Toward a “Full Biography of Obsidian”: Studies of Obsidian Use and Exchange in the Maya Area

by

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“Hitherto, obsidian has been subject mainly to studies which have privileged such issues as the economic dynamics of production, trade and exchange. Yet obsidian’s full ‘biography’ must include an assessment of its unique ideological positioning as a bridge between symbolic and physical realities.”

(Saunders 2001: 221)
Acknowledgements

I could not have written this thesis without the help and support of my professors, friends, and family. Thank you to everyone who has seen me through this process.

To Doug Charles, my adviser: thank you for teaching me about archaeological theory and about good writing this year. I am grateful to have had the chance to be your student.

To Helen Haines: thank you for bringing me to Belize. Thank you for teaching me so much about the ancient Maya, obsidian, and archaeological fieldwork.

To Anya Backlund, my thesis mentor: thank you for your good questions and great advice.

To Miranda Becker, Emily Himes Iversen, Jared Gimbel, Seth Alter, and Allegra Stout: thank you for your friendship and confidence in me. To my parents, Doug and Ellen Heath: thank you for always encouraging my love of archaeology.
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<td>Basic Maya Chronology</td>
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**Introduction**

When we arrived at Ka’Kabish, in northern Belize, we had to carve a space for ourselves in the jungle. The site was in a patch of forest surrounded by corn and sugarcane fields. Thick vegetation made it hard to walk through the site, and we had been warned of poisonous fer-de-lance snakes and Africanized bees. The jungle was one of the greenest places I had ever been: even the light turned green as it filtered through the tree boughs above. The ground was spongy with rotting leaves beneath my boots. Only howler monkeys, and perhaps a looter or two, had disturbed the site for the last year. In June 2010, the members of the Ka’Kabish Archaeological Research Project piled out of the beds of pickup trucks to learn from it what we could.

We were a diverse group: a Canadian professor, Helen Haines, with her three graduate students; two undergraduates from the United States; and eight Belizean men from the local villages. The day we arrived, the Belizeans sharpened their machetes, and began clearing the site. The students burned piles of vines and shrubs that the men had cut down. Ponciano, the oldest of the workmen, and the self-proclaimed *abuelito* (grandfather) of the project, taught us to avoid the Belizean equivalent of poison ivy: a vine with leaves a square foot in size, which causes severe allergic reactions for most people. We watched out for poisonous snakes and killer bees. It took a week or two to feel safe in the jungle.
As we cleared the site, Ka’Kabish began to take form. At first, I had seen nothing but jungle, but I slowly began to see the buildings that we would be investigating. They looked nothing like the beautifully reconstructed pyramids I had seen before. I had come to Ka’Kabish after a semester abroad in Mérida, Yucatán, Mexico, where I had begun to learn about the Maya. I had visited many sites as a tourist, but they had all been restored and landscaped. Ka’Kabish was a new site and a new experience.

Helen Haines had first investigated Ka’Kabish under the auspices of the Maya Research Program, which is based at the site of Blue Creek, about 17 km west of Ka’Kabish (Guderjan 1996; 2007). She and other researchers from the program visited and mapped Ka’Kabish in 1995, and had originally planned to conduct excavations there in a future summer. Blue Creek, however, turned out to be a more fruitful and important site than expected, so those plans fell through. Helen and her colleagues did, however, ascertain that Ka’Kabish was a large site, likely an independent polity (2007).

Along with the site’s size, one of the researchers’ most important observations was of the looting at Ka’Kabish, which was “possibly the most looted site in Belize” (Guderjan 2007: 17). Looters had targeted most of the structures at Ka’Kabish in search of artifacts to sell on the black market. They had tunneled into the pyramids, threatening their structural stability.

In 2005, 2007, and 2009, Helen returned to Ka’Kabish to do reconnaissance work and to more fully map the site, creating the Ka’Kabish
Figure 1: Map of Ka’Kabish (adapted from Haines 2011: figure 2)
Archaeological Research Project. When I worked at Ka’Kabish in the summer of 2010, I participated in the first season of excavation there.

There were several different projects being done at the same time during the 2010 field season. The three graduate students were investigating the construction of one of the pyramids, the construction of a tomb that had been entered by looters, and the layout of the settlement zone around the site, respectively. Helen assigned me, along with several of the Belizean men, to excavate a 4m by 4m unit in the central plaza of the site, Plaza D (see figure 1). Maya sites were often organized around plazas, large areas paved with plaster, surrounded by temples and other buildings.

