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People, Piedras, Plants, and Pictographs: Collaboration and Indigenous Archaeology in Abiquiú, New Mexico

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People, Piedras, Plants, and Pictographs:
Collaboration and Indigenous Archaeology in Abiquiú, New Mexico

By

Danny Sosa Aguilar

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in

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Committee in charge:

Professor Jun Sunseri, Chair
Professor M. Steven Shackley
Professor Lauren Kroiz

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Abstract

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by

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Professor Jun Sunseri, Chair

The community of the Merced del Pueblo de Abiquiú in northern New Mexico has strong connections to their heritage and identity to their land grant and surrounding landscape. Abiquiuseños request an examination of the material culture found atop their most prominent land grant landmark, Abiquiú Mesa. This project collaborates with Abiquiuseños. Using archaeology and oral histories, we develop research questions related to the pre-contact history of the Abiquiú Mesa. My partnership with the Merced del Pueblo de Abiquiú includes a co-created research project that incorporates Abiquiuseños in the research design and a community leadership-vetted proposal and memorandum of agreement. This partnership is grounded in the place-making practices of ancestors and a decolonizing praxis framed by more ethical and accountable archaeology that is rooted in how archaeology can impact the present-day descendant community.

My research draws upon a "spatial frame" theory encompassing western and indigenous knowledge that connects landscape theory, exchange theory concerning materiality, and indigenous philosophies. The framework opens an indigenous historical interpretation of past regional interactions that Abiquiuseños partook in and how their landscape narratives changed through time. Together we explore these questions by looking at archaeological evidence and providing knowledge of historical ties to material culture and surrounding areas. For example, one methodological focus is to investigate obsidian artifacts and rock art on the Abiquiú Mesa. Incorporating x-ray fluorescence spectrometry analysis on obsidian and rock paintings tells a pre-contact Abiquiú Mesa history narrative as it has been co-created over space or landscape by people and material culture.

The primary methodological framework for the entire project revolves around community-based participatory research. Previous archaeological projects that incorporated collaboration with local and descendant communities demonstrate new archaeology possibilities that hold scholars accountable for their research and how to disseminate that knowledge. As an archaeologist, I am responsible for my institution and the Merced del Pueblo de Abiquiú by seeking advice and prioritizing community mandates in my decision-making process. Their approval of my interest in lithics and rock art, in their opinion, contributes to the community's

own goals regarding Abiquiú's history. The goal is to uncover the historical knowledge found in ancestral places within Abiquiú Pueblo lands. Incorporating community members' priorities in designing research questions about their past is essential. This project's implementation strives to create an ethical and accountable archaeological project by including community members as stewards of the past.

By asking for community approval and providing an opportunity for building community agency and control, a level of community autonomy occurs within the project. Community approval creates a collaborative and accountable archaeology project that establishes community members as partners. The method builds a collaborative atmosphere that involves the participation of Abiquiuseños of all ages in all levels of the research project. Collaborative projects of this nature do not lower the level of scholarship produced. Instead, my research recognizes multivocality, acknowledges intangible heritage, and prioritizes community-based research questions by mobilizing knowledge through various means, including community member's perspectives and participation in lab and fieldwork. This research directly supports the Merced del Pueblo de Abiquiú in their pursuit of developing multigenerational knowledge transfer and potentially use the knowledge to reclaim lost Ancestral lands. My research operates in conversation with these issues by providing an archaeological interpretation of pre-contact occupational evidence and disseminates the historical knowledge produced back into the community.

Dedication

Para mi mama y papa,

Gracias por enseñarme el camino correcto.
Gracias por enseñarme la importancia de echarle ganas.
Gracias por todo lo que hacen por mi y sequiran haciendo durante mi siguiente etapa de mi vida.
Se que lo hacen todo con amor.

Los amo!

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CHAPTER 1: THE ABIQUIÚ MESA PROJECT

The Merced del Pueblo de Abiquiú

Located approximately fifty-three miles north of Santa Fe is the Merced del Pueblo de Abiquiú. Established in 1754 by Tomas Velez Gachupin, the Merced is referred to as "Pueblo de Abiquiú" for the community's "historical connections with Hopi Genízaro Pueblo Indians of Tewa descent" (Gonzales 2014: 590). The Merced del Pueblo de Abiquiú and other settlements throughout during the 18th century served as buffer settlements, where Genízaros were given land grants to settle in strategic places to protect Colonial settlements from raids (Dunbar-Ortiz 1980). What makes these settlements unique is the complexity in identity within each one, but the Pueblo de Abiquiú stands out for being at the crossroads as a commercial center, as a migration point that included the Old Spanish Trail, and as a survivor community of raid warfare. As a Genízaro cattle ranching community, the deep-rooted connection with Hopi-Tewa identity varies by individual. Abiquiú serves as a common bond that ties together different oral histories and memories for each family lineage. There are extensive Ute, Comanche, Kiowa, Navajo, and Apache interactions in Abiquiú (Gonzales 2014: 590). As a result, the Merced del Pueblo de Abiquiú has a vibrant and complex history that ties people's movement across different landscapes, including the Rio Chama Valley, the Jemez Mountains, and the Rio Grande region.

The Pueblo de Abiquiú Library and Cultural Center has been at the crossroads of almost every project concerning Abiquiú's history. The center acts as a library with educational programs for the community and an archival repository for everything historically related to Abiquiú. The director, Isabel Trujillo, and President, Sabra Moore, put the Library and Cultural Center as an intermediary between researchers and the community. The center also showcases local artisans through events that draw local and neighboring pueblo communities.

Participation in community events is essential for archaeologists and community partners. Events create opportunities to participate with community members, neighboring communities, and local youth. Events develop trust among partners. For example, the Abiquiú Library and Cultural Center hosted an event on DNA ancestry research that tested ten families living in Abiquiú. The event was a huge success incorporating scholars from the University of New Mexico and neighboring pueblos (http://manitos.net/2019/01/29/dna-at-the-community-level/). The event lasted two hours with presentations about other ongoing projects, moments of people sharing their oral histories, and a discussion on DNA ancestry research results. The study found that several Abiquiú family surnames (Archuleta, García, López, Martínez, Suazo, and Trujillo) are connected to Hopi-Tewa people through intermarriage. The same Hopi-Tewa people settled the Pueblo de Moqui and the Genízaros of Ute, Apache, and Navajo present at Pueblo de Santo Tomás (Gonzales 2014). The events are festive, promote community interaction, and serve as an opportunity to disseminate information to the Abiquiuseño community. Attending events like the DNA ancestry demonstrate to community partners the commitment to community and show interest in the community's issues.

The Pueblo de Abiquiú Library and Cultural Center is a fundamental intermediary between the community and participation in research opportunities. The Library and Cultural Center presents the community with opportunities to learn from indigenous knowledge and disseminate Abiquiú history. The cultural center's educational programs target Abiquiú youth (https://abiquiupl.org/programs.html). The center's Summer Reading/Adventure Program has been successful for years. The program requires youth to participate in knowledge-building activities created by different volunteers, including local community members, professors, and

various professionals. The Berkeley-Abiquiú Collaborative Archaeology (BACA) Project and AMP volunteer to host 1 or 2 activity reading sessions during the field season for the Abiquiú Library and Cultural Center.

Begun in 2013 by Jun Sunseri BACA has established research opportunities between Berkeley graduate students and the Abiquiú Community. The project has contributed to three dissertations and funded multiple field seasons of community youth involvement. Its goals range from water rights adjudication, federal land management support, and community-prioritized mandates. I participated as a BACA crew member in 2016 and 2017 under two different graduate student projects. With the permission of the Merced del Pueblo de Abiquiú Executive Board, graduate students are given the opportunity to lead projects, resulting in a tiered mentorship model that allows graduate students to build their projects within BACA.

The Merced Board is the representative governing body in Abiquiú. Its elected officials hold meetings to manage the Abiquiú Pueblo lands and inform the community's comings and goings. The board manages, among other things, the ranging pasture lands, the permission to construct any new buildings, and authorizing permission for research to take place within Abiquiú Pueblo lands. My approach to working with Abiquiuseños as partners revolves around consent, consensus, and collaboration. I first visited Abiquiú in 2016. I met Bernardo Archuleta and developed a friendship through our interests in flintknapping. Community members expressed interest in Pueblo history before the 1500s, so I decided to introduce a project proposal at one of the Merced Board meetings. I wanted to incorporate Abiquiuseño participation whenever possible in the research process. The proposal serves as a formal intention to initiate another archaeological project with the community's consent and consensus. The BACA proposal was tentatively approved, leading to more conversations about the specifics of the project. Unfortunately, in 2017 the Merced Board instituted a temporary halt in any BACA research. The halt meant that my involvement to lead a BACA project the following year was uncertain. After a few discussions with Mr. Bernie Archuleta, we presented a proposal to the Merced Board as an alternative archaeological project that would maintain similar BACA structures of accountability but with stricter restrictions on publicizing research at academic events and public forums.

Working closely with Mr. Bernie Archuleta and the Merced Board president at that time, Mr. David Archuleta, a Memorandum of Agreement (MOA) was drafted and approved by the Merced Board. The MOA contained a list of community mandates. The board's most crucial mandate was to involve Abiquiú youth participation, a collaborative effort between the board, the Library and Cultural Center, and the project. The mandates mention procedures regarding artifact collection and return, data collection and dissemination, human burial protocols, Abiquiú youth involvement, and appointing a board-assigned community member to oversee the project's progress. The following list includes some of the mandates, milestones, goals, and deliverables laid out in the MOA:

- Mandates
    - Recruit Abiquiú interns to participate in all aspects of the project.
    - All project information must be vetted by the Merced Board and MHPO before presenting it to the public.
    - Artifact collection is permitted for learning purposes during the field season.
    - Artifacts are permitted to be studied at Berkeley lab with the permission of the Merced Board or MHPO.

    - Provide opportunities for Abiquiú elders and youth to have conversations about Abiquiú history.
- Milestones
    - Complete survey of the Abiquiú Mesa by the end of June 2018.
    - Complete evaluation of rock alignments by the end of June 2019.
    - Complete lab analyses within two years of completing field work.
    - Report to the Merced Board and MHPO within a year of completing the dissertation with results of the study.
    - Report any additional data, information, or analysis not included in the dissertation within a year of finishing the dissertation.
- Goals
    - Uncover knowledge left over by ancestors throughout Abiquiú Pueblo lands.
    - Provide opportunities for Abiquiú youth to participate in learning about Abiquiú history.
- Deliverables
    - Presentation or report to the Merced Board or MHPO.
    - Return all removed artifacts to the Abiquiú Mesa.
    - Turn over all data to the Merced Board or MHPO.

Recognizing community members as stewards of the past is important to create opportunities for community members to voice their perspective over their own history. For instance, there is a stipulation that I must seek community approval before publishing this research as a book, an essential step in ensuring Abiquiú control over their history. Unlike some Federally-recognized Native American communities with whom state and government agencies are required to negotiate have a Tribal Historic Preservation Officer (THPO), Abiquiú is a Merced and does not contain a position related to historic preservation. Instead, the Abiquiú Executive Board appointed Mr. Archuleta with some of the responsibilities of a THPO, or in this case, his position could be dubbed as a Merced Historic Preservation Officer (MHPO). The MHPO idea first developed in BACA back in 2014 and then implemented by President David Archuleta in 2018. I believe collaboration must be flexible, patient, and open to involving the community in different aspects of the project.

Today, Abiquiuseños continue to actively seek and learn more about their Pueblo ancestors. The Abiquiú Mesa Project (AMP) is only one of the many ways the Abiquiú community explores its history. A few entities played a crucial role in the development of AMP. Participation by the Pueblo de Abiquiú Library and Cultural Center, the Merced del Pueblo de Abiquiú Executive Board, and individuals within the Abiquiuseño community made the project what it is today. Each of them contributed significantly during different aspects of the project, including authorization, public forums for presenting research to community members, managing local intern hiring, invitations to local community events, and sharing oral histories.

The Merced Board approved the Abiquiú Mesa Project and supported it by granting the archaeology crew temporary housing during the 2018 fieldwork season. My research influences stem from BACA into an independent graduate student-led and community-initiated project that maintains similar ethics, and accountability, but with distinct goals and mandates. The Abiquiú Mesa Project builds community involvement as one aspect toward community agency and autonomy within the research. AMP works closely with community partners to know when, where, and how to disseminate the information from this research. AMP attempts to provide

archaeological evidence of pre-contact occupation. The Abiquiú Mesa Project's research goals include thus far exploring the history of the Abiquiú Mesa, investigate further the potential social relationships between the mesa and other pueblos. The goals align with the Abiquiú community's stated priorities regarding research into the Pueblo period history and desire to understand any possible utility for archaeological data in building a capacity for multigenerational knowledge transfer between Abiquiú elders and youth.

By seeking the community's advice and prioritizing community mandates incorporated into the Abiquiú Mesa Project, a level of accountability must be held to the board, but ultimately to the community members of Abiquiú. Including community members' priorities in designing research questions and listening to valuable feedback played an essential part in making this project a success. The most significant contributions came from two individuals: Bernardo "Bernie" Archuleta and Isabel Trujillo. MHPO Bernardo Archuleta was instrumental in my learning about the landscape and encountering places of significance. He grew up and lived in Abiquiú most of his life, walking the landscape and the Jemez lands as his backyard. His extensive knowledge of oral histories passed on to him by his family, his extensive experience walking and hunting in the area has allowed him to come in constant contact with the knapped stone, rock art, and even unstudied places of significance. He hopes to continue research on the Pueblo period and learn more about Abiquiú's places of significance. Much of the fieldwork logistics were possible thanks to his extensive knowledge of the landscape. Exploring the Abiquiú Mesa would not be possible without the MHPO's help navigating the trails up and down the mesa.

Isabel Trujillo is the director of the Pueblo de Abiquiú Library and Cultural Center. Her participation in sponsoring events by BACA, AMP, and Abiquiú community members allowed opportunities to inform the archaeology research community. Also, Director Trujillo promoted research projects, allowing AMP to engage with other researchers in the surrounding areas and consistently meet new affiliates of the center. The director and staff were instrumental in advertising, recruiting, and funding for Abiquiú youth. The funding came from a non-profit organization and grants co-written by Isabel and the BACA project Principal Investigator Jun Sunseri. The funds paid the Abiquiú youth as paid interns. The Library and Cultural Center received additional funds from other organizations thanks to the center's Head of the Board of Directors, Sabra Moore. Typically, archaeological projects bring money into a community. As part of the funding model developed with Professor Sunseri and the BACA project, grant writing occurred together, funding was administered through the Abiquiú Library and Cultural Center and approved by the Merced Board. Projects that hire day laborers or paying informants can disrupt or create conflict within a community. Instead, the Abiquiú Library and Cultural Center distributed funding. Funding autonomy allows community entities to dictate specific actions, ensuring community partners participate and control the decision-making process's monetary aspect. The decision to allow an entity like the Pueblo de Abiquiú Library and Cultural Center to supervise funds establishes the project's commitment toward forging community members as partners. Both MHPO Bernardo Archuleta and Director Isabel Trujillo were mentors that guided the research through constant feedback, community participation, and contextualizing Abiquiú's histories. Also, the Library and Cultural Center lent itself as an educational field lab for the 2018 and 2019 AMP field seasons.

Undoubtedly, the Merced del Pueblo de Abiquiú Executive Board, the Pueblo de Abiquiú Library and Cultural Center, and community partners played a significant role in the successful outcome of the Abiquiú Mesa Project. Although tensions between community members did

arise about how and when to disseminate information, partners consistently focused their efforts on ensuring Abiquiú Youth's participation during the acquisition, learning, and engagement of the archaeological project.

Partnership and Research: Abiquiú Mesa Project

The project investigates the Abiquiú Mesa to determine the nature, age, and occupational history of the site. Collaboration with Abiquiú community members and community feedback designed the research scope of the project. We were able to focus the project on the following community-based research questions:

1. What is the Abiquiú Mesa history as it has been co-created over time by people, artifacts, and landscape?
2. What exchange systems did the people in the Abiquiú Mesa partake in, and how did that change through time?
3. How can native oral histories decolonize the scholarship from traditional westernized assumptions of Tewa Pueblo trade and exchange in the American Southwest history?

Building on previous archaeological and indigenous knowledge, the Abiquiú Mesa Project works under the following hypotheses:

- A careful analysis of the Abiquiú Mesa material culture (such as pottery, petroglyphs, stone tools), archaeological features (rock alignments), and stratigraphic context will help confirm occupation dates. Radiocarbon dates from ethnobotanical and charcoal samples will provide the Abiquiú community with scientific lab reports as physical evidence of specific occupational history in the Abiquiú Pueblo lands. Additionally, community knowledge and participation will play a vital role narrowing the focus of analysis during archaeological survey. Any artifact collected will contain an affect to Abiquiú youth and thus presenting a representative sample of artifacts that interest the community members.
- If we examine both stone tools and pottery sherds, the artifacts will yield results that may coincide with archaeological exchange models. Maps created from obsidian portable x-ray fluorescence data will be placed into a context that compares previous sourcing studies and indigenous knowledge. These maps will be archived at the Abiquiú Library and Cultural Center for local access and potentially to look for other Tewa sites related to Abiquiú Pueblo lands.
- Since contemporary narratives by Abiquiuseños offer a perspective that captures the relationship between the Pueblo de Abiquiú, the Abiquiú Mesa, and the surrounding landscape, Abiquiú narratives demonstrate subtle changes in landscape perspectives through time (Harrington 1916; Ortiz 1969). Suppose material culture and descriptions are lines of evidence that indicate a deep history and relationship to the landscape. Building from an indigenous philosophy and incorporating an indigenous framework into theory can be one way to decolonize Abiquiú's history. In that case, an alternative model based on indigenous knowledge can add a dimension of expertise that accounts for more than just the archaeological evidence. Exchange as a cultural practice acknowledges the necessity for a social aspect of relationships established through material culture, landscape, and oral histories.

The principal methodological framework for this project is community-based participatory research (Atalay 2012). What makes this a Collaborative and Indigenous Archaeology project is prioritizing community interests first in a research partnership-style interaction (Atalay 2012; Colwell-Chanthaphonh and Ferguson 2008; Cowie et al. 2019; Kuwanwisiwma et al. 2018;

McGuire 2008; Silliman 2008; Smith 1999; Smith and Wobst 2005). Indigenous Archaeology must establish a research partnership-style relationship and acquire consent. The implementation of a Memorandum of Agreement creates the foundation for an ethical and accountable archaeological project. The second implementation is the tradition of community-based work that incorporates community members as stewards of the past. As an archaeologist, I am accountable to the Merced del Pueblo de Abiquiú by seeking advice and prioritizing community mandates in the decision-making process in the partnered research. Incorporating community members' priorities in designing research questions about their past is essential. Asking the community for permission reinforces community agency and control.

Community autonomy in AMP establishes Abiquiú community members as partners with multigenerational knowledge transfer and research process control as primary mandates (see pages 2 and 3). However, different projects will contain different mandates, and mandates are not universal throughout all collaborative projects. For instance, the Library and Cultural Center provides opportunities for children and pre-teens to learn about Abiquiú's history. The Merced Board's mandate to include Abiquiuseño youth participation is another way to continue building the capacity for creating multigenerational knowledge. AMP serves the community with another opportunity in building that capacity in the teenager demographic through hands-on field and research experience. Additionally, community autonomy is essential. Control of the research process asserts and reinforces the community's sovereignty power that accountable archaeology seeks to support. Limiting when, where, and how research is publicized, the risks to community partners decrease and can potentially avoid having a community halt archaeological research.

Including indigenous knowledge does not lower the level of scholarship produced. It is essential to communicate with community members at all aspects of the project, including fieldwork, lab sessions, co-authorship, theory or method development, interpretations, acknowledging intangible heritage, mobilizing knowledge, and research questions, among other things. The real-world social, economic, political, and cultural implications of archaeological research on local and descendant communities begin with honoring community mandates.

Collaboration leads to more ethical and accountable archaeology. It recognizes and challenges archaeological practice mechanisms that often exclude the local and descendant communities to satisfy the western colonialist perspective for knowledge (Smith 1999). The point is to shift the archaeologist's focus to one that centers around the people whose history we study need to be included in archaeological research. Community mandates shift archaeological practice from strictly prioritizing archaeology to a project that includes indigenous and descendant communities as collaborators. This shift in archaeological approach leads to our discipline's re-evaluation of our role in the contemporary world. Otherwise, academics continue to repeat the Western epistemology for acquiring knowledge by subjecting non-Western forms of knowledge into a paradigm, myth, or tradition. After all, as Smith (1999: 41) states, "Objectification is a process of dehumanization."

Accountable archaeology ensures a level of commitment by the archaeologist, not the community. Long after the project ends, the archaeologist must make an effort to maintain the ties, especially if the archaeology goes on to involve other scholars or financial endeavors. In my particular case, community members have expressed interest in my involvement in exploring different areas around Abiquiú. The success or failure of collaborative projects merits self-reflection to identify what kind of collaboration happens versus what we expect. Suppose the scholarship does not reflect a level of accountability or communication to the local or descendant

communities and the people involved. In that case, there will be a failure to mobilize the knowledge between the researcher, the institution, and the communities whose history we study.

Ultimately, all records, data, reports, artifacts, presentations, and the dissertation will be handed over and archived to the Pueblo de Abiquiú. I will only do any future presentations or publications on this project through the community's consent.

Dissertation Overview

The dissertation begins with a general history of the area and positions the Abiquiú Mesa in an archaeological context. A literature review of previous archaeology studies in agriculture, obsidian, pottery, and pictograph imagery touch on the many elements that connect the Abiquiú Mesa to other prominent archaeological places. The Abiquiú Mesa documentation goes back to Harrington's (1906) ethnographic survey of Tewa ruins in the Rio Chama Valley. Also, grey literature found in the New Mexico Cultural Resource Information Systems demonstrates an attempt to document and archive sites like the Abiquiú Mesa. Although I recognize the importance of old archaeological reports, exploring the drawbacks to the previous research done by Harrington and NMCRIS reports is one way to acknowledge how to avoid repeating similar mistakes in disseminating knowledge to the community.

Collaborative Archaeology does have its theoretical challenges. Since historical narratives by Abiquiuseños position people in the landscape, their narratives capture the relationship between the Pueblo de Abiquiú, the Abiquiú Mesa, and the surrounding landscape. Exploring an ontology of space can frame the research's knowledge centering around indigenous knowledge. Exploring a Tewa space-frame ontological perspective that prioritizes space, Tewa ontology serves to contextualize and interpret the relationship between people and their use of space (Ortiz 1969). Participating in a conversation with indigenous writers is an essential part of acknowledging theories that reflect the worldview of the people we study. Incorporating native voices and philosophies has the potential to change our thinking about how archaeological projects are done.

Native narratives offer spatial continuity, demonstrating subtle land-use changes through space and time. I argue for an ontology of indigenous space that centers indigenous philosophies and links multiple forms of knowledge to produce a unified model of indigenous and scientific knowledge that explores a connection between materiality, people, native oral histories embedded as a landscape assemblage. A space-frame theory of the past attempts to (1) place indigenous philosophies at the center of theory; (2) be consistent with an indigenous ontology of space and how this ontological framework informs our archaeological knowledge production; and (3) contextualize Abiquiú knowledge as history. Recognizing indigenous knowledge as history better informs archaeological interpretation. Additionally, the historical record can reflect an native perspective that speaks to both Native and non-Native people. The literature examples focus on exploring the ontological frameworks from Native scholars while considering various perspectives.

Native perspectives are an essential aspect of collaborative projects. However, Collaborative Archaeology projects are not perfect. Outlining previous Collaborative Archaeology projects, scholars must explore the role archaeology plays in collaboration and archaeology's role in the Abiquiú-Berkeley partnership. I believe it is crucial to incorporate critical historical events of Native people's resilience and recent collaboration in archaeological projects. Collaboration is not a novel idea by archaeologists. Instead, it recognizes that archaeological history and knowledge must include indigenous voices, the research must be indigenous propriety, and serve the descendant community. The Abiquiú Mesa Project's

framework is community-based participatory research (Atalay 2012). What makes this a collaborative archaeological project is choosing to prioritize collaboration in all aspects of the study. An Indigenous Archaeology project establishes room for a research partnership-style relationship. My close partnership with the Merced del Pueblo de Abiquiú in New Mexico includes a co-created research project that incorporates Abiquiuseños in research design, as well as a community leadership-vetted proposal and memorandum of agreement.

Community mandates dictate the role archaeology plays in the project's partnership. The logistics involving the Abiquiú youth's participation in archaeological research and fieldwork during the summers of 2018 and 2019 is crucial in multigenerational knowledge transfer of Abiquiú history. The Abiquiú Mesa Project participated in significant community events and community household gatherings, exploring how Collaborative Archaeology extends beyond archaeology. The archaeological methods used to gather data include catch and release survey (quadrants), excavation, x-ray fluorescence spectrometry on obsidian artifacts, floatation analysis, radiocarbon dating, and petroglyph recording. All field and lab methods were approved by the Merced Board, including the gathering and destructive analysis of soil samples. All laboratory results, charts, data, and figures regarding the archaeological data are in this dissertation section. Data interpretation utilizes archaeological and indigenous perspectives to answer research questions and explore Abiquiú Mesa's history.

As stated before, collaboration is not perfect. The final section of the dissertation explores the limitations of scholarly research in a decolonizing archaeology context. I argue that the scientific method's format changes with collaboration resulting in different interpretations and knowledge building. Indigenous knowledge is as valid as scientific knowledge. Can indigenous knowledge be accepted as history without archaeology, and if not, who do only certain types of scholarship have authority in issues of exercising sovereignty? After all, community scholars produce scholarship. A western ontology of history still limits the understanding that builds from multivocal perspectives. Are there limitations to decolonizing archaeology? More specifically, the final section reflects Abiquiuseño concerns regarding how this archaeological knowledge benefits the people of Abiquiú and future collaborative research.

CHAPTER 2: A CONTEXTUAL HISTORY OF ABIQUIÚ MESA BEFORE 1490 CE

The Abiquiú Mesa stands immediately East of the Pueblo at 6800 ft of elevation. At the northernmost point of the Abiquiú Mesa, you can see an incredible landscape. To the North, you can see the Rio Chama followed by an unending view of iron-rich mesas stretching out into the horizon. To the East lies the Tewa Basin with Poshuouinge, a Tewa site that dates back to the 1450s. Further, into the horizon, you can see the road leading to the modern-day city of Española. To the South lies Vallecitos (little valley) guarded over by Polvadera Peak. And finally, to the West rests Cerro Pedernal, a mountain considered sacred to nearby pueblo people and a strong chert source. The landscape details the context in which the Abiquiú Mesa exists. The mesa contains obsidian and chert debitage, pottery sherds, pictographs, rock alignments, and other structural features. Each artifactual element present at the Abiquiú Mesa can lend itself to explorations of new interpretations on social interactions or migrations.

Previous Research

One of the first non-locals to research the Abiquiú Mesa was J.P. Harrington. In his book *The Ethnogeography of the Tewa Indians* (1916), Harrington compartmentalizes and catalogs geographical locations associated with place names based on the Tewa language. For example, Harrington refers to the Abiquiú Mesa as "*Abèfukwage*" primarily as "chokecherry mesa," which is where Abiquiú establishes its name (Harrington 1916; Gonzalez 2014). Harrington's extensive monograph established a standard used today by archaeologists to investigate Tewa places. However, much of Harrington's work omitted current well-known Tewa places and misidentified others like the Abiquiú Mesa as a residential pueblo site. As a result, early work on the mesa limits their research to a surface survey (Hewett 1906, 1938; Hibben 1937).

However, the most recent work (before BACA and AMP) was an extensively detailed survey of the northern end of the Abiquiú Mesa found in a New Mexico Cultural Information System (NMCRIS) report for the mesa's nomination to the National Register of Historic Places. Gauthier and Peckham (1981) placed the Abiquiú Grid Gardens (LA4934) on the National Register on December 7, 1982. The report describes field houses, grid gardens and argues for this archaeological site's importance in learning about ancestral pueblo farming practices and population growth in the region. However, recommendations based on a non-systematic survey and surface scatter found around the basalt rock alignment leave no conclusive evidence or analysis reports readily available for the Abiquiú community. The Abiquiú Mesa Project begins from the NMCRIS report and moves forward by evaluating some of the claims while simultaneously providing archaeological evidence of historical ties to the Abiquiú community. The community can then deploy this knowledge to identify material culture and areas of interest within the Santa Fe and Carson National Forests as part of Abiquiú ancestral pueblo history.

An Archaeological History of the Rio Chama Valley

The Rio Chama Valley is part of what archaeologists call the Northern Rio Grande region. The Eastern Pueblos who reside in this area are "Indigenous peoples living in communities along the Rio Grande, distinguished by agricultural subsistence and a range of shared cultural practices" (Snead 2017: 413). Before 1250 CE, the Rio Chama Valley shows evidence of a sparse population with sporadic archaeological evidence of mobile hunter-gatherer groups interacting in the entire Southwest region (Ballenger et al. 2017). People primarily engaged in seasonal farming, hunting, and gathering lifestyles. Hamilton and colleagues (2013) notes evidence of Clovis occupation just south of the Rio Chama evidenced by El Rechuelos Rhyolite domes. Additionally, a Clovis proximal fragment was recovered nearby analyzed by Shackley as El Rechuelos Rhyolite obsidian incidentally recovered near a mammoth carcass

dating to ca. 18,000 BP. So, there is at least 13,000 years of prehistory in the Northern Rio Grande region (Steven Shackley, personal communication).

Both scholars and Native people agree that the Rio Chama Valley contained densely populated areas, and farming became a more permanent subsistence form by 1300 CE (Cordell and Gumerman 1989; Crown et al. 1996; Fowles 2004; Snead et al. 2004; Van Zandt 2005). The characterization of the Rio Chama Region by Linda Cordell's (1989) extraordinary work outlines its settlement history. The research considers Archaeological Resource Management System (ARMS) survey data and excavation projects to break down a timeline that asserts the regions several periods ranging from "Initiation" through "Expansion, Transition, Reorganization," and "Aggregation" (Cordell 1989: 303). The culmination of work, at that point, served as a way to emphasize the broader social and organizational patterns of people living in the Northern Rio Grande region. The research dramatically stems from, among other factors, pottery analysis, agricultural field studies, Pueblo economy, and lithic distributions (Ortman 2019). Much of her research and interpretations continue to hold today. More specifically, in the Rio Chama Region, the social structure changed dramatically in late Pueblo III while transitioning into Pueblo IV (1200-1300 CE).

