overinterpretation and supported a more cautious classification of observed traces.



Figure 4.15. OHS #2532 in (a) unprocessed MSI-UVR with yellow lines marking varied depth in the eye sockets and nose bridge, as well as trace transfer of an unknown residue along the midline. (b) unprocessed MSI-VIS.

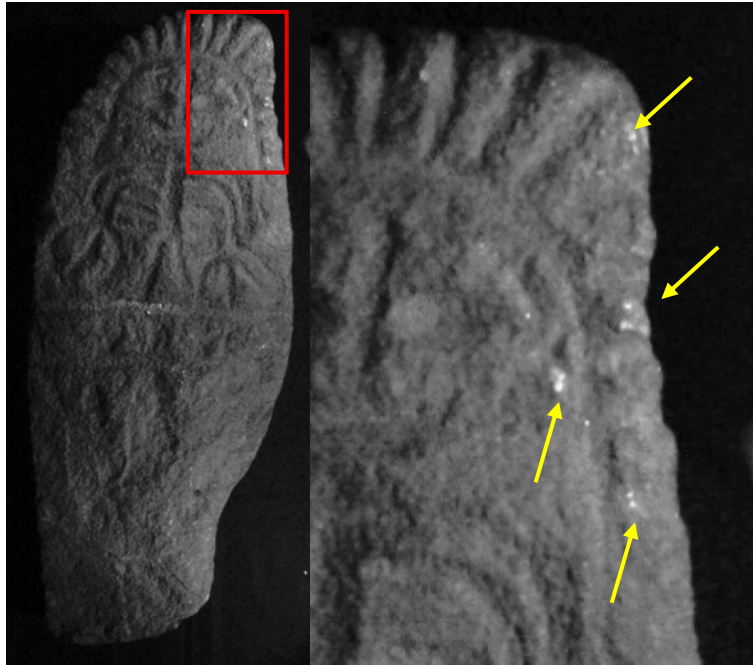


Figure 4.16. OHS #2532 under MSI-UVR, post-processed in the blue channel with level adjustments; anomalies were visible in the superior or cranial portion of the belonging.



Figure 4.17. OHS #2532 under MSI-UVR, post-processed in the red channel with level adjustment; the facial features appeared diminished using the UVR technique.

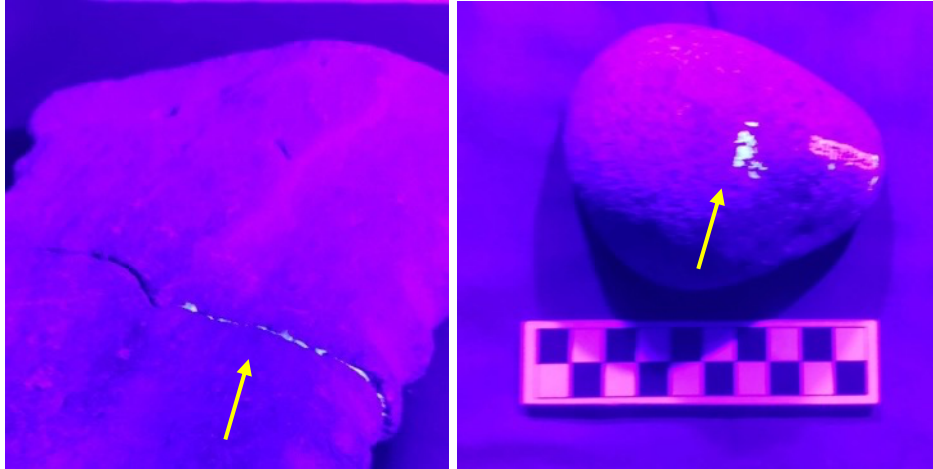


Figure 4.18. OHS #2361 under unprocessed UVF in close-up, with modern repair visible in a crack of the carved object where the glue adhesive fluoresces under UV light.

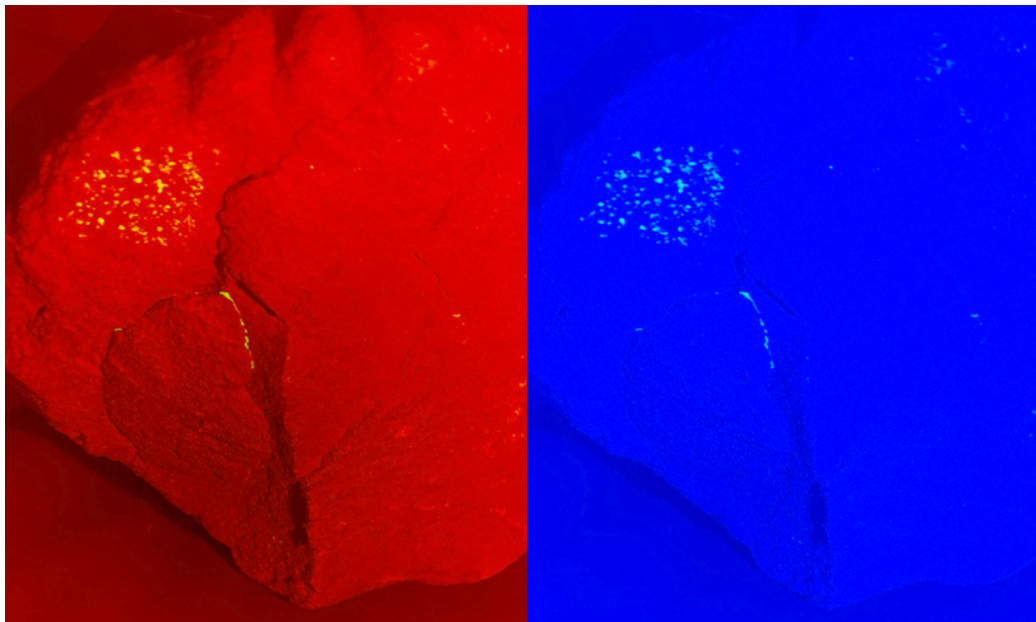


Figure 4.19. Backside of OHS #2528 under UVF: (a) post-processed in the red+ green channels, where old label glues or residues fluoresce, and (b) post-processed in the blue+ green channels.

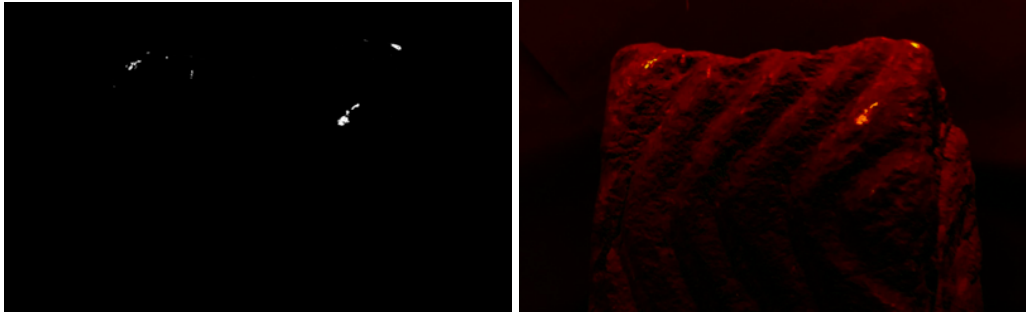


Figure 4.20. OHS #2526 UVF technique (a) post-processed in the green channel, note bright white anomalies interpreted as fluorescent residue and (b) post processed red channel, with evidence of fluorescence on distal end.

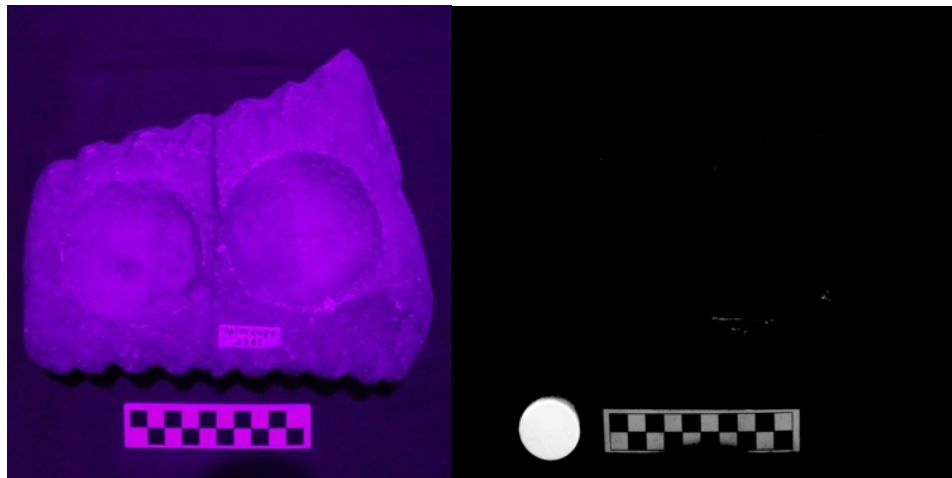


Figure 4.21. OHS #2361, UVF unprocessed Paint cups basalt; triangular shaped flattened, serrated edge, two cupule depressions on surface(b) post processed green channel with slight evidence of fluorescence near curatorial label.

Results: Use Wear Analysis

Use wear analysis examines artifacts for macroscopic and microscopic evidence of wear, alteration, and residue. In archaeological research, use wear studies have been used to understand how objects were made, used, maintained, altered, and discarded (Adams 1993, 2014; Wright 1992). These analyses have supported more detailed reconstructions of past human behavior, including subsistence practices, economic activities, conflict, and ritual practice, and technological decision making in the production of material culture (Ross et al. 2015). Use wear studies commonly identify macro-scale and micro-scale patterning including striations, abrasions, incising, crushing, polish, edge rounding, and surface leveling. They have also included the evaluation of surviving organic and inorganic residues on artifact surfaces (Rots et al. 2015; Stemp et al 2016).

In this study, I employed macroscopic and low-power use wear examinations to evaluate how Columbia River communities created, used, altered, and discarded carved stone belongings (Adams 2002; Adams 2014; Wright 1992). The analysis focused on visible and low-magnification evidence of surface modification, identifying patterned evidence of technical practice and to consider how the surfaces of the belongings reflected broader processes of making, use, movement, repair, and later alteration (Figure 4.22). For analytical purposes, I organized the evidence of surface modification into four broad phases, surface preparation, systemic use wear, post-depositional changes, and later alterations (Table 7). These categories provided a way to distinguish, where possible, between traces associated with manufacture and use, changes produced through burial or depositional processes, and modifications that occurred after collection or museum curation. Each observed pattern may not definitively be assigned to a

single event with certainty, but it provided a consistent observational framework for describing traces and possible patterns across the ad hoc assemblages.



Figure 4.22. CTGR #2008.003.096; paint pot; Photo taken through microscope, possible hematite residue on bowl edge design

I approached use-wear analysis in this study as both a descriptive archaeological method and a way to bring similarities in production histories into view. This approach helped make visible the traces of actions, skill and handling that were embedded in the stones themselves. Following Hickey (2019), I treated the use wear traces as part of the knowledge carried by belongings, while also recognizing that archaeological description could only partially account for the cultural knowledge, relationships and teachings connected to them.

The analysis began with visual and tactile examinations of each belonging. Identifying ground or smoothed surfaces by observing differences in texture, sheen, and surface topology (Adams 2014). I then moved to descriptive analysis documenting the shape, raw material, and other special surface conditions and anomalies across the belonging. This stage included recording visible surface modifications that could be associated with the various stages outlined in Table 7.

Low-power examination was conducted using a Dino-Lite AF4515T-JV Edge Series is a handheld digital microscope with switchable dual 395nm UV and 940nm Near Infrared (NIR). This equipment and stage allowed for closer documentation of incised surface features, fatigue wear, gouging, scratching, polishing, density, and its distribution across the belonging.

Table 7. Phases Of Use and Reuse and the Imaging Techniques Used.

Phases	Evidence	Imaging Techniques used to uncover
1. Preparation of the surface	Preparation of the surface	Visual, MSI/NIR
2. Systemic use wear	Grinding, incising, shaping	Visual, MSI, Macroscopic
3. Post-depositional processes	Patterns of surface modifications sauced by natural weathering or fragmentation	Visual, MSI, RTI
4. Later alterations	Repainting, labeling, and exhibition glues	Visual, MSI/UV

Belonging 45CO02-490 is a carved basalt stone from the Decker Site 35CO2, more specifically, from the Rylander Collection (Figure 4.23). Located near Scappoose, Oregon northwest of Sauvie Island in the Wapato Valley, the Decker/ Rylander site (35CO2). The Rylander Collection was originally assembled between 1909 and 1946 on the Rylander homestead and includes belongings that are consistent with village occupation (Martinez 2019). Archaeological excavations were carried out between 1960 and 1963 (Pettigrew 1973). Artifacts were documented, bagged with provenience information, classified, and then given to the

individuals who excavated each block. Due to the collection of artifacts by OAS members at site 35CO2, artifacts are located in scattered private collections and are unavailable for analysis (Martinez 2019). A collection donated to Grand Ronde in by the Rylander family after meeting with Jordan Mercier and listening to his explanation of the importance of reclaiming and preserving collections. The vesicular basalt surface exhibited areas of smoothing, deeply incised lines, cupules, and concentric circles. These features formed the primary visible structure of the belonging. The design showed Chinookan River motifs through use of threes in the cupules, fives in the negative space of the deeply incised trapezoid side profiles. The base is manufactured, as in it was not the original base. It most likely was part of a taller stone structure. Multispectral imaging documented areas of green, whitish, and orange fluorescence across portions of the stone. The fluorescent responses were recorded as surface modifications only with no chemical identification assigned.

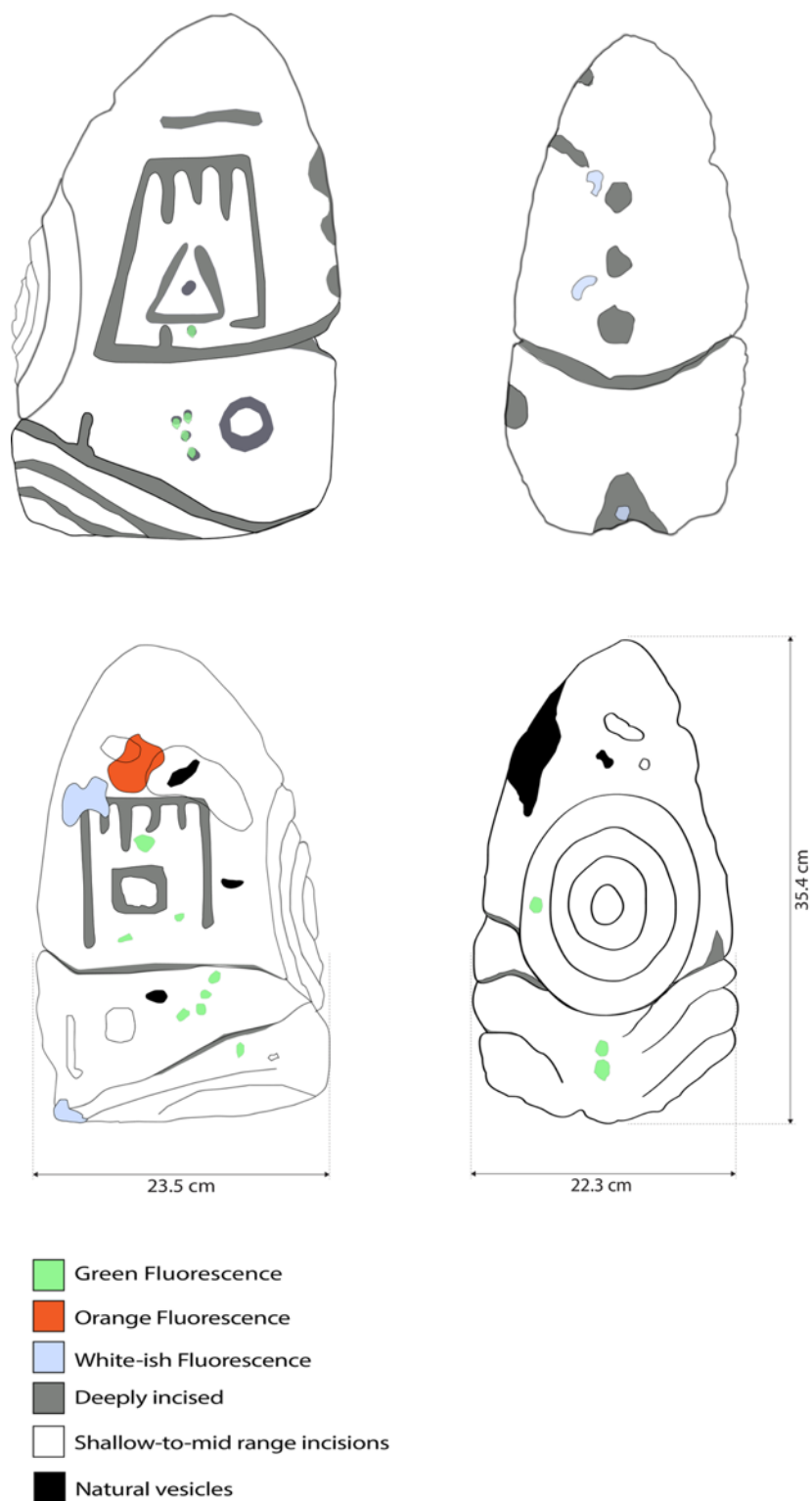


Figure 4. 23. Carved stone sculpture 45CO02-490 exhibiting several distinct colors of fluorescence and surface modification.