As we excavated the plaza, we began to find obsidian, mostly in tiny broken pieces. When I arrived in Belize, I knew almost nothing about obsidian. I knew that it was a shiny, black, igneous rock, but had no idea how or why the Maya might have used it. At first, I had trouble noticing the obsidian in the screen as we sifted dirt for artifacts. Ponciano pointed it out to me: *Los brillantes son de obsidiana. ¡Cuidado! Son bien afilados.* (“The shiny pieces are obsidian. Careful! They're pretty sharp.”). The pieces looked like tiny shards of glass. We collected the obsidian carefully, keeping it separate from the other stone tools. When we washed it in the lab, I saw that the obsidian we found was clear or grayish. Some had black or gray grit embedded in it, or had black or gray stripes. Many of the pieces were as small as my smallest fingernail (see figure 2).

I wondered about the obsidian. Ponciano told me that the ancient Maya had made knives out of it. I could tell from the tiny cuts on my fingers that it was
Figure 2: Obsidian from Plaza D South, Ka’Kabish

Figure 3: Chert and Chalcedony Artifacts from Plaza D, Ka’Kabish
very sharp. Yet most of the stone tools we found were made of chert or chalcedony (see figure 3). Compared to the obsidian, these pieces seemed heavy and crude. They were not nearly as sharp and did not shine in the sun the way the obsidian did.

I wondered why the people of Ka’Kabish had used both kinds of stone for their tools. The obsidian was so much sharper that I thought it must have been a better tool for many tasks, yet there was much more chert and chalcedony at the site. I wondered how people had thought about the two materials: were they used for different tasks? Did the obsidian’s beauty and sharp edges make it more than just a good cutting tool in the eyes of those who used it?

Helen began to answer these questions for me. During truck rides to the site, mealtimes, and Sunday afternoons washing artifacts, she taught me all kinds of things about the Maya. She had written her dissertation (Haines 2000) about obsidian in northern Belize, and offered to teach me how to analyze it. Since none of the graduate students at the site planned to study the obsidian, the artifacts were available for my work. I had found a topic for the undergraduate thesis I planned to write in the coming year.

**In the Laboratory**

Helen explained that, while chert and chalcedony could be found locally, the closest obsidian sources were far away in the mountains of southern Guatemala (see figure 4). The obsidian we found had come from there, and had
Figure 4: Obsidian Sources in the Maya Highlands (adapted from Haines 2000: figure 2.3)
been brought to Ka’Kabish on foot or by canoe. She told me that most of the pieces we found were broken prismatic blades, a type of thin and delicate knife (see chapter 3). Other pieces were shatter (debris from tool production) or expended cores (the pieces left behind after blades had been made from a piece of obsidian).

I learned how to carry out a basic laboratory analysis of the obsidian we found. I separated the obsidian into blade pieces, other flakes, shatter, and cores. Then I separated the blade fragments into proximal, medial, and distal pieces. The proximal end of a tool is the end closest to the user, or the handle end of a blade. The proximal ends of prismatic blades are identifiable by their bulbs of percussion, rounded faces formed when the stone is broken to make the tool. The distal end is the farthest end from the user: the point of the blade. Medial fragments come from the area in between. Since every blade can only have one proximal end, the count of proximal fragments gives a minimum number of blades at the site. We found 222 proximal fragments, meaning that the obsidian we found represented at least 222 prismatic blades.

Helen told me that it was possible to determine which source area a piece of obsidian had come from based on its chemical composition. Since such tests are expensive and destroy the sample, we did not send our obsidian to a laboratory for chemical testing. Instead, she taught me how to tell where a piece of obsidian likely originated by looking at it, since each source area yields obsidian with a slightly different appearance. Although visual sourcing is
imperfect, it gives a general idea of which obsidian sources were utilized (see chapter 3).

Visual sourcing is based on the stone’s color and inclusions, or visible pieces of material imbedded in it. Clear pieces with visible, gritty-looking inclusions were from San Martín Jílotepeque. Pieces with such small inclusions that the individual particles were not visible, giving the obsidian a milky gray appearance, were from El Chayal. Helen identified one clear prismatic blade fragment with inky black stripes as possible Zaragosa obsidian, from a source in central Mexico. Many pieces were classified as indeterminate, particularly the smaller pieces. Yet the sourcing showed us that most of the obsidian from Ka'Kabish had come from the sources of San Martín Jílotepeque and El Chayal (see table 1).