Fowles (2004) argues that the social structure in this region was primarily affected by an influx of people resulting in densely populated centers, such as Sapawe and Poshuouinge along the Rito Colorado Valley. Fowles (2004: 19) corroborates this significant movement of people with Ortiz's (1969) work that tells of migration within the Tewa's origin narrative. Northern Tewa-speaking people mainly populated the Rio Chama Valley. Naranjo (2008) and Ortiz (1969) emphasize the importance of Tewa's oral histories and place names. Like Sapawe and Poshuouinge, Tewa settlements archaeologically demonstrate the extent to which populations were gathering and bestowing these Tewa settlements as places of significance. Oral histories suggest a narrative of the Tewa people's origin expanding from the Northern San Juan region (Ellis 1967). Names of places are associated with specific oral histories to ensure future generations learn about their significance. Tewa cosmologies associate with real-life physical places related to various aspects of life that significantly influenced the social organization and agricultural practices (Anschuetz et al. 2017). Groups in the Rio Grande region came together or combined both with small migrations happening through time (Boyer et al. 2010; Cordell 1979). However, some archaeological narratives establish Eastern Pueblo settlement's origins were due to people migrating from Mesa Verde (see Ortman 2012). Ortman (2012) argues that biological, linguistic, and cultural evidence evolved independently but strongly suggests that Tewa people originate from the San Juan region.

However, an alternative exchange model suggested by James L. Moore and colleagues (2020: 167) argue that Tewa occupants in northern Pajarito Plateau migrated west from the northern Rio Grande and not Mesa Verde. Instead, the entire San Juan region was part of a single obsidian exchange system into Pueblo II resulting in factors that suggest stronger ties with southern San Juan (Moore et al. 2020: 160). Evidence of the obsidian distributions during Pueblo II correspond to an exploitation model that persists in northern and southern San Juan. The increase in Cerro Toledo obsidian is due to the colonization of the southern Pajarito Plateau after AD 1175. Moore's model contradicts Ortman's narrative suggesting Tewa migrations are not coming from Mesa Verde. Although there is no consensus on how exactly Tewa settlements became densely populated in the Northern Rio Grande, scholars do agree over the first emergence of large pueblos in the region, and specifically, in the Rio Chama Valley and Jemez Mountains happening between 1200-1300 CE (Anschuetz 2005; Anschuetz et al. 2017; Boyer et

al. 2010; Ford et al. 1972; Fowles 2004; Kohler et al. 2004; Lakatos 2007; Lipe 2010; Snead 2017; Snead et al. 2004; Varien 2010).

Understanding Agriculture through Archaeology

Some earliest agricultural features date back between 1000 BCE to 900 CE (Damp et al. 2002). Generally, from 200 to 900 CE, agriculture, hunting, and gathering were a necessary form of subsistence (Cordell and McBrinn 2012: 163). Anschuetz and colleagues (2017: 700) point out how agricultural features, such as cobble-bordered gravel-mulch plots, demonstrated a diverse skill set by indigenous populations in managing all available resources to construct agricultural fields in areas with flexible environments, and adopted social strategies to sustain their agricultural economies.

Previous research on Tewa agricultural landscapes (Anschuetz 2001; Anschuetz et al. 2017; Camilli et al. 2019; Dominguez 2000) demonstrates how widely cobble-bordered agricultural features appear throughout the Tewa Basin. Anschuetz and colleagues (2017: 701) describe that similar rock alignment features are "mesa-top planting areas" including rock-bordered grids and cobble step terraces all broadly date between 1250 and 1730. According to Camilli and colleagues (2019: 36-38), gravel-mulch fields are distinctive in the Northern Rio Grande. Morphology, thickness, gravel volume, and context help identify the distinguishing features in gravel mulch fields. Gravel texture ranges from moderately fine to coarse, accounting for up to 10 percent of the soil volume, with average gravel sizes ranging between 8 and 64 millimeters in diameter. Gravel mulching produces a two-layer soil horizon. The upper strata consist of "wholly placed gravels that subsequently intermix with aeolian and waterborne fine sediments," whereas the lower strata consist of "native lag gravel" (Camilli et al. 2019: 36). A good deal of gravel consists of granite, basalt, and quartzite. These rocks are in part essential to the cycle of absorbing heat and releasing moisture. As Camilli and colleagues (2019: 37) describe:

> "*In the northern Rio Grande region, the presence of rock mulch establishes a springtime diurnal cycle when surface horizons of soils are generally moist. After sunset, rock mulch conducts heat gained from solar radiation during the day to the moist soil below. During this process, some heat transfer from the mulch into the air, primarily through radiation, might protect plants against threatening springtime frosts. Moist soils warm with minimal evaporation owing to the reduction in temperature-driven evaporation during the cool nights...The utility of treating fields in cool, upland settings with gravel mulch lies in its properties that enable cultivated soils to warm and retain heat, thereby buffering against diurnal temperature swings in the early Spring*."

In part, this farming system would allow for cotton to be grown under the conditions found in the region.

The agricultural fields in the region focused on maize and cotton. Camilli et al. (2019: 39) argue that while people cultivated maize in mulched and non-mulched plots, cotton exclusively grew in gravel-mulched fields. Studies by Glenna Dean (1989, 1991, 1995) suggest simultaneous cotton and maize cultivation as maize replenishes the nitrogen in the soil that is depleted by cotton. Cotton growth played an important role in textile production's economic development in the Chama region (Jeançon 1923; Luebben 1953; Meehan 2019; Webster 1997), with exchange potentially reaching Plains groups (Baugh 1991; Camilli et al. 2019). Meehan's (2019: 49) study looks at the archaeological literature to closely examine the economic and social interactions between landscape and the chain of operation from cotton to textile goods. As the research suggests, growing and processing cotton was part of a "deep-rooted communities of

practice" that gave rise to connections to different regions, including the Central Rio Grande and mobile populations.

Interaction: Raw Materials, Stone Tools, and Pottery

Agriculture was only one part of the economic activity in the Northern Rio Grande. The exchange of raw materials for stone tools and pottery production is evident throughout the region. Chert, obsidian, and clay sources and artifacts found in the Rio Chama Valley played a crucial role in understanding the Pueblo economy (see Ortman 2019). More specifically, studies in raw material distributions (Arakawa et al. 2019; Duff et al. 2012; Habicht-Mauche 1993), obsidian sourcing (Shackley 2005), migrating populations (Mills et al. 2013), and Ancestral Tewa pottery distribution (Duwe 2019) all characterize a story of Pueblo interaction.

For instance, obsidian has been a popular raw material for making stone tools in the later part of human history. Obsidian's unique volcanic rhyolite glass-like characteristics favor stone toolmakers to produce some of the world's sharpest edges. Obsidian's elemental composition is also unique, allowing archaeologists to use X-ray fluorescence spectrometry to distinguish a unique chemical signature that renders obsidian identifiable by source. The closest obsidian deposits to the Rio Chama Valley are those found in the Jemez Mountains, the Taos Plateau, and Southern Colorado (Baugh and Nelson 1987; Glasscock et al. 1999; Shackley 2005). The most common obsidian found in archaeological sites in northern New Mexico is El Rechuelos Rhyolite obsidian originating from a dome complex north of Polvadera Peak (Shackley 2005). However, El Rechuelos is not the only source. Cerro Toledo Rhyolite and Valles Rhyolite (Cerro del Medio) obsidian sources produce high-quality obsidian that serves well for stone tool production. Extensive studies (Gardner et al. 2010; Heiken et al. 1986; and Self et al. 1986; Self et al. 1996) provide geological data for archaeologists to physically and chemically distinguish Jemez Mountain obsidian sources. The data are valuable for understanding the context of procurement strategies and exchange networks before 1500 CE.

Other raw materials, such as chalcedony, are much harder to identify through a unique chemical signature but instead identified through historical context. For instance, approximately eleven miles to the west of the Abiquiú Mesa is Cerro Pedernal, a large narrow mesa with chalcedony deposits used throughout history for stone tools and Spanish gun flints (Duff et al. 2017; Moore 1992, 2001a, 2001b, 2004). A study by Arakawa and colleagues (2019) examines the changes in tool-stone raw materials distributions from different northern Rio Grande sites. Using GIS modeling, the study examines obsidian, basalt, and Cerro Pedernal chalcedony (Arakawa 2019: 97). Their conclusions suggest that a commodity-based economy existed in the region by controlling these three raw materials (Arakawa 2019: 99). In another study, an extensive data set by Mills and colleagues (2013) uses GIS to compare and contrast the obsidian and pottery social networks in the Western Southwest focused on the Late Classic. The study found dramatic changes within 250 years, suggesting that more extensive networks lacked the stability to endure through time, while the smaller networks were more sustainable (Mills et al. 2013: 5789). Moore et al. (2020) use obsidian sourcing to argue distinct migration patterns in the San Juan region that contest Ortman's (2019) Tewa origins. In general, the lithic raw material studies demonstrate interaction and networks associated with artifacts found at the Abiquiú Mesa.

Unlike lithics, pottery source studies and analysis presents archaeologists with multiple points of data from the raw material analysis, production, and distribution. Since the 1930s (Kidder and Shepard 1936), pottery has served as a model for displaying the American Southwest's historical chronology. However, culture history typologies are problematic for

multiple reasons, mainly as pottery typologies do not definitely identify with a specific culture. However, the utility of typologies serves only as common reference from which to begin a discussion. For example, pre-contact period pottery in the Rio Chama has several categories: Santa Fe black-on-white, Wiyo black-on-white, Abiquiú black-on-grey, and Bandelier black-on-grey with dates expanding from 1300 to 1500 CE (Duwe 2011, 2019; Kidder and Shepard 1936). Much like obsidian, chemical compositional analysis allows archaeologists to examine procurement strategies and exchange networks through time. In a study by Habicht-Mauche (1995, 2002), petrographic techniques were able to identify production sources from geographically distinct areas in Rio Grande Valley sites. In another study, Duwe (2019: 105) finds that the Rio Chama exported Abiquiú black-on-grey and Bandelier black-on-grey into the Pajarito Plateau sites, implying an economic relationship between in the areas. The exchange models and archaeological patterns continue to reveal connections and relationships within the diverse community in the Rio Chama Valley.

Although sourcing, lithic, and pottery data are incommensurate material categories in archaeology, the data are similar in attempting to capture the movement of populations across a landscape. The data are used relative to each other in the context of oral histories. Specifically, when compiled and used as context for Abiquiú Native oral histories, the broader narrative becomes an assemblage of landscape knowledge (see Chapter 3 for landscape assemblage).

Pueblo Pictographs and Imagery

Current rock art studies in North American Southwest archaeology incorporate nuanced methods of connecting identity, date, and social organization with the ethnographic record (Crotty 1995, 2001; Dykeman and Roebuck 2008; Hegmon and Kulow 2005; LeBlanc 1999; McCall 2004; McDonald and Veth 2012; Plog and Solometo 1997; Schaafsma 2000; Sekaquaptewa and Washburn 2004; Snead 2002; Solometo 2010; Wright and Russell 2011; Young 1988). These studies are necessary and informative but can be limiting. Places with rock art are more than the interpretive imagery and date of a particular location. Solometo (2010: 85-86) argues that the "how" and "why" of motif selection is important as the identity of the image represented. Although Solometo is speaking about historic murals, this concept applies to Pueblo rock art style and motifs.

Early American rock art research highlighted regions in the Southwest, the Great Plains, and the Eastern Woodlands. These studies focused on the themes of design, classification, style, cultural affiliation, and regional influence (Wellmann 1980: 535-536; see also Schaafsma 1985). The work adopted a cultural-history theoretical perspective. Thirty years ago, Polly Schaafsma (1985: 238-239) stated that "rock art research is still in a descriptive phase" and too often a mentality "to get it recorded before it is gone" did not allow room for proper analysis and interpretation.

Rock art is controversial and problematic. Early rock art studies included a lack of strong material evidence to correlate with dating, interpreting imagery, and the use of ethnographic analogy (Turpin 1990: 263). For example, Turpin (1990) illustrates how pictographs from the Lower Pecos River region can help reconstruct prehistoric social systems. Turpin (1990: 277) concludes that "recognizing the elaborate ideological and ritual considerations operated to maintain social systems… [that add to the] interpretive dimensions that transcend the potential of material and environmental explanations of human behavior." Rock art continues to rely on other contextual evidence for a proper analysis. Schaafsma (2013) discusses some of the major issues in rock art interpretation and addresses new theoretical challenges emerging from various

perspectives. The inclusion of native voices into archaeological interpretation brings about recent changes and challenges in a colonizing discipline.

Rock art in northern New Mexico contains pecked petroglyphs and red (iron), green (malachite), or blue (piñon plum) rock paintings (Schaafsma 1986: 26-28). Rock paintings near Abiquiú are closely related to Navajo imagery that depicts human figures, shield bearers, shields, eagles, cloud terraces, birds, and corn plants (Schaafsma 1986: 252). Alongside the Rio Chama, there are many petroglyphs with pecked swirls (Poling-Kempes 1997). Much of the known imagery displays cloud terraces, lightning arrows, birds, flute players, along with a "great horned serpent" (Schaafsma 1986: 258). Common colors in American Southwest rock paintings are red, white, black, and orange. Pink, yellow, green, and blue also occur, but on rare occasions (Schaafsma 1986). Color palettes indicate the kinds of materials available in the landscape. Unlike blue, green is more likely to be found in rock art sites in Southwest rock paintings because azurite transforms into malachite (Schaafsma 1986: 26). White clay deposits and gypsum (or calcium carbonate) are two of the significant sources found in the Southwest (Schaafsma 1986). Black and white paints often complement each other in rock paintings. In the American Southwest, rock paintings containing black color are from charcoal-based pigments (Schaafsma 1986).

Petroglyphs outnumber rock paintings in the American Southwest. Many regions, including Abiquiú, contain pecked or etched images. Petroglyphs in the Rio Chama Valley are on dark exposed sandstone, basalt cliffs, and talus boulder surfaces (Schaafsma 1986: 28). Petroglyphs have a distinct operational sequence to rock paintings. César Mendez Melgar (2008) experimented with knapped stone tools and then made pecking and etching markings on several surfaces. Mendez Melgar's study provides a basis for identifying the material type tool using Mohs Hardness Test (MHT). Pecking requires a hammerstone made of basalt, sandstone, or soapstone. Basalt and sandstone materials exist around the Chama River near Abiquiú. The sharpest edge of the hammerstone easily pecks into the rock surfaces. Freehand pecking creates unprecise markings that result in pecking dints surrounding the intended peck (Mendez Melgar 2008). However, using a chisel provides precise control. Pecking marks are distinguishable based on the pecking techniques visible in petroglyphs. The results show a variation in markings based on the material type and ultimately concluding a less intensive and opportunistic chaîne opératoire.

Smaller petroglyphs contain figures filled in pecking marks, while more extensive petroglyphs tend to be outlines and hollow. For example, large dints and rough shapes contrast other small, evenly spaced dinting (Schaafsma 1986). Larger pecking suggests a level of work invested in the small petroglyph due to the amount of work necessary to fill in the figure with pecked markings. Unpecked interior spaces of more extensive petroglyphs allow other individuals to add to the image. On the other hand, etched markings require a sharp tool to apply on soft sandstone rock surfaces like those found near the Chama River (Schaafsma 1980). These petroglyphs do not stand out as much as pecked petroglyphs, but somewhat etched petroglyphs demonstrate a greater detail that depicts events through the imagery of horses, battles, and trails.

Summary

Each element in this chapter focuses on one aspect of the history of the Abiquiú Mesa. These aspects include artifacts and features with information that can answer community questions about their past. The archaeological history and background add context to the place's rich history through artifacts such as obsidian, chert, pottery, pictographs, and rock alignments. Due to the limited archaeological information available on the Abiquiú Mesa, it is important to

understand the previous studies from nearby archaeological places to understand a broader context. The information obtained from this research adds to the significant knowledge that already exists within the community. The physical evidence is a part of how community narratives have been used to demonstrate Abiquiú's ties to their lands, their histories, and ancestors.

CHAPTER 3: AN ONTOLOGY OF INDIGENOUS SPACE

One of the most challenging aspects of Collaborative Archaeology is to develop a theoretical framework that incorporates indigenous philosophies while maintaining the scientific integrity required by academia. Trigger (2006) wrote an entire history of archaeological theory that demonstrates a Eurocentric perspective that only recently emphasizes the incorporation of indigenous perspectives. However, indigenous perspectives must reconcile to a Eurocentric ontology. Decolonizing archaeology aims to challenge Eurocentric ontologies and epistemologies. Decolonization deconstructs and inserts indigenous philosophies at the center of research (Smith 1999). This framework has caught the attention of scholars like McGhee (2008) and Williams & Shepley (2020), who argue that Indigenous Archaeology threatens scientific objectivity and leads to scientific consequentialism. Realistically collaborative and indigenous archaeology does not intend to replace science, only challenge it.

Scholars like Benjamin Alberti and Yvonne Marshall (2009) critically look at the archaeological theory and the challenges of incorporating indigenous philosophies. Some scholars (Alberti et al. 2011) explore indigenous ontologies as more than epistemological frameworks. Alberti suggests recursivity and alterity as alternatives that promote a more dynamic middle ground ontology for Indigenous Archaeology. I argue that indigenous knowledge is as valid as archaeological knowledge without resorting to relational ontology arguments. I propose an ontology of space that subverts the dualistic perspective of science versus indigenous philosophies by linking both forms of knowledge to produce a unified learning model that explores a connection of materiality, people, oral histories, and narratives embedded in a landscape assemblage. Ultimately, the goal is to ensure the research uncovers the hidden knowledge present in ancestral places around Abiquiú Pueblo lands.

This chapter addresses the theoretical challenges of collaborative archeology, explores the ontology of space based on an indigenous perspective, and frames a hypothesis for a potential theoretical framework that prioritizes indigenous knowledge. Alberti's (2016) *Annual Review* article is an excellent review to begin discussing Collaborative and Indigenous Archaeology. Pushing the conversation forward are specific examples from various books and edited volumes (Cowie et al. 2019; Kuwanwisiwma et al. 2018; McGuire 2008; McNiven 2016; Silliman 2008; Smith and Wobst 2005) that serve as influences on the theory for this project.

Exploring an ontology of space is not a new concept. Alfonso Oritz's book *The Tewa World* understood the practicality of this kind of knowledge through Vine Deloria Jr.'s book *God is Red.* In accepting a worldview that prioritizes space, Tewa ontology contextualizes and interprets the relationship between people and their use of space (Ortiz 1969). Since contemporary historical narratives by Abiquiuseños position people in the landscape, their view offers a perspective that captures the relationship between the Pueblo de Abiquiú, the Abiquiú Mesa, and the surrounding landscape. Furthermore, narratives (either ethnohistoric, ethnographic, or oral history) offer habitational spatial continuity, demonstrating subtle land-use changes. In the last section of this chapter, I propose a hypothesis that builds on the existing literature of landscape, assemblage theory, materiality, object itineraries, and native philosophies. Together, these concepts assemble a space-frame approach that attempts to (1) place indigenous philosophies at the center of theory; and (2) serve as a consistent ontological framework useful for Indigenous Archaeology.

I will be commenting on Bruno Latour's (2005) Actor-Network Theory, Manuel DeLanda's (2006) assemblage theory, a variety of approaches to "object agency" (Chen 2013; Parikka 2012; Watts 2013), and mention work broadly considered "new materialism" (see Coole

and Frost 2010; van der Tuin and Dolphijn 2012). These themes enter into conversation with concepts of itineraries, reciprocal exchange, and indigenous philosophies to describe the different forms of knowledge found in native narrative and ontological frameworks (Alberti and Fowler 2018; Creese 2011; Jones et al. 2011; and Tisawii'ashii Manning 2017).

Finally, there are a few key terms that must be defined. *Space* refers to looking at both tangible and intangible entanglements that interact with Native people as "interlocutors with distinct epistemological stances who have their contributions to make toward the theorization of cultural [and social] landscapes" (Fowles 2010: 453). *Relational Ontology* refers to one ontological perspective defining another ontological perspective that establishes a hegemonic relationship. *Indigenous* or *native philosophies* are modes of reality included in oral histories, contemporary stories, or narratives that constitute legitimate ways to understand the world. *Monist Ontology* is the characterization of existence as a single substance where subject and object are indistinguishable. The term *materiality* is specific to "actively abetting, impeding, and transforming the lives of humans, and exceeding their intentions, shaping the places and spaces where humans and nonhuman animals and things were assembled" (Joyce 2015a: 3). Lastly, *reciprocity* (or *reciprocal exchange*) refers to "two parties act, or are disposed to act, toward one another in equivalent ways" and "even the most unequal relations usually can be represented as somehow reciprocal by the actors involved" (Graeber 2001: 225; 278).

Theoretical Challenges in Collaborative Archaeology

The collaborative archaeological literature tends to focus primarily on developing methodologies that interact with descendant communities. McNiven (2016: 33) points out the need for theoretical frameworks, such as his "dual historical approach" in Collaborative Archaeology, to help interpret archaeological materials. McNiven (2016) and other scholars (Colwell-Chanthaphonh & Ferguson 2008; Lightfoot 2008; Smith & Wobst 2005; Watkins 2000) point out the importance of incorporating indigenous ontologies as developing new modes of knowledge that can inform and progress theory in archaeology. Other scholars such as Meagan Brooks (2007), Randall McGuire (1992, 2008), and Robert Paynter (1991) argue for a process that incorporates cultural significance and symbolic interpretation in understanding material culture. I explore the archaeological literature's current theoretical perspectives that focus on critical theory and indigenous ontologies.

Critical Theory, Praxis, and Decolonizing Archaeology

Bruce Trigger (2006) points out that archaeology benefits from specific social classes. As a result, the discipline saw the rise of feminist, postcolonial, gender, indigenous, and Marxist critiques to address the discipline's discrimination and disenfranchisement of non-white histories. Several authors (Conkey and Gero 1991; Gilman 1989; Leone et al. 1987; Pauketat, 2001; Preucel 1991, 1995; Shanks and Tilley 1992; Trigger 2006; Wylie 2002) outline a diverse body of theoretical knowledge that changed archaeology. Early archaeology theory and practice sought knowledge at indigenous people's expense. One example is Stewart's (1942) direct historical approach that incorporated ethnography from contemporary indigenous people. The priority was to gain knowledge to inform the practice of archaeology. It did not allow indigenous or descendent communities to participate in any aspect of the research process, except as scientific subjects of the study.

Examples by McNiven (2016) or McNiven and Russell (2005) illustrate how the direct historical approach is a viable theoretical framework within Collaborative Archaeology to avoid ethnographic analogy's pitfalls. A dual historical approach focuses on "historicizing of ethnographically known cultural practices" to track them back to the past while simultaneously

"interpreting the emergence and persistence" of those same practices (McNiven 2016: 33-34). The dual historical approach prioritizes the scientific method while consciously incorporating and historicizing indigenous knowledge applicable to making connections to and from the past.

However, McGuire (1992, 2008, 2014) argues that a Marxist paradigm is a more robust theoretical framework for analyzing archaeological materials to understand, criticize, and change the world. McGuire pursues an epistemology that advocates for political archaeology that allows local, indigenous, or descendant communities to voice their interpretations. McGuire (2008) illustrates two concrete examples (Cerro de Trincheras and Ludlow Camp) that link to archaeological praxis's social reality in contexts that directly reflect political archaeology. He strongly advocates for a praxis that has "the distinctively human capacity to consciously and creatively construct and change both the world and us" (McGuire 2014: 119). He proclaims that archaeology's praxis through collaboration takes a dialectic role and becomes "emancipatory when it advances the interests of the marginalized and the oppressed against the interest of the dominant…[praxis] implies a process of gaining knowledge of the world, critiquing the world, and taking action to change the world" (McGuire 2008, 2014: 120). The notion that archaeology is apolitical is false and encourages archaeologists to ignore the discipline's political nature (McGuire 2008: 10).

McNiven's and McGuire's theoretical approaches challenge the hegemonic process for how archaeologists interpret material culture. McGuire's praxis gets at a worldview that allows non-traditional forms of knowledge to emerge within the academic literature. Praxis has four basic postulates: *coherence, correspondence, context,* and *consequence*. Coherence refers to a logical consistency in social theory and research questions that dictate consistent knowledge modes (McGuire 2008: 83-84). Correspondence is an essential element that incorporates cultural and symbolic meaning as the social perspective for interpreting material culture (McGuire 2008: 84-85). Interpretations must fit what we observe in the material culture. Observation leads to context. The archaeologist influences this element of praxis. Context identifies communities within collaborative research and prioritizes the power dynamics of privileged modes of knowledge or historical narratives (McGuire 2008: 88). And finally, McGuire (2008: 91) refers to consequences as the ethical dilemmas that archaeologists pose to these communities' research. These four postulates continually act as a dialogue that allows knowledge claims to be made and contested equally. This "dialectical Marxism" contains collective agency and non-processual/postprocessual paradigms (McGuire 1992). McGuire's experience at Ludlow Camp and Cerro de Trincheras serve as examples for dialectical Marxism at work.

The Ludlow Camp project in Colorado illustrates how archaeology can use praxis to engage with the National Guard and Union workers' descendant communities. The project focuses on the historical narratives of both communities. The goal is to investigate historical narratives and establish archaeology as a tool to disprove several myths, such as the negative portrayal of the National Guard. Ultimately, archaeology can relate to a working-class outside the hegemonic privileged class (McGuire 2008: 220). At Cerro de Trincheras in Sonora, México collaboration involved the Instituto Nacional de Antropología e Historia (INAH), Norteños, and Tohono O'odham. The project sought to open discussions on colonialism among the communities involved (McGuire 2008: 142). The results demonstrated praxis's limitations when attempting to repatriate burials from Cerro de Trincheras to the Tohono O'odham failed. However, the conflict caused tensions between all the stakeholders involved. Overall, the Cerro de Trincheras case study forces archaeologists to "confront the political, cultural, and economic difficulties of living communities" (McGuire 2008: 185). McGuire's "praxis" suggests that

Collaborative Archaeology participates at a research-level beyond traditional ethnographic methods. The participation forces archaeologists to deal with the political reality of nationalism, past narratives, sovereignty, and community mistrust of foreign entities. Opening a dialogue acknowledges these political realities and enforces new modes of knowledge that challenge archaeology's hegemonic narrative. Although each Collaborative Archaeology case study brings something unique, there are common elements. Establishing long-term partnerships and incorporating indigenous, local, and descendant communities in various aspects of the research leads to better scholarship (Atalay 2012).

The phrase "indigenous knowledge" in academia is recognition for modes of knowledge outside traditional science. However, more often, indigenous knowledge is subject to "othering" and only recognized for its relation to western perspectives (Smith 1999). Disregarding indigenous knowledge and perspectives does have real-world social implications. For example, Alfred Kroeber documented and recorded hundreds of indigenous cultures and languages in California. He believed that Native Californians were going extinct and Native culture needed to be preserved. His research led to policy decisions that disenfranchised many indigenous groups in California from federal recognition and land rights (Kroeber 1925: 830; Lightfoot 2005: 30-48; Lightfoot and Parrish 2009:75-77).

Native voices are essential in archaeology. Native perspectives strengthen our understanding of history and potentially change our thinking about archaeological projects (Atalay 2019; Mihesuah 1998; Teeman et al. 2019). The role of archaeology must now consider the social ramifications of projects and learn from indigenous groups to ultimately benefit indigenous, local, and descendant communities (Atalay 2012). Suppose North American archaeology is to outgrow the western ways of knowing the world. In that case, the method, theory, and collaborative framework need to embody indigenous ontological perspectives that resonate with local, indigenous, and descendant communities. As Linda Tuhiwai Smith (1999: 39) puts it:

> "*Decolonization, however, does not mean and has not meant a total rejection of all theory or research or Western Knowledge. Rather, it is about centering our concerns and world views and then coming to know and understand theory and research from our own perspectives and for our own purposes.*"

George Nicholas (2008b: 1661) points out that the term "indigenous" implies local, indigenous, and descendant communities in archaeological research. The word also empowers the role of indigenous people within projects that do archaeology "with, for, and by indigenous people" (Nicholas and Andrews 1997; Atalay 2012). Indigeneity is not just a concept, and it has real-world social ramifications. Joe Watkin's (2005:199) discussion of Kennewick raises the issue between the "political status of American Indians versus that of American science." The history of archaeology has always seen the past as a subject of academic pursuit. The legitimacy of indigenous knowledge gets ignored continuously for the prioritization of scientific expertise. As contemporary indigenous people are participating in archaeological projects, real-world implications are more apparent to archaeologists. Indigenous people risk more than archaeologists when sharing their knowledge (Liebmann and Rizvi 2008; Watkins 2005). Native perspectives can be part of scientific knowledge, but indigenous ontologies are only recognized when incorporated with scientific research. Indigenous participation in all aspects of archaeological research will open a new discourse that acknowledges archaeology's colonial history and advocates for centering indigenous worldviews in the research.

The role of Indigenous Archaeology is to advocate for native ontologies as new modes of knowledge to empower historically disenfranchised communities. The first step is to acknowledge new perspectives that center on indigenous stories. The effort is not merely applying a level of ethnoarchaeology or direct historical approach. In their own right, indigenous stories act as valuable theories and methods for understanding history. Incorporating indigenous voices as a framework for history improves upon archaeology's past shortcomings (see Trigger 1991, McNiven 2016). As Teeman and colleagues (2019: 36) argue:

> "*It is essential for archaeology to be inclusive of Indigenous epistemologies, because knowledge, and therefore reality, is derived from cultures' epistemological systems, and without Indigenous knowledge, Western anthropologists and anthropology will continue to represent only the reality and narratives of dominant society from which it emerged.*"

Recent Native scholars such as Zoey Todd (2016), Sarah Hunt (2013), Vanessa Watts, and Kim Tall Bear (2017) have pointed to the lack of engagement with indigenous scholarship regarding agency and nonhuman entities. Zoey Todd (2016: 8) points out how Eurocentric scholarship engages with "eighty-year-old texts" but avoids contemporary indigenous scholarship. Similar issues regarding assemblage theory and new materialism literature often overlook indigenous scholarship. Indigenous ontologies create a different framework. Research that participates in indigenous modes of knowledge that culturally and politically empower those communities identify with the archaeological research. As David (2005: 120) describes:

> *"[E]veryone, Indigenous and non, is situated in the here and now and situatedness in the now implicates ontological and practical engagements with whichever means of the world one chooses to engage with. Such engagements need not prioritise archaeology as an academic practice in and for itself, but rather as a social [author's emphasis] practice that is a tool of social enquiry. As a social practice, archaeology can be used by, and for the benefit of, the people whose history is being investigated. A truly Indigenous archaeology signals an engaged and engaging social practice that goes beyond a subversive politics of difference, and that rather recognises the legitimacy of empowerment of indigenous people to historicise and represent one's own presence by using the tools available today, as engaging yet self-determined peoples."*

Archaeology is a knowledge-producing discipline, but it can also empower people. The truth is that academic or Western archeology has never been accountable to indigenous people. Fortunately, archaeological literature is beginning to change with discussions that promote accountability and collaboration. The future of archaeology will incorporate more collaborative work. In some cases, using indigenous ontologies to inform archaeological interpretation empowers the community it studies. It may be the case that Collaborative Archaeology will not be possible everywhere (Atalay 2012). Still, archaeologists who collaborate must be flexible, patient, and open to exploring new forms of knowledge outside traditional knowledge. Collaborative and Indigenous Archaeology begins with understanding the real-world social, economic, political, and cultural implications of archaeological research on local and descendant communities (Smith & Wobst 2005).