Figure 4.24 is a dep OHS 2527. It was trapezoidal carved stone sculpture made from gray vesicular basalt. Donated in 1905. The surface showed deep pecking across the body, indicating that pecking was used to shape and prepare the surface before the design was added (1). The rounded edges suggested additional grinding or abrasion after rough shaping. The distal end was the widest end of the belonging. Chevrons reminiscent of possible x-ray rib motif. One incised line appeared irregular and may have been reworked during production (2-3). The surface was weathered across the whole belonging, with worn and softened edges, and a general exterior texture consistent with long-term outdoor exposure. Paint residues were observed on the surface (4). These residues could relate to systemic use or to later alterations, but the current evidence did not allow this distinction to be made with certainty. A possible ground surface level was marked in the figure by the green dashed line, suggesting that the stone may have an upright directionality and could be classified as a standing stone (5).



Figure 4.24. OHS #2527. Carved stone sculpture (1-5) represents phases of production.

Figure 4.25 depicts the production process of OHS 2526. It was a carved basalt figurine from Cape Horn, Washington, within the Lower Columbia Culture Area donated in 1905. Although it was not from Wapato Valley, the belonging exhibited columnar basalt material and carving practices similar to Wapato Valley stone sculptures. The maker used and worked around a natural fracture in the stone and shaped one end into a pointed “face” (1). This suggested that the production sequence followed the natural morphology of the stone. Six deeply incised lines, make up a formation of five broad zigzag elements across the body. The “face” was modified through incision and pecking, with eyes and a simple mouth added to the pointed end (2). The surface also showed dark burning or charcoal-like pigmentation, along with faint, red-colored pigmentation. These traces may represent paint residues, burning, or later surface alteration, although the current evidence did not allow these possibilities to be separated with certainty (3).

A reworked area near the “face” showed heavy pecking and crushing. This modification appeared to flatten the design back toward the original surface and may represent an in-progress instance of reuse, where the stone was being prepared for a new design (4). After checking in with Bobby Mercier and Greg Archuleta, they relayed that a reworked surface on this would be almost taboo. Due to the personal and spiritual nature of art creation, an artist would most likely not rework another’s creation. We concluded that it is unclear if this surface was intentionally leveled and by whom. It was also unclear whether the sculpture was intended to stand upright. The fractured surface suggested that it may have broken from, or been removed from, a larger rock mass.

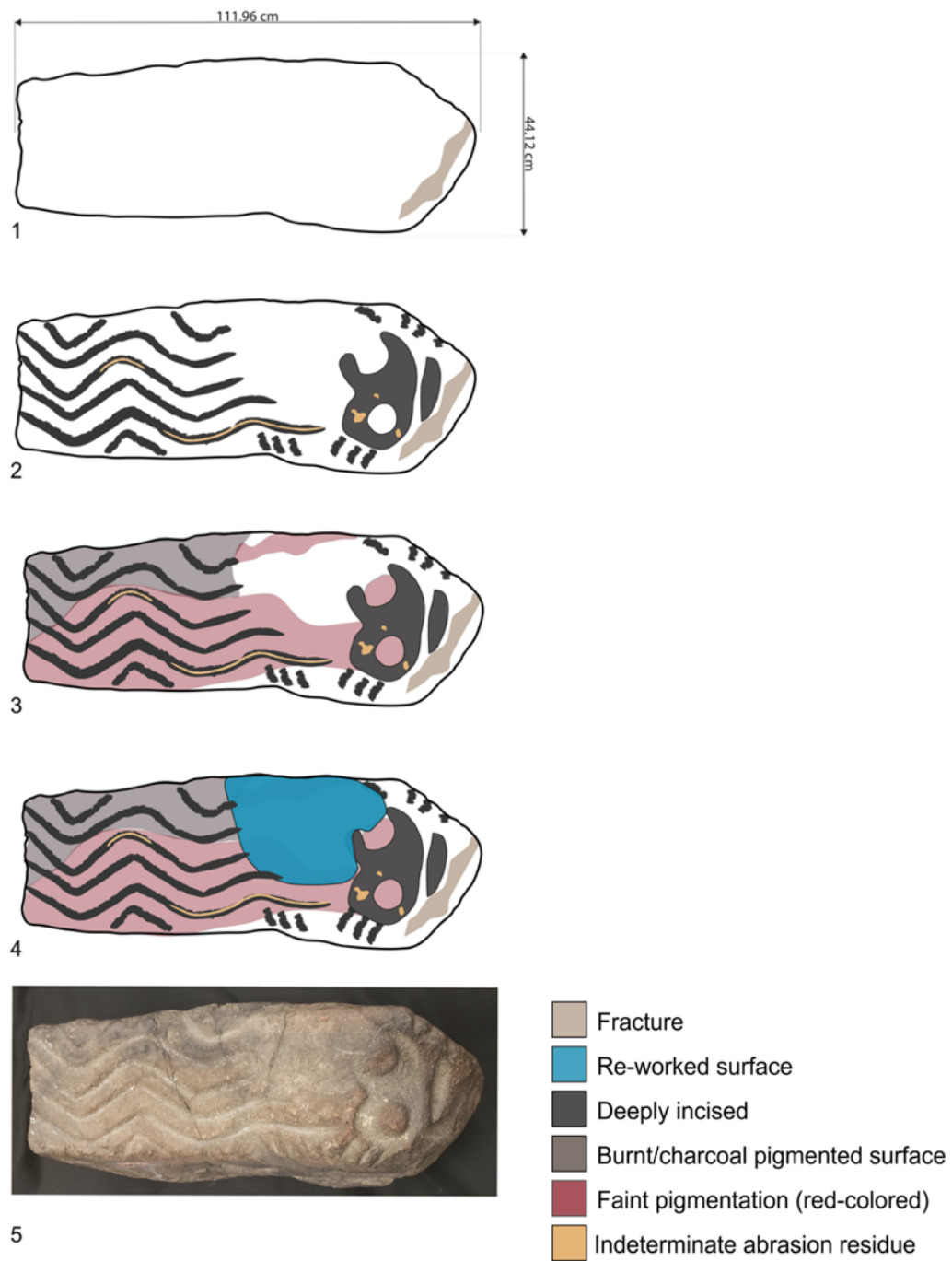


Figure 4.25. OHS #2526 Carved stone sculpture, possibly zoomorphic, represent phases of use.

Figure 4.26 is a depiction of OHS 2536. It was a gray basalt paint cup with black inclusions. The belonging was an irregular, flattened slab with cupules on both sides. The cupules were similar in diameter and depth. Three notched areas were also present along the edge. The surface had been shaped and smoothed, with the working area appearing very smooth and almost polished (1). The smoothed surface preserved an area of burnt charcoal-like residue, concentrated in the working area. Additional grinding wear was visible in association with the smoothed surface, indicating repeated contact, abrasion, or rotary motion during use (2). The cupules likely functioned as active working depressions where pigment, charcoal, or possibly food materials were processed. The similar size and depth of the cupules on both sides suggested that the belonging may have been turned over and used on multiple surfaces across its use life.

Several later alterations were also present. An incised line crossed over the burnt residue area, indicating that this mark was added after residue had accumulated or after the surface had already been used (3). An old label with the object ID number 2536 was painted onto the belonging, representing a clear curatorial alteration, it is unclear if that paint was added when the belonging was accessioned into the collection, or years later. Possible paint residue was also observed on the distal end, though its relationship to systemic use remains uncertain. Edge wear on the notched areas was indeterminate.

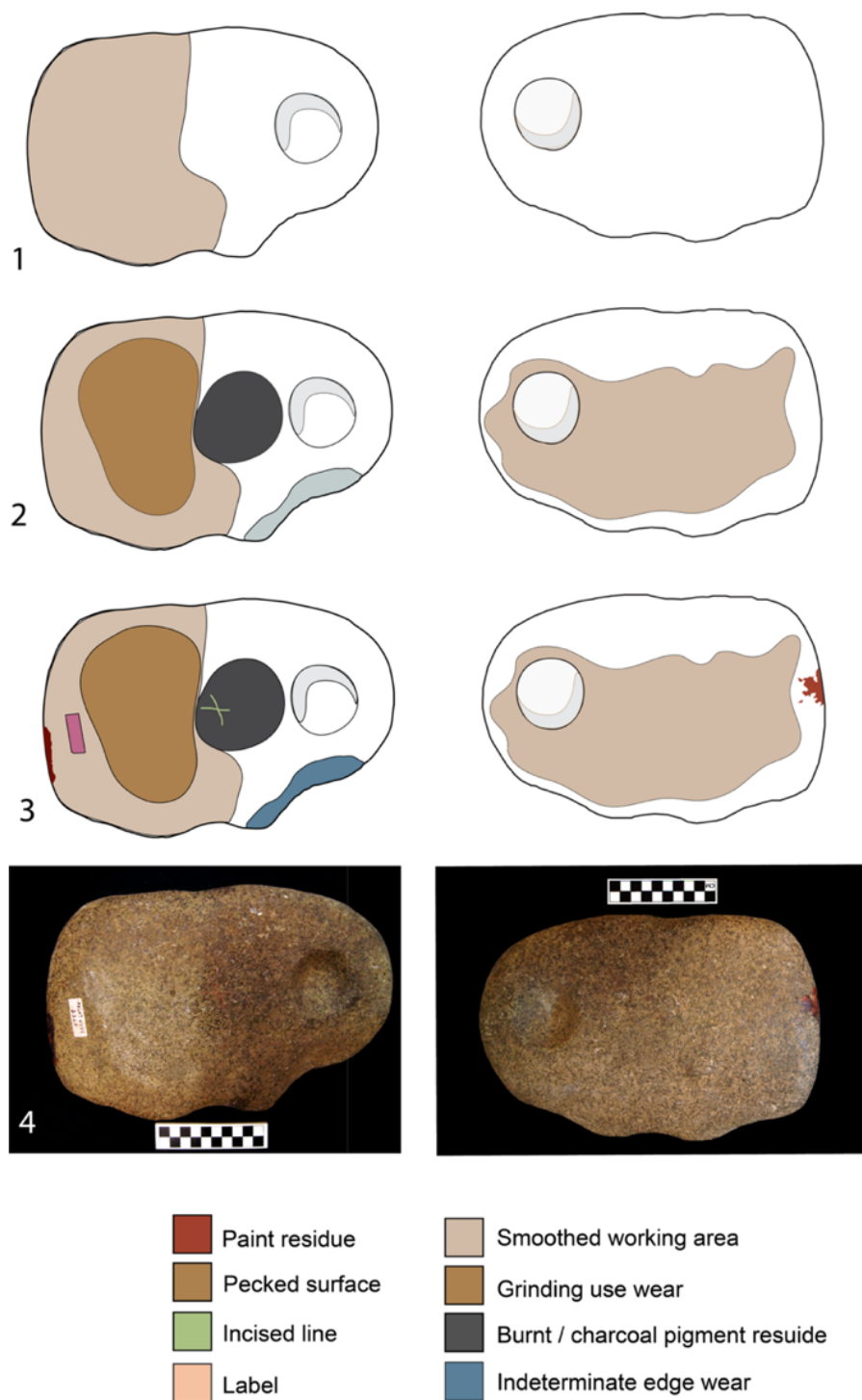


Figure 4.26. OHS #2536; Front and back of worked stone slab. Numbers 1-3 represent phases of alteration and use.

Discussion of Findings

The imaging results documented multiple forms of surface modification across the examined belongings, including pecking, grinding, engraving, incision, smoothing, polishing, pigment-like residues, adhesives, and other later surface additions. These observations demonstrated that technical photography provided a useful means of documenting and examining manufacture, use, reuse, and later alterations without destructive sampling. Ultraviolet fluorescence revealed several later alterations, including historic and modern paints, adhesives, coatings, and label residues that fluoresced under UV illumination. These materials were recorded as part of the belongings' curatorial and post-collection histories. They were not treated as definitive evidence of ancient paint use unless supported by additional lines of evidence.

The material results also reinforced the importance of three-dimensional form. Many of the sculptures exhibited high-relief carving, shaped edges, rounded surfaces, and fully worked volumes that could not be adequately understood through frontal visible-light photography alone. The false-color enhancements of OHS 2532 made the anthropomorphic form more legible by increasing contrast across the face, body, and carved surface planes (Figure 4.10). RTI renderings of the same belonging showed how shifting specular angles clarified surface orientation, curvature, and shallow carved features that were difficult to see under fixed illumination (Figures 4.11 and 4.12). UVR and VIS comparisons further showed variation in the depth of the eye sockets, nose bridge, and possible trace transfer of an unknown residue along the midline (Figure 4.13).

In the processed UVR images, anomalies in the superior or cranial portion of the belonging became more visible, while some facial features appeared diminished depending on the channel and level adjustment used (Figures 4.15). These results showed that each imaging

technique emphasized different aspects of the same surface. Together, they made it possible to document the belongings as worked, dimensional, and historically altered surfaces.

These findings were significant because they addressed the dual and related problems of provenance and provenience that shaped this study. Most of the belongings examined in this project were unique examples of stone sculpture with limited provenience information and uneven provenance documentation. Technical imaging could not resolve those gaps by itself. It did, however, provide another line of evidence by documenting physical traces that connected the belongings to episodes of making, use, alteration, collection, repair, and curation. In Chapter 5, I use these traces to build a relational study of how life histories may be reconstructed when archival and archaeological records are partial and fragmented.

The broader aim of this research was to examine how technical imaging techniques contributed to understanding the phases and production practices of carved stone belongings. This attention to surface traces supported a broader interpretive goal. As Lightfoot et al. (1998) noted, “it is through daily practices—how space is structured, how mundane domestic tasks are conducted, how refuse is disposed of—that people both organize and make sense of their lives”. (201). These practices also shaped how people made, finished, used, maintained, and altered belongings. While much archaeological work linking artifacts and identity has focused on design style (e.g., Conkey 1990; Conkey and Hastorf 1990; Dietler and Herbich 1989, 1998; Hegmon 1992; Parkinson 2006; Plog 1980, 1995; Sackett 1977, 1982, 1985; Wiessner 1983, 1985; Wobst 1977, 1999), the less visible practices of making, finishing, using, and maintaining objects also constituted evidence of social practice.

A community of practice approach to carved stone belongings emphasized knowledge production through collective learning, repeated engagement, and shared responsibility for

materials, skills, and protocols (Modelewski 2012). This framework was useful because the imaging results showed patterning in how stone was worked across multiple belongings. Similar practices appeared in the repeated use of pecking to prepare basalt surfaces, grinding and smoothing to regularize working areas, incision to create geometric or facial details, and the shaping of natural stone forms into figures, standing stones, or pigment-processing tools. These repeated technical choices suggested shared ways of doing. They reflected learned practices of stone selection, surface preparation, design placement, and finishing.

UVF, UVR, NIR, false-color imaging, and RTI helped make these patterns more visible. UVF was especially useful for separating later curatorial additions from older worked surfaces. Modern glues, label residues, and some coatings fluoresced strongly, which clarified which surface features belonged to museum handling or repair histories (Figures 4.18, 4.19). This mattered for community of practice analysis because it helped prevent later alterations from being mistaken for original technological choices. NIR was more useful for examining carved sequence and production. Under near-infrared imaging, incised lines, gouging, overlapping movement, and differences in surface depth became more legible. These features provided evidence for how makers organized cutting, pecking, and grinding actions across stone surfaces. RTI added another layer by allowing the same surface to be examined under multiple virtual light positions. It helped distinguish true surface relief from mineral inclusions, specular reflection, or photographic anomalies. In this way, technical imaging made it possible to compare the repeated gestures of production across the assemblage, including the direction of striations, the depth of incised lines, the rounding of edges, the treatment of facial features, and the reuse or reworking of surfaces.

This patterning was especially visible in the shared use of basalt and related volcanic stones. Several belongings showed makers working with the natural form of the stone, including fractures, vesicles, cobble shape, and columnar structure. OHS 2026, for example, showed evidence that the maker worked around a natural fracture and shaped one end into a pointed face. OHS 2536 showed a smoothed working surface, cupules on both sides, and repeated grinding wear associated with pigment or charcoal processing. OHS 2532 showed carved facial features whose depth, surface orientation, and possible residue traces became clearer through UVR, VIS, false-color enhancement, and RTI. These examples suggested that the assemblage contained repeated practices of selecting stone, adapting natural form, preparing surfaces, and creating visual or functional emphasis through incision, pecking, grinding, and polishing.

A community of practice approach to interpreting carved stone belongings may be a good way to emphasize knowledge production through collective learning, repeated engagement, and shared concern for a set of materials, skills and responsibilities (Modelewski 2012; Pye 1969). It is an approach to knowledge production and re-production by examining collective learning and shared experiences among groups of people who share a concern or passion for something they do. Through social interaction and a shared repertoire of knowledge, such as the creation of large stone stelae for plankhouse and landscape display, groups learn how to carry out cultural activities appropriate to protocol as they interact with each other regularly. The practices of a community are dynamic and involve collective responsibility for managing knowledge as well as organizing the proper structure and performance of that knowledge. This can be seen in the use 3's and 5's in motifs, the shared use of basalts instead of sandstone or other material, the shared repertoire of knowledge of how to carve using the natural folds and fractures of the stone.