<table>
<thead>
<tr>
<th>Artifact Type</th>
<th>Source</th>
<th>El Chayal</th>
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<th>Zaragosa?</th>
<th>Grand Total</th>
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<td>26</td>
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<td>18</td>
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<td>Zaragosa?</td>
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Table 1: Obsidian from Ka'Kabish, Summer 2010 field season, by source and artifact type
Most of the obsidian found during the 2010 field season came from the Plaza D and Plaza D South excavations. In Plaza D, we excavated a 4m by 4m unit, eventually switching to a smaller 2m by 2m unit in its center to prevent collapse. The plaza had been plastered and re-plastered many times, as each surface wore out, sometimes being raised with layers of stones and gravel. The original purpose of the excavation was to give an idea of when and for how long the site had been inhabited. We found seven plaster floor levels before reaching the bedrock, showing a long period of occupation. Jim Aimers, a ceramic analyst, stylistically dated pottery from the excavation to the Preclassic and early Classic periods.

After finishing the Plaza D excavations, we excavated a 2m by 2m unit in Plaza D South (see figure 1). The vast majority of the obsidian found during the field season (498 of 557 total pieces) was found in Plaza D South. Most of it (350 pieces) was found in the first two levels of excavation, in the humus and topsoil layers. Each of these levels was defined stratigraphically: the humus layer consisted of decomposing forest litter, and was only a few centimeters thick. The topsoil was a thin layer of recently formed soil. It is unclear why so much obsidian was right at the surface, and it is hard to say how it had been used or what its location may have meant, given the unclear context. Helen speculated that perhaps looters digging in a nearby structure had found a cache of obsidian, decided it was worthless, and dumped it in the plaza.
Back to the Library

At the end of the field season, I returned to Wesleyan University with a spreadsheet of data and an enormous paper to write. Since I had not originally planned to write about obsidian, my thesis adviser suggested that I spend some time reading anything I could get my hands on that related to Maya obsidian. Then I could see where my data might fit into the context of obsidian studies.

I began by reading Helen’s dissertation (Haines 2000), and the sources she had cited. One of the first things I noticed was that most of what I read cited two articles by Norman Hammond (1972, 1976) that discussed which source areas had been used when, and in which parts of the Maya area obsidian from each source area had been used. Most researchers fit their data into Hammond’s model, while Helen called for a more nuanced model. While these questions of sourcing were important, many of their arguments were repetitive. I kept wondering why the Maya had used these different obsidian sources. What had the obsidian meant to them?

Another thread of research was about prismatic blades and how they were made. I found studies discussing the technology itself (e.g. Crabtree 1968; Hester 1972; Sheets 1972) and the meaning of craftsmanship (e.g. Hruby 2007; Aoyama 2008). Some of these discussed the material in terms of its utilitarian superiority to other types of stone, but none analyzed its possible symbolic importance.

After a month and a half of research, I stumbled onto Orellana’s (1977) study of obsidian found in the Guatemalan highlands. In her introduction,
Orellana discussed references to obsidian in *The Annals of the Cakchiquels*, a sixteenth-century codex that described Maya cosmology. Finally, I had found a discussion of the spiritual significance of obsidian itself! Yet Orellana followed this introduction with a fairly orthodox study. I searched for other work citing her article, but in the decades since its publication, no one else had followed up on the religious aspect of her work.

Looking outside the Maya area, I found examples of the kind of study I had been looking for (Heyden 1988; Saunders 2001). Working in central Mexico, Heyden and Saunders had examined the symbolic importance of obsidian as a material. I wondered why their research questions had not reached the Maya area.

I decided to focus my research and writing on how and why some questions have become popular and others have been neglected. I traced the questions that have guided research about Maya obsidian use, and looked for research angles that had been neglected. I found that two types of questions have been asked: where obsidian came from and what was done with it. As archaeological theory has developed, approaches to these questions have changed, but the questions themselves have been essentially constant. The repetition of the same questions has limited Maya archaeology, allowing it to neglect lines of inquiry that have been used in other parts of Mesoamerica.

I argue that Maya archaeologists have been myopic in their continued focus on the same types of questions. They have ignored the kinds of research that Heyden and Saunders have begun to carry out in central Mexico. It is time
to branch out: only by doing so will we understand what Saunders called the “full biography” of obsidian in the ancient Maya world (Saunders 2001: 221).