An Ontology of Time Embedded in an Ontology of Indigenous Space

An ontology of indigenous space is not a new concept. In the book, Deloria Jr. (1973: 145-146) goes on to emphasize how "Space contextualizes the historical events in narratives and ceremonies." Fowles (2010, 2013) attempts to engage with Deloria Jr.'s metaphysical philosophy and develops an archaeology of "doing" to interpret Southwest ancestral Pueblo

Archaeology. Similarly, the body of theory presented in this chapter attempts to engage with Deloria Jr.'s metaphysics. For this project, a worldview that prioritizes space and movement can guide the interpretation of the relationship between people and their use of the landscape. A worldview that prioritizes indigenous space, specifically a Tewa ontology (Ortiz 1969), contextualizes and interprets the relationship between ancestral pueblo people and their use of space.

Contemporary narratives by Abiquiuseños offer a perspective that captures the relationship between the Pueblo de Abiquiú, the Abiquiú Mesa, and the surrounding landscape. Embedded in oral histories is cumulative knowledge learned from changes and experiences with the landscape. Indigenous people use oral histories and ceremonies to maintain relationships with their ancestors by connecting with the land. Embedded in ancestral connections exists historical knowledge. To an archaeologist, the intangible nature of ancestral beliefs can be challenging to prove with tangible material culture. Furthermore, ancestral beliefs are dismissed in instances involving human remains or interpreting the significance in material culture. Current archaeological theory cannot appropriately assess the full extent of non-traditional indigenous narratives or oral histories. The problem hinges on using scientific ontologies and epistemologies in a history situated in an indigenous philosophy. At best, archaeology uses Indigenous stories and oral histories as an interpretive tool that supplements western interpretation. When native oral histories or native traditions lack do not coincide with the archaeological evidence, the native perspective is often dismissed or ignored.

Including indigenous oral histories and narratives ensure an indigenous perspective. However, this is a compromise that limits the power of oral histories and stories. Archaeology and scientific interpretation tend to privilege western expertise over native knowledge resulting in a Eurocentric bias. The metaphysical division between western and indigenous knowledge assumes an incompatibility. As a result, archaeologists working under one framework cannot reconcile the other. Instead, I propose that working from native philosophies can lead to modes of knowledge production that incorporate Western and indigenous ontologies.

Indigenous knowledge and philosophies work within a similar ontology as that of the western worldview. If western and indigenous ontologies were distinct, this issue poses a serious question about whether two different ontologies can genuinely communicate (Alberti 2016: 171; see Harris and Robb 2012). For example, Abiquiuseños acknowledge both science and native perspectives as legitimate forms of knowledge in learning about the past. Deloria Jr. (1973) acknowledges that indigenous people can accept both science and native perspectives, implying that native knowledge only differs from scientific expertise in how knowledge is produced and prioritized. Both indigenous people and scholars agree that the dimensions of time and space exist similar to how mountains exist independent of human experience or human presence. Time, space, mountains, and other entities that exist outside the human experience are referred to as ontologically objective. Essentially, knowledge production varies depending on the epistemic claims about ontologically objective entities.

Human interaction with non-human entities creates an ontologically subjective experience. Ontologically subjective refers to ideas and conceptual experiences derived from "what is," and human experiences may share these concepts with other ontological systems. For example, the concept of currency or the idea of an economic system is ontologically subjective. A culture's ontological principles create the financial system; the subjective part comes into play based on cultural values and interactions. As a result, people make epistemically objective claims based on the ontologically subjective reality they experience. For example, archaeology

frequently makes epistemologically factual claims about ontologically subjective data with assertions such as:

> "*The Tewa agricultural landscape during the late pre-Hispanic and early colonial periods (ca. 1250 - 1650/1720 CE) is centered on the province in north-central New Mexico commonly known as the Tewa Basin.*" (as cited in Anschuetz et al 2017: 701)

The cited passage demonstrates how time defines past people's experiences. By placing limitations on a particular regional space, archaeological claims prioritize time as a fundamental worldview. Names, geographical locations, and periods are epistemically objectively predicated on a time-based ontology. The challenge I present is asking how the information would differ if historical claims prioritized an ontology of indigenous space. In short, native oral histories and narratives develop a historical perspective from an ontology of space. Tewa oral histories and stories offer spatial continuity through their language, and contemporary narratives disclose subtle land-use changes from knowledge embedded in the landscape (Basso 1996; Ortiz 1969; Deloria Jr. 1973).

Knowledge and wisdom lead to distinct ontologically subjective experiences about the world. Everyone understands that space and time exist; however, the distinction lies in how each group prioritizes and experiences these dimensions. Two people can have different subjective perspectives from the same ontologically objective reality. One example is Heisenberg's Uncertainty Principle, which dictates that we cannot simultaneously know the exact speed and exact position of an object because it acts as both a wave and a particle (see the introduction in Busch et al. 2007 for an overview). Knowing the precise location of a particle requires pinpointing it to one spot but creates uncertainty about knowing the speed at which the particle travels. Understanding the exact velocity of a particle requires measuring the wave of a moving object. We cannot pinpoint an entity in motion to one single spot creating uncertainty about its position.

As Heisenberg's Uncertainty Principle deals with particles and waves, archaeology must deal with both time and space. Western thinking (especially the discipline of archaeology) prioritizes an ontological perspective of time. For native philosophies, that perspective is space (Deloria Jr. 1973: 72). Each view contains historical knowledge that goes unbeknownst to the other. Approaching the past from one single ontological perspective fails to capture the full story of the past. Western thinking and native philosophies function together to produce historical knowledge.

On the one hand, the foundations of Western thought are built from European philosophers and religious leaders (see Deloria Jr. 1973: 90-94; and see Teeman et al. 2019: 30-33). Western knowledge stems from an ontology prioritizing time, which creates an epistemology, like the scientific method, as the basis for knowledge production. The scientific method must endure a test of repetition for knowledge to be validated. As a result, the culmination of that experience endures through time as a basis for knowledge. Archaeology prioritizes time. Historical interpretations reinforce the idea that a time framework contextualizes space and materiality. One immediate objection is the thought that archaeologists do prioritize space through landscape archaeology. However, the goal is *not* to deny that archaeologists use space in their analysis and interpretation. Instead, the default theory of archaeology is culture history. Any approach and method will center around a chronological framework based on the scientific method. The archaeological framework limits a complete understanding of the past. For example, a scientific perspective that prioritizes time can argue

that the meaning or function of a place (or space) changes based on the time it encapsulates. When archaeological interpretations include indigenous views about a place, the interpretation relates indigenous knowledge to the scientific timeline. native histories are frequently left out as part of the timeline historical narrative. When oral histories and oral traditions match the archaeological evidence, indigenous perspectives are supplemental footnotes or points of contention that ultimately prioritize a non-Native timeline of history. Archaeologists dismiss native stories in preference for tangible archaeological evidence. As a result, scholars undermine the cumulative knowledge existing within native oral histories.

On the other hand, embedded in the landscape exists indigenous knowledge. Knowledge in oral histories, narratives, and pictographs are only a few forms of information scholars utilize. There exist forms of knowledge and knowledge-producing methods unknown to academia. Deloria Jr. (1973: 145-146) emphasizes that "Space contextualizes the historical events in narratives and ceremonies." Space associated with historical events creates meaning. Significance originates from an ontological perspective that prioritizes space. Knowledge production of history becomes embedded within spaces, and as some scholars (Basso 1993; Fowles 2013) have argued, places hold significant meaning to Native people. Leanne Betasamosake Simpson (2014: 12) points out:

> "*The way we are taught to access that knowledge is by being open to that kind of knowledge and by being engaged in a way of living that generates a close, personal relationship with our ancestors and relations in the spirit world through ceremony, dreams, visions and stories.*"

Simpson (2014: 7) views the land as "both context and process." Ceremonies, dreams, visions, and stories provide ways for Native people to access knowledge from their ancestors through the land. Indigenous knowledge are not proverbs nor static universal pockets of knowledge. Indigenous knowledge is dynamic, continuously changing with people and materiality. Stories about ancestors or spirits "happen in various incarnations," and engaging with those stories will vary their significance based on present experience (Simpson 2014: 8). An ontology of space embeds time into space (Deloria Jr. 1973). A space worldview prioritizes the spatial relationship among events between materiality, people, and landscape tied together into a narrative. Native knowledge derived from the landscape and oral histories can lack a western notion of date or time. Oral histories with specific dates and periods may not coincide with the assigned archaeological period.

Archaeologists can interpret the same data set in multiple ways creating a level of uncertainty about the past. In a sense, Western knowledge is the "particle" entity, whereas indigenous knowledge is the "wave" entity in the Heisenberg Uncertainty Principle. By adhering to an ontology of time, archaeological knowledge positions materiality to date or a time in the same way that physicists can locate particles at particular points in time. The chronological association establishes material culture and identity. Scientific principles compensate for uncertainty in assumed causal interactions and human behavior. Theories that attempt to establish ancestry (i.e., Tewa origins) use time as the fundamental principle for identity and material culture (see Ortman 2012 chapter 1 for an overview). The problem lies in assuming continuity between two points or artifact dates when found in different geographical locations. In an ontology of space, indigenous knowledge captures moments across the landscape similar to waves that act as disturbances through space. The retelling of stories acts as the wavelength between neighboring stories. Oral histories and narratives capture history's movement or momentum through the retelling of stories involving people and material agency through the

landscape. But native oral histories can be difficult to date as the retellings can change the initial context. To produce knowledge of the past with a position (time) and momentum (space), it requires both Western and indigenous knowledge to create a contextual past that uses native oral histories as continuity for materiality and landscape.

Materiality, Itinerary, and Reciprocity embedded in Indigenous Landscape

The archaeological concepts of materiality, itinerary, and reciprocity are embedded in an indigenous landscape. Each concept helps structure a spatial framework in which oral histories and contemporary narratives act as fundamental interpreters for collaborative archaeological projects. In short, oral histories and stories provide a contextual itinerary of the material assemblage. Events embedded in the landscape are human-to-human, human-to-nonhuman, and nonhuman-to-nonhuman reciprocal interactions. Thus, landscapes become important, meaningful places.

If time is embedded in space, then time is embedded in the landscape. Oral histories are space-framework that serves as a crucial part of accessing knowledge of the past. Each generation of oral histories and narratives accumulates indigenous experience similarly to how the scientific method accumulates experience. To some degree, indigenous knowledge undergoes replicability and interpretive change with each telling of oral histories (or oral traditions). The judgment to retell or change narratives is the equivalent of scientific rigor. The knowledge of a specific technique or skill is only one aspect of indigenous knowledge. The other part of that knowledge focuses on the historical events embedded in the landscape. Oral history knowledge can address when an event happened, but *where* it happened becomes more important. Access to that knowledge is limited; only specific information is known when people, materiality, and landscape come together. As such, knowledge as praxis (McGuire 2008) or "doing" (Fowles 2013) or exploring "ways of knowing" (Atalay 2012) are influenced by indigenous philosophical concepts. Practicing ceremonies, telling stories, and teaching crafts provide ways for Native people to access and disseminate their knowledge.

Landscape connects with people and their histories. Ancestral land narratives connect native perspectives and people with their past. Some perspectives view landscape and humans as indistinguishable and inseparable. For example, a Crow Native American Chief from Montana spoke of the soil as "the dust of the blood, the flesh, and the bones of our ancestors" (Seton 1936: 58). This view is not a simple representation of religious beliefs but rather speaks of the landscape as a living entity that is the literal physical manifestation of their ancestors. The ancestor and landscape embody native history through space. For this reason, space contextualizes the historical events in narratives and ceremonies (Deloria Jr 1973: 145-146). The belief that landscape as a living entity does exist outside North America. One perspective from a pre-contact Andean culture believes that landscape, including rocks, function as a mechanism that links human history:

> "*Ceremonies celebrating remembered rocks recalled specific versions of history that supported certain land and water rights…Thus man petrous waka were associated with particular social groups, for those waka embodied their collective history as well as the special prerogatives accorded them because of historical deeds or circumstances*" (Dean 2010: 37).

Without space (ancestor) to perform the ceremony, the connection between history and landscape is disrupted, leading to potentially losing identity, belonging, and knowledge. The destruction of that space means the destruction of the ancestor and consequently the history it constitutes. Adopting indigenous landscape narratives as knowledge opens the possibility for

decentralized interpretations of history. Interpretations that traditionally rely only on scientific knowledge can now incorporate all forms of knowledge to bring about a multivocal understanding through indigenous ways of being-in-the-world. Similarly, an ontology of space is a critical perspective that views a state of being that captures the reality of indigenous people's interaction with a particular landscape, place, or space.

Place-making is an essential aspect of indigenous philosophies and beliefs in understanding landscapes. Archaeologists know sacred places through the help of native American oral histories and ceremonies. Archaeological interpretations with rich cosmological information tend to emphasize religious beliefs impacting social structures. Under an ontology of space, the intangible idea can be a tangible one. As place and space are a time, space is a shared metric between archaeological and native knowledge. Indigenous space already encompasses archaeological time. A place that represents events becomes interwoven to other events, essentially creating a non-specific timeline. Discussions of native history must inevitably involve a relationship of space. Although places may reflect native philosophies, places have a historical significance (Deloria Jr. 1973: 70-71). Ceremonies without place lose their context as ceremonies are a way to remember historical events in a particular space or place. These places without rituals are landscapes of memory that connect living people with their ancestors through language and narratives (Basso 1996: 107; Watts 2013: 21).

Keith Basso (1996: 31-34) argues a connection linking place-name narratives to communities and individuals. "Place-names" relate to constructing the past, present, and future histories that unfold in the landscape, creating a "place-world". Contemporary communities remember these histories through place names as answers to common culture history questions such as "what happened here?" (Basso 1996: 7). The answer reflects the sentiments of community identity by building on the social traditions from their world perspective that Basso calls "place-making". The connection from narrative to landscape and landscape to individual identity, without a temporal reference, is much less accepted by academics. European and U.S. law do not recognize Native American narratives as religious beliefs and identity (Coulthard 2007: 443; Donald 2009: 4; Deloria Jr 1973: 79; Innes 2000: 69; Todd 2016: 18; Watts 2013: 18). Simpson (2014: 22) emphasizes this point by stating, "Nishnaabeg must stop looking for legitimacy within the colonizer's education system and return to valuing and recognizing our individual and collective intelligence on its own merits and on our own terms." The strong connection between history, identity, and landscape demands scholars to seek out worldviews centered around the people whose history it studies.

Landscape and place-name narratives act as memories that exist in contemporary indigenous and descendant communities. Marta Diaz-Guardamino Uribe's (2015: 120) case study of the prehistoric menhir, stelae and statue-menhirs in the Iberian Peninsula illustrates "triggered memories" affecting contemporary people. The landscape and place names condition individuals to reflect on dialogue connecting past events through memory and recent experience. The landscape narratives strengthen the social traditions that manifest into a historical identity. As Basso states, "If place-making is a way of constructing the past, a venerable means of *doing* human history, it is also a way of constructing social traditions and, in the process, personal and social identities. We *are*, in a sense, the place-worlds we imagine " (Basso 1996: 7). Thus, experiencing the landscape becomes crucial at the community and individual levels. However, place-making is not universal, nor is it something that people imagine. Risling Baldy (2015: 8) rightly points out that "Knowledge contained in the oral tradition is treated as a universalized metaphor that stretches across tribal and Indigenous groups." Furthermore, indigenous oral

narratives are living histories that contain living philosophies of the present and future (Risling Baldy 2015: 18).

Scholars (Alberti & Bray 2009, Conneller 2011; Tisawii'ashii Manning 2017) explore alternative approaches closely related to Native people's philosophies on the landscape. Phenomenological landscape and relational ontology theory contextualize rock art materiality under different perspectives. In archaeological discussions of rock art images as representations, the concept of space and place by Native peoples is not usually shared by some academic interpretations. Clottes (2008), for example, demonstrates how Paleolithic cave art uses rock surfaces as part of the imagery. Clottes' phenomenological perspective incorporates the landscape but derives from informed ethnohistorical and ethnographic work. Clottes' phenomenological framework is a study that begins acknowledging the relationship of rock art as landscape. Unlike Clottes, Smith & Blundell (2004) argue for distinguishing between the natural landscape and cultural landscape. The emphasis comes from making a distinction between insider ethnographic knowledge and theoretical approaches to interpreting rock art.

Jones and colleagues (2011: 325) argue that the landscape has animacy through rock art surfaces. Rock art style utilizes the color and texture of the background to emphasize a motif. Basalt, for example, will have grey, subtle striations that can serve as a way to color a face or body within the image. Thus, natural processes, such as cracking or discoloration, alter rock art and, by extension, the landscape. In Scotland, rock art surfaces contain cracks and fissures that are destroying the rock art motif. Jones and colleagues (2011: 324-328) examine the rocks and landscape's texture by recognizing the linear striations and geological formation. In this sense, rock art becomes part of the landscape, and context will change through time but be consistent with the significance of the place.

Alberti and Fowles (2016) argue that rock art surfaces are active agents altering rock art images. For example, in the Rio Grande in New Mexico, lichen grows and covers the surface of granite boulders containing etched petroglyphs. A full-figure shamanic petroglyph dating back to the Archaic period has lichen covering only the face. Alberti and Fowles (2016: 112) claim that the lichen covering the face mimics the masks worn by contemporary katsina figures. The authors suggest that ecological factors, such as lichen and water, actively alter rock art in a way that looks natural to the landscape. Fowles and Alberti offer an anti-Cartesian interpretation by incorporating the landscape's biological processes as potentially exploring humans' connection to non-human interactive agency. Non-human agency is independent of human actants. In Fowles and Alberti's case, lichen must have grown in places other than the face. Another possibility could be that humans must have removed the lichen from different petroglyph parts to portray the lichen as a mask. Landscape and rock art animacy perspectives are often influenced by Philippe Descola's (2013) work. Pauketat (2007: 2) cautions archaeologists to stay away from proving or disproving anthropological constructs, which include indigenous ontologies. But Alberti and Fowles (2016), along with scholars like Vanessa Watts (2013), suggest the purpose of adopting indigenous ontologies is to explore distinct perspectives that may help everyone understand relationships in the past. There exists a more in-depth interaction between human and non-human actants. As Jones (2017: 169) suggests, indigenous ontologies are an anthropological construct that can reflect the reality of the world of the people archaeologists' study.

A fruitful approach will be to accept the messy reality of ontological categories as a tool for interpretations. For example, Dolleen Tisawii'ashii Manning (2017) presents an Anishinaabe ontology of Mnidoo-worlding in a philosophical aspect. Mnidoo linguistically refers to "spirits"

or "essence, transcendental, mystical, muse, patron, and divine" (Tisawii'ashii Manning 2017). Expanding on Merleau-Ponty's non-human-centered ontologies, Tisawii'ashii Manning (2017: 158) uses the concept of Mnidoo-worlding to incorporate realistic conceptions of indigenous reality. Tisawii'ashii Manning's spearfishing sketch embodies both the limitations of human consciousness and conceptualizing mnidoo-worlding:

> "*This sketch does not represent spearfishing in itself. Instead, it articulates our thoroughgoing permeation with mnidoo, as seen through routine acts-that is, without recognizing it in an obvious way. The arrow depicts the direction of the thrust (whereas an actual spear would have three or more prongs). This diagram pronounces how a mnidoo structure of correspondence and discord (or division/difference) is enmeshed without paradox when their variant dimensions are taken together as a fluctuating co-responsiveness*" (2017: 175).

An activity such as spearfishing drawn on paper must conceptualize both a perspective about the actual subject matter (spearfishing) and a perspective involving the sketch (of spearfishing). Tisawii'ashii Manning's drawing represents the complexity of bringing indigenous thought into an academic or Eurocentric framework. The concept of mnidoo-worlding is not a universal model. Mnidoo-worlding explores a body of pedagogical knowledge that draws ontological connections between scholars and indigenous knowledge.

In another example, there exist native philosophies that view the landscape as a living god-like creator of the "Great Spirit" (Deloria Jr 1973: 81; McLuhan 1971: 8). The word "ancestor" associates with the Great Spirit and is not considered a direct descendant. Instead, an "ancestor" is a being that links all human and non-human entities together. Narratives, ceremonies and the landscape establish links to human and non-human entities. Space serves as tangible proof of the things made by the creator. Walking Buffalo explains how the landscape plays a role in learning about the intricate relationship between humans and non-humans:

> "*Did you know that trees talk? Well they do. They talk to each other, and they'll talk to you if you listen...I have learned a lot from trees; sometimes about the weather, sometimes about animals, sometimes about the Great Spirit*" (McLuhan 1971: 23).

Walking Buffalo is not personifying trees. Instead, he acknowledges trees as knowledge bearers that reveal occurred events in the landscape. Landscape connects contemporary people to past events as part of Native people's history. Unlike Crow Chief, who believes that the connection is direct of a kin ancestor, Walking Buffalo establishes a link to the events, place, people, and the Great Spirit.

Indigenous scholars like Watts (2013: 3) argue that thoughts such as "the land is alive and thinking" is "Place-Thought" where human and nonhuman agency derives. Connection to the land goes beyond that of an ancestor and recognizes the land as having a spirit. Unlike Crow Chief and Walking Buffalo, Watts (2013) emphasizes that this spirit has nonhuman agency existing independent of human interaction. Place-Thought focuses on the interaction existing between nonhuman entities that exist outside the human experience. In Watts' argument, the landscape organizes itself not as an ecosystem but rather a landscape whose agency is "not limited by innate action or causal relationships" (Watts 2013: 6). Watts' modality can be difficult to incorporate into a scientific and western perspective without venturing into the realm of relational ontologies.

John Creese (2011) and David Robinson (2013) discuss how relational ontologies can inform archaeological interpretations between socially interactive human and nonhuman

landscapes. The concepts and knowledge expressed through rock art characterize the way people experience and produce knowledge. Creese (2011: 8-9) argues that Canada's Northern Algonquian rock art indicates a landscape power relationship of reciprocity between humans and non-human. The Algonquian ontology sees rock art as part of the landscape experience. That experience characterizes people's relationship with medicines found throughout the land. In this particular case, rock art is not merely figurative. Instead, rock art serves as a context for learning the knowledge embedded in the landscape (Creese 2011: 18). Most of the authors so far, like Deloria Jr (1973), Basso (1993), and Walking Buffalo (McLuhan 1971), all mention the vital role landscape plays in the production of knowledge, history, and belief.

A relational ontology undermines nonhuman interactions by suggesting they operate in distinct worlds. However, an ontology of space is a framework that embodies all historical knowledge and experience in the same world. Furthermore, diverse interpretations of people's history with the landscape do not need to be relational. A landscape assemblage embodies that single space world. Landscape assemblages prioritize space where more than one actant exists. Bennet (2010: 9) defines actants as "that which, by virtue of its particular location in an assemblage… makes the difference, makes things happen, becomes the decisive force catalyzing an event." Humans are one of the many actants that operate the loudest in landscape assemblages. Nonhuman entities are actants but are often seen as the components or parts of an assemblage from a human-centered perspective, such as the commodification of goods. Assemblages emphasize entities with "active meaning-making" relationships (Parikka 2012: 95). Focusing on commodified goods as nonhuman entities establishes assemblage relationships with entities other than humans. Nonhuman interactive relationships include human and nonhuman interactions in a social landscape that crosses any nature/culture divide (Haraway 1990).

Scholars like Benjamin Smith and Geoffrey Blundell (2004: 244) argue for distinguishing the natural landscape and a cultural landscape by adopting a macro-micro distinction (Smith and Blundell 2004: 245; see Jones 2017: 174). Landscape assemblage acknowledges nature and culture as a simultaneous interaction. Landscape assemblage establishes connections that blur the nature/culture divide and positions interactions within an ontology of space. Materiality related to landscape recognizes and incorporates the potential social ways nonhuman actants influence (stabilize or destabilize) relationships. Dean (2010: 35) conceptualizes the nature/culture point well through her concept of "interstitiality." Interstitiality, or "in-betweenness", can be a tool that places rock art as the connection in the landscape as knowledge. Similarly, interstitiality and the concept of "place-thought" embed indigenous knowledge as a form of interaction. Linking the tangible with the intangible points to examples of marked or caved rocks that "produce connectivity to and contrast with the natural environment and so accentuate interstitiality." (Dean 2010: 35-36). The interaction between human-to-human, human-to-nonhuman, and nonhuman-to-nonhuman constitutes a landscape assemblage. Assemblage interactions are built from materiality, people, and oral histories.

Why are these connections and relationships meaningful? If time is embedded in space, landscape assemblages compile archaeological timeframes and indigenous spaceframes linked through oral histories. As DeLanda's (2006: 18-19) concept of assemblage theory suggests:

> "*Assemblages are characterized along two dimensions: along the first dimension are specified the variable roles which component parts may play, from a purely material role to a purely expressive one, as well as mixtures of the two. A second dimension characterizes processes in which these components are involved: processes which stabilize or destabilize the identity of the assemblage*

> *(territorialization and deterritorialization)...a third dimension will be added: an extra axis defining the process in which specialized expressive media intervene, processes which consolidate and rigidify the identity of the assemblage or on the contrary, allow the assemblage a certain latitude for more flexible operation while benefiting from genetic or linguistic resources (processes of coding and decoding)*."

An assemblage framework focuses on characterizing humans and nonhumans as social entities that are products of historical processes (Deleuze and Guattari 1987; DeLanda 2006). DeLanda's "1st" and "2nd" dimensions characterize an assemblage as having components that are either material, expression, or both, that partake in events that change the network. The first two dimensions relate to archaeology and actor-network theory, specifically in topics of materiality and sociality as products of human and nonhuman actions (Latour 2005; Law & Hassard 1999). Similar to Watts' (2013) characterization of nonhuman entities, DeLanda's framework recognizes nonhuman entities as independent, active agents. Nonhuman entities engage in a "meshwork" of relations that influence human behavior (Ingold 2011).

DeLanda asserts that assemblages have an affect that causally influences participating human and nonhuman entities that "deterritorialize" each other. For example, Mel Chen's book *Animacies* argues that the element lead (Pb) has an affect that forces other entities to renegotiate lead and destabilize (or, in DeLanda's view, "deterritorializes") the relationships with the toy products made from China while simultaneously maintaining other relationships using the same lead found in electronics. She argues:

> "*Lead deterritorializes, emphasizing its mobility through and against imperialistic specializations of 'here' and 'there'...Even popular reports of the export of electronics waste to developing countries for resource mining still locate the toxicity of lead, mercury, and cadmium away from 'here'; their disassembled state is where the health hazard is located, and disassembly happens elsewhere*" (Chen 2012: 167).

The argument for nonhuman affect draws to the forefront questions about the kinds of relationships that emerge in an assemblage. The discussion centers around the way people in the United States see foreign lead as threatening its citizens' safety but does not characterize the lead mined in the United States as threatening. Chen (2012: 185-188) points out how lead becomes racialized as "Chinese lead" associated with children's illness and toxicity who lick the lead-based paint off Chinese-made toy cars.

Oral histories and narratives have affect. Like Chen's example of lead, native oral histories are often cast aside as baseless by archaeology, yet the discipline acknowledges their importance only when investigating places of archaeological significance. Native oral histories and narratives influence the kinds of research that archaeologists address. If archaeologists prioritize the tangible evidence, then interpretations based solely on materiality become incomplete historical narratives. Oral histories have an affect and are part of the spatial landscape assemblage building historical knowledge. In particular intangible place-thoughts live in nonhuman material entities. As Ortiz (1969: 20) states:

> "*Souls belong to a larger category of spirits and man-associated objects called xayeh, which also includes fossilized bone, sea shells, tools, weapons, and other objects rescued from ruins; in essence, all objects which have been used by people are endowed with sacredness because they are associated with the souls and with the sacred past*."

Acknowledging the variety of spatial interactions between human and nonhuman entities requires exploring intangible relationships within landscape assemblages. A close tangible or intangible connection or interaction with native historical narratives establishes interpretations of the past that encompass known knowledge forms about a particular archaeological place.

DeLanda's (2006: 39) "3rd dimension" elaborates on the tangible and intangible relationships that exist within landscape assemblages. Relationships are either an emergence, a recurrence, or social processes (or a combination of all these) to explain causal affect agency. Causal affect is the apparatus, or the complex intangible flow, that motivates interactions in landscape assemblages. Karen Barad's idea of apparatus is a "specific material reconfiguring of the world that does not merely emerge in time but iteratively reconfigures spacetime matter as part of the ongoing dynamism of becoming" (Barad 2007: 142). Similar to Barad's idea, causal affect works within an assemblage. All interactions are merely part of coding or decoding the social landscape (DeLanda 2006: 39). The causal affect relation happens spatially from whole-to-parts and in a temporal manner from parts-to-whole (DeLanda 2006: 40-42).

Deloria Jr (1973: 89) makes a similar observation by asking, "If all living things share a creator and a creation, is it not logical to suppose that all have the ability to relate to every part of the creation?" A landscape, for example, acts as a whole and can interact with its parts consisting of human and nonhuman entities. Simpson (2014: 15) also points this out, stating, "Aki (land) includes all aspects of creation: landforms, elements, plants, animals, spirits, sounds, thoughts, feelings, energies and all of the emergent systems, ecologies, and networks that connect these elements." Thus, like bees carrying pollen from one flower to another, human trade and exchange are the bees that carry other entities (human or nonhuman) as part of the transformative recurrence that continuously happens through space or place.

Space (or landscape) as an assemblage encompasses both tangible materiality and intangible forms of knowledge. The knowledge pertains to interactions between human and nonhuman entities. Itinerary and reciprocity are the initial basic concepts for describing the kinds of interactions happening in landscape assemblages. The Marcel Mauss (1950: 39) concept of obligation (to give, to receive, and to reciprocate) has long been used in studies of exchange to explain preferential procurement (i.e., of obsidian) and social interactions (Mitchell & Shackley 1995; Torrence 2011; Torrence et al. 2009). As Graeber (2001: 211) points out:

> "*In every case, the most valuable objects in gift economies are valued primarily because they embody some human quality…Of course, I've already argued something similar about market economies as well; but here, one can say that the ideal of the complete detachability of persons and things (which Mauss emphasized) is part of that same overall movement that led also to the separation of the spheres of production and consumption, emphasized by Marx, which allows these essential links to be obscured. In this sense it is not gift economies but market economies that deny 'the true soil of their own life,' since they are constantly obscuring the fact that all 'economic' activity is ultimately a means to the creation of certain sorts of person*."