Amy Lonetree (2012) described museums as possible spaces of healing when they support truth-telling, accountability, and the repair of relationships between Indigenous communities and cultural belongings. In this project, we handled stones, examined surfaces, identified belongings of interest for Grand Ronde staff and artists, and discussed possible relationships among form, material, carving, and memory. These shared practices were sometimes generative, and they could also be emotionally and spiritually taxing.

Handling ancestral belongings required care, protocol, and attention to the limits of what should be studied. Storytelling, listening, and observation were central to the process (Archibald 2008; Atalay 2019). These conversations ranged from contemporary carving practices to personal memories, family histories, cultural teachings, and reflections on how particular belongings may have been used or understood in the past. Moments when carvers and artists recognized unfamiliar motifs or found inspiration in the collections were especially important. In those instances, collections became places where knowledge could be preserved, reclaimed, and renewed through living practice.

This dissertation made an intentional choice not to record or reproduce every moment of sharing that occurred in the collections. The collaborative space needed to remain open enough to allow familial experiences, cultural stories, and deeply personal reflections that did not need to be published in an academic document. The specific relationships between Grand Ronde artists and their familial connections to particular belongings were not the primary intellectual material that this dissertation sought to extract or analyze. This restraint was part of the low-impact archaeological approach. Following Gonzalez (2016) and Gonzalez et al. (2018), low-impact methods lessened harm by minimizing physical, emotional, and spiritual harm while producing information that was useful to the Tribe. The harms created by colonial collecting, separation

from belongings, and the inability to bring the belongings home were already substantial. The research design therefore needed to reduce further harm and avoid converting every moment of engagement into data.

The project also required careful attention to avoidance as a form of respect. In some ethnographic collections, we encountered “killed” mortars and bowls. These belongings had been intentionally altered, often through a hole punched through the base. They denoted the end of the life of the user, were connected to funerary contexts, and were not available for study. Similar to the forms of knowledge outlined by Laluk and Burnette (2021:113), they affirmed that avoidance can be the highest form of respect. As someone who is not Grand Ronde and is not initiated into the protocols needed to protect, handle, or interpret these belongings, avoidance of funerary belongings was a critical part of the low-impact methodology.

As outlined previously in Figure 4.3, safety and respect were maintained through practices such as smoke cleansing, washing hands, prayer, songs, and other forms of care. Smoke cleansing, or smudging, was not allowed in the collection areas, but before and after handling belongings, a short cleansing off site was sometimes necessary. Institutionally approved protections generally included handwashing, a blessing, a prayer, or a song. These actions were part of the methodological structure of the project and shaped the conditions through which belongings were sampled, photographed, and interpreted.

Conclusion

The use-wear analysis documented instances of manufacture, use, reuse, post-depositional change, and later alteration (Adams 2014; Wright 1992). Surface modifications were classified into four phases: preparation of the surface, systemic use wear, post-depositional

processes, and later alterations. These categories helped distinguish natural and cultural modifications and identify phases in the production process of each belonging. Multispectral imaging, RTI, photogrammetry, and false-color imaging enhanced the detection of surface modifications and helped differentiate stages of use, possible re-work or repair, residues, and curatorial alterations.

One of the overarching goals of CHIP has been to develop digital and community-guided research strategies for legacy collections. The digital tools used in this study supported visualization, documentation, and careful artifact processing in ways that could be integrated into other archaeological projects, especially those conducted in consultation and collaboration with Tribal or descendant communities. Documentation of legacy collections in this way has the potential to raise the context-sensitive standard of care for material culture and to support the return of knowledge from collections into living community contexts. Chapter 5 builds on these findings by examining how material, archival, and relational contexts come together to reconstruct the lives of stone belongings from Wapato Valley across time.

CHAPTER 5:

Relationality as Generative Archaeological Investigation

This chapter examines stone sculpture from the Wapato Valley through a relational approach to archaeology. By interpreting belongings as embedded in ongoing cycles of reuse, movement, and memory, this analysis builds a conceptual-methodological approach for tracing the life histories of these belongings through their connections to practices, places, land, and memory. It also situates legacy collections within broader relationships among ancestral makers, contemporary communities, museums, and archaeological practice. By tracing selected *communities of practice*, the various shaped, maintained, and renewed knowledges take material form across time.

Nonlinear temporalities are central elements of Black and Indigenous philosophy and imagination (Cornum 2023; Looser 2014). Kim TallBear, for example, writes about networks of relation and describes a form of relatedness that activates remembering, honoring, and imagining across generations and living bodies (2019). Time, in this sense, extends beyond a linear sequence of equal segments (Rose 2013). It may repeat, spiral, or be marked through contemporary, present-day human experience. This understanding of time grounds the relational archaeological analysis by showing how stone belongings carry associations among makers, materials, places, practices, and contemporary communities across multiple temporal contexts.

A *community of practice* framework provides one way to organize these relationships across temporal contexts. Wenger (1998) demonstrated that learning connects practice, meaning, identity, and community to a shared repertoire of mutual engagement. *Communities of practice* are communally understood and continually renegotiated by their members. They operate through a series of relationships of mutual engagement that bind members into a social entity and

produces a shared repertoire of communal resources such as landscape knowledge, visual vocabulary, styles, and ways of doing or making that members have developed over time (Hegmon 1998).

I examine these different *communities of practice* to show how carved stones carried histories across their lives. I begin by outlining Grand Ronde's place-based scholarship, which draws from multiple modes of knowledge creation across time. From there, I turn to Sauvie Island and the Wapato Valley to situate these belongings within the lands, waters, histories, and colonial disruptions that shaped their movement into museum collections. I close by outlining the life histories method used to trace carved stone belongings through systemic, depositional, colonial, and living contexts.

Tracing Relations Across Time

Bringing Indigenous and Western knowledge systems into conversation with each other requires close attention to social and material entanglements. Grand Ronde includes diverse Tribes and bands with overlapping culturally significant places, and attention to these dynamics remains essential for engaging with these belongings. Here, I trace multiple forms of relation demonstrated through community-based work with Grand Ronde artists and community members, including Travis, Bobby, Stephanie, and others. These collaborations deepened my understanding of place-based learning and showed how people, practices, and places shape Grand Ronde ways of knowing, interpreting the past, and carrying that knowledge into the current work of the Cultural Resources Department.

Relationality offered an intervention into archaeological approaches that relayed primarily on classification by observations drawn from *Ikanum*, historical records, and contemporary engagement highlighted relationships among past and present human and nonhuman bodies. For CHIP, understanding the detailed histories of belongings' removal from community contexts became a tool for unsettling colonial attempts to diminish Grand Ronde's political and cultural identity.

Figure 5.1 demonstrates how Grand Ronde place-based scholarship draws from multiple modes of knowledge across time. Indigenous ways of knowing and teaching are embedded in place, carried through story, and connected to life values, responsibilities, and relationships. These knowledge systems offer a strong foundation for archaeological interpretation. As many Indigenous scholars and communities have emphasized, oral traditions can guide and strengthen archaeological research by locating material evidence within deeper histories of place, memory, and responsibility (Kelley 2020; Mason 2000).

At place, *Ikanum*, historical records, and contemporary observations come together to illustrate the entanglements of people, belongings, and enduring practices on the landscape. Places are localities made meaningful through experience, story, movement, and repeated return. *Ikanum* connections are rooted in the deep past and remain relevant in the present. Historical records were products of their time, shaped by colonial documentation practices, yet they can also support land claims, cultural restoration, and the reclamation of knowledge. Contemporary observations include the present-day work of Tribal staff, artists, researchers, and community members who continue to engage with these places and belongings.

Figure 5.1 represents the varied frequencies of *Ikanum*, historical records, and contemporary observation across time. At place, these modes of knowledge come together to tell

a story, guide interpretation, and support learning. The figure may also read from left to right as a temporal model. *Ikanum* may be most prevalent in the deep past, while historical records and contemporary observations become more visible closer to the present. The figure is therefore meant to show how different forms of knowledge do not replace one another. They overlap, resonate, and become meaningful through their relationships to place.

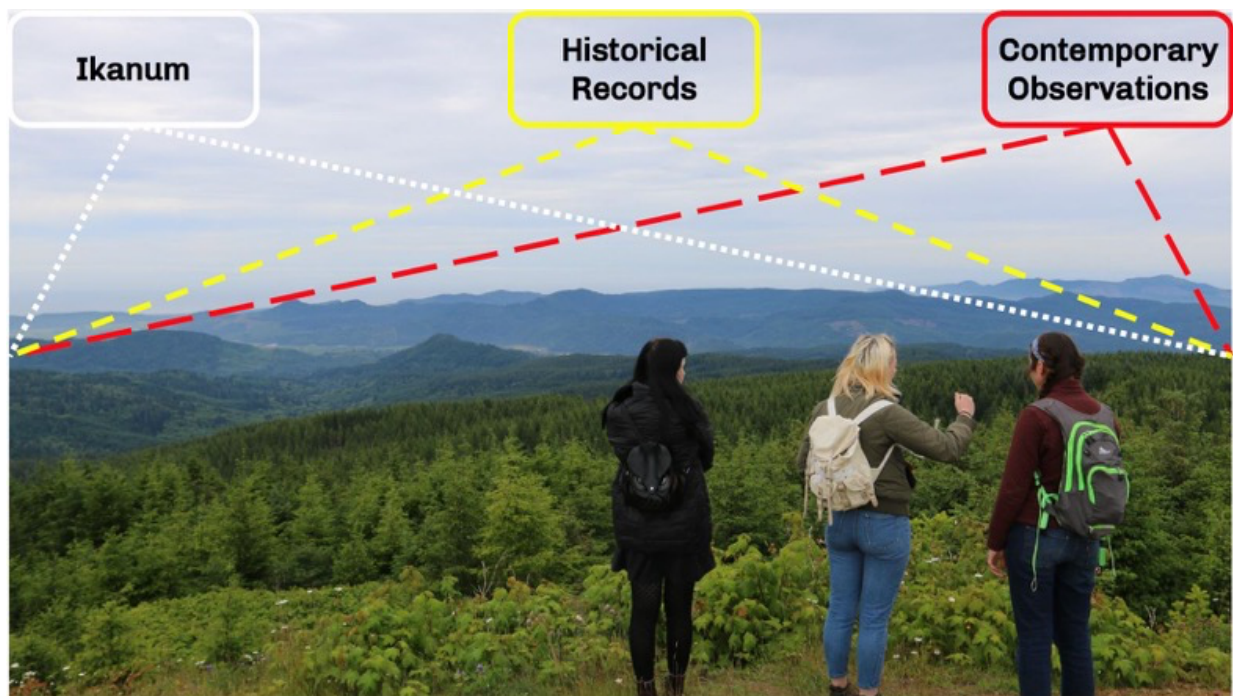


Figure 5.1. A representation of Grand Ronde place-based learning. FMIA students at the top of Mount Hebo. Photo courtesy Ian Kretzler.

Relationality is also informed by holism, an Indigenous philosophical concept referring to the interrelatedness between the intellectual, spiritual, emotional, and physical realms to form a whole, healthy person (Archibald et al. 2019). Clementine Bordeaux (2023) and ahtone et al (2024), offer insights on how to engage with cultural art objects based on non-Western cultural perspectives that engage the animacy of objects as relationship to particular landscapes and

histories. This holistic framework shifts the analysis from asking what a belonging represents to asking how it participates in relationships among place, story, responsibility, and community authority.

What stories, songs, and rituals are associated to that place? Who is the appropriate person to tell that story? Is that story limited by season? The products of this research are to use elements of Indigenous storytelling to give shape to and animate these embedded relations or meeting-up of stories and histories into a collaborative dialog about Columbia River stone carvings and their relation to place (Tuck and Yang 2019).

In archaeological principles, this means that the past is constructed in the present and informed through interpretations and political contexts of the researcher (Shanks and Tilley 1992; Hodder 1991; Rose 2001; Rosenzweig 2020). I extend these concepts of place-based learning and social reconstruction to cultural belongings., such as the carved stone effigies, or power figures suggest complex relationships in historical contexts, *Ikanum*, and their contemporary relationship to the project collaborators. The communities of people who obtained the belongings' raw materials, shaped, created, used, and passed them on are connected to the belongings even today. It is not possible to explicate each and every connection through time, but we can use these tangible and intangible elements as a baseline for understanding the production, movement, and contemporary interactions of stone power figures.

Background: Sauvie Island: A many-storied cultural landscape

Sauvie Island is the largest island in the Columbia River and is located northwest of Portland, Oregon (Figure 5.2). It has also been known historically as Wapato Island, Wappatoo Island, Multnomah Island, Wyeth Island, and Sauv  s Island. The name Sauvie Island comes

from Laurent Sauvé, a French-Canadian employee of the Hudson’s Bay Company who managed the company’s dairy operation on the island during the 1830s and 1840s (McArthur 1927; National Park Service 2020). Lewis and Clark referred to the island as Wapato or Wappatoo in 1805–1806, after the wapato plant, a wild potato with arrowhead-shaped leaves that was abundant in the area (McArthur 1927; Darby 2002). In 1834–1835, Nathaniel Jarvis Wyeth built Fort William on the island, and some early maps identified the island as Wyeth Island (National Park Service 2020; ODFW 2019).

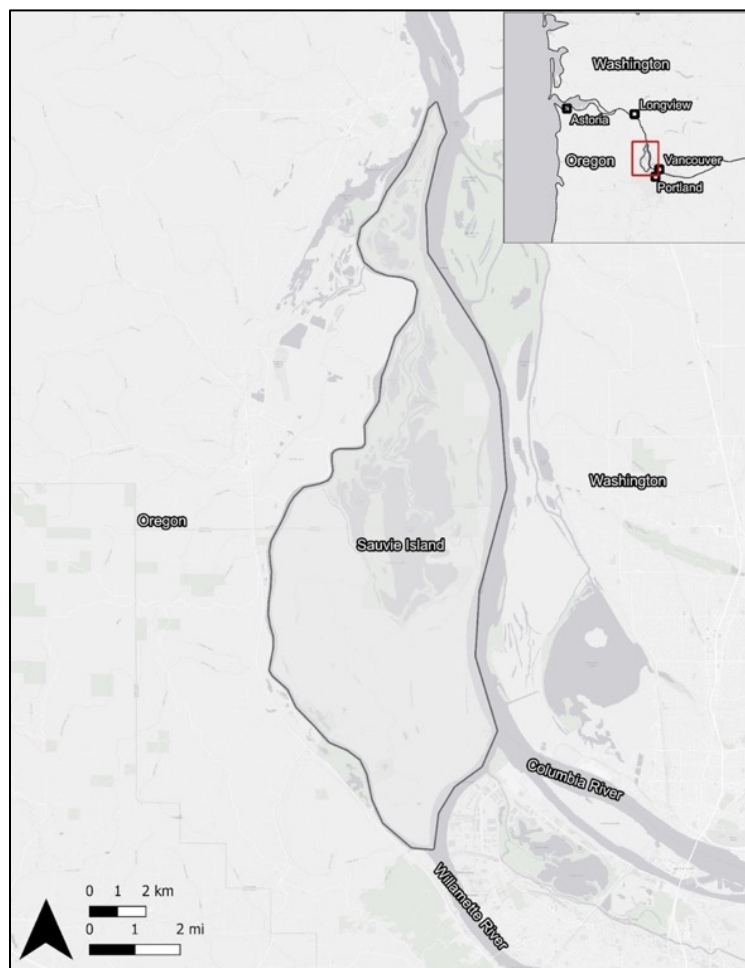


Figure 5.2. Map of Sauvie Island in the Wapato Valley

Figure 5.3 depicts an assemblage of carved stone sculptures found on Sauvie Island and donated to their collection in the early twentieth century. The record of transfer lacks provenance beyond the fact that they were found on Sauvie Island. Historically, many farmers likely encountered these belongings while plowing their fields and many Sauvie Island belongings still remain in private collections today (Ames 1992; Tipton 2020). These historical images and accession records are some of the only lines of evidence for tracing the movement of these ad hoc assemblages through time.

Methods: A Life Histories Approach

Dian Million has argued that the liberation paradigm centers relationality as a generative form of practice (2013). This methodology is organized through a generative life histories approach and framed through *communities of practice*. Through storytelling, a fundamentally creative process, people are brought together to form communities of shared knowledge, understanding, and responsibility (Archibald 2008). This approach traces the lives of standing stones across four interconnected contexts: systemic, depositional, colonial, and living contexts (Figure 5.3). These contexts are overlapping relational fields through which Chinookan carved stone belongings move over time, rather than discrete stages or steps. This framework makes it possible to examine the materiality of meanings, practices, and relationships accumulate across generations and how belongings actively participate in these processes (Meskell 2008).

The idea of life histories borrows in part from taphonomic studies, which examine the histories of fossils and bones from the death of an organism to its moment of human discovery (Behrensmeyer and Hill 1980). In this project, taphonomic triangulation among archaeological evidence, ethnographic records, and contemporary cultural tradition provides a way to begin a

conversation about relational life histories. This approach was shaped by what Briece and other Grand Ronde collaborators emphasized from the beginning: cultural resources are embedded in stories of people, practices, and places important to the Grand Ronde Community.