In the first half of this thesis, I will contextualize these questions by giving overviews of Maya history (Chapter 1) and the history of archaeological theory (Chapter 2), followed by a discussion of what obsidian is and the tools the Maya made out of it (Chapter 3). The next three chapters discuss trends in Maya obsidian studies. I will examine the two ways that Maya obsidian has been discussed — based on source data and on studies of tool production — and explore which questions have been ignored and possibilities for new research. In conclusion, I will revisit Ka’Kabish, discussing how its obsidian fits into these larger questions.
The ancient Maya were one of many cultural groups in the area we know as Mesoamerica. Mesoamerica includes modern-day Mexico, Guatemala, Belize, Honduras, and El Salvador. Although culturally and environmentally diverse, the prehispanic civilizations of Mesoamerica had some social, religious, and economic aspects in common. In this chapter, I will give a brief account of Mesoamerican history and archaeology, focusing on the Maya.

Mesoamerica contains a vast range of ecosystems, including deserts, savannas, tropical and coniferous forests, and mountainous highlands. In what is today central Mexico, the Classic-period Teotihuacán civilization and the Postclassic Aztec Confederacy flourished in the dry area between the two mountain ranges of the Sierra Madre. To the southeast, the land narrows into the Isthmus of Tehuantepec, where the Preclassic Olmec civilization flourished. Farther east, the Yucatán peninsula juts northward. The Maya lived there during the Preclassic, Classic, and Postclassic periods (Adams 2005: 14-15) (see figure 5).

Like peoples from other areas of North America, indigenous Mesoamerican civilizations depended on the cultivation of corn, beans, and squash for subsistence. They used no metals harder than copper, and used stone tools made of chert and obsidian. They did not use the wheel and had no domesticated draft animals: all travel and trade was by foot.
Figure 5: Sites and Civilizations Mentioned in Chapter 1

Key:
1. Teotihuacán
2. Tlalcopan
3. Tenochtitlán
4. Texcoco
5. Laguna de los Cerros
6. San Lorenzo
7. La Venta
8. Palenque
9. Dzibilchaltún
10. Chichén Itzá
11. Mayapan
12. Uxmal
13. Kabah
14. Sayil
15. El Mirador
16. Nakbé
17. Tikal
18. Seibal
19. Altar de Sacrificios
20. Quirigua
21. Copan
22. Caracol
23. Colha
24. Cuello
The cultures of Mesoamerica also had various social commonalities. Many were highly stratified, with an elite class in control of governance, and social classes of merchants, warriors, artisans, and farmers. People lived in city-states, which were sometimes united under kingdoms or empires.

Mesoamerican religions were polytheistic, with pantheons of capricious deities. Although each society had its own set of religious beliefs, many gods from one group’s religion had parallels in others. For example, the Aztec feathered serpent god Quetzalcoatl is considered equivalent to the earlier Maya Kukulcán because of their similar depictions in art and mythology. Some rituals were performed throughout Mesoamerica, such as the Ball Game, which emulated a game played by the gods. Ball courts can be found on archaeological sites from many cultures throughout Mesoamerica (Adams 2005).

Archaeologists generally divide Mesoamerican prehistory into several periods, including the Lithic, Archaic, Preclassic, Classic, Postclassic, and Colonial eras (see table 2). During each of these periods, different cultures and empires developed in different parts of Mesoamerica. Each period can be further subdivided. In the Maya area, archaeologists often discuss a “terminal classic” period, during the transition between the Classic and Postclassic periods. (Sharer 1994: 46-48).

**The Maya**

The Maya were never a centralized empire like the Aztecs of central Mexico or the Inca of the Andes. What defines the Maya world is the shared
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<th>DATES</th>
<th>DESCRIPTION</th>
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<td>Conquest by the Spanish; forced conversion and enslavement on haciendas; Spanish priests hold auto-de-fes where they burn and destroy any Maya sacred objects they can find</td>
</tr>
<tr>
<td>Postclassic</td>
<td>900-1500 CE</td>
<td>After Classic societies collapse, new cultures arise Aztec Confederacy rises to power in central Mexico</td>
</tr>
<tr>
<td>Classic</td>
<td>150-900 CE</td>
<td>Complex cultures with monumental architecture, art of many media, hieroglyphic writing systems, state-level political systems, stratified class systems; Maya culture in southeastern Mesoamerica and Teotihuacán in central Mexico are important</td>
</tr>
<tr>
<td>Preclassic</td>
<td>2000 BCE-150 CE</td>
<td>Olmec culture flourishes; Beginning of agriculture in Maya area; Earliest complex cultures with monumental architecture, political and religious sculptures, and government systems</td>
</tr>
<tr>
<td>Archaic</td>
<td>c. 7000-2000 BCE</td>
<td>Beginning of agriculture in areas other than the Maya area; Transition to settled agricultural villages</td>
</tr>
<tr>
<td>Lithic</td>
<td>c. 25000-7000 BCE</td>
<td>First settlers enter Mesoamerica from the north; People live in caves, leave behind stone tools and animal bones Migratory hunter-gatherers</td>
</tr>
</tbody>
</table>