The production and consumption spheres that Graeber mentions characterizes Maussian exchange as incompatible with an ontology of indigenous space. The problem emerges from limiting any social or economic activity to humans, and nonhumans are passive tangible material manipulated by humans. Can a landscape assemblage be used to interpret the social and economic interactions?

A solution is to expand the Maussian reciprocity to the object people exchange. Interactions and exchange expand into a worldview that incorporates nonhuman entities. Rather than exchanging goods for economic gain or social interaction, a reciprocal exchange occurs through reciprocal affect. Chen's (2012) and Watts' (2013) argument for nonhuman affect and agency lays the groundwork for instances of Maussian reciprocity. Obligation emerges from human and nonhuman entities. Reciprocal exchange exists between human and nonhuman entities as Chen (2012: 11) argues:

> "*Affect is something not necessarily corporeal and that it potentially engages many bodies at once, rather than (only) being contained as an emotion within a single body. Affect inheres in the capacity to affect and be affected.*"

Affect reciprocates in both humans and nonhumans. More specifically, evidence for nonhuman entities establishing reciprocal relationships are discussed by Watts (2013: 6):

> "*Not only are they [non-human entities] active, they also directly influence how humans organize themselves into that society. The very existence of clan systems evidences these many historical agreements between humans and non-humans… The structure of societies is demarcated by territory, which again, is an extension of Sky Woman's original circumstance. She is present in the relationships between humans and humans, humans and non-humans, and non-humans and non-humans*."

The difficulty lies in developing an argument for nonhuman entities as independent actors without characterizing nonhuman entities as passive or deterministic within the context of assemblage. Jones and Cloke (2008: 87) make an argument for recognizing the interactions by non-humans as either "routine action," "transformative and purposive action," and "non-reflexive action." Jones and Cloke (2008: 81) also focus primarily on organic nonhuman entities and only attribute intentionality to humans. However, what if nonhuman entities have what Barad (2007) calls "agential possibility" or intentionality? Watts (2013: 5-6) argues that intentionality is for both humans and nonhumans as "to be animate goes beyond being alive or acting, it is to be full of thought, desire, contemplation and will…all elements of nature possess agency, and this agency is not limited to innate action or causal relationship". Watts explicitly states that nonhuman entities influence human actions. The social obligation extends beyond the human to nonhuman interactions and into nonhuman-to-nonhuman interactions. DeLanda's (1997) historical perspective on materiality offers a glimpse into a nonhuman worldview without human intentionality.

Reciprocal exchange offers one explanation for human and nonhuman interactions in assemblages. Nonhuman interactions include a level of "reciprocity," "strength," and the "presence and absence" of other entities (DeLanda 2006: 56; see also Scott 2000). Expanding reciprocity to include interactions between human and nonhuman entities contributes to understanding multiple perspectives in landscape assemblages. For instance, lichen growth on rock art characterizes nonhuman-to-nonhuman reciprocal interaction. When looking at the biological factors for lichen, a biological and chemical exchange occurs. Nonhuman interactions are more than simple biology or chemistry. Alberti and Fowler's (2016) example of lichen growth on rock art exemplifies the interaction between the tangible and intangible among people, lichen, rock, and symbolism. A reciprocal exchange between all four entities (people, lichen, rock, knowledge) is a non-economic relationship that establishes nonhuman entities as persons. Interaction as a reciprocal relationship ultimately displays human behavior and perception of

places. Native oral histories and narratives often talk about similar relationships between people, materiality, and ancestors (i.e., landscape).

The concept of reciprocal exchange as it pertains to human and nonhuman affect has its limitations. The discussion primarily relies on the tangible aspect of the past. However, landscape assemblage incorporates the intangible element. One possibility is to address the agential and affect nature of oral histories through the concept of object itineraries or "biographies" focused on tracing the historical timeline of material objects (Appadurai 1986; Kopytoff 1986). Suppose intangible knowledge exists in the form of oral histories. In this case, oral histories and narratives can be subject to itinerary principles that ascribe intangible knowledge in native oral histories as nonhuman entities within a landscape assemblage. Rosemary Joyce (2015b: 29) argues that the term object itineraries can better "capture" object [non-human or intangible] mobility. As Joyce (2015b: 37) point out:

> "*Object itineraries are something different: itineraries precisely account for and create models of the work things do, whether being shaped, fragmented, accumulated, stopped, and mediated, or reproduced. Itineraries trace connections that are spatial, temporal, material, and consequential*."

In Joyce's (2015b: 34-36) example with Ulua marble vases, the old itineraries of the vases were "relational agents," and their modern itineraries are now "singular artworks." Their context changed not only through time but also through the spatial networks these vases inhabit.

Similarly, native oral histories and narratives can exist as intangible knowledge of native history and tangible itineraries for archaeological interpretation. Itineraries do not necessarily follow a particular timeline and can change within distinct assemblages. For example, Andrew Roddick (2015: 124) explores object itineraries of Late Formative period pottery to explain how communities of practice and objects mobilize throughout the landscape. The pieces of pottery examined in the study demonstrated a local use of resources. Heather Law Pezzarossi (2015: 179) studies Native baskets and basket makers to look at how basket-making practices are productive strategies for maintaining community identity. Basket makers are essential figures who carry knowledge and narratives of the past. Completed baskets assume a specific role. Native baskets move through various spaces revealing "not only its [object's] physical and social malleability but also its trajectories and subsequent entanglements in the continual renegotiations of people and places over time" (Law Pezzarossi 2015: 181). A narrative that identifies with a social landscape situates a narrative of basket-making practices. In another example, Marta Díaz-Guardamino Uribe (2015: 112) connects itineraries to communities of practice that involve "people, sculptures, and related objects that, through interaction and movement, distributed knowledge about sources for raw materials, stone quarrying, sculpting and engraving techniques, represented objects, and iconographic styles." Itineraries capture the interactive experience between human and nonhuman entities and bring with them in-tangible knowledge.

Summary

I argue that indigenous knowledge is as valid as archaeological knowledge without resorting to relational ontology arguments. An ontological spatial framework focuses on human and nonhuman interaction through materiality. Native philosophies, assemblage theory, and social materiality are all part of a landscape assemblage theory serving as an informative learning model for interpreting the past. Concepts of landscape, assemblage, reciprocity, materiality, and itineraries bridge tangible material objects and intangible indigenous knowledge. This chapter does not attempt to solve all ontological problems in archaeology (see Alberti 2016). Instead, the

goal is to ensure the research reflects a mode of knowledge production that identifies with indigenous and descendant communities.

This chapter builds on the concept of space as a basis for connecting perspectives and developing an interpretation of the past that prioritizes an indigenous worldview. Literature examples draw a close relationship between landscape, materiality, and space. An ontology of space establishes knowledge through connections embedded in the landscape. As Ortiz (1969, see chapter 2) explains, Tewa people are assigned and defined by their positions in the landscape; Tewa people are either winter or summer people, with some exceptions through marriage. Landscape establishes Tewa identity and relationships. Aspects of Tewa's social structure reflect the way humans interact with landscape assemblages. The importance lies in establishing the relationship between people, materiality, and oral histories within the landscape.

CHAPTER 4: INCORPORATING ARCHAEOLOGY INTO COLLABORATION

Instead of asking how to incorporate collaboration into archaeology, archaeologists need to rethink and ask: What is the role of Collaborative Archaeology within collaborative partnerships? And what is archaeology bringing to community partners? Collaboration must guide archaeology. Collaborative Archaeology must prioritize collaboration first, community mandates second, and archaeology third. Otherwise, the scholarship may reflect the colonial mentality that prioritizes research, eventually perpetuating the exploitative nature of ethnoarchaeology's old days. As more North American archaeology projects collaborate with indigenous communities, rethinking archaeology as a service for indigenous communities is a step towards decolonizing archaeology.

This chapter outlines the importance of collaboration in previous archaeological projects and describes the role archaeology maintains in the Abiquiú-Berkeley partnership. Collaboration is not a novel idea by archaeologists. Current collaborative literature discusses the importance of productive and ethical research in Collaborative Archaeology (Atalay 2012; Colwell-Chanthaphonh and Ferguson 2008; Cowie et al. 2019; Kuwanwisiwma et al. 2018; McGuire 2008; Silliman 2008; Smith 1999; Smith and Wobst 2005). Prioritizing a collaborative method first allows the opportunity for community partners, stakeholders, and archaeologists to establish mandates. Consent and consensus is vital in research partnership. Collaboration is a direct method for archaeological practice. As a direct method, collaboration can incorporate other disciplines that benefit indigenous people in different ways (Goode 2015; Lightfoot et al. 2013). Collaborative approaches hold scholars accountable for their research. Collaboration must include indigenous voices when writing about indigenous people's historical narratives or establishing projects that serves the descendant community. The inclusion of indigenous voices comes from a long historical struggle by Native people (Watkins 2000).

The Abiquiú Mesa Project maintains a close partnership with the Merced del Pueblo de Abiquiú in New Mexico as a co-created research project that incorporates Abiquiuseños in research decisions, as well as a community leadership-vetted proposal and memorandum of agreement. What makes this a Collaborative and Indigenous Archaeology project is the prioritization of community interests first in a research partnership-style interaction that encourages participation of all ages at all levels of the research design. AMP encapsulates some of the main principles of community-based participatory research (Atalay 2012). This project strives to create ethical and accountable archaeology rooted in the way archaeology can positively impact the contemporary community. Communicating with community members about fieldwork, lab sessions, co-authorship, acknowledging intangible heritage, mobilizing knowledge, and community participation in research is essential.

Collaboration and Archaeology

The late 1980s was an epistemological turn in the discipline of archaeology and anthropology as a whole. Processual archaeology emphasized scientific rigor through an emphasis on empirical data and universal theories (Binford 1967, 1977, 1982; Binford and Sabloff 1982; Schiffer 1976; and Watson et al. 1971, 1984). One of the most known critics to processualism comes from Michael Shanks and Christopher Tilley's works (1987a, 1987b). Archaeology's turn from processual to post-processual expanded on interpretations that dealt with themes of gender, agency, identity and decolonizing perspectives (Atalay 2006; Conkey & Gero 1991; Forded Green & Neves 2003; Hodder 1991; Hodder et al. 1995; Shanks & Tilley 1987b; Smith 1999). However, the need for collaboration in archaeology indirectly resulted

from the outcry of indigenous people fighting for federal recognition, civil rights, and legislative policies.

Native Movements and their Impact on Collaborative Archaeology

I would like to focus on the mid-to-late 20th-century Native political movements. Hammil and Cruz (1989) point out that Native elders and traditional spiritual leaders raised their voices concerning research on indigenous people. Native people are stewards of the past and criticized academia for thinking scholars were the sole keepers of history. These voices became part of the Native American activism of the early 1970s. During this period, indigenous movements and organizations, such as Red Power and American Indian Movement (AIM) and American Indians Against Desecration (AIAD) promoted native voices in history. Those efforts continue today, adding Native American scholars, activists, non-Native people advocating for native perspectives and voices.

Watkins (2000) and Atalay (2012) recognize Vine Deloria Jr.'s book *Custer Died for Your Sins* (1969) as one of many factors to influence the academic world. Archaeologists and historians are thought to be the experts of Native American culture and history. However, Deloria Jr. argues against this expert paradigm and pushes academia to recognize the actual legitimate owners of Native American history are Native Americans. Deloria Jr.'s book presented a critique of archaeology, insisting that the discipline does not have the right to excavate Native American graves. AIM held protests in Los Angeles, California and Welch, Minnesota in 1971 (Watkins 2000). The protests in Los Angeles wanted to remove Native American remains and other culturally sensitive items from museum displays at the Southwest Museum. In Welch, protesters halted excavations for violating their sacred lands and ancestors. In the heat of these movements, archaeologists and Native Americans engaged in dialogue on archaeological practices. AIAD members protested similar practices against the "Indian Expert" that westernized Native American history. AIAD also stressed how the researcher benefited from studying Native American lifeways (Atalay 2012; Hammil & Cruz 1989; Watkins 2000). Native Americans were standing up for the right to own their history. AIAD and AIM influenced legislation that would ultimately alter archaeological practice.

Watkins (2000: 51) identifies the National Museum of the American Indian Act of 1989 (NMAIA) and the Native American Graves and Protection Repatriation Act of 1990 (NAGPRA) as the two major laws to help Native Americans claim human remains and culturally sensitive materials. NMAIA allowed the National Museum of the American Indian to begin cataloging all objects related to funerary materials, sacred objects, and artifacts in museums. Both laws applied to museums, educational institutions, state and federal agencies, among others. The NAGPRA continues to be controversial among scholars. For example, the NAGPRA legally forced archaeologists to consult with indigenous groups regarding recovered material culture. However, consultation is not necessarily collaboration. The NAGPRA added more tension into an already tenuous relationship between Native groups and archaeologist (Watkins 2000: 59-62). Inadequacies in the law and a lack of enforcement resulted in a failure to repatriate many artifacts, including to non-federally recognized groups. Many wanted to respect the wishes of Native Americans, while others argued that scholars should study the remains for science. There is no more evident example of this divide than the "Kennewick Man" ongoing ethical debate (Watkins 2000; Raja 2016).

Does this mean that non-Native people cannot research Native American culture or history? —No. Instead, this begins a conversation about ethical practices about informants and the consequences of non-Native research has on indigenous people. The conversation must

explore further the issues of repatriation, cultural preservation and historical representation within Collaborative Archaeology. These issues can be addressed in a variety of ways based on the different kinds of collaboration.

Defining Collaboration

Collaboration between archaeologists and Native groups is a relatively recent practice in the discipline of archaeology (Adams 1984; Dowdall and Parrish 2003; Ferguson 1984; Ferguson et al. 1997; Lightfoot 2008; Lightfoot et al. 2001; Nicholas and Andrews 1997; Parrish et al. 2000; Robinson 1996; Zimmerman 1997). Going beyond mandated consultation yielded positive results. Collaborative discourse included new approaches and critiques to archaeological practices. Influences from Indigenous Archaeology literature continue to lay the groundwork for collaboration (Atalay 2003; Cowie et al. 2019; Kuwanwisiwma et al. 2018; Liebmann & Rizvi 2008; Preucel 1995; Nicholas 2005; Smith 1999, 2005). Collaborative Archaeology continues to build upon many examples emphasizing "partnership", "working together", and "reciprocity" with indigenous people in archaeological research projects (Atalay 2012: 38). However, not all collaboration is Indigenous Archaeology (Atalay 2012: 39). Collaboration has multiple meanings to both indigenous groups and archaeologists.

Projects involving descendant communities in research projects continue to emphasize the importance of indigenous voices and participation (Colwell-Chanthaphonh & Ferguson 2008: 2; Watkins 2000: 169; see also Atalay 2012; McGuire 2008). Indigenous knowledge has always informed the discipline of anthropology. Early ethnographies relied heavily on informants and the experience of daily life. Monographs exploited the lives of indigenous people and produced knowledge without benefiting the people who built that knowledge. Any scholar who knows the history of anthropological (and archaeological) thought can see that indigenous knowledge informs anthropology's cumulative knowledge (Kuwanwisiwma et al. 2018). Acknowledging the long history of engagement between archaeologists, indigenous and descendant communities is essential in choosing a collaborative approach. Defining that engagement through collaboration allows future scholars an opportunity not only to recognize how indigenous knowledge informs archaeological interpretations but also builds partnerships that hold scholars accountable to the knowledge-producing communities.

Not all collaboration is Indigenous Archaeology. Arguably, the first ethnoarchaeology study could be considered a basic form of cooperation under the guise of "colonial control" (Colwell-Chanthaphonh & Ferguson 2008). The priority was to gain knowledge to inform the practice of archaeology. Early ethnoarchaeological studies like Lewis Binford's (1978) Nunamiut studies acknowledge the importance of indigenous and descendant communities' role in learning about past people's practices, culture, and history. Collaboration, in this sense, did not allow indigenous or descendent communities to participate in any aspect of the research process, except as scientific subjects of the study. The way that knowledge is produced matters and collaborative projects can easily become colonial in nature. The relationship between participant observation and ethnoarchaeology is indigenous subjectification for information. Anthropological archaeology can still follow the old anthropological ways if there is no accountability to the knowledge producers by failing to (1) incorporate the voices of the community in a non-exploitative way, (2) failing to redistribute research knowledge back into the community, and (3) failing to address issues relevant to the community. A project that is Collaborative and Indigenous Archaeology must not fail to address the previous issues.

Defining collaboration is essential. Collaborative approaches with indigenous and descendant communities play a crucial role in archaeological research. One single understanding

of "collaboration" does not prepare the archaeologist for the pitfalls and problems of engaging with communities. New archaeological projects should commence only if indigenous and descendant communities' consent to participate in the project. An indigenous or descendant community can either make or break an archaeological project. Community partner participation is detrimental to several milestones in a project related to research questions, permits, and knowledge distribution. Understanding archaeology's history is essential in developing a successful collaborative project that does not disenfranchise the people of Abiquiú. Collaborative archaeology involves all stakeholders of the present to engage with the past. As a result, Collaborative Archaeology has been potentially crucial in developing scientific and indigenous modes of knowledge that inform our understanding of disenfranchised histories.

There are multiple ways to describe participation in collaborative projects. Scholars publish edited volumes and books that explore the complexities involved in collaborative projects (Atalay 2012; Colwell- Chanthaphonh and Ferguson 2008; Cowie et al. 2019; Kuwanwisiwma et al. 2018; Little and Shackel 2007; Nicholas et al. 2008; McGuire 2008; Silliman 2008; Smith and Wobst 2005). Although collaboration may not always be an option in archaeological projects worldwide (Atalay 2012: 29), the diverse literature on collaboration as a spectrum allows archaeologists to examine the potential issues that divide archaeologists and indigenous communities. In addition, collaborative approaches require acknowledging the history of colonial engagement with another people's history.

As a result, there exists a multitude of methodological approaches. For example, Chip Colwell-Chanthaphonh and T. J. Ferguson (2008: 11 see Table 1.1) propose that collaboration is a "continuum" with forms of collaboration using terms such as "outreach," "participation," "colonial control," and "indigenous control." The continuum covers legally mandated consultation, public archaeology, multivocality, community-based consultant model, and community-based participatory research (Atalay 2012: 48 Figure 1). In Sonya Atalay's (2012: 49-50 Table 1) book, *Community Based Participatory Research,* she lays out a comprehensive guide in using terminology to define collaboration as either cooperative, covenantal, community, public, civic participation, or service-learning. Atalay's explanations and examples of each term help discuss the various ways collaboration plays out in archaeology.

Collaborative Archaeology emphasizes "the 'collaborative inquiry' approach that aims to meld and disparate understandings of the world" (Atalay 2012: 49). As laid out by Bray and colleagues (2000: 6-7), the concept of collaborative is "a process consisting of repeated episodes of reflection and action through which a group of peers strives to answer a question of importance to them." If adopted ideally into an archaeological project, archaeological inquiry sees indigenous people and archaeologists as 'peers' whose goal is to answer questions that interest both parties. However, studying agricultural features in the Northern Rio Grande is an example of possible conflict and disagreement between archaeologists and community partners, especially between communities to establish first-use water rights (Jun Sunseri, personal communication). Interests may change depending on the circumstances of archaeological projects.

Colwell-Chanthaphonh and Ferguson (2008: 10-11) redefine collaborative inquiry as a continuum with three modes: resistance, participation, and collaboration. Each mode has its own goals, information flow, and consequences for stakeholders. Colwell-Chanthaphonh and Ferguson's form of collaboration accounts for the power structures that preexist before starting a project and emerge during research. Collaboration is a push for reflexivity. It recognizes each stakeholder's role within the community and the archaeological project. For example, Michael

Adler and Susan Bruning (2008) collaborate with four different indigenous communities. Their project deals with the political tensions regarding identity and defining cultural affiliation. Adler and Bruning state, "All cultural understanding is a conciliation of structured interactions and historically informed perspectives; there is an inherent fluidity in each instance in which questions of ancestral affiliation arise" (2008: 47). Collaboration is continuously developing past perspectives that must address and participate with the distinct views involving the present community. The following examples demonstrate the distinct ways in which collaboration plays out in archaeological projects.

Cooperative Archaeology has a more specific goal to bring "together community members and archaeologists for projects that interest communities...but [communities] are not necessarily decision-making partners" (Atalay 2012: 49). Some of the early collaborative work (Moser et al. 2002; Nicholas and Andrews 1997; Nicholas et al. 2008; Robinson 1996) highlight the benefits of cooperating with indigenous and descendant communities. Much of the early cooperation between archaeologists and community members focused on building a relationship that fosters a healthy knowledge production environment. Training indigenous and descendant communities on archaeological methods and theory gives communities the tools to develop their archaeological interpretation (Zimmerman 1997). By including indigenous and descendant communities in developing research questions, Cooperative Archaeology transforms research and interpretation to reflect community interests. A primary focus on community interests leads to research questions that promote new knowledge production modes under a non-western ontology or indigenous ontologies (Smith and Wobst 2005).

Covenantal Archaeology focuses on developing agreements, project objectives, and methods between archaeologists and Native American tribes (Atalay 2012: 49; see Bendremer and Thomas 2008; Ferguson 2003; Preucel and Cipolla 2008; Powell et al. 1993; Zimmerman 1997, 2000). This approach emphasizes community interests, but unlike Cooperative Archaeology, the decision-making process involves archaeologists, indigenous and descendant communities. The edited volume by Kuwanwisiwma, Ferguson, and Colwell (2018) contains chapters co-written with Hopi authors. Themes of cultural preservation, oral traditions, and outreach to Hopi youth demonstrate clear project goals stemming from a serious commitment to agreements made by everyone involved in the project (Clark and Gumerman IV 2018; Colwell and Kuwanwisiwma 2018; Hedquist et al. 2018). Also, Ferguson's (2003: 138) case study discusses the importance of working with Hopi and Zuni to create an atmosphere of reciprocity between archaeologists and the community. Focusing on interests that serve archaeologists and indigenous communities, both groups privilege knowledge. It empowers disenfranchised indigenous peoples to tell their historical narratives in a way that interests their communities.

Community Archaeology "describes [a] wide range of practices" primarily engaging with indigenous and descendant communities through archaeological fieldwork (Atalay 2012: 49). Unlike Covenantal or Cooperative Archaeology, the community does not necessarily play a significant role in the planning and interpreting aspects of the project. Community Archaeology focuses on defining the "community" and community involvement within archaeological projects (Marshall 2002; Moser et al. 2002; Simpson 2010). Yvonne Marshall (2002: 215-216) views communities as "aggregations of people who have come together for all kinds of planned and contingent reasons," particularly as two kinds of communities: local and descendant. The first consultations determine when and how a community becomes involved with an archaeological project. Identifying a community is essential for archaeologists to include and inform community members. Determining who is part of the community strengthens various

aspects of the research project through community participation, goals, youth outreach and potentially safeguards a project's trajectory. Each project determines who that community is through the potential impacts it will have on them. As a result, some community members can be excluded in the determining process, especially when there is conflict within a single community. Establishing trust and building a partnership with many community members willing to participate is a critical step toward Community Archaeology (Atalay 2012). However, community partners may not want to participate even when given the opportunity. Stephanie Moser and colleagues (2002: 227) illustrate how consulting with a community leads to establishing community goals and creating opportunities for community feedback. The level of community involvement depends on the agreement between archaeologists, the community, and the project's objectives.

Public Archaeology, or outreach, serves the general public by sharing information through education programs. The data is generally shared with a community with little to no involvement in the research process (Atalay 2012: 50). Paul Shackel (2004: 14) claims that Public Archaeology requires "public participation", suggesting there is more than just "presenting to the public" and more with "reaching out to members of the community and making them stakeholders in archaeological discourse." The approach explores viable options for archaeological sites to become publicly known or accessible. However, questions about the archaeologist's responsibility for presenting archaeological data and defining the community are still problematic (Shackel and Chambers 2004). Carol McDavid's (2004) case study about developing a website for the Levi Jordan Plantation site. The website was meant to educate the public about the archaeology at the site while allowing public feedback. Yet, the feedback began to address ownership and management issues over the information displayed on the website. The website exemplifies the problematic nature of disseminating data without the consensus of a community involving various stakeholders. In cases where Public Archaeology directly collaborates with the community, the project raises questions about community inclusivity, choosing decision-making leaders, and recognizing a stakeholder's role in the project (Atalay 2012; Little and Shackel 2007; McGuire 2008; Orser 2004). Unlike other collaborative approaches, public archaeology ventures to expand community collaboration outside the partnered community. This approach demands more than just simple consultation and offers opportunities for civic engagement at a basic level.

Civic Engagement Archaeology heavily influences the local political atmosphere as McGuire (2008: 96-97) states, "doing archaeology in the service of politicized interests is dangerous...archaeology must be more than a bourgeois practice for true knowledge to have a transformative impact on the world." Archaeology must participate in public life to promote change in both the political and non-political process (Ehrlich 2000; Little and Shackel 2007; Musil 2003). Civic Engagement Archaeology aims to impact the community at a meaningful level. Unlike Public Archaeology, the impact informs the public of archaeological research and participates with community life through education, preservation, and history. For example, Martin Gallivan and Danielle Moretti-Langholtz's (2007: 61-62) case study demonstrates how collaboration between Virginia Indian tribes and archaeologists can promote native historical narratives that reinforce indigenous identity to challenge the contemporary European historical narrative. The Gallivan and Moretti-Langholtz's project drew the public and media's attention. More projects by the Werowocomoco Research Group emphasize indigenous life during Virginia's pre-contact period while addressing the negative impact of colonization on the tribe. Educating the public about the past and advocating for current disenfranchised indigenous

communities promotes an equitable in-depth history in a state that unapologetically reveres Jamestown or Colonial Williamsburg's history in public education.

Service-Learning Archaeology can happen through civic engagement. Service-learning as a collaborative approach builds focus on community education that ultimately benefits the community (Atalay 2012: 50; Nassaney 2004; Nassaney and Levine 2009). The approach offers an opportunity for archaeologists to empower students and community members while engaging in a real-world setting. (Nassaney 2004: 97). Service-Learning Archaeology promotes a process of critical consciousness-raising, problem-posing and encourages a pedagogy of dialogue through the first-hand experience of archaeological practice. The engagement creates a dialogue that forces all parties to recognize the real-world problems and consequences of colonialism. In some cases, service-learning approaches can move away from traditional archaeology.

Michael Nassaney and Mary Ann Levine's (2009) edited volume tackles some challenges with incorporating service-learning in archaeological projects. In one case study, Scott McLaughlin (2009) provides a research design for service-learning that accounts for student action, reflection, and assessment. Tools for service-learning attempt to expand new pedagogy forms that best suit the communities involved in the archaeological process. Service-learning is different from previous collaborative approaches by focusing participation centered around opportunities for community learning. The collaborative approach stresses how archaeology is done "with others" (Shackle 2004: 217). Archaeologists work together with student and community members in building modes of knowledge to benefit community partners.

Atalay's (2012: 63) Community-Based Participatory Research (CBPR) identifies five core principles: community-based partnership, participation, building community capacity, reciprocity, and acknowledging multiple knowledge systems. Participation of descendants and local communities in archaeological research plays an essential role for Atalay. Communities can contribute to all aspects, including research questions, research design, fieldwork, preservation, outreach, and disseminating information. An immersive level of participation fosters an atmosphere of reciprocity that considers community interests and needs. CBPR allows for communities to become familiar with research practices and builds community capacity. As a result, a few aspects emerge from this degree of participation: (1) the archaeologist has the potential of incorporating knowledge systems outside of science, (2) these practices establish a sense of reciprocity with each constituent playing a crucial role in the success of the project, and (3) a long-term partnership begins to develop (Atalay 2012: 81). Archaeologists should strive for CBPR, but expectations do not always meet reality. As a result, having a multitude of collaborative approaches allows for both archaeologists and community partners to explore alternative for building historical knowledge that serve Native groups.

Defining Collaboration in Abiquiú

Learning from previous collaborative projects, the Abiquiú Mesa Project intends collaboration to be rooted in the inclusivity of Abiquiuseños. The Abiquiú Mesa Project participates in a methodology centered around Collaborative and Indigenous Archaeology to tell a pre-contact Abiquiú history that has been co-created over time by Abiquiú landscape narratives and material culture. The community can then deploy this knowledge to identify material culture and areas of interest within the neighboring Santa Fe and Carson National Forests as part of Abiquiú Ancestral Pueblo history. The project's goal aligns with Abiquiuseño stated priorities regarding more research into the Pueblo period including the capacity for multigenerational knowledge transfer between Abiquiú elders and youth.

The Abiquiú Mesa Project follows in the footsteps of scholars like Sonya Atalay, Chip Colwell, Sarah Cowie, T. J. Ferguson, Leigh Kuwanwisiwma, Christopher Leblanc, and Diane Teeman as a way to create a project that is accountable to Abiquiuseños. My initial collaborative approach was to mirror Atalay's (2012) five core CBPR principles. However, given the dissertation's time frame limitations, I could only achieve certain aspects of CBPR.

Collaboration needs to be flexible and patient. My participation and collaboration with the Abiquiú community began in 2016 and became fully formed in 2018 with the approval of the MOA. The two years of initial collaboration guided the type of archaeological work involved. AMP prioritizes collaboration first, community mandates second, and archaeology third. I argue that collaboration is defined through the collective actions of all stakeholders involved in the project and measured by the outcomes that align with community-mandated goals. More than one kind of collaboration is needed to understand the work AMP does at Abiquiú. The Abiquiú Mesa Project's collaborative facet can best be described as a combination of Covenantal, Eivic Engagement, and Service-Learning Archaeology practices. Each collaborative element contributed a significant role in the overall project.

The early stages of the project closely resemble Covenantal Archaeology. At this stage, the aim was to incorporate Abiquiuseños interests in addressing their research questions, determining the project location, and listening to community feedback. During my visits in early 2017 and early 2018, a consensus on knowing more about the Abiquiú Mesa became the main topic of conversation for that community members wanted me to investigate. Incorporating community members' priorities in designing research questions about their past is essential. I decided to introduce a proposal to the board at one of the general meetings. I wanted to incorporate Abiquiuseño participation in the research whenever possible. The proposal serves as a formal intention to initiate another archaeological project that follows the consensus of the community and establishes their consent through their governing body. As an archaeologist, I am accountable to both my institution and the Merced del Pueblo de Abiquiú. The conscious effort to prioritize community mandates in decision-making processes in partnered research builds community agency, community control, and a level of community autonomy within the project. In this particular case, the Abiquiú community manages and controls every aspect of the project.