Tringham (1991, 1994) examined the use-life of houses in southeast Europe, including the social statements and implications involved in construction, occupation, and destruction. Her analysis showed that houses carried meanings beyond their functional role as shelter. In a similar way, this research considers how Chinookan carved stone belongings accumulated meaning across different social, political, and cultural contexts. A life-history approach traces these belongings from raw material acquisition and manufacture to deposition, colonial collecting, museum curation, and renewed study in the present. It also shows how their influence continues to inspire new meanings across generations. This relational life histories approach centers belongings as active participants in social worlds (Appadurai 1985). As Gell (1998) argued, objects can function as social actors that shape and influence social action. The accumulation of meaning across time produces what Ames (1992) described as social patina, where layers of relationships, memories, and practices accrue through time (Bradley 1990; Gosden and Marshall 1999; Hill 2005; Kopytoff 1986; Meskell 2004). These layers formed through multiple communities of practice which are conceptualized as overlapping groups of learners, teachers, and practitioners engaged in shared knowledge systems (Kohring 2011; Lave and Wenger 1997; Wenger 1998).

George Nicholas identified the Western tendency to separate the “real world” from the “supernatural world,” the present from the past, and people from nature (Nicholas 2005:85; see also Nicholas 2001). As he noted, these divisions do not exist in the worldviews of many Indigenous cultures. The “separation of past and present” is “not only illogical according to some

members of Indigenous societies” and may also “threaten the integrity of [Indigenous] worldview and beliefs” (Nicholas 2005:85). A relational life histories framework therefore offers a way to study carved stone belongings without separating material form from story, practice, place, memory, and contemporary.

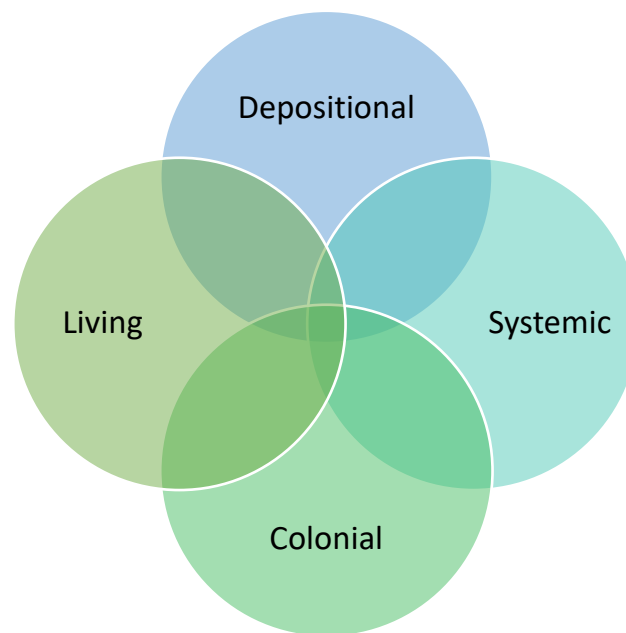


Figure 5.3. *Relational Contexts* across a belongings’ use life (non-linear and overlapping use).

The learning process encouraged enculturation and cultural participation by exposing novices to the norms that structured technical, social, and economic environments (Dobres 2000; Weinrich 2012). This was true in the past and remains true in the present. In many Indigenous communities, “art” represents one of the most visible forms through which intangible aspects of identity, ideology, history, and responsibility are communicated. Chinookan artists created this work in workshops, through storytelling, through teaching, and through repeated acts of making. These practices connected makers to family, personal Tamanawas, place, and history.

Communities of practice provided a useful framework for understanding the entanglements of people, practices, and places across these contexts. Learning occurred through participation in shared practices, where knowledge was transmitted intergenerationally through observation, mentorship, repetition, and direct engagement (Lave and Wenger 1997; Weinrich 2012). In this analysis a *community of practice* operated at multiple scales, from households to villages to regional networks, and were shaped by kinship, gender, ritual systems, and political organization (Roddick 2009). Through collective learning and shared experience, *communities of practice* form among groups of people who shared a concern, skill, responsibility, and commitment to a particular set of activities. Through regular social interaction and this shared repertoire of knowledge, people learned how to carry out cultural practices according to appropriate protocols. These practices are dynamic and involved collective responsibility for managing knowledge, structuring participation, and maintaining the proper performance of that knowledge across generations.

The usefulness of this framework is that it allows “groupness” to be expressed without relying on fixed or homogeneous categories of social identity, such as “cultures”, “horizons”, or bounded archaeological traditions (Frankel 2003). Organizing through *communities of practice* such as a household community of practice, a landscape community of practice, a production community of practice, is a way to avoid assigning specific carving practices to specific contemporary Tribal nations in overly direct or prescriptive ways. Instead, *communities of practice* are defined and organized through relationships and actions among people, practices, materials, and place.

By reconnecting these relational life histories, I chart recent settler-colonial entanglements while also attending to ancient carving practices and lived knowledge. As Loring

(2017:205) notes, the life of a stone tool involved complex networks of knowledge and relationships. People located raw materials, transported stone, shaped objects, shared technical knowledge, and passed belongings across generations. These processes created layered meanings embedded within the belongings themselves.

Results: Systemic Contexts

Production, Use, and Knowledge Transmission

Systemic contexts refer to the creation, use, and reuse of belongings within past communities (Schiffer 1972). Within these contexts, carved stone belongings were embedded into living systems of everyday life. These contexts foreground the social and technical practices through which belongings were made, maintained, handled, and passed on. A *community of practice* framework helps organize this evidence because it allows different forms of knowledge to be examined at multiple scales, from tool production and household activity to ceremonial practice, village display, and landscape relationships.

In this chapter, systemic contexts are organized through several overlapping *communities of practice*, i.e. production communities, household communities, ceremonial communities, and landscape-based communities. I do not fix these groupings, as a *community of practice* can be organized many different ways. *Communities of practice* describe patterned relationships among people, materials, places, and practices and also provide a way to discuss repeated ways of doing without assigning a single practice to one bounded “culture,” “horizon,” or contemporary Tribal nation (Huntley et al. 2012; Hasaki 2012).

Production Communities of Practice

Ground stone production *communities of practice* refer to the shared technical knowledge involved in selecting raw materials, preparing surfaces, shaping stone, pecking, grinding, incising, smoothing, and finishing. Ethnographic sources from the Lower Columbia describe ground stone tools being used for a variety of tasks, including carving associated with canoe manufacture, splitting associated with plank house construction, fishing and food preparation (Ray 1938; Spier and Sapir 1930). Unfortunately, specific references to ground stone tools in the ethnographic and archaeological record of the Lower Columbia are relatively rare when compared to references to flaked lithic tools.

Ground stone tools was a time-consuming labor. A finished object could take several hours or days depending on the size, density, and intended form of the stone. Ground stone tools such as net weights, bowls, mauls, pestles, and carved stone sculptures represented a significant investment of labor, skill, and material knowledge (Stewart 1973; Strong 1967). Spier and Sapir's Wishram consultant, Mrs. Teio, described the characteristics and manufacturing process of ground stone bowls:

“Stone bowls were made of granite. The hollow was made first since the stone would withstand hard pecking while the stone was still a solid block. When the hollow was completed, the exterior was dressed. Large bowls of this type were used for cooking by the familiar process of dropping hot stones into the food” (Spier and Sapir 1930:190).

This account describes a clear production sequence. The hollow was pecked first, while the stone core still retained enough mass to withstand forceful reduction. The exterior was then shaped and decorated after the interior form had been established. This sequence suggests that ground stone production involved planning more around breakage risk due to the stone density and other factors like natural fractures. Mrs. Teio also described the qualities and manufacture of pestles:

“Stone pestles were 12–14 inches long, round in section, tapering from a three-inch diameter at the bottom to half that at the top. The lower face was somewhat convex. The upper end was sometimes ornamented by shaping it to resemble a nose, for example. These were made of common or black granite (gabro? [sic]), the latter being better material. The stone was placed on a layer of dry dirt, four or five inches thick, to serve as a cushion and prevent it breaking during the pecking process. It was lightly tapped with a sharp-edged fragment of granite, turning it the while to give it cylindrical form. Hollows were fashioned by continuous pecking at one spot” (Spier and Sapir 1930:189).

Mrs. Teio described pecking as a controlled materials reduction technique. The maker rotated the stone while shaping it, used a dry dirt cushion to reduce breakage and to shape it uniformly, and worked the surface with a sharp-edged fragment of granite (or other stone type). This process may also refer to a hard hammerstone, cobble chopper, or similar reduction tools. These details from informants show that ground stone manufacture required procedural knowledge of fracture trajectories, support, pressure, sequencing, and the varied predictabilities

of the raw material. They also show how technical knowledge was learned through repeated practice. In this sense, the manufacturing techniques such as pecking, turning, dressing, grinding, and polishing were forms of knowledge transmission within production *communities of practice*.

Zoomorphic stone production offers another way to think through *communities of practice*. Repeated animal forms, shared carving choices, and durable references to beings such as Beaver and Frog suggest that makers worked within learned traditions of form, story, and material knowledge. These belongings were produced through technical skill, but they also carried narrative and relational knowledge that connected carvers, places, and other-than-human beings across generations.

Figure 5.4 shows the relative proportion of animal representations documented in the ad hoc assemblage, including owls, beavers, frogs, and indeterminate zoomorphic forms. Because the assemblage was ad hoc, these percentages should be read as descriptive patterns within the studied sample, not as a complete representation of all zoomorphic stone production in the Lower Columbia River region. Even so, the chart helps show which animal forms appeared most frequently and provides a visual basis for considering how repeated, ambiguous, or recognizable forms may reflect *communities of practice* in carved stone production.

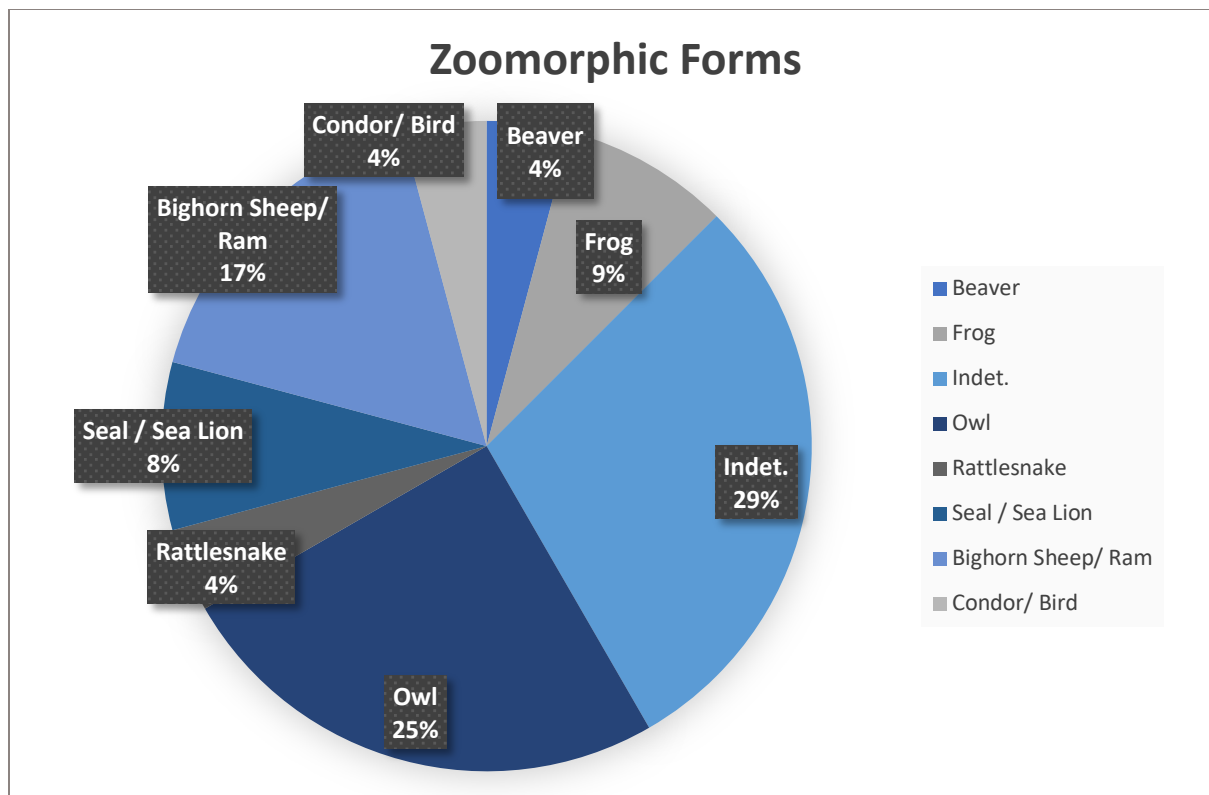


Figure 5.4. Percentage of ad hoc assemblage's zoomorphic forms (n=24)

Beaver representations accounted for 4% of the assemblage. Beaver is mentioned by Charles Cultee, thought to be “one of the last Lower Chinook” in the *Kathlamet Texts*, in relation to a great flood, where Beaver succeeds in bringing land up from deep water (Boas 1901). In the Chinook Texts, in a story also told by Charles Cultee, Beaver puts a grindstone on his belly and back to use as armor, defeating Loon in a challenge instigated by supernatural beings. A story about Frog also appears in the Chinook Texts, in which Frog and Newt are commissioned to create nets by spinning twine. Along with Coyote and Snake, they created net buoys with stones and learned the various taboos for catching salmon (Boas 1894). In Figure 5.5 a frog stone carved in three dimensions from the Oregon Historical Society may represent or recall those stories and connections.



Figure 5.5. OHS #2535 Zoomorphic stone OHS, Frog.

Owl representations formed a substantial portion of the zoomorphic sample, accounting for one quarter of all animal forms in this ad hoc assemblage. This pattern is significant because owls often held complex and sometimes uneasy relationships with people. In a story dictated by Louis Simpson, a Wishram man, in the Wishram Texts, Owl receives its name from Coyote after Coyote throws ashes at him. This act turns Owl ashy gray and limits his ability to harm people (Sapir 1909). The recurrence of owl imagery in carved stone may therefore point to a community of practice in which makers repeatedly engaged powerful animal beings through shared forms, remembered stories, and culturally specific understandings of danger, transformation, and protection.

Indeterminate zoomorphic forms accounted for 29% of the assemblage. The ambiguity of forms in the creation and carving process may have been intentional. Indeterminate forms may have allowed makers and knowledge holders to use a single carved stone animal across multiple stories without requiring a new ground stone animal for each narrative, being, or event. In this sense, visual indeterminacy may have been part of the same community of practice. Its openness supported storytelling, teaching, and relational interpretation by allowing one carved form to hold several possible animal identities, ancestral references, or narrative connections (Figure 5.6).



Figure 5.6. CTGR #2016.003.001 Indeterminate form.

Household Communities of Practice

Household *communities of practice* refer to the ways in which carved belongings were used, displayed, taught, and maintained within domestic and communal settings. The plankhouse

served as a primary setting for many of these activities. Ceremonies, gatherings, and daily living tasks took place inside plankhouses, reinforcing the various social and cultural knowledges through repeated observation and participation (McPherson Smith 2004; Ray 1938; Sobel 2004). Within these settings, belongings were part of the lived environment of households, where people cooked, processed foods, hosted gatherings, taught youth, and maintained relationships to ancestors and spirit power.

Winter was often a season of tool repair, carving, weaving, storytelling, and ceremony (Johnson et al. 2013). During these periods, knowledge transmission occurred alongside production activities. Learners participated in carving and repair practices while teachers shared stories, songs, and oral traditions (Macnair et al. 1984). Storytellers memorized and carefully repeated narratives to prevent significant alteration of stories passed down through generations (Hymes 1984).

Ground stone tools were part of these household systems. Belongings such as bowls, mortars, pestles, mauls, and other worked stone implements were connected to food preparation, plant processing, woodworking, and other daily practices (Ames and Sobel 2019; Ames and Smith 1999). At the same time, some belongings carried more striking visual, social, and ceremonial significance. The distal ends of pestles and hammerstones, for example, could be shaped into various zoomorphic or other decorative forms, suggesting that functional tools could also carry aesthetic or symbolic qualities (Spier and Sapir 1930:189). This overlap between utilitarian use and ceremonial display is important yet challenging to parse. Belongings could participate in household labor, social identity, teaching, and ritual life all at the same time.

Decorated objects could also operate within household systems of social status, kinship, and memory. Ames and Maschner (1999) argue that decorated objects sometimes validated the

status of upper-class individuals, households, and extended kin groups. In this context, carved stone belongings may have participated in forms of household display where motifs, forms, and materials communicated relationships to family, rank, place, and inherited knowledge.

At the household scale, different members could have used or displayed motifs connected to family, status, or guardian spirits (Daehnke 2005, 2017). The interior of a Ceremonial lodge on the Columbia River depicts a carved wood power figure, similarly a stone power figure, can be understood within a similar context.



Figure 5.7 "Interior of a Ceremonial Lodge" in the Columbia River region. Field sketch 1846 by Paul Kane (1810 - 1871). Oil on paper, 24.1×29.2cm. Stark Museum of Art Orange, Texas. Public domain.

Chinookan stone sculptures are often interpreted as figures that may have stood vertically inside or outside traditional longhouses. Figures of this kind may represent mythological characters, ancestors, guardian beings, or important powers tasked with protecting a place. Carved power figures placed inside or outside a plankhouse, or on the landscape, could be seen by broader audiences signaling the power, status, and responsibilities of the people who created it and the people who witness it. This is especially important for standing stones. Their vertical placement would have made them part of the plankhouse architecture and of the social and ceremonial life.

Chinookan individuals with guardian spirits possessed power boards or power sticks used in ceremonial contexts, including spirit dances and household display (Boyd 1996). These belongings were part of a wider ceremonial system to which materials, images, songs, dances, powers, and protocols were connected. Wingert (1952) noted that many sculptures were originally painted and that several still exhibited traces of pigment. The results from the multispectral analysis corroborate that suggesting that carving, painting, standing, and placement was part of a broader artistic practice.

Landscape-Based Communities of Practice

Landscape-based *communities of practice* refer to the relationships among stone, place, raw material, waterways, village locations, and ceremonial landscapes. Some standing stones may have been placed on the landscape to mark ritualized or ceremonial places. Evidence of this was seen in the use wear analysis wherein natural areas were left blank and the form of the stone allowed for it stand upright in the ground. Raw material selection, transport, shaping, and placement all required knowledge of the landscape and its resources. Raw material analysis from

regional archaeological collections shows that pumice, basalt, and rhyolite were commonly used, with pumice comprising approximately 80% of carved stone materials at Cathlapotle and Meier (Ames 1999; Geitgey 1992). The distribution of pumice sources, including places like Rock Mesa, Crater Lake, Bend, and the Rogue River, suggests that there were instances of long-distance movement of materials and relationships across broader landscapes (Geitgery 1992). While more analyses are needed to definitively source these materials, we can still conclude that material movements reflect wide networks of exchange. Whether procured from The Dalles and transported back to Sauvie Island, or quarried right from the Islands bedrock, connecting them to the entire field of relationships through which stone was procured and the stories told and referenced in those places.

On Sauvie Island and within Wapato Valley more broadly, the Columbia River Basalt Group, Columbia River basalt cobbles, Grande Ronde basalt fragments, Troutdale Formation gravels, and Missoula Flood deposits created a complex geological setting to which makers had many choices as to which stone sources to use for tools and stone carvings (Bourdeau 2004; Evarts et al. 2016). In this sense, Sauvie Island can be understood as an abundant toolmaking and tool-using landscape.

Results: Depositional Contexts

Depositional contexts refer to how belongings entered the archaeological record and the processes that altered them over time (Lucas 2012). These contexts included cultural placement, abandonment, breakage, erosion, river transport, sedimentation, plowing, and later collection. *A landscape community of practice* framework helps organize these processes by tracing how

belongings moved through relationships among people, stone, waterways, fields, island landforms, and later collectors.

Within depositional contexts, the landscape community of practice included both cultural and natural formation processes. Figure 5.8 provides one historical example: a newspaper account described “A Large Indian god” carved from basaltic stone, weighing nearly a ton, found on Oak Island. The account stated that the figure remained there until it was broken apart for chimney stone. Although the language reflects colonial interpretation, the account documents a large carved basalt figure in place on the landscape and records its later destruction.



Figure 5.8. Account of Basaltic published in Sunday Oregonian. 1905. "Stone Implements Used by the Oregon Indians." January 1, 1905, 4(34). Public Domain Mark 1.0.

“The location of this island at the junction of the two rivers, with its many lakes filled with wapatoes, the greatest number of waterfowls, and other game in abundance, made it an asylum of refuge for all the tribes and explorers. A Large Indian god carved out of basaltic stone, weighing somewhere near a ton, was found on Oak Island and remained until some 40 years ago when an ignorant tenant, not knowing or caring about the value, needed some stone to build a chimney, broke it to pieces, thereby destroying one of the largest and grandest pieces of stonework that Oregon ever produced. The Indians worshipped it, imploring it for rain or dry weather, for food or journeying to the happy hunting grounds.” (The Sunday Oregonian 1905 4:34.

The geological landscape of Sauvie Island also shaped the depositional record (Naik 2005). Columbia River basalt cobbles, Troutdale gravels, and Missoula Flood deposits complicate source identification. River transport redistributed stone materials and contributed to complex depositional histories at Sauvie Island (Helaire et al. 2019). These processes make it difficult to distinguish primary basalt sources from redeposited cobbles without further geological analysis.

Later collection practices further altered this landscape community of practice. Early archaeological work, amateur collecting, relic hunting, plowing, and erosion all contributed to the removal of belongings from their original settings. Seaman described Sauvie Island as a heavily collected landscape, where plowed fields and eroding riverbanks produced numerous artifacts (1967:45). These practices disrupted stratigraphic and spatial context and contributed to

fragmented assemblages with limited provenience. Taken together, depositional contexts show that the archaeological record of Sauvie Island was shaped by landscape processes that included placement, burial, exposure, movement, collection, and destruction.

Results: Colonial Contexts

Collecting, Displacement, and Institutionalization

Colonial contexts refer to the processes by which belongings were removed, collected, accessioned, catalogued, displayed, and interpreted within settler institutions. These contexts were shaped by settler colonial logics that determined which objects were considered worthy of collection, how belongings were categorized, and whether they remained in museums, private collections, schools, historical societies, or other institutional holdings. As Wolfe (2006) argued, settler colonialism is an ongoing structure rather than a single historical event. Even though the contexts of these accessions are part of a moment in time, the overarching structure remains visible today.

A colonial collecting *community of practice* organizes these people and processes by tracing the repeated actions through which settlers, collectors, amateur archaeologists, museums, historical societies, schools, and civic organizations removed belongings from Indigenous contexts and reclassified them as artifacts, relics, curios, specimens, or art. These practices formed a shared settler practice of collecting, naming, displaying, and institutionalizing Indigenous belongings.

I found that many belongings entered museums and collections through ethnographic collecting, amateur excavation, relic hunting, and citizen gifting. These belongings were often treated as evidence of a disappearing past rather than as part of living communities (Warren and

Barnes 2018). Collectors such as Emory Strong excavated large numbers of belongings, removing them from archaeological contexts and placing them into private collections (Halliday and Chehak 1996). Strong also “salvaged” artifacts, digging up hundreds of stone tools, trade beads, mortars, and pestles for his private collection.

Seaman’s description of Sauvie Island further shows how relic hunting shaped the archaeological record (1967). She wrote that the Reeder Land Claim, located near old Multnomah village, produced more finds for relic hunters than any other single location on the island. She also noted that the upstream half of the island contained many village sites and that camp sites along the Columbia Riverbanks had produced many relics. Her statement that “the best hunting” occurred in plowed fields or where floods had washed banks away shows how erosion, agriculture, and collecting worked together to expose and remove belongings from their depositional contexts (Seaman 1967:45).

Civic and historical organizations also participated in this colonial collecting *community of practice*. Organizations such as the Oregon Pioneer Association, women’s garden clubs, charity clubs, and local schools collected and preserved Indigenous belongings as part of settler historical narratives. The Oregon Pioneer Association was first organized in 1867 as the Oregon Pioneer Society and reorganized in 1874 as the Oregon Pioneer Association. Its stated purpose was “to collect from living witnesses, such facts relating to the Pioneers and history of the Territory of Oregon, as the Association may deem worthy of preservation, and to promote social intercourse among its members” (Oregon Pioneer Association 1874). This language made pioneer history the central object of preservation. Indigenous belongings entered these systems as supporting materials for settler memory, often framed as relics or curios.

A newspaper account from the Dalles Weekly Chronicles documents the violent death of a relic collector named James Harley. Hartley was known in the region for looting burial sites and removing funerary belongings and human remains for profit and distribution. The article, framed in sensational and colonial language, portrays Indigenous people as vengeful aggressors. When read through Vizenor's theory of survivance, this account can be framed as Indigenous presence, resistance to grave desecration, a direct intervention to protect ancestral resting places (Vizenor 2008; Goeman 2017; Panich 2013). The journal relayed to the readership that Hartley is the "King of Ghouls". Journalists in the nineteenth and twentieth centuries often used phrases like "ghouls", or "ghoulish" to commonly describe body snatchers, relic hunters, or people profiting from selling human remains such as resurrection men (Philadelphia Inquirer 1862).

Institutional Afterlives

The colonial contexts also included the institutional afterlives of belongings once they entered museums, schools, historical societies, archives, and private collections. Museum labels, accession records, captions, and exhibition histories reveal how colonial narratives shaped the interpretation of Chinookan belongings. Terms such as "primitive art", "relics", and "Indian artifacts" emphasized aesthetic, evolutionary, or antiquarian categories while obscuring cultural meaning, community relationships, and ongoing responsibilities (Strong 1967; Wingert 1949, 1952, 1974).

Figure 5.9 shows carved stones in the Oregon Historical Society collection in the Henry B. Syverud Scrapbooks Photograph Collection. These archival photographs are important because they document how belongings were grouped, stored, and photographed as collection

objects. They also show how the museum context created new meanings around the stones through arrangement, captioning, and classification.



Figure 5.9. Collection of stones in Oregon Historical Society Collection 1949. Henry B. Syverud Scrapbooks Photograph Collection. Lot 045 v3p48.3-293 – 3-295. Montana Historical Society Research Center, Archives.

One of the first in-depth studies of Lower Columbia River stone sculpture was Wingert's *Prehistoric Stone Sculpture of the Pacific Northwest*, produced in connection with a 1952 Portland Art Museum exhibition. Wingert's framing of these belongings as "primitive arts" placed them within a Western art-historical category that emphasized visual form and aesthetic

comparison. This framing preserved important documentation, but it also translated Chinookan belongings into institutional language that separated them from their relationships to land, households, stories, ceremony, and community knowledge.

Figure 5.10, titled “Big collection of Indian relics and minerals given to school”, provides another example of how belongings moved into institutional settings through donation. The article’s language grouped Indigenous belongings with minerals and “relics”, showing how schools and public institutions became part of a colonial collecting network. These donations moved belongings into various settings where they could be displayed as objects of local curiosity, while systemic, archaeological cultural and relational contexts were reduced or lost.

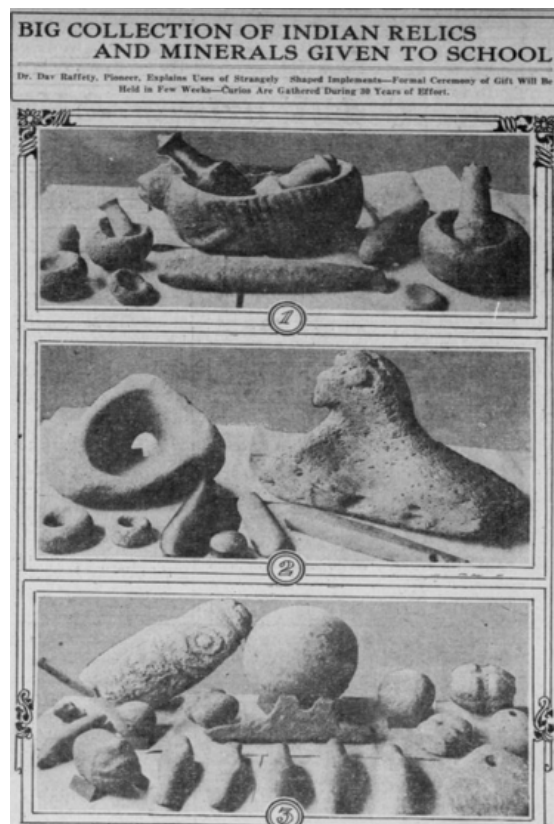


Figure 5.10. “Big collection of Indian relics and minerals given to school”. The Morning Oregonian, Nov 11, 1915.

Across these examples, colonial communities of practice show how carved stone belongings were displaced, transferred, separated and reconstituted through collecting, cataloging, donation, display, and archival reproduction and reproduction. The colonial collecting community of practice included amateur collectors, pioneer societies, schools, museums, journalists, and curators. Together, these actors produced an institutional record that preserved some information while erasing other relationships (Yasuhara 2020).

Results: Living Contexts

Contemporary Engagement and Revitalization

Living contexts refer to contemporary engagement with belongings. These contexts include collaborative research, museum visits, archival work, low-impact imaging, cultural revitalization, public art, and contemporary carving practices. A living community of practice framework helps organize these engagements by tracing how knowledge is shared, reinterpreted, protected, and renewed through relationships among Tribal staff, artists, researchers, museum professionals, families, places, and belongings.

Black Feminist Thought helps make this living context visible because it treats knowledge as situated, embodied, relational, and produced through lived experience (Collins 2000). It also offers a way to understand why memory, emotion, care, and responsibility matter in archaeological interpretation. Knowledge moves through archives, museum records, and academic publications, and it also moves through conversation, family memory, artistic practice, touch, observation, grief, humor, refusal, and return. From this perspective, living contexts are part of how evidence becomes meaningful.

Intersectionality also matters here because relationships with belongings are shaped by overlapping histories of colonialism, race, gender, labor, institutional authority, and community responsibility. Black Feminist Thought asks researchers to pay attention to who carries the emotional and intellectual labor of reconnection, who is asked to explain or translate knowledge, who has access to collections, and who gets recognized as a knowledge producer. In collections-based research, this matters because the work of visiting, identifying, interpreting, protecting, and bringing belongings back into relation often depends on forms of care that institutions rarely record.

Belongings hold knowledge of makers, ceremonies, language, and cultural heritage. They can be understood as knowledge-keepers in their own right. They strengthen links among family, friends, storytelling, cultural motifs, and seasonal practices. They can prompt memory, support the relearning of Indigenous practices, and reawaken spirit. Community history already lives through people, stories, land, and practice. The tactile sense of history held in belongings can deepen that remembering by eliciting strong emotional and memory triggers that provide crucial context for collective remembering (Gonzalez et al. 2018).

Collaborative research methods, including low-impact imaging and archival research, supported these contemporary engagements. These approaches positioned museum collections as sites of knowledge production and cultural reconnection. Community members emphasized the importance of learning from collections. As Brian Krehbiel noted, “I am very excited for the opportunity to learn [from the collections] and teach my children of my world...we can connect our people with their ancestor’s spirit of the tools they left for us to learn.” These engagements show how belongings continue to function as teachers and knowledge holders (Van Heest 2024).

Black Feminist Thought also clarifies why this work is political, emotional, and methodological at the same time. Reconnection requires care, trust, accountability, and attention to the lived conditions under which knowledge is shared. In this dissertation, living contexts are part of present-day practices of teaching, remembering, carving, visiting, and cultural renewal. Contemporary artists and cultural practitioners draw inspiration from ancestral carvings, creating new works that extend these traditions into the present (Figure 5.11).



Figure 5.11. In progress piece from Nick Labonte 2022. Photo by Nick Labonte.

The living community of practice also included institutional work, such as long-term loans, two-way lending, and updating collections histories. These practices created opportunities to correct, expand, and recontextualize museum records. At Clark County collections, for example, Stephanie Craig researched stone bowls and updated descriptions, demonstrating how

collections documentation can become part of cultural care and knowledge renewal (Figure 5.12).



Figure 5.12. Yoli Ngandali and Stephanie Craig at Clark County Historical Society, Vancouver, WA. Photo by Liza S.

In collections visits, knowledge often emerged through careful looking, touch, conversation, and restraint. During one examination of a carved power board, the angle and direction of the incisions suggested that one tool likely made the whole design. The rib motif and fingers gave the group pause. The number of incisions in the fingers and rib lines was not symmetrical on the left and right sides of the figure. Bobby shifted his weight from one leg to another, finding the right words to say without saying too much. The room listened carefully. As Bobby later relayed during a site visit to the Oregon Historical Society, “Sometimes, we will never know that power because it is only for the person making it. When I do my carvings, I make choices that I will never explain to another person because that is only for me to know”.

This moment showed that living contexts also require attention to limits. Some knowledge can be recognized without being fully explained, extracted, or written down.

Public Art and Place-Making

Living contexts also extend beyond museum collections into public art and place-making. Place-making is personal and political. Grand Ronde artists and carvers are involved in the consecration of place and the inscription of memory on contemporary landscapes. What is remembered about a particular place can be triggered, guided, and constrained by visual landmarks, verbal accounts, and other sensory stimuli (Rubertone 2008). These place-making projects are tangible reminders of people, events, stories, and responsibilities. They can be understood as monuments in the sense that they prompt memory and raise historical consciousness about *Ikanum*, history, and contemporary practice.

Giannachi et al. (2012) explore presence as a form of witnessing and interaction. Drawn originally from theatrical and performance studies, presence describes the dynamic experience of being before, or being in the presence of, another. This framework is useful for understanding how artists working in Chinookan art styles use monumental public art to assert sovereignty, presence, and land-based practice.

T'alapas Tamanowas is a Corten steel power figure created by Travis Stewart in the Chinookan style and installed in 2019 at the Baker Creek roundabout (Figure 5.13). T'alapas keeps watch over the place while bringing attention to his stolen daughters. The connection to Missing and Murdered Indigenous Women is evident in the red handprint across the mouth. During my fieldwork, I lived in McMinnville, Oregon, and passed this art piece every day on my

way to the Grand Ronde Tribal offices. This figure made me feel at ease and protected in a place where the majority of residents were White.



Figure 5.13. T'alapas Tamanowas, Travis Stewart. 2019. Photo provided by David Harrelson.

A place-based art piece by Lillian Pitt and team members Juno Lachman and Ben Dye was commissioned in 2019 by the Native American Youth and Family Center for the Nesika Illahee Community Housing Center in Portland, Oregon (Figure 5.14). Pitt created a basalt standing stone with cast glass inserts and sandblasted petroglyphs to signify the history of Native peoples on this land and to create a sense of place for residents. The stones exhibit Columbia River style elements, with emphasis on Tsagaglalal imagery. The water bowl receives water only from rain, symbolizing the sacredness of water.