Asking for the consent of Merced del Pueblo de Abiquiú Executive Board takes the first step toward building community autonomy within the project. Establishing the Abiquiú Executive Board and other community members as partners is one way to ensure a collaborative atmosphere that encourages participation at multiple project levels. Recognizing community members as stewards of the past is important. Community member feedback throughout the project is vital in establishing consensus regarding the project's mandates. Community mandates offer an equal partnership in the mobilization of knowledge by incorporating indigenous perspectives in the research. Outcomes must lead to co-authorship or passing down knowledge to future generations. More importantly, mandates can ensure that archaeological work contains an indigenous voice when disseminated back to the community. Mandates are an essential component toward decolonizing the practice of archaeology. Community mandates shift archaeological practice to include indigenous and descendant communities as collaborators. The shift in the archaeological approach leads to our discipline's re-evaluation of our role in the contemporary world.

The archaeological aspect of the project spanned roughly three years, starting from the summer of 2017. The majority of the investigation took place during the summer month of June

in 2018 and 2019. Developing a trusting partnership requires time and effort, so for the rest of the year, I would plan visits to Abiquiú. However, due to funding, I could not visit Abiquiú as often as I wished. Visits are as important as the project months. They serve as opportunities to discuss project goals, share research progress, and discuss disseminating the research. The project's data and analysis are shared with community partners and presented at Abiquiú general meetings. Sharing the original digital data at these meetings mobilizes knowledge within the community and once again offers a broader set of people the opportunity for feedback.

Nevertheless, examples from previous collaborative projects (specifically Cowie et al. 2019 and Kuwanwisiwma et al. 2018) influence my understanding of collective success while addressing ongoing issues in Collaborative Archaeology. For example, in the summer of 2017, BACA presented a progress report at the Abiquiú general meeting. The report included some lithic and x-ray fluorescence spectrometry analyses I conducted in the archaeological lab in Berkeley. I developed a friendship with Bernie, and our discussions of lithics and obsidian sources contributed significantly toward understanding Abiquiú's relationship with the Jemez Mountains. I asked Bernie if he would be interested in co-authoring a conference paper about the Abiquiú landscape and obsidian sources. Bernie agreed. With the Abiquiú Executive Board's permission, Bernie and I presented the paper *Understanding Landscape and Material Sources through Community Partnership in Abiquiú, New Mexico,* at the Society for American Archaeology in 2018. The paper showcased Abiquiú oral narratives while incorporating archaeological science. The paper received mixed reviews. While some applaud the collaborative aspect, others nodded in disagreement when listening to Bernie's landscape narrative.

Nevertheless, this experience reassured my commitment to collaboration. What was unfolding in front of me was a level of Civic Engagement Archaeology. This approach recognizes archaeological practices that exclude the indigenous and descendant communities while challenging the western colonialist perspective for knowledge (Smith 2013). The point is to shift the focus to an interpretation that centers around a community's disenfranchised history. Adding indigenous perspectives does not lower the level of scholarship produced. Instead, constant communication creates multivocality and acknowledgments of intangible heritage. Prioritizing community-based research questions mobilizes knowledge through various means, including community members' participation in the data interpretation process. Participation and partnership build a level of accountability that ensures a collaborative atmosphere involving all ages at all levels of the research design. This collaborative approach leads to more ethical and accountable archaeology for community partners. Long after the project ends, an accountable project ensures a level of commitment by the archaeologist to maintain community ties, especially if the archaeology involves other scholars or financial endeavors. In my particular case, community members have expressed interest in continuing my involvement after my dissertation research to explore different areas around Abiquiú.

The most crucial collaborative aspect of AMP is Service-Learning Archaeology. It offers an opportunity to empower students and community members. Abiquiú youth involvement is one of the non-negotiable mandates prioritized by the community. Director Isabel Trujillo handled Abiquiú youth recruitment. Grant writing and other funding has been a collaborative effort established between Professor Jun Sunseri, BACA, and the Pueblo de Abiquiú. The funds provide interns with an alternative to getting jobs at the nearest city. Intern families make concessions to have their kids participate in archaeological activities resulting in family investment in community and Abiquiú history. Service-learning involves the community at all

levels of the research forcing all parties to recognize the consequences of colonialism. The benefits of this approach mandate archaeologists, community partners, and students to come together to seek ways to overcome all challenges—for instance, Abiquiú youth participation functions as a paid internship. Interns were taught to walk transects, read a compass, learn geometry, draw maps, identify stone tools, recognize archaeological material, and handle a Trimble GPS device. Other activities included lab analysis, research, attending talks, and educational field trips. Additionally, project activities served to teach about reading, writing, and math while also teaching Abiquiú history. At the end of the field season, the paid interns receive a letter of recommendation for future job opportunities. The letters help students obtain other jobs for the rest of the summer and sometimes lead to new opportunities after high school.

Service-learning promotes a process of critical consciousness-raising, problem-posing and encourages a pedagogy of dialogue through the first-hand experience of archaeological practice (Nassaney 2004). The approach moves away from traditional archaeology and adopts a critical pedagogy (Freire 2000). The focus centers around community learning opportunities. For example, in the summer of 2018, interns participated in the extensive survey of the Abiquiú Mesa that spanned over four weeks. Within the first week, interns learned to find their bearing and use the Trimble global positioning system (GPS) to orient themselves for the next transect. Artifact samples that were collected were taken to the Pueblo de Abiquiú Library and Cultural Center. Each pottery or lithic artifact presented students with the opportunity to participate in their research and creative writing projects. We used the Library and Cultural Center as a field lab where students could research some of their favorite finds. Interns wrote their own stories that connect the artifacts to the mesa and some included details from previous family knowledge. The following example is a story by a former intern who decided to write from their favorite artifact's perspective.

> "*My name is Zayda. I'm a black-on-white pottery. I was born in an oven. I was made by my best friend, Kate. She would use me all the time. But I didn't mind. She would fill me up with veggies. She would carry extra pottery pots like me, but she would always use me. But one day we climbed the mountain and did the same thing we do every day, but then I BROKE! I thought she would fix me because she " was" my best friend. But she just pulled out another pot and just left me on the top of the mountain on the mesa in pieces. Then many years later, a girl named Zayda picked me up. But I was so happy cuz she had my name. And she hasn't found the rest of me, but she will*" (*Part of a project writing assignment, unpublished*).

We can learn to participate with the past through stories and experience the knowledge embedded within ancestral places. Ceremonies, dreams, visions, and stories provide ways for Native people to access the knowledge of the land, ancestors, and spirit world. These vehicles of knowledge are not proverbs nor static universal pockets of knowledge, but rather dynamic and continuously change with how people participate with their landscape and materiality. Interns experience the imagery, learn more about its meaning through their family or research, and the power of that knowledge stays within the community.

One of the highlights from 2019 was having interns participate in research on their favorite petroglyphs. Their assignment was to take their favorite image, do some research, and then write a fiction or nonfiction narrative involving the image. They could use books in the library or go online or incorporate any knowledge they wish to include from their family members. This created an opportunity to have them learn more about the petroglyphs and their

history. Both Marcos P. and Isaiah T. (Figure 4.1 and 4.2) wrote narratives about their favorite petroglyphs. Leanne Betasamosake Simpson (2014: 12) asserts that land is both context and process, stating:

> "*The way we are taught to access that knowledge is by being open to that kind of knowledge and by being engaged in a way of living that generates a close, personal relationship with our ancestors and relations in the spirit world through ceremony, dreams, visions and stories*."

Landscape has *affect* and in turn people build stories that contain knowledge in those places. Narratives incorporate a historical experience. Stories use phrases such as "When my grandpa's grandpa used to tell him" or "my Abuelita says" to characterize the historical knowledge that propagates throughout time in Abiquiú.

The Abiquiú Mesa Project investigates the history of the Abiquiú Mesa as it has been co-created over time by people and other-than-human entities. Abiquiú history must include contemporary Abiquiú youth perspectives along with elder oral histories as a way to experience knowledge building through multiple generations. As one intern, describes:

> "*I like working with Danny and doing archaeological surveying and lab analysis. I think it's fun, and I feel like I've learned a lot not only about Archaeology but about a lot of other interesting things about life and school. I like working with Archaeology because I love being and working outdoors, and then you get to meet new people and learn new things about our ancestors' lives and a little bit in depth of where they lived, what they made, and some of their lifestyles*" (*Part of a project writing assignment, unpublished*).

In that spirit, the project incorporates different collaborative aspects involving Covenantal, Civic Engagement, and Service-Learning Archaeology practices. Collaborative practices involving both youths and adults are part of the experience. The Abiquiú community strongly supports the collaborative aspect of the research. The Abiquiú Mesa Project reciprocates that sentiment by acknowledging their contribution and knowledge toward building the foundational understanding of Abiquiú history. The collaborative efforts of everyone involved continue to be potentially crucial in developing both scientific and indigenous modes of learning that inform our understanding of the disenfranchised history of Abiquiú. I am accountable to the community as a temporary steward of their history. But ultimately, Abiquiuseños are the true stewards of their past.

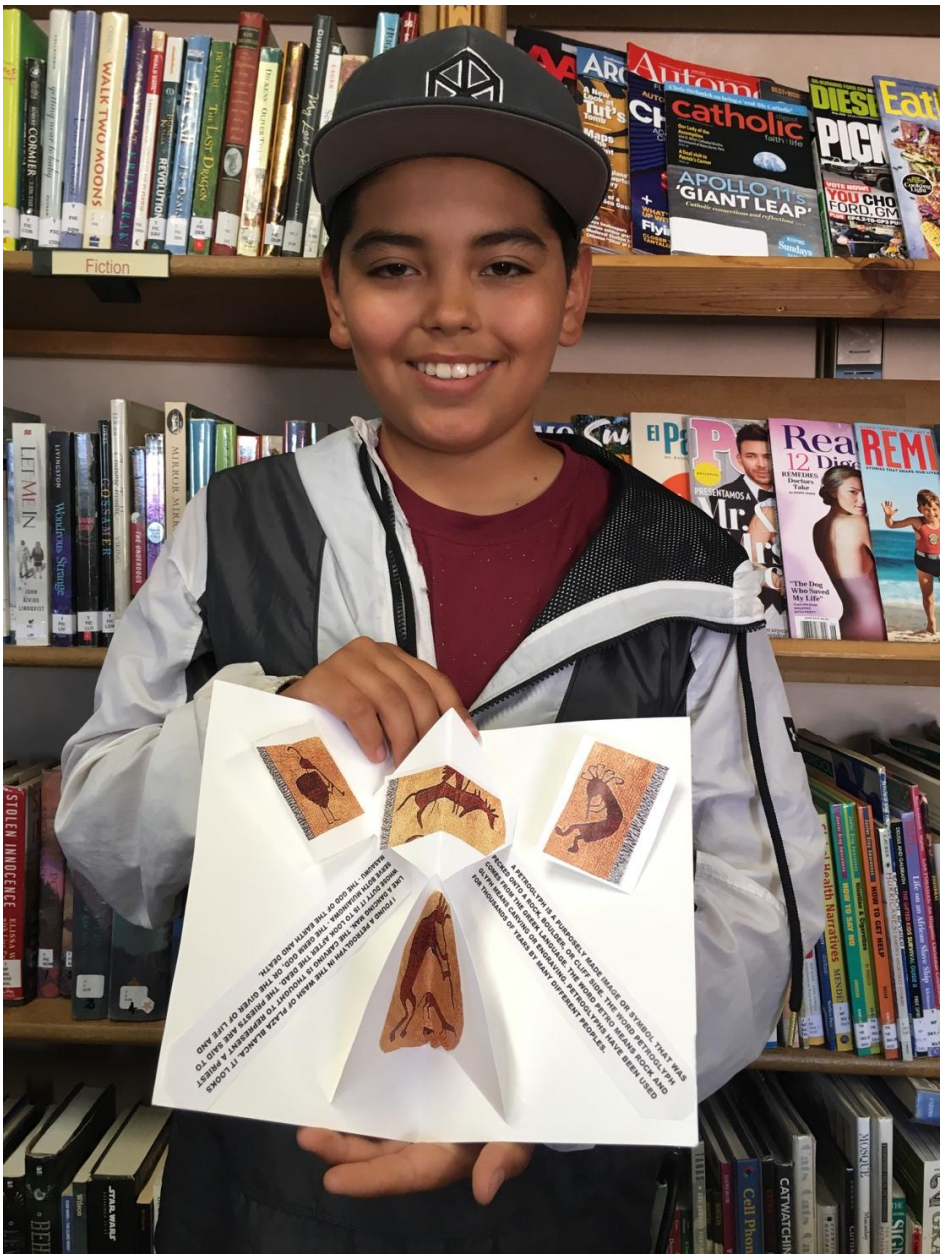

Figure 4.1: Isaiah T. (Photo by author.)

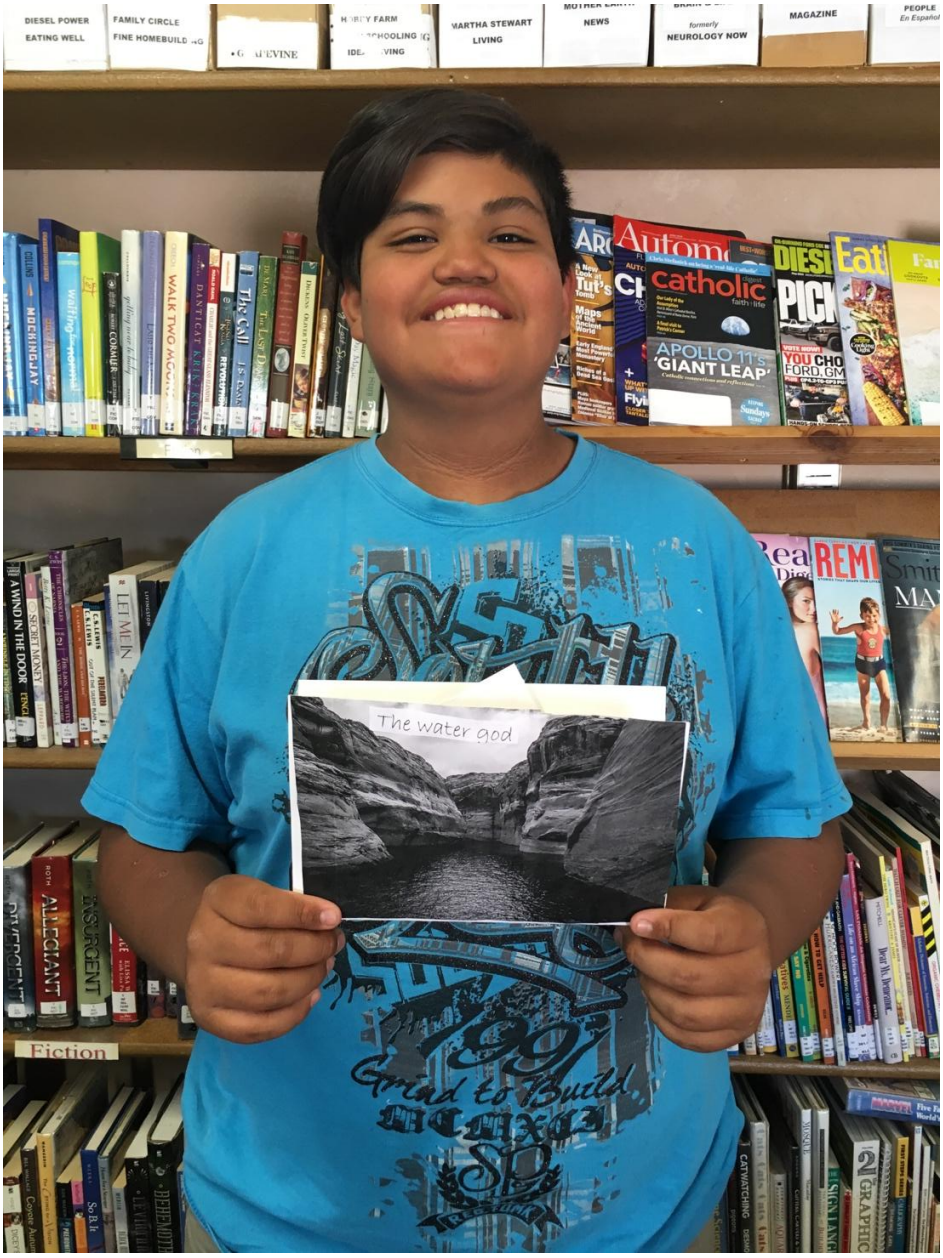

Figure 4.2: Marcos P. (Photo by author)

CHAPTER 5: ARCHAEOLOGY ATOP THE ABIQUIÚ MESA

This chapter provides an overview of the archaeological methods and results undertaken for the Abiquiú Mesa Project. In addition to presenting standard archaeological data, the collaborative methodology is interwoven to explain data collection and reporting. The work presented in this chapter follows an indigenous school of thought (Atalay 2006, 2012; Smith 1996; Watkins 2000) that prioritizes the interests of the Abiquiú community. The Abiquiú Mesa Project makes an effort to follow similar decolonizing methods and create an Indigenous Archaeology project (see chapters 3 and 4). The methods and results will cover the 2018 and 2019 field seasons. Each method contains a description, approach, and explanation of its use in answering the community's research goals. Furthermore, the chapter covers the handling of petroglyphs and oral histories. Finally, a discussion explores the archaeological results and answers to the research questions set by the community. I acknowledge that the Abiquiú Mesa Project is impossible without participation and consent to share archaeological information by the Merced del Pueblo de Abiquiú. Therefore, all data, information, and intellectual property presented in this chapter belong to the Abiquiú people.

Field Methods

June 2018 was the beginning of the archaeological aspect of the Abiquiú Mesa Project. An essential aspect of the project was to ensure the participation of Abiquiú youth (Figure 5.1). A total of 7 interns, all between 8th and 12th grade, participated in every activity, including survey, mapping, using a Trimble GPS, and artifact recording. Other activities included lab analysis, library research, attending talks, and educational field trips. In addition, interns participated in their research and creative writing projects. Interns attended a demonstration about the pXRF at the Abiquiú Library and Cultural Center (Figure 5.2).

The priority of the Abiquiú Mesa Project is to address community-mandated questions regarding the culture, history, and social network of the people on the mesa. Investigating how the Abiquiú Mesa relates to other Pueblos requires implementing several archaeological methods. Given the archaeology research done in the Northern Rio Grande, fundamental lithic analysis, pottery analysis, X-ray fluorescence spectrometry, radiocarbon dating, and flotation analysis are the main tools used for this project. Each study draws a line of physical evidence to illustrate a narrative about the people on and around the Abiquiú Mesa. More importantly, the community can implement findings atop the Abiquiú Mesa as examples for other archaeological places of significance for the Pueblo de Abiquiú.

Survey

As one of the community mandates, a full survey of the entire 5-squared-km surface of the mesa was done (Figure 5.3). All obsidian artifacts, several pottery sherds, and lithic debitage were collected and returned to the mesa. Interns were in charge of recording points and artifact details. Except for a representative sample of artifacts, all artifacts were recorded using a catch and release strategy. Artifacts collected were analyzed and pictured at the field lab at the Pueblo de Abiquiú Library and Cultural Center. As part of the service-learning approach, interns learned to walk transects, read a compass, learn geometry, draw scale maps, identify stone tools, recognize archaeological material, and be trusted to handle a GPS device. I used ArcMap software to create a map of the Abiquiú Mesa showing the artifact distribution and context of the place (Figure 5.4). Interns identified lithic debitage, broken pottery, metal, and contemporary glass, and plastic. The northern point of the Abiquiú Mesa shows a heavy concentration of artifacts and undisturbed rock alignments compared to the rest of the mesa. The concentration of cultural artifacts and features provides an opportunity to further evaluate past human behavior on

the mesa. Based on the survey, the Abiquiú Mesa Project begins focusing its efforts on the northern region of the mesa.

Artifacts

Interns collected several artifacts to record, picture, and research based on their interests. Figures 5.5, 5.6, 5.7, and 5.8 show all the artifacts collected during the survey season. Table 5.1 (see Appendix) shows all the artifacts recorded throughout the entire pedestrian survey of the Abiquiú Mesa. The survey revealed 436 artifacts distributed throughout the entire Abiquiú Mesa. Approximately 93% of the artifacts found is lithic debitage, 5% pottery sherds, and 2% was bone, metal, and glass. Cerro Pedernal and obsidian made up of 80% of the lithic finds. All obsidian artifacts were collected and analyzed using pXRF. Quartz and quartzite does occur naturally in the nearby region (Cavazza 1986). However, quartz and quartzite were added to the data. Use-wear analysis and petrography studies (Astruc et al. 2001; Clemente et al. 2015; Dalpra and Pitblado 2016) on quartz and quartzite can provide more forms of information to deliver on Abiquiú community priorities in future projects. The rest of the lithics consisted of small (less than 5 cm in diameter) debitage pieces. They include 2 red chalcedonies, 6 jasper and 3 dark grey cherts. Broken pottery sherds were collected. The exceptions were any pottery sherds less than 1 centimeter in diameter were digitally recorded on the GPS but not collected.

The crew followed a judgmental sampling strategy for collecting and researching. The sampling strategy focused on the interest of the Abiquiú interns. By the second week, interns were able to recognize Cerro Pedernal, obsidian, and pottery sherds while walking transects. To decrease the probability of survey bias, three transects from the previous day were re-surveyed while changing the order in which students walked their lines. The results added one or two artifacts but nothing significant suggests that interns were ignoring artifacts that were not either Cerro Pedernal, obsidian, or pottery.

Giving interns some autonomy to collect samples serves as a way to fulfill community mandates through service-learning. For instance, intern affect plays a role in determining which artifacts were researched at the field lab. As I explored in Chapter 3, affect can explain interactions between people, objects, and landscape. Intern choices and interests reveal an affect for certain artifacts. Their initial questions seek out more knowledge. They learn more through research and family oral histories. Intern knowledge has the capacity build that knowledge by incorporating others such as peers or family members. As a result, Abiquiú history is co-created over time by people, artifacts, and landscape.

Most artifacts gathered come from the north and central segments of the Abiquiú Mesa. Artifacts found in the southern region of the Abiquiú Mesa were digitally recorded but not collected or pictured. Except for two obsidian artifacts, an overwhelming majority of the artifacts in the south region of the mesa was Pedernal debitage. The Abiquiú Mesa Project returned all artifacts at the end of the 2018 field season to within one-meter GPS margin of error of their original spot. This section will not focus on obsidian artifacts as those will be discussed in the "Portable X-Ray Fluorescence Spectrometry Analysis" section further into the chapter.

Figure 5.5 shows some of the first artifacts collected and recorded from the field season. The two clear obsidian pieces look to be broken fragments of two different bifaces. The debitage material found was obsidian from various deposits and chalcedony from Cerro Pedernal. Pedernal, as it is known, is a small narrow mesa that resides several miles west of Abiquiú. Pedernal material continues to be recognized today as "flint" because Spanish soldiers used Pedernal as flints for their rifles (Duff et al. 2017: 775). Pedernal is the most common material found on the Abiquiú Mesa and serves as good knapping material. Broken pottery served as an

excellent research opportunity for students to learn more during lab hours. In their research, students were able to explore various pottery design styles. Next, I guided the students to look into black-on-white style pottery, prompting many questions and debating the differences and similarities. Interns were able to identify some of the pottery design styles present in the collection based on a long history of pottery research in the American Southwest, specifically Tewa Black, Tewa Micaceous, Wiyo Black-on-white, Abiquiú (Biscuit A) Black-on-white, Bandelier (Biscuit B) Black-on-white, Kwahe'e Black-on-white, and Santa Fe Black-on-white (Adler and Dick 1999; Cordell 1979; Curewitz 2008; Dick 1968; Eiselt and Ford 2007; Gauthier 1987; Guthe 1925; Habicht-Mauche 1993; Honea 1968; Kidder 1915; Kidder and Amsden 1931; Kidder and Shepard 1936; Lang 1982; Levine 2001; Mera 1934, 1935, 1939; Smiley et al. 1953; Snow 1982; Sundt 1987; Sunseri 2009; Vint 1999; Warren 1979; Wendorf 1953, 1954; Wendorf and Reed 1955; Wilson 2006; Wilson 2005, 2008, 2010, 2011, 2013; Wiseman 2014).

Figure 5.6 shows more Pedernal, obsidian, pottery sherds, and one piece of quartzite. In addition, two pieces of contemporary bottled glass and a half-rusted nail were also found but not collected. The pottery styles present are Wiyo Black-on-white, Abiquiú (Biscuit A) Black-on-white, and Santa Fe Black-on-white. The presence of diverse pottery design styles demonstrates a connection between the Abiquiú Mesa and Jemez mountains. Figure 5.7 represents the diverse concentration of artifacts found at the midsection of the mesa. Interns became more familiar with the artifacts, leading to collecting various samples to capture the diverse array of artifacts found in this area. Again, Pedernal, obsidian, pottery sherds, quartzite, and jasper were collected to represent the concentration of artifacts. Pottery styles present in this particular figure are Wiyo Black-on-white, Abiquiú (Biscuit A) Black-on-white, Santa Fe Black-on-white, and Bandelier (Biscuit B) Black-on-white (Duwe 2019; Mera 1935; Wiseman 2014).

Figure 5.8 shows artifacts collected on June 12th, 2018. Artifacts and features have sparsely scattered from the mid to south part of the mesa. The picture shows one pottery piece, six obsidian debitage, and three Pedernal debitage. The pottery design style present is Kwahe'e Black-on-white. Kwahe'e Black-on-white was produced in the Northern Rio Grande region with decorative design styles and materials seen in other assemblages from around 1100 to 1300 CE (Mera 1935; Wilson 2005; 2010; 2013; Wiseman 2014).

Allowing interns to participate in the decision-making process of collecting artifacts, they became more engaged in learning more about artifacts (Figure 5.9). The idea was to create learning experiences while producing research. As explained in chapter 4, interns participated in creative writing in which they explored different possible ways in which their artifact of interest ended up on the mesa. Their stories provide a connection with material culture. The writing exercises force interns to ask more questions and reach out to elders about their history. There was two ways in which youth/elder interactions took place during the project: family interaction and public forums. Family interactions happen when an intern goes home and shares what they find. This conversation can open opportunities for elders to share their experiences through oral histories associated with themselves or ancestors. Public forums is the second way youth/elder interactions happen. Interns have an opportunity at the end of the field season to demonstrate to the community their interests. After a public forum event, elders approach the interns and ask them follow-up questions. These conversation lead elders to begin telling their stories and oral histories about their experiences with finding artifacts. As the modern world becomes more digital, it is essential to the Abiquiú leadership that the younger generation learns from the experience of interacting with physical materials that connect with their ancestors.

GPS

After an initial survey of the entire Abiquiú Mesa, we concentrated on mapping the northern area of the mesa where the rock alignment features stand out in the landscape. Each intern had the opportunity to use the Trimble GPS and record features (Figure 5.10). The project's focus was on the northern rock alignments. Figure 5.11 is a map of the rock alignments in the north end. The map shows the compiled work of all the students within a couple of days of recording the rock alignment features located at the northern end of the mesa. However, the overgrowth of piñon and the frost-thaw cycle continues to distort most rock alignments. Thus, through time, the rock alignments become less visible, as evidenced by the erosion of the rock alignments in the southern region of the Abiquiú Mesa.

Mapping

The heavy concentration of rock alignments at the northern end of the Abiquiú Mesa were of particular community interest for archaeological examination. The rock alignments were recorded twice using GPS and hand-drawn maps. The hand-drawn maps establish a physical record for the community with the potential to be kept at the Pueblo de Abiquiú Library and Cultural Center. Hand-drawn maps are more accessible for a long-term record as digital data can become lost through technological compatibility. Interns learned about map scale ratios while using reel tapes and tape measures to draw the rock alignments using standard archaeological methods for drawing scale maps. They learned to apply their compass training and orient the maps correctly to ensure maps contained a north arrow, a scale, and a key. Figure 5.12 shows interns on their last day working on recording the final rock alignments. For interns, this was a great chance of pace from the entire season of survey. All the maps produced from the project data will become the intellectual property of the Merced del Pueblo de Abiquiú.

Non-destructive Survey Testing

As part of the memorandum of agreement with the Abiquiú community, all non-destructive testing is permissible, and the magnetometer is a helpful instrument for performing non-destructive survey to analyze the rock alignments. Using other methods such as Ground Penetrating Radar (GPR) would not adequately capture the data. A GPR must be maintained low to ground with no room to pass through a rocky mulch surface or the large cobble boulders. The magnetometer instrument is easy to carry up steep elevations and through tough inaccessible areas. Furthermore, the magnetometer can lend itself as a hands-on learning tool for Abiquiú interns. Under supervision, interns can map out multiple grids and process their work in the lab. The experience of working with the equipment can lead to self-confidence and broaden their interests. The magnetometer's suitability for such a project with tough geography and service-learning will bode well for future non-destructive survey testing.

A total of 5 10x10 meter survey grids, each containing a sub-datum point creating a reference designation for any excavation unit. Only one grid showed a distinct pattern from the rock alignments. Figure 5.13 is the grid showing a shallow circular pattern distinctive from the rectangular designs. The magnetometer data shows an emphasis on the top right-hand corner of the data. Based on our hypothesis, the AB1DM5 grid was an exploration for the possibility of a field house. The hand-drawn map puts the magnetometer grid into context, showing the disrupted rock pattern buried under the surface. We hypothesized that these rock alignments were part of ancestral pueblo grid gardens, and no human burials were expected. However, you can never be too careful when excavating ancestral pueblo places. No human remains were found nor disturbed during the excavation of any of the units. Overall, excavation units were picked out based on the research questions and successfully avoided disturbing any ancestors on

the mesa. Future non-destructive survey may present opportunities in other areas within Abiquiú Pueblo lands.

Excavation

Figure 5.14 shows the entire crew for the 2019 field season. The team consisted of three UC Berkeley undergraduates and four Abiquiú interns. The aim of the 2019 field season consisted of setting up five 10x10 meter grids to conduct non-destructive survey testing and excavating a limited number of units based on the data. The magnetometer data was fundamental in determining where to excavate. One of the community mandates is to preserve the Abiquiú Mesa as much as possible; this limited excavation units to ten or fewer. Based on community advice and magnetometer data, excavation units were assigned using judgmental sampling. Each survey grid, for example, has a designation for the site name, sub-datum marking, and excavation unit (i.e., Abiquiú Mesa 1 Datum Mark 1 Unit 1 is shown as AB1DM1U1). Given the timeframe and excavation crew experience, the crew dug only a few excavation units to establish stratigraphy, soil composition and investigate anomalous patterns. All units were screened using a one-eighth inch screen. Community partners and I added an addendum to the MOA allowing the crew to collect soil samples for floatation analysis.