Figure 5.14. Nesika Illahee. Lillian Pitt and Team. 2019. Photo courtesy of David Harrelson.

Chinookan artist Greg A. Robinson's 2015 piece, *We Have Always Lived Here*, was placed on both sides of Tilikum Crossing in Portland, Oregon (Figure 5.15). The installation continues the idea that the Big River is not a barrier but a connection. The continuation of stonework, as suggested in the title, is a powerful representation of presence, continuity, and place-making in Chinookan art.



Figure 5.15 We Have Always Lived Here is a 2015 public art installation by Greg A. Robinson, installed at Tilikum Crossing in Portland, Oregon, in the United States. Photo by author.

Conclusion

This chapter examined the life histories of carved stone belongings and stone power figures across systemic, depositional, colonial, and living contexts. It considered the varied contexts through which belongings moved, with attention to their functional and symbolic dimensions as well as the histories of collection and curation that shaped museum holdings. Carved stone belongings treated as social actors that materialized relationships among makers, places, families, ceremonial knowledge, and contemporary communities (Gell 1998). These assemblages of belongings were held within complex and changing webs of social meaning. They moved through multiple *communities of practice*, including production, household, collectors, archaeologists, museum professionals, and contemporary cultural practitioners. This framework also contributed to current community discussions about past and present needs for stone within community. In this project, museum collections emerged as dynamic spaces that hold the status of sites of dispossession, knowledge production, reconnection, and care.

The future directions of this project follow from these responsibilities. What is needed next is a more refined classification system for decorated stone bowls and stones on the Columbia River and in the Willamette Valley. Future collaborative work with Grand Ronde could also develop an ochre mineralogical comparative collection, including calibration materials for binders, paints, pigments, minerals, historical pigment swatches, and curatorial gums and glues to be connected to the multispectral and use wear process. This would help distinguish possible cultural residues from later museum treatments. Future work could also examine pumice carving and other raw materials more closely, analyzing whether pumice allowed makers to transfer wood or antler carving skills into stone, or whether pumice held a deeper relationship to the places where it occurs naturally.

CHAPTER 6: Conclusions and Recommendations for Future Research

This dissertation asked how archaeological practice could respond to the colonial conditions that shaped museum collections. *Legacy Archaeology* answers that call through a willingness to return to inherited collections with humility, responsibility, and attention to the people, places, and communities who continue to hold relationships with them. Through care, technical data gathering, and collaboration, the carved stone belongings examined in this study showed that legacy collections can still hold important archaeological, cultural, and relational knowledge, even when museum records are incomplete or archaeological provenience is limited.

Across the belongings examined through multispectral imaging, I documented multiple instances of surface modification, including shaping, smoothing, pecking, engraving, incising, grinding, polish, residues, edge wear, reworking, reuse, weathering, and curatorial alteration. These traces showed that many belongings had longer, and more complex life histories connected to the lands, stories, and practices of Lower Columbia River peoples.

I also found evidence of long-term exposure to the natural elements, as well as indications that some standing stones had once been shallowly placed in the ground in a vertical position. These traces suggest that carved and standing stones may have been visible features within past landscapes at Sauvie Island. They may have marked places, households, pathways, or relationships in ways that connected daily life to land, memory, and community presence.

Near infrared and ultraviolet imaging deepened the analysis. It revealed subtle residues, ground areas, carving details, and worn surfaces that were difficult to see under normal visible light conditions. In some cases, post-processing made grinding patterns more visible, including circular wear associated with repeated contact motion in mortars and bowls. Reflectance

transformation imaging revealed subtle engraving, smoothing, retouch, and possible reworking by allowing surfaces to be examined under shifting light in a digital environment. Modern glues, labels, and some paints fluoresced when excited with a UV light source. This revealed evidence of labels, coatings, adhesives, and other curatorial materials that are also part of the belongings' post-accession histories. Fluorescent residues and other surface modifications are not sufficient alone to independently identify ancient pigment or cultural residue. As with other digital techniques, fluorescent responses should be interpreted alongside visible light examination, near-infrared imaging, RTI, archival documentation, collaborative review, and as many other lines of evidence as possible to ensure a positive signature or anomaly. Together, these methods showed that technical imaging is a viable tool for documenting surface traces that standard laboratory photography often misses. They also showed that legacy collections can support meaningful archaeological study without destructive sampling.

The many-storied and relational life histories of ground stone emerged through the combined study of surface modification, wear, residue, motif structure, archival information, museum records, and community-guided interpretation. The relational life histories analysis revealed how surfaces carried histories of production, histories of removal such as “pot hunting”, and how technical imaging could support the care and reconnection of living and contemporary art practices. Collaboration guided what should be studied, shared, protected, or returned.

These legacy collections are products of multiple overlapping histories. When we ask what amalgamations of stories made a collection or assemblage possible, what kinds of documentation support community priorities, and what information should remain protected, intersectional and reflexive approaches to collaboration become critical and necessary tools for archaeological research (Atalay 2012; Backhouse et al. 2017). Intersectionality and reflexivity

shaped how I understood these histories and my own role in producing knowledge about them. Race, gender, coloniality, power, and institutional authority shaped what kinds of belongings entered the collections, how the various museums and historical societies organized their knowledge and objects, and how we interacted with each other to produce new knowledges today.

When we bring these knowledges forward into a living context, the belongings transcended their role as static artifacts or data about the past. They were witness to history and agential other-than-human beings that shared ancestral knowledges in a contemporary setting. Meaning-making emerged through physical and visual connection with the stones inside and outside of the collection spaces. Whether artists were using the stones as inspiration for new creative endeavors, community members or students were learning photography skills that supported their personal and familial connections to ancestors, these became a way to think about practice, memory, and survivance (Powell 2002). When we encountered designs like recurrent groupings of threes and fives, along with other Chinookan-style motif structures, such as concentric circles, zigzags, and rib motifs, it reiterated the continuity of carving practices into the present. These patterns are evidence of *communities of practice*, shared design principles, and shared ways of learning and doing. The recurring use of these structures showed how knowledge moved among makers, connecting past and present artists through tangible material culture.

Living contexts may include long-term loans, 3D models or prints, photographs, updated museum records, sharing circles, listening sessions, artist engagement, or future research partnerships. It may also include decisions to leave belongings undisturbed, or restricted access or photography. These choices and responsibilities formed much of the research process. The often-unseen labor involved in collaborative collections work such as the conversations,

permissions, reviews, revisions, and various forms of care and connection are all part of the living story of these stones.

The future directions of this project followed from the responsibilities created through this work. Future collaborative work with Grand Ronde aims to build comparative collections for multispectral imaging. By collecting ochre, pigments, binders, minerals, glues, historic pigment swatches, labels, adhesives, and other curatorial materials from known sources, these comparative collections would help distinguish ancestral cultural residues from modern museum treatments (Baldia 2007; Tamburini et al. 2024). They would also strengthen future interpretations of fluorescence chemical composition and other residue analyses.

More broadly, this project opens toward context-sensitive protocols for museum practice locally and globally. Museums and other repositories hold collections shaped by removal, uneven documentation, and colonial classification. *Legacy Archaeology* offers one way to return to those collections with care and accountability for the histories of removal. It asks museums and archaeologists to update records, support access for artists and makers, collaborate with descendant communities, prioritize knowledge return, and respect the limits of what should be studied or shared. It also encourages principal investigators and museum curators to treat collections work with belongings as an expression of ongoing relational practice.

Ultimately, this dissertation showed that relationality changes and challenges the purpose of archaeological practice and interpretation. When archaeology privileges relationships, belongings emerge as teachers, witnesses, and participants in the ongoing work of memory, repair, and renewal.

APPENDICES

APPENDIX A: CTGR Staff, Artists, and Community Members

CTGR Staff

- Nic Atanacio
- Chris Bailey
- Tammy Cook
- David Harrelson
- Briece Edwards
- Michael Lewis
- Jordan Mercier
- Jesse Norton
- Cheryl Pouley
- Jeremy Ojua
- Crystal Starr Szczepanski
- Veronica Montano
- Jeremy Johnson
- Kelsey Bosch
- Jordan Mercier
- Jesse Norton
- Jedd Schrock
- Tina Lara

Advisors, Artists & Community Members

- Bobby Mercier
- Travis Stewart
- Greg Archuleta
- Nick Labonte
- Brian Krehbiel
- Teal Reibach
- Stephanie Craig
- Faye Smith
- John McCallum
- Zoey Holsclaw
- Vincent Chargulaf
- Felix Furby
- Dakota Zimmerman
- Rochelle

Research Assistants / Interns

- Izaiah Fisher
- Joseph Ham
- Sophie Glass
- Justice McNeeley
- Bay Loovis
- Kyra McFarland

APPENDIX B: Listening Sessions

Grand Ronde Artist Summit

Artist Circle

October 2019

Listening Session notes

Context:

Conversation took place in Grand Ronde with many artists in an artist circle
Main focus: how to describe, learn, and support Columbia River/Chinookan-style art.

Topics:

What is Chinookan or Columbia River Art?

Is “Columbia River Style” the best term?

“Columbia River Style” works, but “Chinookan” may also fit because the style extends beyond the Columbia River

Other terms, like “organic symmetry,” have been used, but are less common.

Where the style is used

The style connects to the Columbia River, Willamette River, The Dalles, and nearby areas.

Artists at Grand Ronde, Chinook Nation, Shoalwater, Siletz, and other communities are renewing this style.

How people are learning

Culture camp

Culture classes in Portland and at Grand Ronde

Individual practice at home

Learning through family connections
museums

What artists are making?

Stone, bone, weaving, carving, and other materials can all carry this style

Museum access

Artists need to visit museums and spend time with these belongings

The belongings can teach how they were made

Sitting with them can support learning and cultural renewal

Collaboration

Artists want more chances to meet, share materials, and learn from each other

Possible collaborations include pigments, tools, workshops, and shared making spaces

A wider community of carvers and traditional artists could support this work

Artist needs/Requests

Funding

Grant-writing support

More time and resources to focus on making

Support for carrying this work forward for ancestors and future generations

Listening Session Notes
Burke Museum
Jan 24, 2020

Sophie Glass, Brian Krehbiel, Nick Labonte,
Zoey Holsclaw, Vincent Chargulaf, John McCallum

Next Trip

- Portland/Astoria Museums
- How to get access to private collections?
- Other Museums?

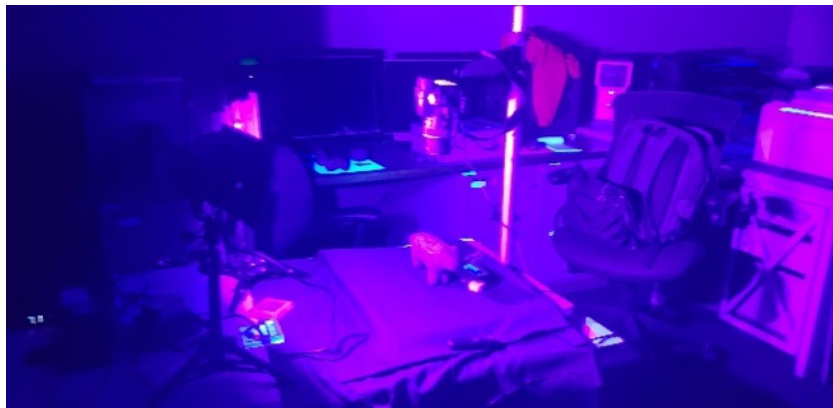
Topics:

- Ways to maintain Cultural knowledge
 - Purposes behind different designs
 - For health, for ceremony
- Off-site canoes and models of boats
 - Different varieties of canoe across Oregon
 - Vortex generators
 - Paddles
- Sketches as a teaching tool
 - Grant Writing
 - 3D Model Belongings
- Broadening Tribes & Bands represented (Even at Chachalu)
 - Expanding the Burke's understanding of various objects, adding to the object descriptions.
- "Traditional" methods of conservation vs touching / holding belongings
- Long houses per region
 - How are people living day to day?
- Willamette Valley Bowls
- Fishing Patterns
 - Fishing gear styles?
- Clothing

Requests:

- Increasing Accessibility of scholarly works
- Condensing dissertations into short reports with pics
- Models and off-site visits
- Book "People of the Cascades"

APPENDIX C: Multispectral photography Equipment



Appendix C Figure 1. Various setups for Multispectral Imaging

Image capture	I shot in RAW format and took between 420-950 photos with a total of 3,200 photos per week.
Photo log	I kept a photo log of the equipment setup (filters and lights) along with the photo number on the camera.

Camera 1	Sony A35. The Sony was my old SLR camera I had converted to multispectral imaging. In May 2018, I sent it to Life Pixel, a private company in Washington that specializes in Infrared and UV photography. They remove the interior mirror in the body of the camera and switch it out for a clear lens. The clear interior lens allows for infrared, visible, and UV light to penetrate the camera all at once. Special filters always need to be used to control the light spectrum coming into the camera.
Camera 2	Canon 70D. The Canon camera is a rental from the archaeology department. I used this camera to quickly and easily switch the setup to photograph objects using photogrammetry and RTI techniques.
Lens filters	Infrared (530 nm, 650 nm, and 750nm), Visible (400- 700nm), and UV (320-400nm). For each object, I took at least 5 photos for each side, with each filter and light setup. This totaled about 50-100 photos per object.
Tabletop lights	I bought three small tabletop lights for each spectral setup. Infrared, Visible, and UV each had two or three lights. I also had LED strip lights to attach to the interior of the light box.
Visual inspection	I inspected each object for raw material, evidence of paint, surface modification, design elements, and wear. I measured length, width, height, depth, edge width, diameters, and decorative motifs in

	centimeters. I took note of any evidence of paint and will come back to those items at another time for portable x-ray fluorescence analysis.
Photogrammetry	For objects that were of particular interest to the rest of my studies I was able to create several 3d models using a series of photographs and the computer program Agisoft Metascan.

APPENDIX D: Multispectral SOP

1. Project Setup & Documentation

Define research questions, materials to be analyzed, spectral bands to be used, and create standardized file naming and metadata protocols.

2. Equipment Preparation & Calibration

Calibrate camera sensors, lenses, filters, and lighting sources; capture dark frames, flat fields, and reference standards (e.g., Spectralon or gray cards).

3. Controlled Image Acquisition (Per Object)

Photograph each object under all designated wavelength bands (e.g., UV, visible, IR) using fixed camera position, exposure consistency, and lighting geometry. Include color bar and scale.

4. Image Pre-Processing

Correct for sensor noise, lens distortion, uneven illumination, and normalize exposure values across bands. Adjust metadata to standards for project.

5. Spectral Alignment & Stacking

Register images from different bands so pixels correspond spatially, then stack them in photoshop.

6. Region of Interest (ROI) Selection

Identify and mark areas of analytical interest (e.g., pigment traces, residues, worn areas, inclusions).

7. Spectral Response Comparison

Compare ROIs across bands to document fluorescence, absorption, reflectance shifts, or areas showing no spectral change.

8. Material & Condition Interpretation

Relate spectral behaviors to possible materials (e.g., mineral pigments, binders, residues) or surface alterations (use-wear, conservation treatments).

9. Visualization & Composite Imaging

Produce false-color composites, adjust band ratios, or conduct a principal component analysis to visualize and enhance pattern visibility.

10. Data Archiving & Delivery

Organize raw images, processed files, metadata, and reports into a structured archive for long-term storage and client access.