Additionally, newly unseen petroglyphs were recorded and added to the existing Abiquiú knowledge. Overall, the crew found little to no artifacts within the strata of any unit, and we identified no floor features. Surface artifacts within the datum grid boundary were recorded but not collected. There were only two exceptions: collecting soil samples and collecting a burnt boulder. The organic flotation materials and the surface of the burnt boulder are candidates for radiocarbon analysis at the Center for New Mexico Archaeology (See Macrobotanical Analysis and Radiocarbon Dating section) to establish a timeline for the occupation of the Abiquiú Mesa.

AM1DM2 Excavation A

AM1DM2 Excavation A is the first excavation unit dug in the Abiquiú Mesa Project. The purpose of this test unit was to teach interns and students the proper digging techniques while simultaneously learning the stratigraphic layering of the mesa. The unit was placed just outside one of the rectangular rock alignments. The one-meter by one-meter unit was dug using ten-centimeter intervals until reaching sterile at fifty centimeters in depth (Figure 5.15).

Level 1 (surface to 10 cm) consisted of light brown (7.5 YR 6/3) sandy loam soil with a few weeds, no artifacts, and cobblestones were medium to small in size. Level 2 (10-20cm) consisted of brown (7.5 YR 4/3) compact loam soil with no artifacts. Level 2 also contained medium-sized granite gravel throughout the unit. Level 3 (20-30 cm) consisted of very compact hard brown (7.5 YR 5/4) clay-like loam with medium to large-sized gravel with no artifacts. A small portion of the southeastern side is similar to Level 2's strata but ends at twenty-five cm depth. Level 4 (30-40 cm) consisted of the same brown (7.5 YR 5/4) compact clay-like loam with larger gravel and no artifacts. Much of the strata was uneven throughout the level, with no pattern for the large gravel nodules. Levels 3 and 4 were difficult to excavate and took longer than anticipated. Level 5 (40-50 cm) showed much of the same with less gravel and no artifacts. At this point in the excavation process, we closed the unit at 50 cm depth ending with a layer consisting of mostly volcanic tuff.

AM1DM2 Excavation A demonstrates that the human cultural levels only go as far down as twenty-five centimeters or less. The amount of gravel in Levels 1 through 3 may suggest human manipulation for dry farming purposes (Anschuetz et al. 2017; Camilli et al. 2019). Levels 1 and 2 demonstrate a soil consistent with gravel-mulch farming. Overall, strata are similar, but not the same, with examples of farming studies by Camilli and colleagues (2019) and

Anschuetz and colleagues (2017) regarding Ancestral grid gardens. However, given that this unit is not within a rock alignment enclosure, the data serves as a point of comparison for future excavations. The compact levels with medium to large gravel do not suggest any type of floor or architectural feature.

AM1DM2 Unit 1

AM1DM2U1 is the second excavation unit in the Datum Mark 2 grid. This particular unit was placed in the northeast corner within one of the enclosures of the rectangular rock alignments. A unit within an enclosure establishes a point of evaluation by collecting soil samples for macrobotanical analysis, future phytolith analysis, and discounting these rock alignments as room blocks. The one-meter by one-meter unit was dug using a Harris Matrix approach to ensure that soil collection was the same matrix throughout a level (Figure 5.16). The crew took a total of four 7-liter soil samples. The floatation sampling strategy for floatation was advised to me by the former state archaeologist, Glenna Dean. Based on her years of archaeological experience with agricultural features in the region and using the stratigraphic knowledge gained from AM1DM2 Excavation A unit, Layers 1 through 4 were collected that mostly likely contained evidence of botanical materials. The first 7-liters of each layer were collected and the remaining layer soil was screened using a one-eighth inch screen. Samples were double bagged in thick trash bags for floatation at the UC Berkeley Bear Bones lab and at the Center for New Mexico Archaeology.

Layer 1 consisted of soft sand and tiny pebbles with a light brown (7.5 YR 6/4) sandy loam soil with no artifacts. Layer 2 consisted of brown (7.5 YR 5/2) sandy loam soil with no artifacts and easy to excavate. Layer 3 had a fine consistency of brown (7.5 YR 4/3) sandy loam, primarily located in the southeast corner of the unit. Due to the amount of large gravel and digging using the Harris Matrix, layers 1, 2, and 3 were within the first seven centimeters of the excavations. Figure 5.16 shows the profile that captures the consistency of the topsoil. Layer 4 was a mix of sandy loam and sand brown (7.5 YR 5/3) throughout the unit. Given the stratigraphy and the excavation method, the unit was at various depths throughout the process. An intern found a small 3.5-centimeter diameter bioturbation hole at the end of layer 4. The hole was classified as layer 5 and excavated until we reached the consistency with layer 4. Layer 6 was brown (7.5 YR 5/3-5/4) with sandy consistency throughout the entire unit and ended with the compact clay-like loam that you see in Figure 5.16. The crew found no artifacts throughout any of the layers, and all soil samples were collected from this excavation unit. The last two levels consisted of uneven compact gravel similar to what was found in the sterile levels AM1DM2 Excavation A. The profile revealed three compacted layers similar to AM1DM2 Excavation A unit suggesting that soil color changes were due to moisture and not a distinct layer. Gravel volume in Levels 1 through 3 may suggest a stronger case for human manipulation for dry farming.

AM1DM5 Unit 1

AM1DM5U1 is located in Datum Mark 5 grid approximately 258 meters from the datum. A single unit within a 10-meter by 10-meter grid is specifically laid out to evaluate an unusual rock alignment pattern. The excavation unit was chosen using judgmental sampling and picked through the MHPO's advice. One-meter by one-meter unit was dug using 10 cm levels (Figure 5.17).

Level 1 (surface to 10 cm) consisted of light brown (7.5 YR 6/3) sandy soil with many weeds, no artifacts, and cobblestones were medium to large. Level 2 (10-20cm) consisted of brown (7.5 YR 4/3) compact loam soil with charcoal. Level 2 also contained a heavy

concentration of large rocks on the northeast corner and one large boulder situated on the mid-section of the eastern wall extending just outside the unit. At the end of the level, the crew removed the large boulder located on the east wall, with most of the charcoal concentration focused on the southeastern corner of the unit. The removal revealed a small dark circular pit (7.5 YR 2.5/1 black) with more charcoal material. The pit was located at 18 centimeters in-depth and extended into level 3. Level 3 (20-30 cm) consisted of very compact hard brown (7.5 YR 5/4) clay-like loam with no artifacts and some charcoal in the southeast corner of the unit.

Figure 5.17 demonstrates the eastern wall profile showing the location of the boulder. The small pit with charcoal is directly underneath, with some charcoal concentrated in the southeast corner and very little else throughout the rest of level 3. The large boulder that an intern removed from the east wall was cataloged as a feature and taken back to the UC Berkeley Bear Bones lab investigate for traces of charcoal (Figure 5.18). With the MHPO's permission, three samples were cut along the Y axis using a diamond saw blade from the boulders surface (Figures 5.19, 5.20, and 5.21). The cut segments were determined based on 200x microscopic magnification and dark coloration on the surface of the boulder. The samples were sent to the Center for New Mexico Archaeology for surface analysis and radiocarbon dating.

Further analysis by Eric Blinman at the Center for New Mexico Archaeology preliminary reports shows signs of the boulder having been heat affected. The lab cut the segments perpendicularly to document the cross sections. The perpendicular cuts reveal some slight weathering rind that could be interpreted as oxidation (Figures 5.22, 5.23, and 5.24). However, a thick black lichen layer is contaminating any meaningful radiocarbon dates as shown in Figure 5.24. Removing that lichen layer would also result in compromising any charcoal residue on the surface. The aim is to provide definite radiocarbon dates as physical proof for the community's records. Even though the boulder may not yield reliable results, the charcoal recovered from under the rock in AM1DM5U1 levels 2 and 3 will be reliable radiocarbon results. The oxidation marks from the boulder and the charcoal recovered from AM1DM5U1 levels 2 and 3 imply evidence of an anthropogenic fire.

Portable X-Ray Fluorescence Spectrometry Analysis

The presence of obsidian artifacts presents opportunities to investigate trade and exchange dynamics that capture the movement of people to and from the Abiquiú Mesa. X-ray fluorescence spectrometry (XRF) testing can confirm the source or origin of obsidian artifacts. Knowing the source or origin can demonstrate associations with neighboring areas suggesting possible procurement and exchange routes to other known Ancestral Pueblo sites (Shackley 2005; Snead 2008). Obsidian has been a popular raw material for making stone tools in the later part of human history. Obsidian's unique volcanic rhyolite glass-like characteristics favor stone toolmakers to produce some of the world's sharpest edges. In addition, obsidian's geochemistry is unique, allowing archaeologists to use X-ray fluorescence spectrometry as an analytical method to distinguish a unique chemical signature that renders obsidian identifiable by source (Baxter 1994; Davis et al. 1998; Goffer 1980; Jenkins 1974; Macdonald 1980; Shackley 1988, 1995, 1998a, 1998b, 2010). Figure 5.25 shows the largest obsidian debitage collected during the survey.

As part of my agreement with the Abiquiú community, any non-destructive analysis was permissible. Therefore, the pXRF is the ideal non-destructive analysis to identify obsidian sources. In addition, the data are valuable in recognizing potential procurement strategies or social networks. During the survey, all obsidian gathered was analyzed using the portable X-ray fluorescence spectrometry machine running at 40 KeV with a copper (CU) filter for 200 seconds.

A total of 56 samples found throughout the mesa were collected, analyzed, and then returned to the top of the mesa. Tables 5.2, 5.3, and 5.4 (see appendix) show the values obtained during the analysis.

The analysis revealed five obsidian sources (Figure 5.26, see appendix). The 3-dimensional graph that plots the Parts per Million (PPM) values of Rubidium (Rb), Yttrium (Y), and Zirconium (Zr). I chose these three element values based on a previous analysis of known obsidian deposits. I expected for El Rechuelos to appear in significant quantities, but to my surprise, another obsidian source appeared from further into the Jemez Mountains. Cerro Toledo and Cerro del Medio show up in small amounts, which is expected given the distance between the obsidian deposit and the Abiquiú Mesa. There were two big surprises: Bull Creek obsidian and Canovas Canyon obsidian. Bull Creek obsidian is from Yavapai County, in western Arizona. The pXRF identified only four debitage samples, but its presence speaks to the potential interaction between Tewa, Hopi, and Navajo people. As you can see, Canovas Canyon is far south, and yet this source nearly rivals El Rechuelos source in quantity. I did expect Canovas Canyon obsidian to appear in Abiquiú; what was unexpected was the large quantity found in the collected sample.

Macrobotanical Analysis and Radiocarbon Dating

Macrobotanical analysis is an essential part of investigating the ancestors' activities that occupied Abiquiú Mesa. In addition, radiocarbon analysis of botanical and charcoaled findings within any of the two excavation units will begin a base of information from which investigations can reference future projects. The Office of Archaeological Studies Laboratory carried out all botanical analysis and all radiocarbon analysis at the Center for New Mexico Archaeology in Santa Fe. The macrobotanical analysis primarily focuses on AM1DM2U1 and AM1DM5U1. Both units contain botanical materials with the possibility of acquiring samples for radiocarbon dating to establish dates. In addition, the potential stratigraphic context serves as a basis for other places of significance to Abiquiú history.

Macrobotanical Analysis

The crew gathered all soil samples from one unit, AM1DM2U1. A total of 4 soil samples were collected and brought back to UC Berkeley, where Students did floatation on levels 1, 2, and 3 at the lab. A Sefar 250-micron polyester mesh was used as a filtering screen during floatation. Students used a 1/16th screen on the heavy fraction. It was sorted by hand, weighted, and bagged for return to the Abiquiú community. The soil volume by level from one of the units. Basalt and granite appeared between 9 and 21 percent with very little quartz. The high percentage of gravel in level 2 suggests human manipulation of the soil as it exceeds the 10 percent found in naturally occurring mulch. Gravel sizes vary widely between 10 and 57 millimeters in diameter. The northern and eastern profiles of the unit demonstrate three distinctive intermix levels going down 18 cm in depth. Most of the units would hit volcanic tuff by 25 cm. The high presence of rock mulch consisting of basalt and granite gravel does suggest it to be part of a common farming technique used in the Northern Rio Grande. In part, this farming system would allow for cotton to be grown under the conditions found in the region.

The Center for New Mexico Archaeology did all light fraction analysis and level 5 flotation (see Report A in Appendix). The lab has years of experience analyzing state botanical specimens. The results revealed levels 1 and 2 contained Juniper (berries and seeds, twigs, male pollen cones, scale leaves); pinyon needles; cheno-am seeds (deflated and eroded); modern roots and insect scat abundant; one pristine Croton seed; modern roots and insect scat present. Levels 3 and 5 contained only modern roots, juniper twigs, and a partial seed, one possible pinyon

needle. The flotation samples from Levels 1 through 5 yielded no carbonized material. Although these results do not reveal any significant evidence of farming, the analysis raises more questions about the function of the rock alignments and the timeline of human occupation on the mesa. All lab reports and documents will be handed over to the Abiquiú MHPO Bernardo Archuleta.

Radiocarbon Dating

The Center for New Mexico Archaeology analyzed the Abiquiú Mesa Project's radiocarbon samples using Low Energy Plasma Radiocarbon Sampling (LEPRS). The LEPRS technique has successfully extracted carbon 14 for dating from various samples in rock art, pottery sherds, and organic materials (Loendorf 2017; Rowe et al. 2017; Viñas et al. 2016). Although this technique is not used on Abiquiú rock imagery, there is potential for future projects to explore this dating method. The advantages include its accessibility with 30-100 millionths of a gram of carbon, nondestructive for most artifacts or samples, step removal of multiple soot layers, and multiple dates from a single sample (Rowe et al. 2017). In addition, as the technique is mostly non-destructive, I will give these materials back to the Abiquiú community.

AM1DM5U1 contained a small charcoal pit with burned materials collected for radiocarbon analysis. Charcoal samples consist of burned material containing twenty *Atriplex* (saltbush) samples in level 2 and two *Artemisia* (sagebrush) in level 3. Samples underwent plasma oxidations for dating. The radiocarbon analysis will provide the Abiquiú community with physical evidence of ancestral Pueblo occupation of the Abiquiú Mesa. One of Abiquiú's priorities is to use the research data to establish a way to recognize Abiquiú ancestral pueblo places outside the land grant boundaries as part of Abiquiú Pueblo lands. In addition, these radiocarbon results in corroboration with the research data and oral histories will set a standard for identifying associated ancestral pueblo material culture found in the Santa Fe and Carson National Forests.

Petroglyphs

There are known petroglyphs throughout the Abiquiú Pueblo lands. Most of the petroglyphs found atop the mesa were already known to some in the community. Figures 5.27 A through G in the appendix demonstrate all the petroglyphs recorded and researched for this project. Throughout the field season, a handful of images have been recorded as part of Abiquiú's history. Based on previous petroglyph studies (Fewkes 1892, 1906; Michaelis 1981; Schaafsma 1986; Walker 1981; Wallace and Holmlund 1986; Waters 1963), the images are associated with Tewa, Hopi, and Navajo groups. As of right now, we are discussing ways to convey Abiquiú's knowledge without needlessly exposing sensitive details of Abiquiú petroglyphs and reach a consensus on how to incorporate Abiquiuseño voices into future reports and publications.

The diverse petroglyph imagery, etching, and scratching suggest Tewa, Hopi, Navajo, and Comanche ties. The level of overlap within the images point to a long history of people visiting the mesa. The petroglyph imagery has some consistency with what we find in other archaeological places, such as grids probably denoting the rock alignments and shields that identify with cultural groups. For example, figure 5.27.A (see appendix) is an etching of a circular shield with a broad cross. On the left of the picture is an etched rectangular grid of possible grid garden imagery, while on the right is a bird-like or half-butterfly imagery. Figure 5.27.G (see appendix) shows two circles with a dot in the middle situated next to a snake. The two circles represent corn, bean, and squash agriculture, while the snake represents bodies of

water, most likely indicating the Chama River. The snake imagery is also associated with the Hopi Snake Clan symbols.

However, Abiquiú Mesa petroglyphs contain non-traditional imagery connected with what we can identify archaeologically. For instance, in Figure 5.27.C (see appendix), a pecking of a turtle-like shield has what is possibly an incomplete or another version of corn stock. Figure 5.27.F (see appendix) shows an etched rectangular shape with a concentration of crisscrossing lines in the center; possible imagery of mapping grid fields. In another petroglyph (Figure 5.27.H, see appendix), the imagery of the shaman attached to an abstract symbol makes it challenging to identify the symbol as the shaman's staff or a possible clan symbol (MHPO Bernardo Archuleta personal communication).

Oral Histories

Throughout the six years that I have been going to Abiquiú, I have heard many amazing stories regarding ancestors and knowledge that pertains to the land. Although it is typical for an archaeological project to record testimony from community members, I chose not to record any of the oral histories. It's no surprise, given the history of anthropology's discipline to exploit native stories for research. For the Pueblo de Abiquiú, oral narratives reinforce the connections to long-distance locations, ultimately demonstrating a relationship across the ancestral Pueblo landscape. In addition, much of the knowledge within many of these stories describe areas sensitive to Abiquiuseños pertaining to Abiquiú Pueblo lands.

As part of a decolonizing praxis, oral histories should remain knowledge within the community. Asking them to participate in events where then they share those stories is up to the community partner. Native stories are also the intellectual property of the people whose history archaeologists' study. Ashley Long and colleagues (2019: 133) make this very point arguing:

> "*Many of the elders who participated in the interview process hesitated to have their testimony formally recorded. Over the course of the project, several tribal members pointed out the long history of anthropologists publishing native stories, which has questionable repercussions for intellectual property issues. Given these discussions, Patrick Burtt determined it was best to orally record these stories in a more traditional way, and share them less formally with non-Natives. Thus, the oral histories referred to in this volume are oral histories provided by tribal members that were not formally recorded* (cited as personal communication)."

As such, the Abiquiú Mesa Project also incorporates oral histories in an informal method. Long's approach ensures that sensitive knowledge does not lose its propriety while simultaneously adding to academic knowledge.

Discussion of Archaeological Findings and Research Goals

The Abiquiú Mesa was part of an extensive economic and social network that anyone can map out through artifacts, petroglyphs, and landscapes. The Abiquiú Mesa Project investigates the Abiquiú Mesa using various archaeological methods to determine occupational history, social networks and add to Abiquiú's historical knowledge. Although the rock alignments are the primary focus of the investigation, multiple lines of evidence suggest a period of continuous multipurpose use of the mesa. The Abiquiú Mesa rock alignments resemble Tewa agricultural landscape containing similar large cobble-bordered gravel-mulch plots. For example, examining both lithic debitage and pottery sherds yielded knowledge that could exist within the Northern Rio Grande trade and exchange (Moore 2020; Ortman 2019). In addition, the rock alignments throughout the Abiquiú Mesa imply the intention to farm, linking with ancestral pueblo sites

such as Poshuouinge dating to 1450 CE.

Abiquiú Mesa History Co-created Over Time by People and Landscape

Spread throughout the Abiquiú Mesa exists a cultural history found in various pottery and lithic artifacts, petroglyphs, and rock alignments. The complete survey revealed multiple rock alignments spread throughout the mesa, with the heaviest undisturbed concentration on the northern end and naturally disturbed rock alignments everywhere south of the excavation areas. The Abiquiú Mesa is a Tewa agricultural landscape containing large alignments of cobble-bordered gravel-mulch plots. Previous research on Tewa agricultural landscapes (Anschuetz 2001; Anschuetz et al. 2006; Camilli et al. 2012; Dominguez 2000; Marshall and Walt 2007) demonstrates how widely these agricultural features are found throughout the Northern Rio Grande region. Rock alignments generally associate with Tewa agricultural activity dating between 1250 - 1750 CE (Anschuetz et al. 2017; Camilli et al. 2019; Hewett 1906, Gauthier and Peckham 1981; Snead, 2017). Tewa farming fields grew maize or cotton, which played an essential role in the region's social and economic exchange networks (Dean 1989, 1991, 1995).

The macrobotanical analysis of the Abiquiú Mesa revealed no evidence of agriculture in one particular area of the rock alignments. Camilli and colleagues (2019: 36-38) describe the uniqueness of gravel-mulch fields based on morphology, thickness, and gravel volume. Evidence of soil composition shows basalt and granite appearing in high percentages of gravel in level 2 suggests human manipulation of the soil as it exceeds the 10 percent found in naturally occurring mulch. The gravel-mulch, rock alignments, and regional placement all point to evidence suggesting that these rock alignments were part of a common farming technique used in the Northern Rio Grande.

Although the stratigraphic data reveals a similar soil composition to Tewa farming practices (Anschuetz et al. 2017; Camilli et al. 2019), it is possible that Abiquiú ancestors built these rock alignments but never had the opportunity to be used for two possible reasons. The first reason may be an environmental component in which farming may not have been viable at that moment in history. The second is the emergence of Spanish colonial control that did not allow local indigenous people the opportunity to continue farming atop the Abiquiú Mesa. In either case, the evidence of large granite cobblestone piles next to unfinished alignments suggests a disruption of labor on the northern end of the mesa. Radiocarbon dates will narrow the possibilities further into a scenario that can be of utility for the Abiquiú community in issues of land and first use water rights in the future.

Given their pristine condition compared to other rock alignments found on the south end of the mesa, and the presence of Tewa Black pottery sherds in the north end suggests that northern concentration of rock alignments may be much younger and possibly date later than other areas of the Abiquiú Mesa. Wiyo Black-on-white and Abiquiú (Biscuit A) Black-on-white sherds on the surface near these alignments coincide with a building period dating after 1375 CE (Curewitz 2008; Kidder and Shepard 1935; Mera 1935; Smiley et al. 1953). The concentration of pottery sherds were found near the rock alignments. The mean pottery dates calculated by quadrants to expand on upon use histories to specific sections of the rock alignments. Furthermore, the typology of lithic artifact scatter on the surface of the mesa suggests the occupation is continuous from before 1250 CE based on previous archaeological studies of the Northern Rio Grande. The petroglyph imagery etched on site implies the constant presence of humans on the mesa well into the present. One explanation of the continuous presence could be explained by interpreting the northern rock alignments as ritualistic. Ceremonies to honor Abiquiú Mesa ancestors by contemporary Tewa people and descendants have been happening for

a long time (Sabra Moore personal communication). Additionally, the Abiquiú Library and Cultural Center commissioned a Pueblo history study[1] that demonstrated other Pueblos relate to Abiquiú through Tewa, Hopi and Navajo ancestry and see Abiquiú as a Pueblo. (Director Isabel Trujillo, personal communication).

The investigation into AM1DM5U1, the non-rock aligned pattern, revealed a small fire pit. The fire is anthropogenic, as evidenced by the heat treatment found on the boulder's surface used to suffocate the fire. The fire pit suggests this was a temporary camping site, evidenced by the sparse artifact distribution within the studied grid. Survey data does show that just 200 meters south of the fire pit is a significantly increased number of artifacts scattered east to west on the mesa. Thus, the potential for other camping sites may exist, and AM1DM5U1 provides some of the characteristics to look for when revisiting similar rock patterns on the south end of the Abiquiú Mesa.

Abiquiú Mesa Exchange Networks

Chert, obsidian, and pottery tell us about distinct histories interacting with the Abiquiú Mesa. For each artifact type, there are archaeological models that account for interpretations of exchange networks in the American Southwest (Curewitz 2008; Habicht-Mauche 1993; Mills et al. 2013; Moore 2020; Nelson and Strawhacker 2011; Ortman 2019; Shackley 2005; Spielmann 1982). In some cases, Abiquiú oral histories coincide with the archaeological exchange models. The distribution of artifacts confirms that the ancestors who looked over the Abiquiú Mesa participated in trade and exchange networks reaching such places as the Tewa Basin, Jemez Mountains, Hopi lands, and Navajo lands.

Take for example the PXRF analysis revealing five obsidian sources (Figure 5.26, see appendix). The presence of El Rechuelos, Cerro Toledo, Cerro del Medio, and Canovas Canyon obsidian confirms ancestors were navigating the Jemez Mountains. El Rechuelos obsidian has one of the nearest deposits to the Abiquiú Mesa. Other obsidian nodules collected by MHPO Bernardo Archuleta near Polvadera Peak have shown that there exist deposits with significant variation in Rb and Y concentrations suggesting multiple obsidian deposits are closer to the Abiquiú Mesa but do not appear on the mesa. Both Cerro del Medio and Cerro Toledo obsidian appear in relatively small quantities. Canovas Canyon obsidian is the furthest of the Jemez sources at approximately 52.5 km (32.61 miles) south of Abiquiú. Based on the data, Canovas Canyon obsidian must have been preferred over the other sources. One possible explanation can be explained through Moore's and colleagues (2020) migration model based on obsidian sourcing data in the Northern Rio Grande. Patterns in the data suggests that northern Rio Grande people expanded into areas near the Jemez Mountains like the Pajarito Plateau (Moore et al. 2020: 168). Obsidian artifacts at the Abiquiú Mesa may be a result of an exchange network already existing since AD 1100. Furthermore, the presence of Bull Creek obsidian suggests that Abiquiú Mesa ancestors participated in an exchange system that extended into Western Arizona. Since only four debitage samples with no cortex were found, the debitage must be from a tertiary context. Nevertheless, its presence coincides with oral histories that link the Pueblo de Abiquiú with Hopi and Navajo groups. Abiquiú's oral histories speak of a trail that leads to Navajo Country and about Abiquiuseño travels through the Jemez Mountains to reach Hopi and Navajo Lands (MHPO Bernardo Archuleta personal communication).

Abiquiú's oral histories speak about journeys traversing Navajo trails while journeying to and from Hopi lands. The petroglyphs found at the Abiquiú Mesa contains diverse images that link with Hopi and potentially other Pueblo groups. For instance, the snake imagery in Figure

[1] A copy of the report can be found at the Pueblo de Abiquiú Library and Cultural Center.

5.27.G is associated with the Hopi Snake Clan. Images such as the shaman (Figure 5.27.H) associate with Hopi and Navajo practices. Other images are not traditionally associated with other ancestral pueblo groups. Figure 5.27.B and Figure 5.27.D contain scratching and Spanish period imagery of crosses noting that human presence on the mesa continued even after European contact. The diversity in petroglyph imagery confirms the interaction between people and the Abiquiú Mesa landscape.

Other non-obsidian exchange models can tell a distinct narrative about the exchange systems connected to the Abiquiú Mesa. The quantity of Pedernal chert debitage recovered from the survey may indicate that the ancestors on the Abiquiú Mesa participated in a commodity-based economy (Arakawa et al. 2019: 99). Arakawa and colleagues (2019) examine the changes in tool-stone raw materials (i.e. Pedernal chert) using GIS to best model distributions through time in different northern Rio Grande sites. The study finds Pedernal chert was traded with people in the northeast during 1200 to 1325 CE, but exchange distribution decreases with the heaviest concentration of Pedernal chert near Tsiping during 1325 to 1600 CE (Arakawa et al. 2019: 98). The Abiquiú Mesa is situated between Tsiping and Poshuouinge, a Tewa place that also shows a heavy concentration of Pedernal chert (see Arakawa et al. 2019: Figure 7.2). The Abiquiú Mesa fits as part of Pedernal chert commodity economy. The large quantities of Pedernal chert suggests a long history of ancestors traversing eastern landscapes between Cerro Pedernal and the Abiquiú Mesa.

Finally, pottery has the potential to illustrate similar exchange patterns as lithics studies. However, clay sourcing is not as straightforward as the standards set by obsidian XRF source studies (Speakman et al. 2011). Instead, archaeologists can study different aspects of pottery to learn about production and distribution (Beck and Neff 2007; Habicht-Mauche et al. 2000). Pottery analysis serves as another line of evidence for Pueblo interaction with the Abiquiú Mesa as evidenced by multiple pottery types found during survey. The data shows that the oldest pottery type found at the Abiquiú Mesa is the Kwahe'e black-on-white dating back to 1000 - 1225 CE and distributed in the Taos Valley, Rio Tecolote, Jemez, and Rio Puerco Valley (Cordell 1979; Lang 1982; Mera 1935; Wiseman 2014). Wiyo Black-on-white data ranges from 1250 - 1450 CE and are most commonly found in archaeological places in the northern Tewa Basin and Chama Valley (Habicht-Mauche 1993; Wilson 2013). Santa Fe Black-on-white dates between 1150 - 1425 CE and is commonly found near Sangre de Cristo Mountains, Chama River, Taos, and Tijeras Canyon (Habicht-Mauche 1993). Abiquiú (Biscuit A) Black-on-white and Bandelier (Biscuit B) Black-on-white appear in similar areas in the Tewa Basin, Chama Valley, and Pajarito Plateau (Curewitz 2008; Mera 1934). Abiquiú (Biscuit A) is older than Bandelier (Biscuit B), existing contemporaneously between 1400 CE and 1450 CE. The presence of multiple pottery types found at the Abiquiú Mesa suggests that ancestors interacted with Puebloans in other regions. More specifically, the Abiquiú Mesa stands between large ancestral places and could be part of exchange routes pre-1490 CE. Broken pottery sherds near the rock alignments may suggest farming activity (Anschuetz et al. 2017). Although the survey found no complete pottery vessels, oral histories by Abiquiuseños speak of full pottery bowls used to sit at the top of the Abiquiú Mesa. It is believed that all complete pottery vessels were looted before the 1950s (David Lopez, personal communication).

Lithics, pottery, and petroglyphs confirm that the ancestors who looked over the Abiquiú Mesa participated in extensive networks that interacted with other Pueblos in the Northern Rio Grande, the Jemez Mountains, and the San Juan region. Additionally, each line of evidence produced a model for Pueblo interaction with the ancestors of the Abiquiú Mesa through several

moments in time. Based on the data presented, the Abiquiú Mesa and its ancestors may not have been a central hub like Tsiping or Poshuouinge. However, the Abiquiú Mesa played an important role as part of extensive social networks as evidence by the diverse material culture that spans through a rich deep history.

Further Analysis and Future Research

The diverse cultural history of the Abiquiú Mesa can provide more forms of information to deliver on Abiquiú community priorities. A couple of analyses that will be done after the submission of this dissertation. First of all, phytolith samples still needs to be analyzed. Phytolith samples were collected from AM1DM2U1 for each layer of soil sample collected. Unfortunately, due to the COVID-19 pandemic and delayed funding, the labs I contacted were unavailable to perform the analysis in time to include in this dissertation. Currently, there is funding to analyze the phytolith samples. I will be contacting the labs again as they reopen from COVID-19 lockdown. The second analysis needed are the radiocarbon dates from the samples sent to the Center for New Mexico Archaeology lab. The boulder slabs sent to the Center for New Mexico Archaeology lab were not sent until early 2021. Access to the Bear Bones lab was limited due to the pandemic, which made cataloging and processing the samples difficult. The good news is that the lab results will be in later this year. Both analyses will contribute significantly to our understanding of the mesa. The Abiquiú Mesa Project will present the results back to the community.

There is potential for future research into the Abiquiú Mesa. The central and south regions of the mesa remain to be closely evaluated. Several unexamined rock alignments in the central and south region can provide a richer context into the developing history of the mesa. Collecting soil samples from the central and southern rock alignment plots of the mesa may shed light on a hypothesis of multiple consecutive human occupations that begin in the south and progresses forward in time as you move toward the north end of the mesa. Other anomalous alignments may uncover evidence of ancestor presence through other fire pits or human-made features. The LEPRS technique can be helpful in dating petroglyphs located in Abiquiú Pueblo lands. The method will fulfill community priorities in uncovering more of Abiquiú Pueblo history. Additionally, the utility for radiocarbon dating petroglyphs can serve the community in exploring bigger issues regarding the acquisition of lost ancestral lands. And finally, the possibility of Another revisiting the north end and collect more samples from DM3 and DM1 may be a possibility given more funding and a bigger crew. Come this August, I will be meeting with MHPO Bernardo Archuleta to continue discussing future directions for the Abiquiú Mesa Project and other future projects.

Figure 5.1- 2018 Field Crew. From top left to right: Danny Sosa Aguilar, Isaah B., Kyle M., Andrea F., Brenda O., Jasmine P. Bottom left to right: Zayda R., Eric O. Missing from the picture is Chandler Fitzsimons, Ph.D. Student at College of William and Mary. (Photo courtesy of Rosalia Triana)

Figure 5.2 - Portable X-ray Fluorescence (pXRF) machine demonstration at the Pueblo de Abiquiú Library and Cultural Center. Reading Program students and interns are learning about periodic elements. In addition, students brought in their rocks for analysis. Unfortunately, they were not permitted to handle the portable x-ray fluorescence machine for safety reasons. (Photo courtesy of Rosalia Triana)

Figure 5.3 - **Top**: Interns Eric, Andrea, Kyle, and Brenda run transects on their first day. **Bottom**: Isaah, Zayda, and Jasmine stand in place as other interns (off-camera) are recording an artifact. (Photo by author.)

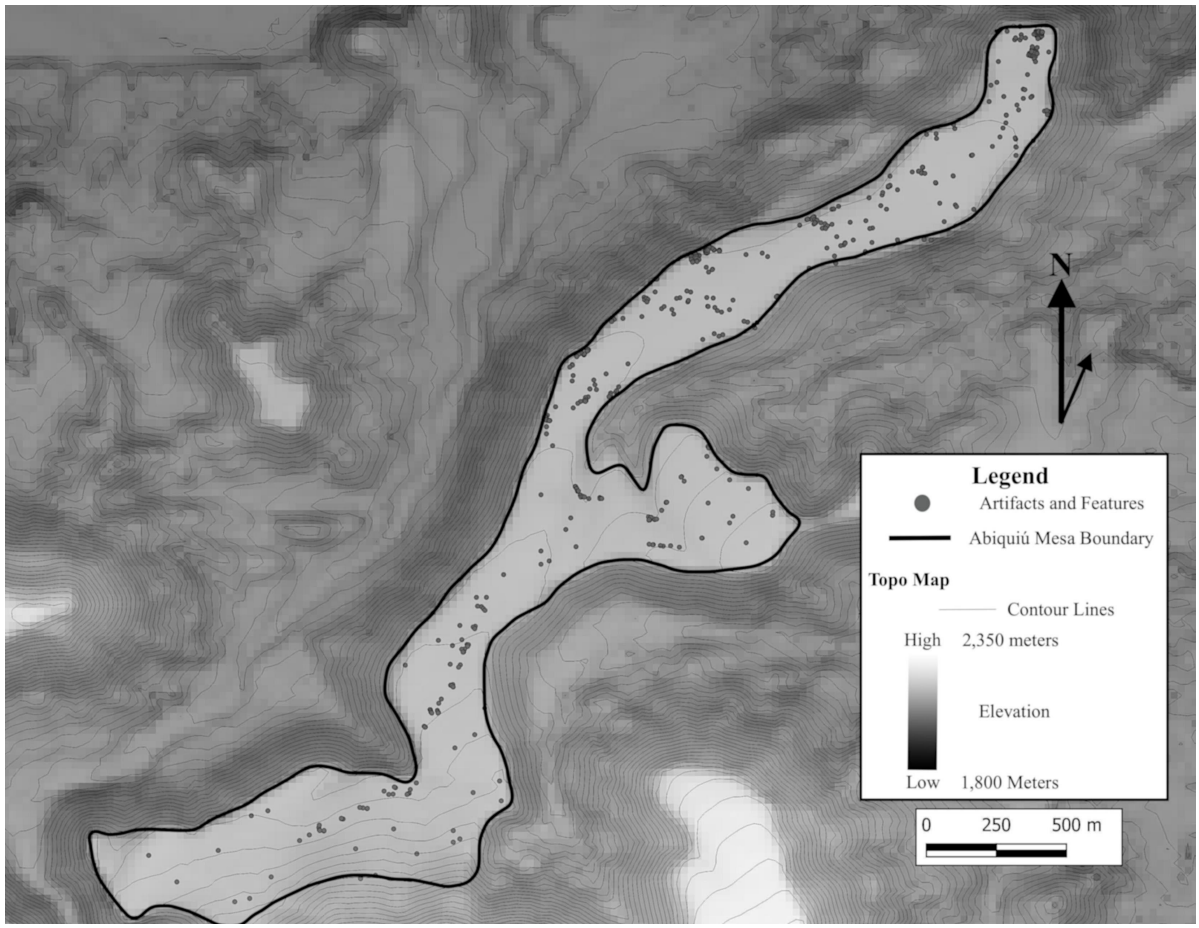

Figure 5.4 - This is a map of the entire Abiquiú Mesa. Outlined in black is the survey area, and the dots represent archaeological material scattered throughout the mesa. Under supervision, interns did all GPS points, artifacts details, and records. Interns identified debitage, broken pottery, metal, and glass. This map was created using GPS data on QGIS with open source raster data.

Figure 5.5 - Artifacts collected on June 6th, 2018. The picture shows three pieces of Abiquiú Black-on-Grey, three debitage pieces of obsidian, and one debitage piece of Pedernal. Pottery design styles present are Tewa Black, Wiyo Black-on-white, and Abiquiú (Biscuit A) Black-on-white. (Photo by Zayda R.)

Figure 5.6 - Artifacts collected on June 7th, 2018. The picture shows seven pottery pieces, three debitage obsidian pieces, and five debitage pieces of Pedernal. Pottery design styles present are Wiyo Black-on-white, Abiquiú (Biscuit A) Black-on-white, and Santa Fe Black-on-white. (Photo by Zayda R.)

Figure 5.7 - Artifacts collected on June 11th, 2018. The picture shows nine pottery pieces, seven debitage obsidian pieces, nine Pedernal debitage pieces, and one jasper piece. Pottery design styles present are Wiyo Black-on-white, Abiquiú (Biscuit A) Black-on-white, Santa Fe Black-on-white, and Bandelier (Biscuit B) Black-on-white. (Photo by Jasmine P.)

Figure: 5.8 - Artifacts collected on June 12th, 2018. The picture shows one pottery piece, six debitage obsidian pieces, and three debitage Pedernal pieces. The pottery design style present is Kwahe'e Black-on-white. (Photo by Zayda R.)

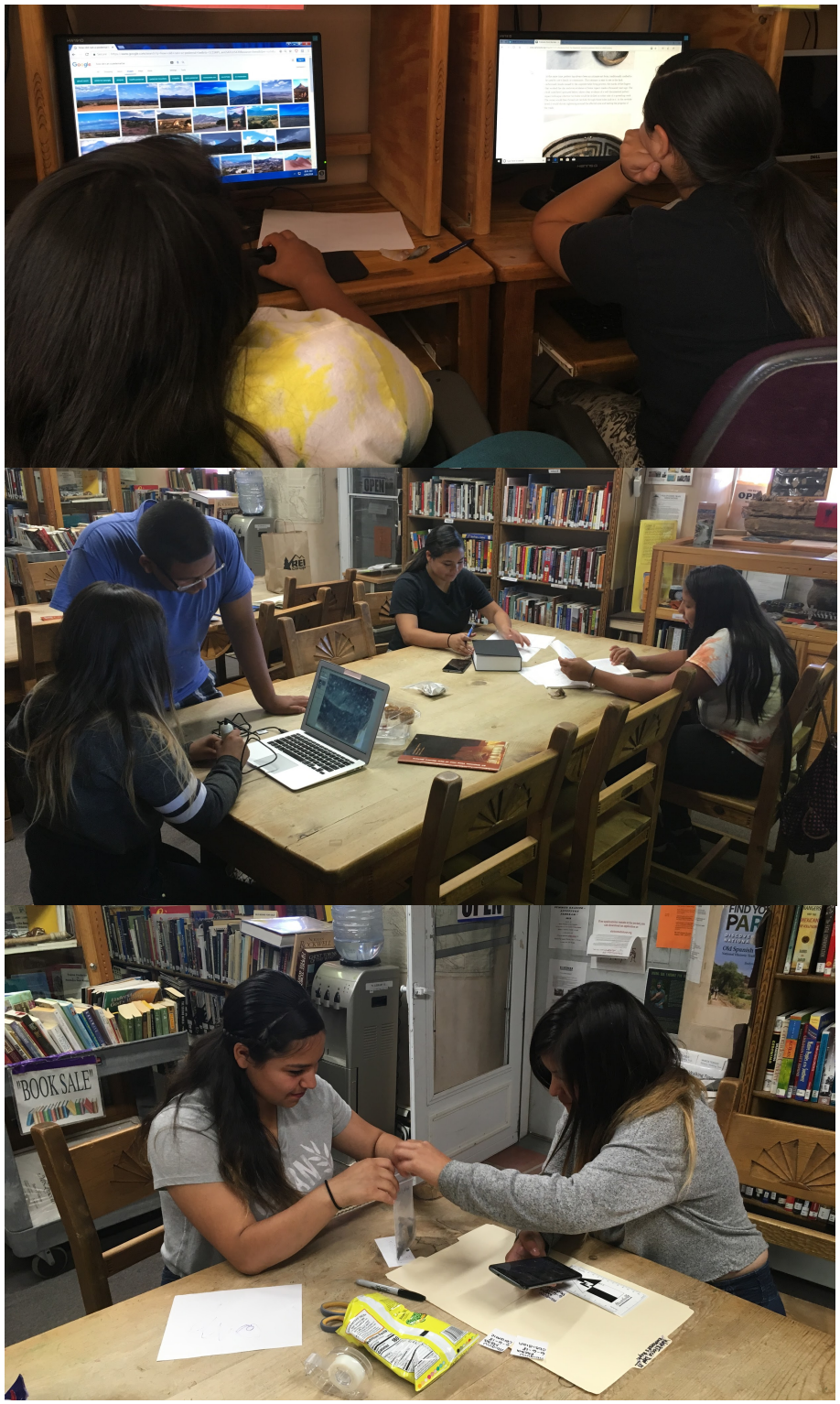

Figure 5.9 - **Top**: Brenda and Jasmine researching their artifacts. **Middle**: Zayda, Eric, Jasmine, and Brenda are doing research. **Bottom**: Jasmine and Zayda cataloging and taking artifact photos. (Photo by author)

Figure 5.10 - Interns using the GPS. **Top Left:** Andrea and Eric. **Top Right:** Brenda and Jasmine. **Bottom:** Isaah recording rock alignments. (Photo by author)

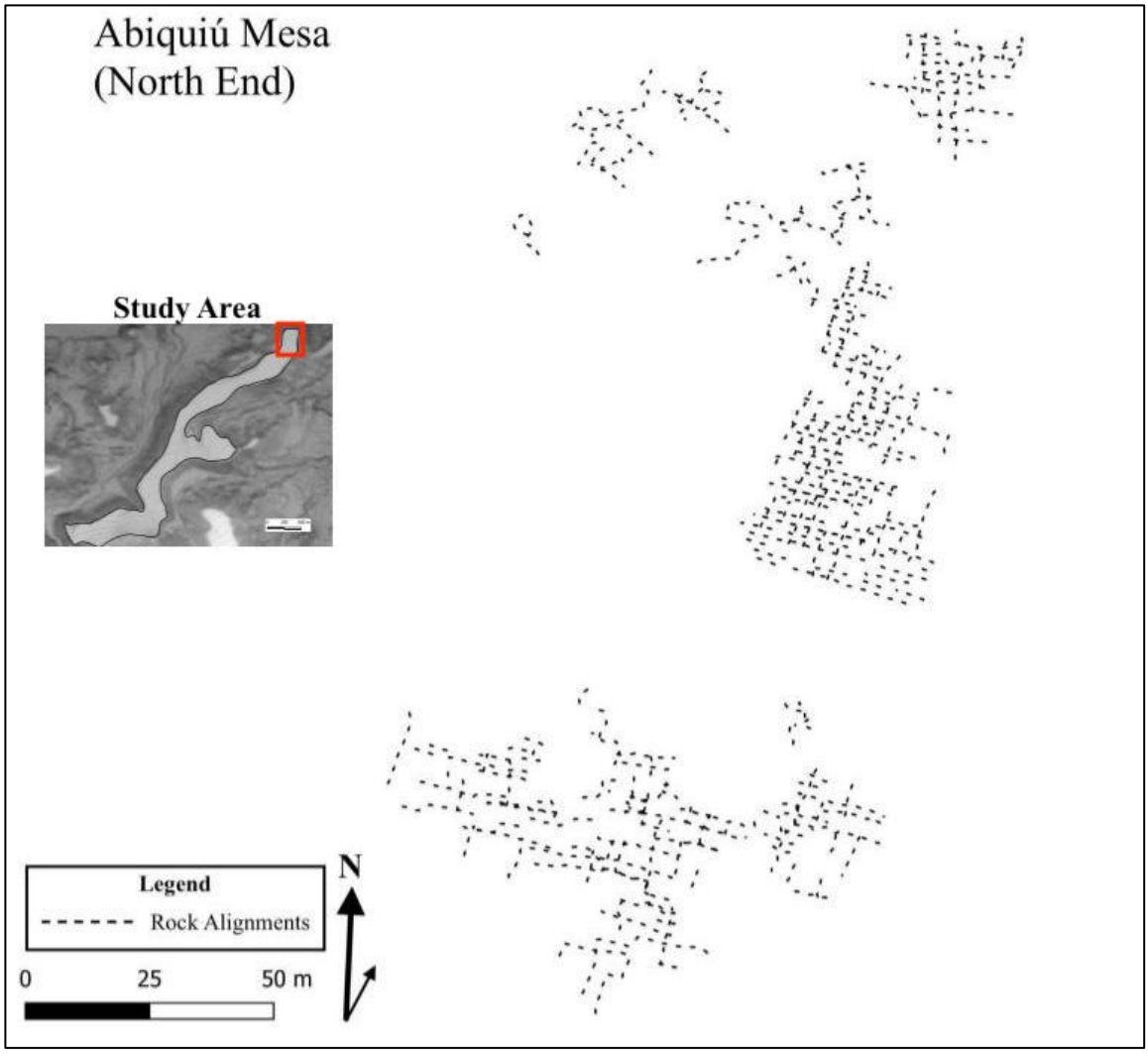

Figure 5.11 – Rock alignments at the North end of the Abiquiú Mesa. The map shows all the students' compiled work within a couple of days of recording the rock alignment features. Under supervision, interns did all GPS lines.

Figure 5.12 - **Top**: Interns Brenda, Eric, Andrea, Isaah, Jasmine, and Zayda map rock alignments using reel tapes and tape measures on the last day. **Bottom**: Andrea leading her peers Jasmine, Kyle, and Eric by delegating which sections of the rock alignments they will map. (Photo by author.)

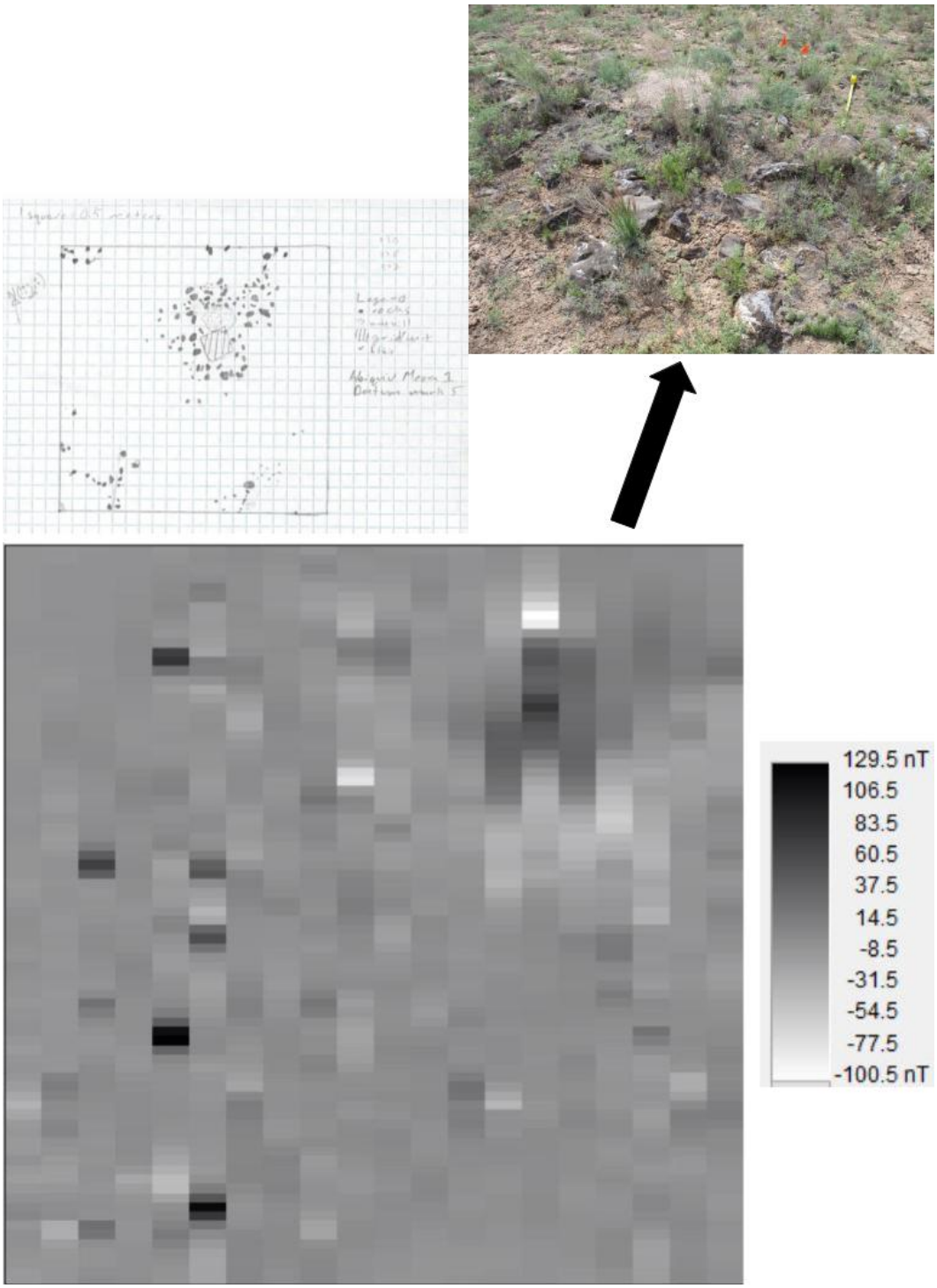

Figure 5.13 - The MHPO Bernardo Archuleta chose this specific grid based on anomalous patterns. The top left photo is a scanned drawing of the entire 10x10 meter grid. The top right photo shows the small circular mounted area. The bottom demonstrates the magnetometer data of the whole grid, emphasizing the circular pattern showing a shallow circular pattern. We choose to excavate that area to explore the hypothesis for evidence of a temporary field house. (Photo by author.)

Figure 5.14 - 2019 Field Crew. From top left to right: Marco C., Mikaela R., Morino B., Danny Sosa Aguilar; Middle left to right: Jasper S., Marcos P., Isaiah T.; Front: Manuel G. (Photo courtesy by Director Isabel Trujillo.)

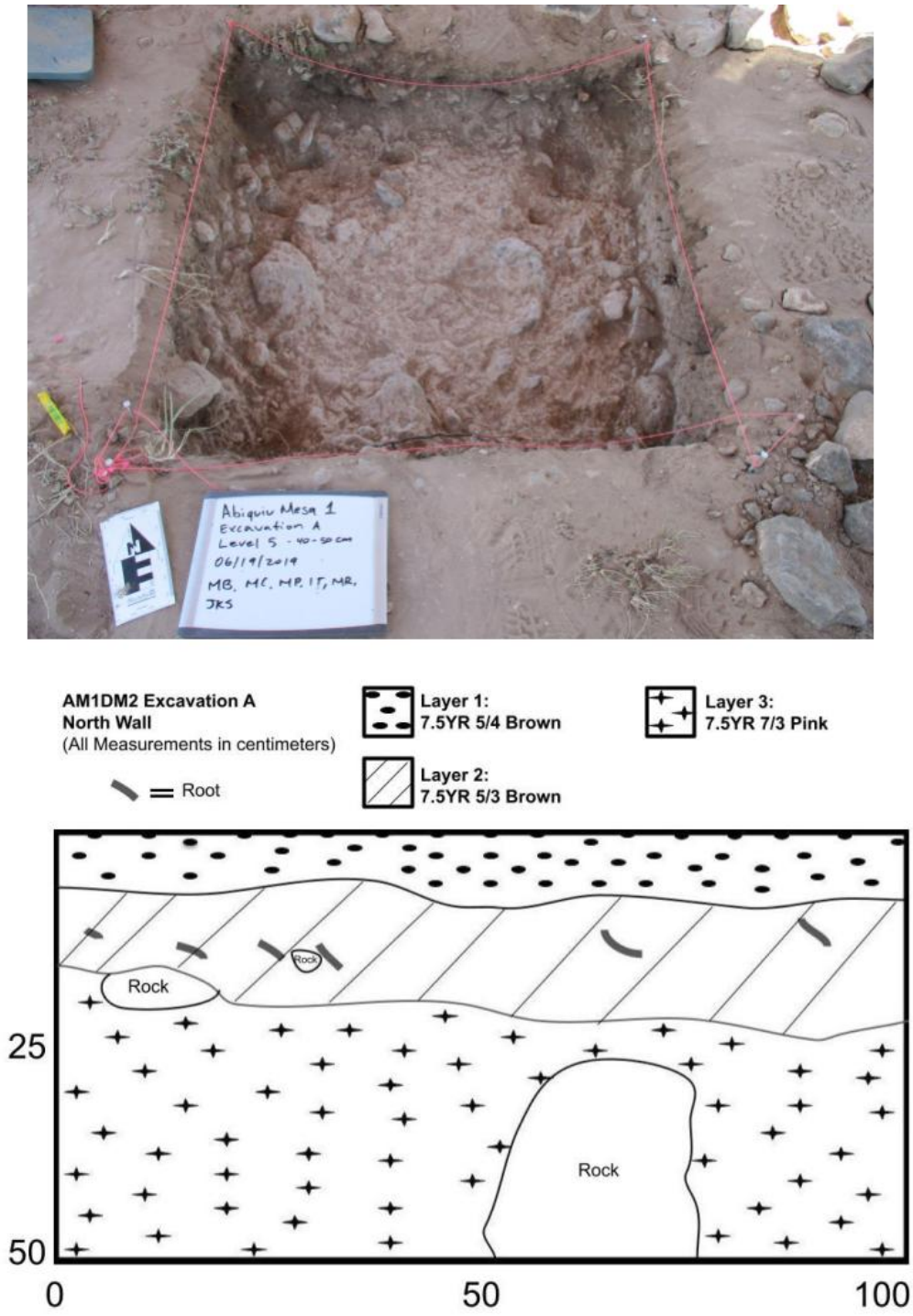

Figure 5.15 - **Top:** Photo of Excavation A at 50 cm depth (final level). **Bottom:** A North wall stratigraphy profile, traced and digitized from hand-drawn on-site profile maps by interns and students.

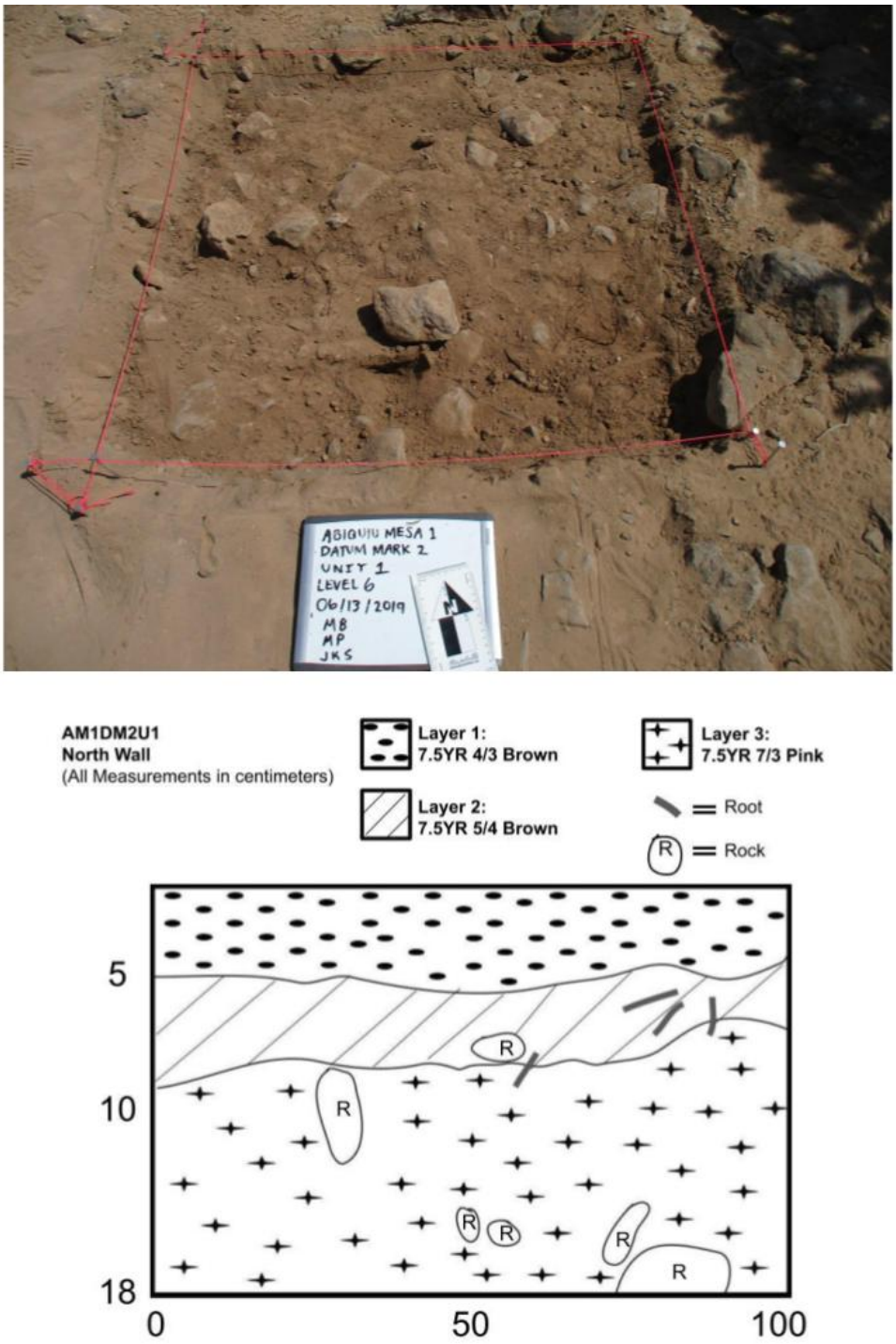

Figure 5.16 - **Top:** Photo of Unit 1 at 18 cm depth (final level). Due to the sandy nature of the soil, debris from the east and south walls continuously fell inside the unit throughout the day. AM1DM2U1 was set within a rock alignment enclosure to collect soil samples for macrobotanical analysis. **Bottom:** A North wall stratigraphy profile, traced and digitized from hand-drawn on-site profile maps by interns and students. The profile revealed 3 compacted layers similar to AM1DM2 Excavation A unit suggesting that soil color changes were due to moisture and not a distinct layer.