Appendix D. Table 1. Observations and in-progress reference citations for UV fluorescence

Material	Typical fluorescence under UV	Reference
Fish egg binder	Blue-white fluorescence	Matteini et al. 2009
Animal fat / oil	Green fluorescence	Longoni et al. 2022
Tree resin / pitch	Yellow-green fluorescence	Longoni et al. 2022
Shell white pigment (calcite)	Orange or yellow fluorescence	Toffolo et al. 2019
Iron ochre pigments	Little to no fluorescence	
Charcoal pigment	No fluorescence (very dark)	
PVAc adhesive / white glue (Common older repair adhesive)	Variable pale blue to yellowish	
Epoxy adhesive (Modern repair adhesive)	Variable; often amber/yellowing with age	Down 1986
Modern acrylic emulsion paint (Modern overpaint / retouch possibility)	Variable	Willneff et al 2014
Acetone (Solvent used in conservation and with B-72)	Not a persistent object signal; only fluoresces while present as solvent	Thurber et al 1998

APPENDIX E: Artifact / Belonging Documentation and Description Sheets

CULTURAL HERITAGE IMAGING PROJECT (CHIP) ARTIFACT DESCRIPTION SHEET

Object ID _____

COLLECTION: _____ CAT# _____ DESCRIPTION: _____
Date: _____ Recorder(s): _____

ORIGINAL NOTES:

EQUIPMENT SETUP NUMBERS: _____

Artifact Type: _____ Artifact Subtype: _____

Rock Type - Basalt / Andesite / Slate / Pumice / Meta - Sediment / CCS / Other _____

Texture/Granularity - No Texture / Fine / Medium / Coarse / Conglomerate / Other _____

Condition - whole / fractured / broken / rejoined / indeterminate / _____% intact

Measurements (cm): Length: _____ Width: _____ Height: _____ Depth: _____

Diameter: _____ Weight (g): _____

Shape - Cylindrical / Rectangular / Circular / Semi - Circular / Zoomorphic / Anthropomorphic
/ Other Describe: _____

Burned? Y/N - Oxidation / Smoke Blackening / Carbonized Residue

Heat

Cracked? Y / N

Number Of Modified Surfaces _____

Surface Modification / Design Sheet? Y/N # of pages _____

Design Features? Y/N

NOTES:

**CULTURAL HERITAGE IMAGING PROJECT (CHIP)
SKETCH**



NOTES:

**CULTURAL HERITAGE IMAGING PROJECT (CHIP)
MODIFIED SURFACE FEATURES & DESIGN NOTES**

Object ID _____

COLLECTION: _____ **CAT#** _____

DESCRIPTION: _____

Date: _____ **Recorder(s):** _____

Surface Number _____

Surface Feature Description _____

Surface Coverage - Border -Flat / Border-Raised / Complete / Incomplete / Indeterminate

Surface Wear - Light / Moderate / Heavy / Unused / Indeterminate / Describe

Location: Orientation: Ventral/ Dorsal/Distal/Proximal Describe:

Stroke - Reciprocal / Circular / Other

Surface Feature Measurements (cm) Length _____ Width _____ Depth _____

Border Or Rim Width (cm) _____

Residues - Pigment / Clay / Carbon / Indeterminate / Glues / Other

Describe _____

Munsell color(s): _____

NOTES:

Reflectance Transformation Imaging Project Sheet **(modified from Webb and Wachowiak 2011)*

Reflectance Transformation Imaging (RTI) Project Sheet

Date:

Name:

Set-Up (ie: hanging, on the floor, etc):

Title:

Medium:

Dimensions:

Distance from light to object:

MCI #:

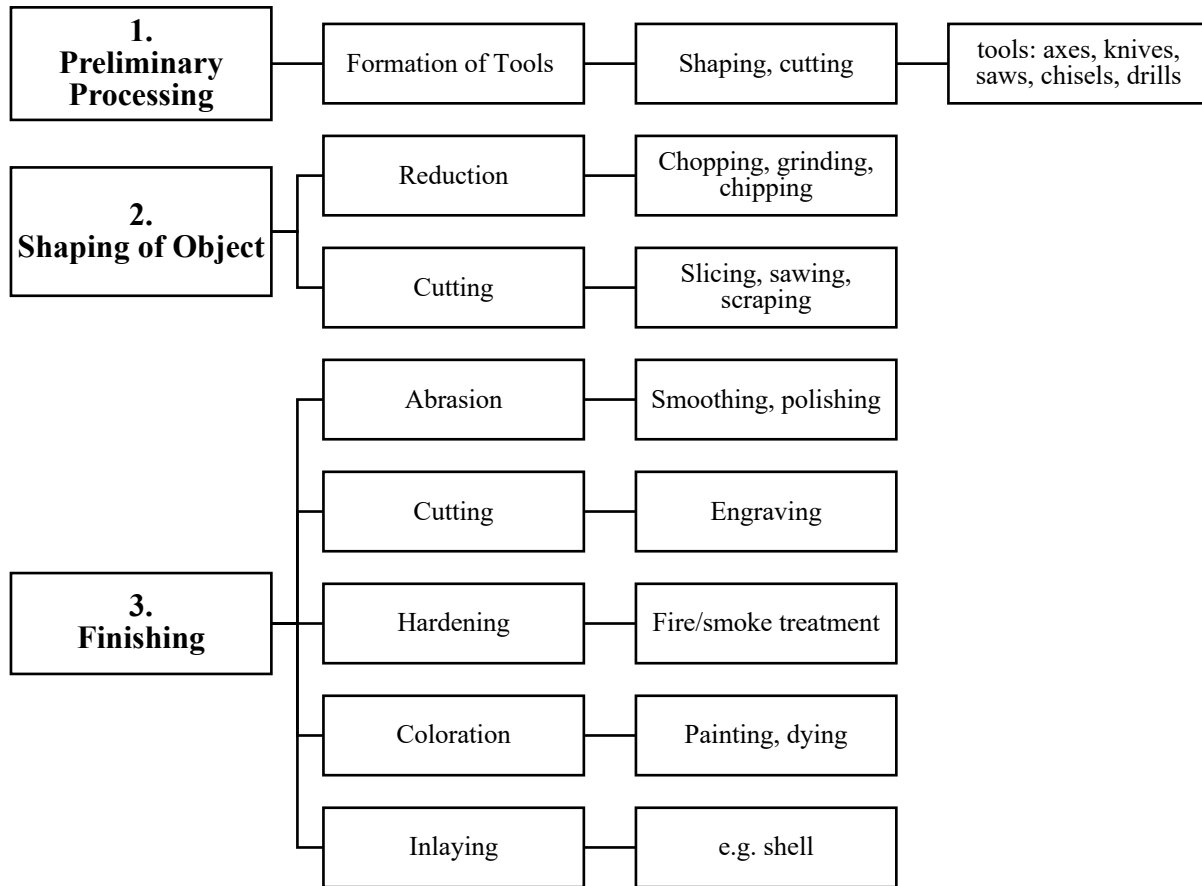
RTI File Name:

Camera System:			Lighting System:
Camera Settings			Lighting Settings
ISO	APERTURE	SHUTTER SPEED	
1.			1.
2.			2.
3.			3.
4.			4.
5.			5.
6.			6.
FINAL:			FINAL:

PROBLEMS/ISSUES:

ADDITIONAL NOTES:

APPENDIX F: Generalized Production Process (**Adapted from Miller 2006*)



APPENDIX G: Research, Access, and Authority for Use Policy

Research, Access, and Authority for Use Policy Cultural Collections Program

I. Introduction

The Confederated Tribes of Grand Ronde's Cultural Collections Program ("Program") will maintain full responsibility for access to the Confederated Tribes of Grand Ronde's Cultural Collection and Cultural Archive.

A. Mission Statement

The Mission of Chachalu Museum and Cultural Center is to collect, curate, preserve, organize, document and interpret cultural materials, understandings and values reflective of the Confederated Tribes of Grand Ronde and its' rich culture. Chachalu will strive to promote amongst the Tribal community and general public an understanding of its' Tribal history, language and current practices through education, exhibits, research materials, publications and other educational activities.

II. Access Policy

All access to archival and historical material held by the Tribe is by appointment only. Additional appointments may be necessary depending on the location and amount of materials requested. There may be limitations imposed on access due to staff availability, environmental conditions or condition or security of the materials. All researchers must adhere to any such limitations. Access by Tribal staff and contractors will be handled on a case by case basis. Individuals needing access to collections are required to notify the Cultural Collections Coordinator as soon as possible.

Registration

The Tribe requires all persons seeking access to register with the Cultural Collections Program. Each researcher must fill out the Request for Access Form and must include a copy of their curriculum vitae (if applicable). Research will be conducted under tribal staff supervision. Should access to research be granted, the researcher will be notified by staff and any restrictions (if applicable) will be addressed in the notification.

Human Subjects Protocols

Research projects which have a Human Subjects protocol, and other research protocols from the researcher's institution, are required to be submitted and approved by the Collections Coordinator before research activities occur. Researchers are advised to submit their research proposal to the Collections Coordinator for Program review and approval before submission of the protocol to their institutional committee in case changes are required.

Access to Collections

1. Advanced notice of at least 7 working days is required but does not guarantee access as Program staff must coordinate access. Researchers should be aware that Program staff are very busy and only Program staff may facilitate access to collections.
2. All persons, excluding Cultural Resources Department, will be accompanied at all times by Program staff while in the museum collections area, and when working in the archival area. Access to the archive and collections spaces will be closed if no Program staff are available to supervise the researcher.
3. The Tribe reserves the right to limit or refuse access to sacred objects, objects of cultural patrimony, sensitive documents, fragile or restricted documents, photos, private genealogical documents and objects.
4. The Cultural Collections Program will not allow access to genealogical information which is not publically available and will not discuss this information through electronic communications.
5. The Tribe strictly controls the lending of and use of original tribal documents and oral histories: all documents and oral history recordings must be reviewed in the approved areas.

Video, Television and other Public Media

For projects involving filming of cultural exhibits, collections or archives (including Program staff), the project organizers must follow the Tribe's public media policies. These policies generally require approval of the Public Affairs Office before filming can occur. All video media projects require a detailed project proposal with information about where the videotaping will occur and who will be featured. The project organizers must submit changes to the proposal in advance to the Public Affairs Office. In order to ensure that Tribal history and culture is accurately portrayed, the Tribe reserves the right of review with editorial responses, and approve/decline the final product. Tribal entities and individuals (Tribal members, staff, Tribal officers and Tribal Council) must be referenced and credited if they participated in the project. The Cultural Resources Department will subsequently receive copies of all video products including the raw footage.

Project proposals must include:

1. Details regarding the locations, facilities and lands owned by the tribe that will be videotaped or photographed.
2. Details regarding who will be videotaped or photographed in the project.
3. Details about schedule, Tribal review rights, and when the final product will be aired.
4. Details regarding the use of photo images, Tribal maps, and other documents (charges may apply).
5. How will the product or project be utilized and what audience will view the product.
6. How the copy of the project resources will be transferred to the Tribe.
7. Whether the Tribe may use the product and/or project resources for Tribal projects.

Different Types of Documents

1. Documents that are copies/photocopies of federal and/or state collections are considered public documents. Researchers are recommended to obtain permission from the appropriate state or federal agency to use the documents, and to appropriately reference them.

2. Documents that are from historical societies, heritage organizations, museums, archives, universities, colleges and private collections are not public documents. These documents require that researchers ask permission of the original archive for use of the document. Researchers must also reference both the Grand Ronde Tribe and the original archive in any resulting publications. The Tribe cannot grant the use of documents when they originate from an outside archive not owned by the Tribe.
3. Permission is required to make copies of documents including: Digital copies, PDFs, JPEGs and other digital files. Collections staff will supervise digital transfer of documents. Large projects will require additional time and may require fees for digital transfer media and staff time.

Research Room Rules

1. Pens and markers are prohibited. Only lead/graphite pencils are permitted in the archival and collections storage and research spaces.
2. Bags, cases, packages, coats, backpacks, and all carried items are subject to search when entering and leaving archival and collections spaces. Storage space will be arranged by staff during the research time.
3. Scanners, portable photocopy machines, and cameras with a flash are prohibited unless authorized by Program staff.
4. The use of tape recorders, typewriters, portable computers, PDAs and other electronic devices are subject to security procedures and review while in the archival and collections spaces.
5. Food, beverages and smoking are prohibited within the archival and collections spaces.
6. Researchers who disregard these rules or endanger records or objects or the work of others will be asked to leave and may be denied future access to the Tribe's collection.

Photocopying, Copying, Scanning

1. All photocopy requests are at the discretion of the Cultural Collections Coordinator. Photocopying and printing may be permitted after review by Program staff of the requested material. Large or complex orders may be scheduled and printed at a later date.
2. Paper Copies requiring use of the large format printer will be charged according to the Interpretive Program's fee scale. Prints on different materials on the large format printers will require special pricing by staff based on size and material.
3. Permission to obtain a copy for scholarly purposes does not constitute permission to publish. A request for permission to publish must be obtained from the Cultural Collections Coordinator. Additional fees may apply.
4. Citations of the Tribe as the archive are expected of all researchers. This citation is required: Confederated Tribes of Grand Ronde, Cultural Collections Program, "Collection", and "Document Title". If the photo is from Smoke Signals the publication needs to be credited as does the photographer.
5. Any requests for information through electronic communications will be dealt with on a case by case basis.

Authority for Use

Researchers must seek permissions to publish, display or use any materials owned by the Tribe. Researcher will need to ensure that permission is clearly requested on the Request for Access Form. Should use be granted, an approval letter, signed by staff, will be sent to the requestor giving permission, conditions for use, and any restrictions (if applicable). Permissions will be considered on a case by case basis.

Projects including any materials owned by the Tribe will require clear citation. Citation standards can be discussed after permission is granted to the requestor. Even when permission is granted, the Tribe still has legal ownership over the materials.

Confederated Tribes of Grand Ronde
Cultural Collections Program
Request for Access

I, **Yoli Ngandali**, certify that I have read and understand the Confederated Tribes of Grand Ronde Cultural Collections Program's Research, Access, and Authority for Use Policy and make this request in good faith.

Name of Researcher:	Yoli Ngandali
Contact (email/phone):	[REDACTED]
Dates of Research:	Begin August 2018
Institution of Researcher:	University of Washington
Subject of Research:	Multi-spectral photography and analysis

This research is an archaeological and ethnographic analysis of past and present cultural significance of the Lower Columbia River art style. I am researching carved motifs, the practices and process to which these pieces are carved and created, and how the painted pigments and carved styles may be connected to important places on the landscape. The primary techniques in my pilot research strategy this summer are: ethnographic archival research, physical attribute analysis of Lower Columbia carved stone, multi-spectral photography, and digital techniques such as photogrammetry and 3D modeling.

Physical traces of artifact modification have distinctive use wear patterns, methods of manufacture, and diagnostic motifs. The digital imaging techniques are critical components of the study of artifact modification and can be used to classify Lower Columbia River artifacts to create a typology of motif styles. By controlling and manipulating the color-band distribution using multi-spectral photographic techniques, I can improve the perceptibility of modification features such as: carving, pecking, and sanding. This enhances the visual interpretation of carved motifs and ochre paint and its distribution on the artifact.

Is this project under a Human Subjects Protocol?	No, but can fill out paperwork under tribe's request
Do you anticipate making copies of research documents?	Yes
Will you be publishing from the project?	Yes

Documented Sites of the Lower Columbia River (*Pettigrew 1987; Table 1*)

Table 1. Documented Prehistoric Sites of the Lower Columbia Dated After 1000 B.C.

<i>Phase</i>	<i>Site</i>	<i>Source</i>
Merrybell	Merrybell (35MU9)	Pettigrew 1981
	Lady Island (45CL48)	Woodward 1977
	Kersting (45CL21)	Jermann, Lewarch and Campbell 1975
	Schultz Marsh (45CL29)	Chatters 1974
	Bachelor Island (45CL43)	Pettigrew 1981; Steele 1980
Seal Island	Eddy Point I (35CLT33)	Minor 1983
	Burkhalter (45WK51)	Minor 1983
	Skamokawa (45WK5)	Minor 1978, 1980, 1983
	Palmrose (35 CLT47)	Phebus and Drucker 1975
Multnomah 1	Cholick (35MU1)	Pettigrew 1981
	35CO3	Pettigrew 1981
	Malarkey (35CO4)	Pettigrew 1981
	Trojan (35CO1)	Warner and Warner 1975
	Sandy	Woodward 1974
Ilwaco 1	Ivy Station I (35CLT34)	Minor 1983
	Fishing Rocks I (45PC35)	Minor 1983
	Eddy Point II (35CLT33)	Minor 1983
	Skamokawa (45WK5)	Minor 1978, 1980, 1983
	Ave. Q (35CLT13)	Phebus and Drucker 1975
	Par-Tee (35CLT20)	Phebus and Drucker 1975
Multnomah 2	Meier (35CO5)	Pettigrew 1981
	Lyons (35MU6)	Pettigrew 1981
	Pump House (35CO7)	Pettigrew 1981
	45CL31	Wessen and Daugherty 1983
	Blue Lake (35MU24)	Archibald 1984
	Duck Lake (45CL6a)	Slocum and Matsen 1968
	Sandy	Woodward 1974
	Feldheimer	Woodward 1974
	45SA11	Skinner 1981
	Caples (45SA5)	Dunnell and Beck 1979
	45SA12	Dunnell and Campbell 1977
	45SA13	Dunnell and Campbell 1977
	45SA19	Dunnell and Campbell 1977
Ilwaco 2	Fishing Rocks II (45PC35)	Minor 1983
	Ivy Station II (35CLT34)	Minor 1983
Multnomah 3	Meier (35CO5)	Pettigrew 1981
	Lyons (35MU6)	Pettigrew 1981
	Pump House (35CO7)	Pettigrew 1981
	Herzog (45CL4)	Slocum and Matsen 1968; R. Jones 1972; Foreman and Foreman 1977
	Decker (35CO2)	R. Jones 1972
	Powell	R. Jones 1972
	Mostul Village	Woodward 1974
	45SA11	Skinner 1981

APPENDIX H: Select Ground Stone used in CHIP, by location.

Full data spreadsheet available by request. Please contact the Cultural Resources Department at chachalu@grandronde.org to submit a research request.

Project ID	Location	Site / Area	Catalog/Object ID	Morphofunctional Description
CHIP.103	CCHS	Kenton	O C 5799	Anthropomorphic Figure
CHIP.145	CCHS	Grant House	O GH 2628	Hammer
CHIP.146	CCHS	Grant House	O GH 2631	Maul
CHIP.106	CCHS		O C 0138	Mortar
CHIP.107	CCHS		O C 2779	Mortar
CHIP.108	CCHS		O C 4271	Mortar
CHIP.109	CCHS		O C 6131	Mortar
CHIP.110	CCHS		O C 9082	Mortar
CHIP.111	CCHS		O C 10133a	Mortar
CHIP.112	CCHS	Grant House	O GH 2613	Mortar
CHIP.113	CCHS	Grant House	O GH 2622	Mortar
CHIP.114	CCHS	Grant House	O GH 2650	Mortar
CHIP.115	CCHS	Grant House	O GH 2651	Mortar
CHIP.105	CCHS		O2204.NA.0505	Paint Pot or Cup
CHIP.116	CCHS	Grant House	O GH 3047	Paint Pot or Cup
CHIP.117	CCHS	Grant House	O GH 3048	Paint Pot or Cup
CHIP.118	CCHS		O C 0104	Pestle
CHIP.119	CCHS		O C 0501	Pestle
CHIP.120	CCHS	Columbia River	O C 0510	Pestle
CHIP.121	CCHS		O C 1279a	Pestle
CHIP.122	CCHS		O C 1279b	Pestle
CHIP.123	CCHS		O C 1279c	Pestle
CHIP.124	CCHS		O C 1279d	Pestle
CHIP.125	CCHS		O C 1961	Pestle
CHIP.126	CCHS	Okanogan county	O C 2590b	Pestle
CHIP.127	CCHS		O C 2590c	Pestle
CHIP.128	CCHS		O C 3629	Pestle

CHIP.129	CCHS		O C 4085f	Pestle
CHIP.130	CCHS		O C 5511b	Pestle
CHIP.131	CCHS		O C 8881a	Pestle
CHIP.131	CCHS		O C 8881b	Pestle
CHIP.131	CCHS		O C 8881c	Pestle
CHIP.132	CCHS		O C 9079	Pestle
CHIP.133	CCHS		O C 9080	Pestle
CHIP.134	CCHS		O C 10100	Pestle
CHIP.135	CCHS		O C 10133b	Pestle
CHIP.136	CCHS	Grant House	O GH 0228	Pestle
CHIP.137	CCHS	Grant House	O GH 0229	Pestle
CHIP.138	CCHS	Grant House	O GH 0230	Pestle
CHIP.139	CCHS	Grant House	O GH 0438	Pestle
CHIP.140	CCHS	Grant House	O GH 2623	Pestle
CHIP.141	CCHS	Grant House	O GH 2624	Pestle
CHIP.142	CCHS	Grant House	O GH 2625	Pestle
CHIP.143	CCHS	Grant House	O GH 2626	Pestle
CHIP.144	CCHS	Grant House	O GH 2627	Pestle
CHIP.147	CCHS	Grant House	O GH 2632	Pestle
CHIP.101	CCHS		O C 2152	Petroglyph
CHIP.102	CCHS	Mt. Vernon	O C 23951	Petroglyph
CHIP.099	CCHS		O C 4396q	Zoomorphic Figure
CHIP.100	CCHS	Mt Hood	O C 3588	Zoomorphic Figure
CHIP.267	CTGR	35CO2- Rylander Collection	35CO2-479	Abrader
CHIP.250	CTGR	35CO2- Rylander Collection	35CO2-462	Adze
CHIP.220	CTGR	35CO2- Rylander Collection	35CO2-427	Adze Blade
CHIP.221	CTGR	35CO2- Rylander Collection	35CO2-428	Adze Blade
CHIP.222	CTGR	35CO2- Rylander Collection	35CO2-429	Adze Blade
CHIP.223	CTGR	35CO2- Rylander Collection	35CO2-430	Adze Blade

CHIP.224	CTGR	35CO2- Rylander Collection	35CO2-431	Adze Blade
CHIP.012	CTGR		2008.003.109	Anthropomorphic Figure
CHIP.240	CTGR	35CO2- Rylander Collection	35CO2-452	Bola Stone
CHIP.230	CTGR	35CO2- Rylander Collection	35CO2-442	Bowl
CHIP.270	CTGR	35CO2- Rylander Collection	35CO2-482	Bowl
CHIP.271	CTGR	35CO2- Rylander Collection	35CO2-483	Bowl
CHIP.272	CTGR	35CO2- Rylander Collection	35CO2-484	Bowl
CHIP.273	CTGR	35CO2- Rylander Collection	35CO2-485	Bowl
CHIP.274	CTGR	35CO2- Rylander Collection	35CO2-486	Bowl
CHIP.275	CTGR	35CO2- Rylander Collection	35CO2-487	Bowl
CHIP.276	CTGR	35CO2- Rylander Collection	35CO2-488	Bowl
CHIP.278	CTGR	35CO2- Rylander Collection	35CO2-490	Carved Stone
CHIP.218	CTGR	35CO2- Rylander Collection	35CO2-425	Club
CHIP.010	CTGR	Horner Collection	2008.003.122	Figurine
CHIP.265	CTGR	35CO2- Rylander Collection	35CO2-477	Hammerstone
CHIP.279	CTGR	35CO2- Rylander Collection	35CO2-491	Hammerstone
CHIP.219	CTGR	35CO2- Rylander Collection	35CO2-426	Handle
CHIP.266	CTGR	35CO2- Rylander Collection	35CO2-478	Manuport
CHIP.241	CTGR	35CO2- Rylander Collection	35CO2-453	Maul
CHIP.242	CTGR	35CO2- Rylander Collection	35CO2-454	Maul
CHIP.244	CTGR	35CO2- Rylander Collection	35CO2-456	Maul
CHIP.246	CTGR	35CO2- Rylander Collection	35CO2-458	Maul
CHIP.247	CTGR	35CO2- Rylander Collection	35CO2-459	Maul
CHIP.248	CTGR	35CO2- Rylander Collection	35CO2-460	Maul

CHIP.249	CTGR	35CO2- Rylander Collection	35CO2-461	Maul
CHIP.252	CTGR	35CO2- Rylander Collection	35CO2-464	Maul
CHIP.253	CTGR	35CO2- Rylander Collection	35CO2-465	Maul
CHIP.254	CTGR	35CO2- Rylander Collection	35CO2-466	Maul
CHIP.255	CTGR	35CO2- Rylander Collection	35CO2-467	Maul
CHIP.256	CTGR	35CO2- Rylander Collection	35CO2-468	Maul
CHIP.257	CTGR	35CO2- Rylander Collection	35CO2-469	Maul
CHIP.258	CTGR	35CO2- Rylander Collection	35CO2-470	Maul
CHIP.259	CTGR	35CO2- Rylander Collection	35CO2-471	Maul
CHIP.280	CTGR	Willamette Valley	2019.032.002	Mortar
CHIP.007a	CTGR	Horner Collection	2008.003.195	Mortar
CHIP.011	CTGR	Horner Collection	2008.003.098	Mortar
CHIP.226	CTGR	35CO2- Rylander Collection	35CO2-438	Net Weight
CHIP.227	CTGR	35CO2- Rylander Collection	35CO2-439	Net Weight
CHIP.228	CTGR	35CO2- Rylander Collection	35CO2-440	Net Weight
CHIP.231	CTGR	35CO2- Rylander Collection	35CO2-443	Net Weight
CHIP.232	CTGR	35CO2- Rylander Collection	35CO2-444	Net Weight
CHIP.233	CTGR	35CO2- Rylander Collection	35CO2-445	Net Weight
CHIP.234	CTGR	35CO2- Rylander Collection	35CO2-446	Net Weight
CHIP.235	CTGR	35CO2- Rylander Collection	35CO2-447	Net Weight
CHIP.236	CTGR	35CO2- Rylander Collection	35CO2-448	Net Weight
CHIP.237	CTGR	35CO2- Rylander Collection	35CO2-449	Net Weight
CHIP.238	CTGR	35CO2- Rylander Collection	35CO2-450	Net Weight
CHIP.239	CTGR	35CO2- Rylander Collection	35CO2-451	Net Weight

CHIP.260	CTGR	35CO2- Rylander Collection	35CO2-472	Net Weight
CHIP.006	CTGR	Mohney Collection	2000.002.027	Paint Pot or Cup
CHIP.008	CTGR		2017.013.001	Paint Pot or Cup
CHIP.009	CTGR		2008.003.096	Paint Pot or Cup
CHIP.007b	CTGR	Horner Collection	2008.003.195	Pestle
CHIP.014	CTGR	Sauvie Island	71-152.2	Pestle
CHIP.229	CTGR	35CO2- Rylander Collection	35CO2-441	Pestle
CHIP.243	CTGR	35CO2- Rylander Collection	35CO2-455	Pestle
CHIP.245	CTGR	35CO2- Rylander Collection	35CO2-457	Pestle
CHIP.251	CTGR	35CO2- Rylander Collection	35CO2-463	Pestle
CHIP.264	CTGR	35CO2- Rylander Collection	35CO2-476	Pestle
CHIP.225	CTGR	35CO2- Rylander Collection	35CO2-432	Pipe Fragment
CHIP.262	CTGR	35CO2- Rylander Collection	35CO2-474	Specialized Pecking Tool
CHIP.261	CTGR	35CO2- Rylander Collection	35CO2-473	Unknown
CHIP.263	CTGR	35CO2- Rylander Collection	35CO2-475	Unknown
CHIP.268	CTGR	35CO2- Rylander Collection	35CO2-480	Unknown
CHIP.269	CTGR	35CO2- Rylander Collection	35CO2-481	Unknown
CHIP.013	CTGR		2016.003.001	Zoomorphic Figure
CHIP.104	CTGR	Spedis	2018.017.001	Zoomorphic Figure
CHIP.277	CTGR	35CO2- Rylander Collection	35CO2-489	Zoomorphic Figure
CHIP.038	OHS	Sauvie Island	2303	Anchor
CHIP.042	OHS	Sauvie Island	2322	Anchor
CHIP.046	OHS	Sauvie Island	2330	Anchor
CHIP.047	OHS	Sauvie Island	2341	Anchor
CHIP.069	OHS	Sauvie Island	2523	Anthropomorphic Figure
CHIP.074	OHS	Sauvie Island	2532	Anthropomorphic Figure
CHIP.076	OHS	Sauvie Island	2534	Anthropomorphic Figure

CHIP.098	OHS	Sauvie Island	4001	Anthropomorphic Figure
CHIP.015	OHS	Sauvie Island	75-87	Bowl
CHIP.068	OHS	Sauvie Island	2514	Bowl
CHIP.019	OHS	Sauvie Island	588A	Carved Stone
CHIP.020	OHS	Sauvie Island	1428	Carved Stone
CHIP.053	OHS	Sauvie Island	2381	Carved Stone
CHIP.067	OHS	Sauvie Island	2513	Carved Stone
CHIP.070	OHS	Sauvie Island	2524	Carved Stone
CHIP.071	OHS	Sauvie Island	2525	Carved Stone
CHIP.060	OHS	Sauvie Island	2431	Celt Stone
CHIP.061	OHS	Sauvie Island	2437	Celt Stone
CHIP.062	OHS	Sauvie Island	2451	Club
CHIP.063	OHS	Sauvie Island	2465 r	Club
CHIP.064	OHS	Sauvie Island	2472	Grindstone
CHIP.065	OHS	Sauvie Island	2499	Grindstone
CHIP.066	OHS	Sauvie Island	2511	Grindstone
CHIP.024	OHS	Sauvie Island	2221	Hammer
CHIP.025	OHS	Sauvie Island	2227	Hammer
CHIP.026	OHS	Sauvie Island	2230	Hammer
CHIP.027	OHS	Sauvie Island	2231	Hammer
CHIP.028	OHS	Sauvie Island	2245	Hammer
CHIP.096	OHS	Sauvie Island	3894	Maul
CHIP.005	OHS		71-4	Mortar
CHIP.054	OHS	Sauvie Island	2402	Mortar
CHIP.055	OHS	Sauvie Island	2408A	Mortar
CHIP.056	OHS	Sauvie Island	2408B	Mortar
CHIP.057	OHS	Sauvie Island	2414	Mortar
CHIP.058	OHS	Sauvie Island	2415	Mortar
CHIP.059	OHS	Sauvie Island	2416	Mortar
CHIP.086	OHS	Sauvie Island	3884	Mortar
CHIP.048	OHS	Sauvie Island	2349	Paint Pot or Cup
CHIP.049	OHS	Sauvie Island	2355	Paint Pot or Cup

CHIP.050	OHS	Sauvie Island	2356	Paint Pot or Cup
CHIP.051	OHS	Sauvie Island	2357	Paint Pot or Cup
CHIP.052	OHS	Sauvie Island	2361	Paint Pot or Cup
CHIP.078	OHS	Sauvie Island	2545	Paint Pot or Cup
CHIP.021	OHS	Sauvie Island	2093	Pestle
CHIP.022	OHS	Sauvie Island	2096	Pestle
CHIP.023	OHS	Sauvie Island	2109	Pestle
CHIP.094	OHS	Sauvie Island	3892	Pestle
CHIP.095	OHS	Sauvie Island	3893	Pestle
CHIP.079	OHS	Sauvie Island	2559	Scraper
CHIP.080	OHS	Sauvie Island	2561	Scraper
CHIP.083	OHS	Sauvie Island	2580	Scraper
CHIP.029	OHS	Sauvie Island	2256	Sinker
CHIP.030	OHS	Sauvie Island	2262	Sinker
CHIP.031	OHS	Sauvie Island	2264	Sinker
CHIP.032	OHS	Sauvie Island	2271	Sinker
CHIP.033	OHS	Sauvie Island	2275	Sinker
CHIP.034	OHS	Sauvie Island	2283	Sinker
CHIP.035	OHS	Sauvie Island	2290	Sinker
CHIP.036	OHS	Sauvie Island	2291	Sinker
CHIP.037	OHS	Sauvie Island	2301	Sinker
CHIP.039	OHS	Sauvie Island	2319	Sinker
CHIP.040	OHS	Sauvie Island	2320	Sinker
CHIP.041	OHS	Sauvie Island	2321	Sinker
CHIP.043	OHS	Sauvie Island	2323	Sinker
CHIP.044	OHS	Sauvie Island	2328	Sinker
CHIP.045	OHS	Sauvie Island	2329	Sinker
CHIP.081	OHS	Sauvie Island	2562	Sinker
CHIP.082	OHS	Sauvie Island	2565	Sinker
CHIP.084	OHS	Sauvie Island	2583	Sinker
CHIP.085	OHS	Sauvie Island	2588	Sinker
CHIP.087	OHS	Sauvie Island	3885	Sinker

CHIP.088	OHS	Sauvie Island	3886	Sinker
CHIP.089	OHS	Sauvie Island	3887	Sinker
CHIP.090	OHS	Sauvie Island	3888	Sinker
CHIP.091	OHS	Sauvie Island	3889	Sinker
CHIP.092	OHS	Sauvie Island	3890	Sinker
CHIP.093	OHS	Sauvie Island	3891	Sinker
CHIP.097	OHS	Sauvie Island	3895	Sinker
CHIP.001	OHS	Columbia River	2522	Zoomorphic Figure
CHIP.002	OHS	Columbia River	2527	Zoomorphic Figure
CHIP.003	OHS	Columbia River	2526	Zoomorphic Figure
CHIP.004	OHS	Columbia River	2535	Zoomorphic Figure
CHIP.072	OHS	Sauvie Island	2528	Zoomorphic Figure
CHIP.073	OHS	Sauvie Island	2531	Zoomorphic Figure
CHIP.075	OHS	Sauvie Island	2533	Zoomorphic Figure
CHIP.077	OHS	Sauvie Island	2535	Zoomorphic Figure
CHIP.193	PAM	Columbia River	2000.67.33	
CHIP.190	PAM	Columbia River	68.13	Anthropomorphic Figure
CHIP.209	PAM	Columbia River	2000.67.2	Anthropomorphic Figure
CHIP.211	PAM	Columbia River	2000.27.1	Anthropomorphic Figure
CHIP.189	PAM	Columbia River	2006.55	Bowl
CHIP.192	PAM	Columbia River	2000.67.32	Bowl
CHIP.194	PAM	Columbia River	2000.67.38	Bowl
CHIP.195	PAM	Columbia River	2000.67.26	Bowl
CHIP.201	PAM	Columbia River	2000.67.15	Carved Stone
CHIP.202	PAM	Columbia River	48.3.362	Carved Stone
CHIP.205	PAM	Columbia River	2000.67.18	Carved Stone
CHIP.216	PAM	Columbia River	55.197	Carved Stone
CHIP.217	PAM	Columbia River	55.235	Carved Stone
CHIP.187	PAM	Columbia River	2012.92.199	Mortar
CHIP.196	PAM	Columbia River	51.237	Mortar
CHIP.203	PAM	Columbia River	2000.67.16	Pendant
CHIP.206	PAM	Columbia River	2000.67.19	Pendant

CHIP.214	PAM	Columbia River	2000.67.3	Pendant
CHIP.215	PAM	Columbia River	2000.67.4	Pendant
CHIP.204	PAM	Columbia River	2000.67.17	Tablet
CHIP.188	PAM	Columbia River	2000.67.27	Zoomorphic Figure
CHIP.191	PAM	Columbia River	52.202	Zoomorphic Figure
CHIP.197	PAM	Columbia River	51.203	Zoomorphic Figure
CHIP.198	PAM	Columbia River	51.204	Zoomorphic Figure
CHIP.199	PAM	Columbia River	52.128	Zoomorphic Figure
CHIP.200	PAM	Columbia River	2004.83	Zoomorphic Figure
CHIP.207	PAM	Columbia River	50.146	Zoomorphic Figure
CHIP.208	PAM	Columbia River	50.6	Zoomorphic Figure
CHIP.210	PAM	Columbia River	2000.67.40	Zoomorphic Figure
CHIP.212	PAM	Columbia River	2000.67.14	Zoomorphic Figure
CHIP.213	PAM	Columbia River	2000.67.39	Zoomorphic Figure

APPENDIX I: Photos available by request

Full photo library available by request. Please contact the Cultural Resources Department at chachalu@grandronde.org to submit a research request.

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