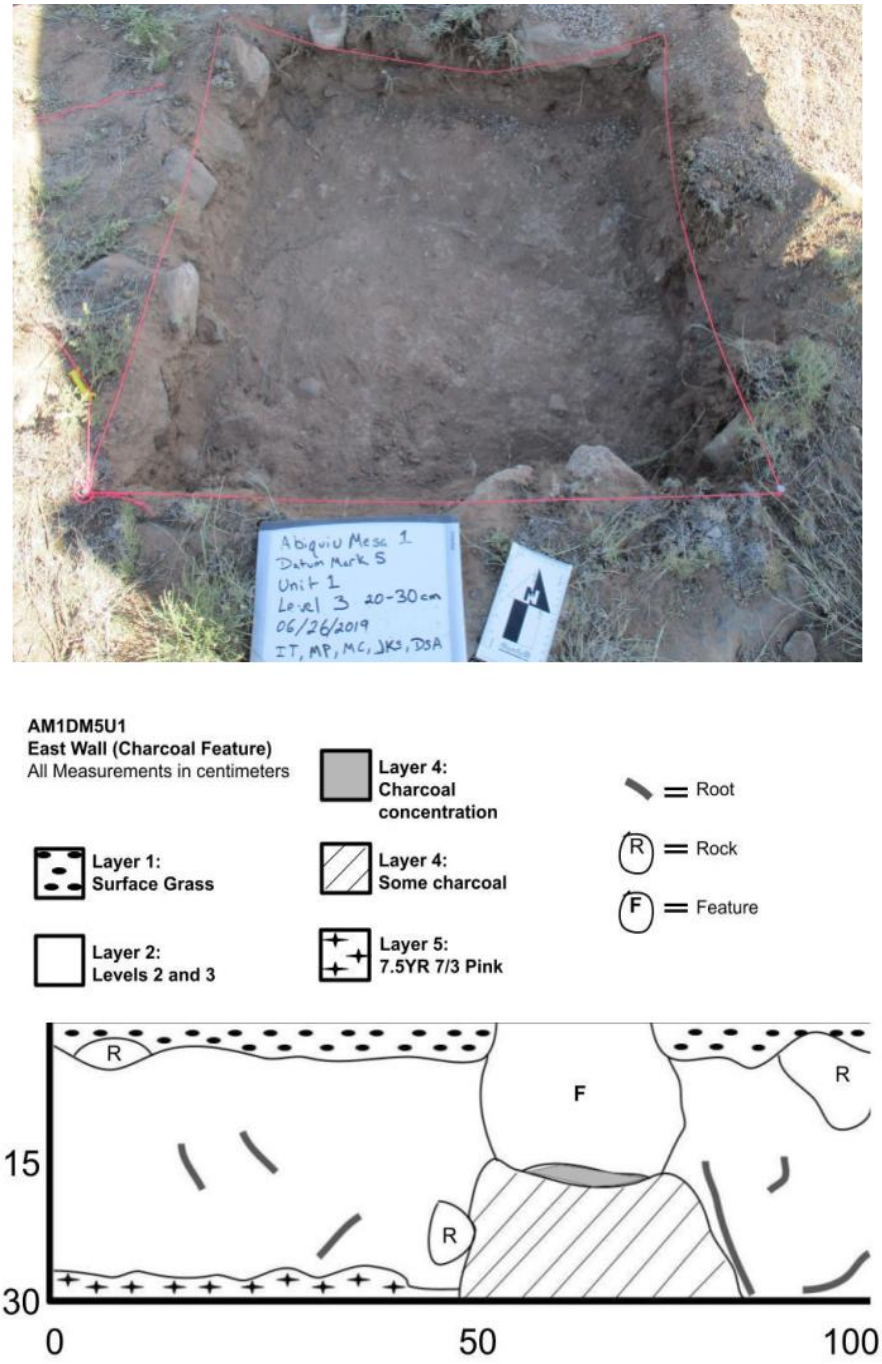

Figure 5.17 - **Top:** Photo of Unit 1 at 30 cm depth (final level). The east wall has not collapsed. However, removing a large boulder (feature 1) took up some space within the east wall. **Bottom:** A east wall stratigraphy profile, traced and digitized from hand-drawn on-site profile maps by interns and students. The "F" demonstrates the gap created by removing the boulder feature for further analysis.

Figure 5.18 – The picture shows burnt side of boulder collected from AM1DM5U1 East wall. The scale is 20 cm.

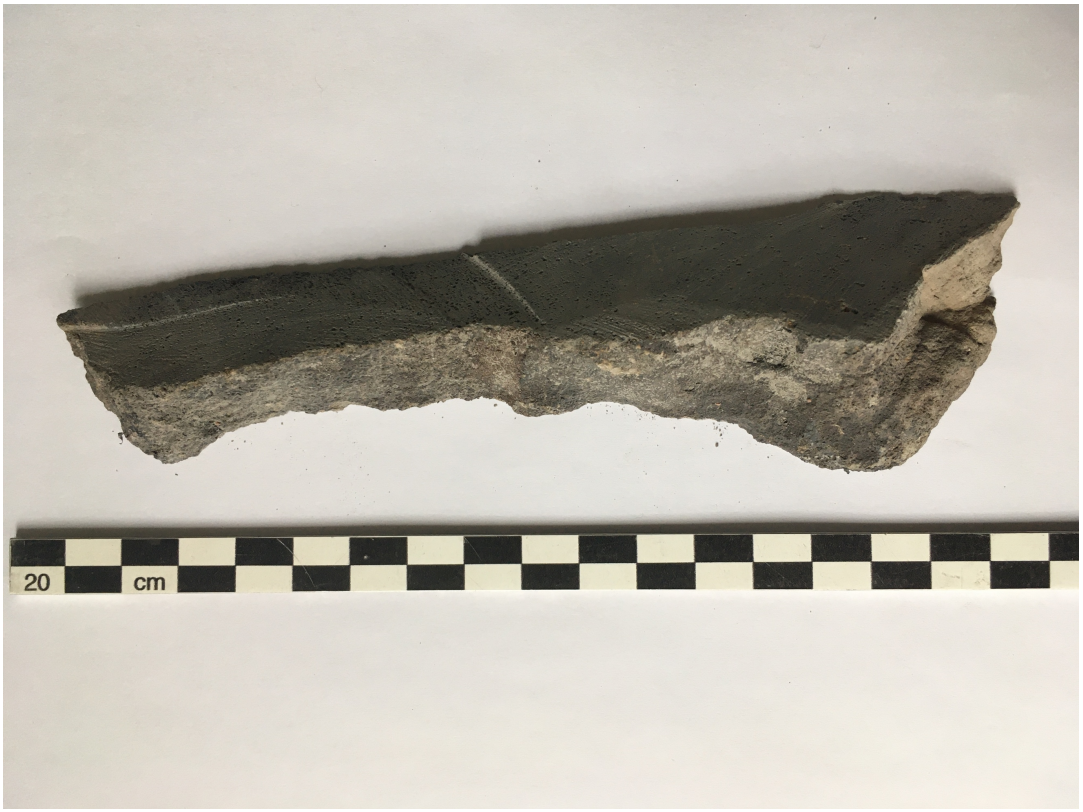

Figure 5.19 – Cut segment AB1DM5U1L2F-A.

Figure 5.20 – Cut segment AB1DM5U1L2F-B.

Figure 5.21 – Cut segment AB1DM5U1L2F-C.

Figure 5.22 – Cross section and plan view of AB1DM5U1L2F-A. **Top:** Cross section of heat affected surface. A small orange rind is seen on the edge closest to the color scale. **Bottom:** Plain view of the heat affected surface. **(**Photo courtesy by Eric Blinman)

Figure 5.23 – Cross section and plan view of AB1DM5U1L2F-B. **Top:** Cross section of heat affected surface. A small orange rind is seen on the edge closest to the color scale. **Bottom:** Plain view of the heat affected surface. **(**Photo courtesy by Eric Blinman)

Figure 5.24 – Cross section and plan view of AB1DM5U1L2F-C. **Top:** Cross section of heat affected surface. **Bottom:** Plain view of the heat affected surface. The large amounts of lichen make it impossible to radiocarbon date reliably. **(**Photo courtesy by Eric Blinman)

Figure 5.25 - The debitage shown here is the largest collected throughout the 2018 field season. The debitage scatters concentrated on the western mid-section of the mesa. All artifacts from this photo were analyzed using pXRF. (Photo by Jasmine P.)

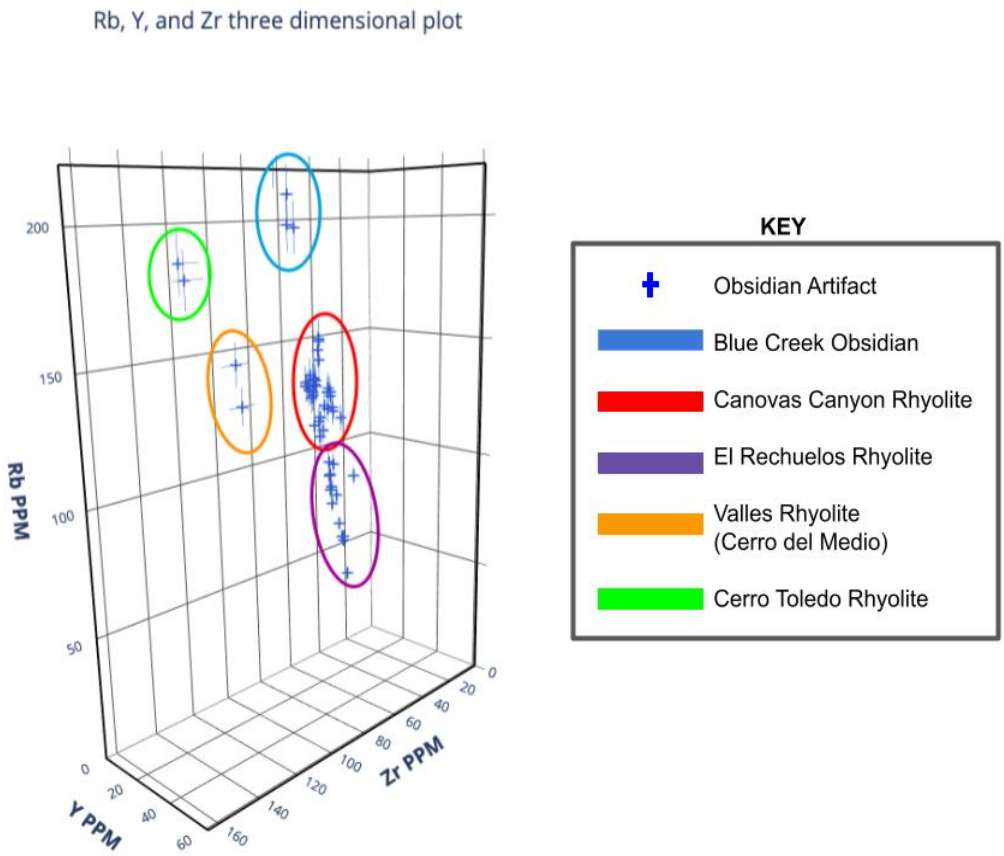

Figure 5.26 - Here is a 3-dimensional graph that plots the parts per million (PPM) values of Rubidium (Rb), Yttrium (Y), and Zirconium (Zr). Quantitative analysis revealed five obsidian sources. Ellipsis are not statistical but rather grouped based on table values on Shackley's (2005: see appendix) work. Each ellipsis represents a specific grouping of obsidian source values: El Rechuelos (purple), Cerro Toledo (green), Cerro del Medio (orange), Bull Creek (blue), and Canovas Canyon (red).

CHAPTER 6: REFLECTIONS FROM THE ABIQUIÚ MESA PROJECT

Collaboration with indigenous and descendant communities influences archaeological research that will happen versus what archaeologists expect. In the same way that outliers in statistical analysis present us with deviations about data, collaboration is an outlier that causes archaeologists to question assumptions and explore different perspectives (i.e., ontological and epistemological frameworks). Collaborating with the Abiquiú community challenged my perspectives on theory by exploring distinct ontological perspectives that resonate with the AMP's methodology. There are a couple of lessons to learn from this project. The first addresses the benefits of guiding an archaeological project by prioritizing and fulfilling community mandates. The second discusses how decolonizing archaeology through sovereignty and affect can produce modes of knowledge that serve the community.

Community mandates are an essential component toward decolonizing the practice of archaeology. The real-world social, economic, political, and cultural implications that archaeological research has on local and descendant communities, like the Merced del Pueblo de Abiquiú, begin with honoring community mandates. As Jun Sunseri (2019) argues:

> "*Archaeology by community mandate is decolonizing by focusing on Indigenous or descendant communities' concerns and concepts, producing knowledge in partnership contexts to resolve tensions between the researcher and community stakeholders, and as a risky endeavor that could hold great reward for those with most at stake, the descendants."*

The point is to shift the focus from an archaeologist-centered project to one that centers around the people who deserve a voice in archaeological research of their history. In AMP, the Merced Board, the Pueblo de Abiquiú Library and Cultural Center, the MHPO, Abiquiú interns, and volunteer community members define the parameters of who can voice feedback into the project as collaborators. The shift in archaeological practice leads to our discipline's re-evaluation of our role in the contemporary world. Their feedback relates to disseminating information, discussing the benefits of the research, and concerns over the potential risks involving new information. As collaborative partners, communities have the power to create meaningful research and produce tangible results that do not alienate those whom the study affects. Mandates offer an equal partnership in the mobilization of knowledge by incorporating indigenous perspectives in the research. Outcomes can lead to co-authorship or passing down knowledge to future generations. More importantly, mandates can ensure that archaeological work contains an indigenous voice when disseminated back to the community.

Regardless of what kind of collaboration you have done in the past, or are currently involved in, the various types of collaboration demonstrate multiple ways to conduct Collaborative Archaeology that is positive and inclusive. Scholars cannot neatly define collaborative projects into each term as several authors fit into various projects under multiple definitions. Collaboration has distinct levels that may not fall within any current definition of collaboration. Each approach focuses on a particular aspect within an archaeological research project that can transform into a fluid substance (Alder and Bruning 2008). Every collaborative project will incorporate some element of the collaborative continuum. Collaboration as a fluid (Alder and Bruning 2008), a continuum (Colwell-Chanthaphonh & Ferguson 2008), or spectrum resonates with terms usually associated with Butler's (1990) "performativity" in gender identity. In my view, collaboration is performative. Two projects with the exact expectations of collaboration will not have the same result. Still, the outcome of both their intentions and the tangible (or intangible) product of working together defines collaboration. Some collaborative

projects reveal how archaeologists can begin a project with a set of joint expectations and produce varying results. Collaborative projects will serve as a form of self-reflexivity that ultimately progresses toward more ethical and accountable archaeology.

Collaboration continues to reveal new aspects in the Abiquiú Mesa Project. Archaeological projects can have unintended consequences and pose risks when exposing a community's history and culture to the general public. For example, before a brown bag talk at UC Berkeley, the MHPO Bernardo Archuleta vetted the slides and information presented. His approval was on the condition that the presentation not be recorded nor live stream the presentation on a social media site. People have been spotted on top of the Abiquiú Mesa trespassing into Abiquiú Pueblo lands without permission. There is a fear that the trespassers are looters looking for artifacts at the ancestral place (MHPO Bernardo Archuleta, personal communication). Permission from only the Merced Board or MHPO is needed to visit these ancestral places within Abiquiú Pueblo lands. However, this is not unique to Abiquiú. Other archaeological projects can have unintended impacts such as internal community conflicts, unwanted tourism, and contested property rights. Establishing community-mandated goals can help minimize and potentially prevent risks for indigenous and descendant communities. The Abiquiú Mesa Project's MOA contains clauses written by the Merced Board that support Abiquiú's sovereignty over their history and information produced by this project.

Like the AMP, when a collaborative project follows the community's research interests, academic research questions are not a priority. One of the strengths of the AMP was the conscious choice to prioritize and only work on community questions. Setting the project's research plan to reflect the community's agenda helps decolonize archaeology and addresses goals relevant to the community. The lasting effects the project has on the community are essential in measuring a project's overall success. For example, The Abiquiú Mesa Project's commitment to service-learning helped prioritize the Abiquiú Merced Board mandates of multigenerational knowledge transfer. Abiquiú community members mention how previous interns and other Abiquiú youth voice their interest in participating in archaeology. Interns speak about their experiences with other youth. Intern affect plays a role in determining which artifacts were researched at the field lab. Intern choices and affect reveal questions. These questions are investigated through research and family oral histories. Intern learning becomes a capacity for building historical knowledge by incorporating others such as peers or family members. Any knowledge learned about stone tools or pottery gets shared between everyone in the community. Parents see their children taking an interest in Abiquiú's history that creates a dialogue. Community members and Abiquiú interns share their stories of the past and experience. As a result, Abiquiú's history is co-created over time by people, artifacts, and landscapes.

Contemporary narratives by Abiquiuseños offer a perspective that captures the relationship between the Pueblo de Abiquiú, the Abiquiú Mesa, and the surrounding landscape. Abiquiú's narratives demonstrate subtle changes in landscape perspectives through time (Harrington 1916; Ortiz 1969). Building from an indigenous philosophy and incorporating an indigenous framework into theory can be one way to decolonize Abiquiú's history. Suppose material culture and descriptions are lines of evidence that indicate a deep history and relationship to the landscape. In that case, an alternative model based on both indigenous knowledge and archaeological evidence. Exchange as a cultural practice acknowledges the necessity for a social aspect of relationships established through material culture, landscape, and oral histories.

Native oral histories and narratives provide a context from which human-to-human, human-to-nonhuman, and nonhuman-to-nonhuman interactions describe events within the landscape. Watts' (2013) "place-thought" lays the conceptual groundwork for agential nonhuman entities. As material goods play a role in the way relationships develop among humans, landscape assemblages portray relationships among materiality, landscape, and indigenous knowledge. Object itineraries and oral histories build the knowledge framework for a worldview that prioritizes spatial relationships. The objects or nonhumans situated in this Place-Thought contain itineraries that archaeologists can use to understand various entanglements (Law Pezzarossi 2015: 181). Itineraries situate oral histories and contemporary narratives as fundamental interpreters for Collaborative and Indigenous Archaeology projects. Object itineraries carry with them the narratives and relationships that give the object meaning, as Simpson (2014: 11) points out:

> "*Meaning then is derived not through content or data…but through a compassionate web of interdependent relationships that are different and valuable because of that difference. Individuals [including non-humans] carry the responsibility for generating meaning within their own lives—they carry the responsibility for engaging their minds, bodies, and spirits in a practice of generating meaning*".

Suppose the scholarship does not reflect a level of accountability or communication to the indigenous, descendant, and stakeholder communities. In that case, there will be a failure to mobilize the knowledge between the researcher, the institution, and the communities whose history we study. An archaeologist is in a power position with a moral obligation to use that knowledge to benefit the indigenous or descendant communities.

The AMP recognizes the validity of indigenous knowledge and tries to address the conflict between western and indigenous modes for producing knowledge. Bringing both scholar and native knowledge modes together, the knowledge produced creates a decentralized form of expertise that detracts from the traditional historical archaeology narrative. Accepting events from native oral histories often leads to contradictions in historical interpretations. Contradictions demonstrate the way scholars and Native people understand historical knowledge differently. AMP is an opportunity to recognize how indigenous knowledge informs archaeological interpretations while building partnerships that hold scholars accountable to indigenous and descendant communities. It also requires scholars to acknowledge the history of engagement with another people's history. Archaeology is a knowledge-producing discipline, but it can also empower people. The role of indigenous archaeology in the Abiquiú Mesa Project is to advocate for Abiquiú history using a decolonizing praxis framed by community-accountable Indigenous Archaeology. Ultimately, the project produces knowledge used by the community to identify areas of cultural significance within the Santa Fe and Carson National Forests and nearby private properties, such as Ghost Ranch, as part of Abiquiú's ancestral pueblo history.

Native knowledge is valid and valuable knowledge. Oral histories and narratives are knowledge that captures intangible historical moments missing from substantial archaeological knowledge. Embracing diverse ways of knowing allows communities to control and present their history on their terms, whether through different media, narratives, ceremonies, or even keeping that knowledge within the community. A multivocality framework decentralizes the power archaeology and institutions have over human history. The knowledge produced detracts from the traditional historical archaeology narrative. Acknowledging indigenous ontologies as modes of learning and knowledge is one of many steps toward decolonization. Ultimately, both

Native and non-Native views are vital to grasp history fully. If not, scholars will continue to use the same methods to drive the knowledge of history and continue to produce the same knowledge that already exists, further perpetuating the same postmodern reflections of colonial narratives that disenfranchise indigenous history (Teeman et al. 2019). Conversely, interpretations of the past with native perspectives challenge the major historical narratives to encompass a more inclusive past. As a result, the Abiquiú Mesa Project prioritizes community outcomes and produces historical knowledge that serves the people whose history we study.

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Appendix

	Artifact Type	Count	% of Assemblage
Lithics	Obsidian	56	12.8
	Cerro Pedernal	252	57.8
	Quartz/Quartzite	88	20.2
	Other*	11	2.5
Pottery	Broken Sherds	20	4.6
Other	Bone	6	1.4
	Metal	2	0.5
	Glass	1	0.2
Total Artifacts		436	

Table 5.1 – Artifact distribution of artifacts found during the survey of the Abiquiú Mesa.
*The "Lithics: Other" category consists of small (less than 5 cm in diameter) debitage pieces. They include 2 red chalcedonies, 6 jasper and 3 dark grey cherts.

	Ti ppm	Mn ppm	Fe* %	Rb ppm	Sr ppm	Y ppm	Zr ppm	Nb ppm	Th ppm	Obsidian Source
RGM-2	1438.243	232.198	1.208	137.329	96.811	21.225	212.891	7.675	9.739	
ABQM_060518_1	416.766	403.593	0.404	129.469	3.5	19.081	52.345	37.334	12.659	Canovas Canyon Rhyolite
ABQM_060518_2	339.88	435.26	0.389	127.153	3.891	17.411	48.564	32.838	14.727	Canovas Canyon Rhyolite
ABQM_060618_1	526.531	551.201	0.528	151.913	5.36	21.46	59.902	39.228	17.087	El Rechuelos Rhyolite
ABQM_060618_2	357.029	363.042	0.34	121.194	3.792	14.666	44.264	30.569	13.461	Canovas Canyon Rhyolite
ABQM_060618_3**	76.467	46.751	0.05	1.764	1.11	n.r.	-9.043	n.r.	n.r.	-
ABQM_060718_1	440.234	496.302	0.449	153.092	4.108	22.554	61.066	40.536	18.032	El Rechuelos Rhyolite
ABQM_060718_2	475.003	664.426	0.543	197.327	6.462	27.698	79.789	52.526	16.221	Bull Creek
ABQM_060718_3	1303.973	826.201	0.938	209.453	6.8	27.805	83.259	51.549	25.479	Bull Creek
ABQM_061118_1	509.742	522.961	0.511	130.811	4.126	18.106	50.671	32.557	13.313	Canovas Canyon Rhyolite
ABQM_061118_2	357.89	414.586	0.388	119.942	2.873	16.22	45.707	31.457	11.94	Canovas Canyon Rhyolite
ABQM_061118_3	393.293	473.2	0.427	115.545	3.593	14.035	38.086	27.038	11.873	Canovas Canyon Rhyolite
ABQM_061118_4	381.644	445.384	0.383	129.273	3.675	18.699	50.14	34.343	17.492	Canovas Canyon Rhyolite
ABQM_061118_5	301.08	354.667	0.367	134.91	5.553	16.925	57.424	36.654	14.322	Canovas Canyon Rhyolite
ABQM_061118_6	573.076	680.767	0.638	222.582	6.519	32.162	94.62	62.993	22.362	Bull Creek
ABQM_061218_1	400.418	437.477	0.417	148.322	5.336	20.891	60.063	40.225	15.539	El Rechuelos Rhyolite
ABQM_061218_2	184.705	195.508	0.198	86.086	3.266	10.672	25.709	19.259	4.103	Canovas Canyon Rhyolite
ABQM_061218_3	285.502	313.511	0.307	122.217	3.115	18.443	51.641	34.197	13.728	Canovas Canyon Rhyolite
ABQM_061218_4	647.907	650.19	0.665	198.399	6.147	29.261	85.224	56.369	21.142	Bull Creek
ABQM_061218_5	332.659	424.847	0.393	144.194	4.867	21.346	59.892	41.007	12.065	El Rechuelos Rhyolite

Table 5.2 Quantitative pXRF analysis of obsidian artifacts collected from the mesa.
* All measurements are in parts per million (ppm); however, due to an input error, the value for iron (Fe) is in the percentage of the total composition.
** The debitage was too thin for accurate measurements

	Ti ppm	Mn ppm	Fe ppm	Rb ppm	Sr ppm	Y ppm	Zr ppm	Nb ppm	Th ppm	Obsidian Source
RGM-2	1379.549	269.617	11465.715	130.295	96.069	22.638	200.848	8.23	11.272	
ABQM_061318_1	803.232	274.625	6553.906	83.064	10.616	10.779	42.212	26.225	12.938	Canovas Canyon Rhyolite
ABQM_061318_2	726.151	1130.326	6104.148	0.361	30.765	1.167	9.073	0.532	6.086	-
ABQM_061318_3	847.149	262.953	6649.557	76.72	11.215	11.312	41.748	21.628	9.596	Canovas Canyon Rhyolite
ABQM_061318_4	775.79	254.392	6411.959	80.347	9.806	12.226	39.707	24.362	11.596	Canovas Canyon Rhyolite
ABQM_061318_5	807.763	248.061	6415.884	64.664	10.507	8.222	33.547	16.555	9.37	Canovas Canyon Rhyolite
ABQM_061318_6	747.272	188.14	5676.642	37.141	9.373	5.164	24.726	7.5	7.698	Canovas Canyon Rhyolite
ABQM_061318_7	811.156	277.116	6519.859	85.324	9.688	13.211	44.097	24.804	13.729	Canovas Canyon Rhyolite
ABQM_061318_8	753.126	234.577	5976.18	55.977	8.736	8.477	31.039	15.399	9.228	Canovas Canyon Rhyolite
ABQM_061318_9	677.6	130.33	5123.181	4.466	8.082	1.196	9.926	0.395	4.392	-
ABQM_061318_10	808.77	278.953	6657.087	98.09	10.269	16.367	49.08	31.959	11.355	Canovas Canyon Rhyolite
ABQM_061318_11	871.713	329.152	7049.326	117.105	10.911	16.56	55.27	33.582	15.037	Canovas Canyon Rhyolite
ABQM_061318_12	831.608	234.079	6339.967	57.409	9.247	7.386	30.735	14.249	11.141	Canovas Canyon Rhyolite
ABQM_061318_13	930.11	512.036	10174.92	183.654	7.637	57.905	160.315	93.36	17.354	Cerro Toledo Rhyolite
ABQM_061318_14	903.17	360.132	7458.708	134.503	9.15	24.258	65.064	41.713	19.363	El Rechuelos Rhyolite
ABQM_061318_15	876.803	343.282	7061.458	129.641	10.843	19.888	62.323	43.027	13.988	Canovas Canyon Rhyolite
ABQM_061318_16	1495.514	385.905	10182.137	134.56	14.033	21.162	67.997	45.22	18.735	El Rechuelos Rhyolite
ABQM_061318_17	849.597	350.215	7224.406	132.432	13.542	20.149	64.982	40.989	15.45	El Rechuelos Rhyolite
ABQM_061218_6	931.332	384.847	7590.1	137.128	11.291	21.6	63.383	39.517	16.461	El Rechuelos Rhyolite
ABQM_061218_7	881.588	477.47	10291.925	188.805	7.637	60.311	164.368	91.311	21.584	Cerro Toledo Rhyolite

Table 5.3 More quantitative pXRF analysis of obsidian artifacts collected from the mesa.

	Ti ppm	Mn ppm	Fe ppm	Rb ppm	Sr ppm	Y ppm	Zr ppm	Nb ppm	Th ppm	Obsidian Source
RGM-2-obs	1349.885	264.246	11356.863	126.382	95.109	21.79	193.243	6.792	15.142	
ABQM_061318_18	840.077	317.156	6995.601	115.737	12.685	16.282	57.854	35.762	14.53	Canovas Canyon Rhyolite
ABQM_061318_19	920.834	312.857	7337.249	111.063	13.568	18.264	56.728	35.487	13.137	Canovas Canyon Rhyolite
ABQM_061318_20	896.911	351.129	7398.333	119.499	11.832	18.889	57.007	33.223	13.669	Canovas Canyon Rhyolite
ABQM_061318_21	820.895	278.27	6782.459	91.526	9.091	14.263	45.994	27.432	13.766	Canovas Canyon Rhyolite
ABQM_061318_22	860.208	344.103	7155.337	124.071	11.089	19.184	54.537	33.983	15.067	Canovas Canyon Rhyolite
ABQM_061318_23	802.983	394.772	8806.844	153.561	8.309	47.658	131.004	71.762	14.742	Valles Rhyolite (Cerro del Medio)
ABQM_061318_24	819.063	286.642	6564.852	91.442	10.872	15.041	47.566	25.241	12.228	Canovas Canyon Rhyolite
ABQM_061318_25	797.473	292.747	6612.485	96.307	10.083	15.581	45.31	28.409	14.482	Canovas Canyon Rhyolite
ABQM_061318_26	833.673	350.654	7149.001	112.733	11.462	16.287	52.485	32.994	13.855	Canovas Canyon Rhyolite
ABQM_061318_27	815.447	242.666	6433.17	57.753	9.795	8.282	30.844	14.394	12.349	Canovas Canyon Rhyolite
ABQM_061318_28	824.046	371.616	8805.599	137.552	7.637	43.073	124.496	65.555	12.926	Valles Rhyolite (Cerro del Medio)
ABQM_061318_29	1342.418	376.189	9964.073	135.946	14.18	20.769	67.59	43.693	16.474	El Rechuelos Rhyolite
ABQM_061318_30	1086.933	447.995	8246.099	136.712	11.85	22.196	64.555	43.425	15.147	El Rechuelos Rhyolite
ABQM_061318_31	907.326	355.341	7546.813	128.951	13.249	20.238	63.612	43.058	13.646	Canovas Canyon Rhyolite
ABQM_061318_32	944.53	352.908	7639.406	131.29	12.788	20.795	63.29	42.898	15.727	Canovas Canyon Rhyolite
ABQM_061318_33	885.541	354.187	7284.593	134.341	11.257	20.982	62.566	43.82	14.407	El Rechuelos Rhyolite
ABQM_061318_34	973.947	366.483	7620.112	134.057	12.38	20.723	66.45	44.157	15.8	El Rechuelos Rhyolite
ABQM_062018_1	996.643	423.791	8072.053	138.431	11.946	20.523	64.549	42.223	16.796	El Rechuelos Rhyolite
RGM-2	1367.234	265.652	11360.599	124.7	95.426	20.213	199.14	9.106	14.159	

Table 5.4 Final quantitative pXRF analysis of obsidian artifacts collected from the mesa.

Figure 5.27.A - An etching of a circular shield with a broad cross. To the left is an etched rectangular grid possible grid garden imagery. To the right is bird-like imagery. (Photo by author.)

Figure 5.27.B - An etched cross filled in with a grid pattern with multiple etch markings to the left. (Photo by author.)

Figure 5.27.C - A pecking of a turtle-like shield with a possible corn stock imagery. (Photo by author.)

Figure 5.27.D - The image contains two styles: pecking and scratching. The image to the left of the scale is the scratching of a cross, most likely by a metal tool. On the right is a pecked abstract figure with unknown meaning. (Photo by author.)

Figure 5.27.E - A rectangular etched shape outlining a pattern of diagonal lines surrounding a circular figure, possibly a shield symbol representing a grid garden. (Photo by author.)

Figure 5.27.F - Rectangular etched lines with a concentration of crisscrossing lines in the center; possible imagery of mapping grid fields. (Photo by author.)

Figure 5.27.G - On the left, you see two circles with a dot in the middle representing the agriculture of corn, bean, and squash. On the right, you see a snake representing bodies of water, such as the Chama River. This imagery is also associated with the Hopi Snake Clan symbols. (Photo by author.)

Figure 5.27.H - The imagery of a shaman attached to an abstract or clan symbol. (Photo by author.)