Table 2: Basic Mesoamerican Chronology (Adams 2005; Sharer 1994)
language and culture of its people, evident in the material culture of its ruins and the continued use of Mayan languages in rural areas. Archaeologists often refer to the Maya “area” to discuss the region in which they lived, which includes the southeastern part of modern-day Mexico, including the states of Chiapas, Tabasco, Campeche, Yucatán and Quintana Roo; all of Guatemala and Belize; and parts of Honduras and El Salvador (Sharer 1994: 19-20).

Archaeologists usually think of the Maya area in two major parts: the lowlands of the Yucatán peninsula in the north and the highlands of Guatemala and El Salvador in the south (see figure 6). The lowlands are sometimes divided into the dry northern lowlands of Yucatán and the wetter, rainforested southern lowlands of Campeche, Belize, and the Petén region of Guatemala. These regions had different resources that their inhabitants traded to each other: the highlands had sources of hard stone for grinding tools, obsidian for sharp tools, and minerals used in rituals and as luxury goods. The lowlands were sources of food and construction materials like palm thatch and limestone building blocks (Sharer 1994: 20-42). The Maya interacted with various other cultures of Mesoamerica, especially the Olmecs of the Preclassic period, Teotihuacán in the Classic, and the Aztecs in the Postclassic (see table 3).

**The Preclassic Period**

**Preclassic Neighbors to the Maya: the Olmecs**

During the Preclassic period, the Olmec civilization was powerful in the narrow isthmus connecting the Maya area to the rest of Mexico. The Olmecs
Figure 6: The Maya Area (de la Cova 1997)
<table>
<thead>
<tr>
<th>ERA</th>
<th>DATES</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| Postclassic| Late          | c. 1200-1500 CE  
Fall of Mayapan;  
abandonment of most sites;  
ends with arrival of the Spanish |
| Early      | c. 1000-1200 CE | Chichén Itzá abandoned, Mayapan becomes most powerful site in the northern lowlands;  
warfare between polities;  
loss of hieroglyphic writing system |
| Terminal   | c. 800-1000 CE  | fortifications and hilltop sites built;  
warfare and invasions from Gulf coast;  
population loss;  
Chichén Itzá powerful in the northern lowlands;  
abandonment of many classic sites |
| Late       | c. 550-800 CE  | peak of population and power in southern part of the lowlands;  
Puuc architectural style expands through northern lowlands;  
use of hieroglyphics |
| Early      | c. 250-550 CE  | Kaminaljuyu becomes powerful in the southern highlands;  
expansion of elite Maya culture;  
stone monuments with hieroglyphic writing spread to northern Lowlands;  
increasing warfare between different polities |
| Protoclassic| c. 100-250 CE | peak population in the southern highlands;  
development of dynastic system |
| Late       | c. 400 BCE-100 CE | stone sculptural monuments, some with hieroglyphics;  
monumental architecture including vaulted rooms and stucco facades |
| Middle     | c. 1000-400 BCE | earliest complex Maya culture;  
beginnings of economic complexity;  
first monumental architecture;  
political complexity |
| Early      | c. 2000-1000 BCE | earliest sedentary farmers |

Table 3: Basic Maya Chronology (adapted from Sharer 1994: 46-47)
were the earliest complex society of Mesoamerica (see p. 53-55), and have been described as the “mother culture” of the region. The western periphery of the Maya area was not far from the area inhabited by the Olmecs, and cultural complexity was beginning to develop in the Maya area during the time that the Olmecs reached their cultural and political zenith. The Maya adopted some aspects of their culture and art, continuing to be influenced by the Olmecs long after the Olmec civilization itself had collapsed (Sharer 1994).

The Olmecs were the first Mesoamerican culture to organize themselves into castes, rigid social categories that were subdivided into more fluid classes, in what would become the typical Mesoamerican system. At the top of the hierarchy was a hereditary elite caste, which governed the rest of society. These elites governed both religious and secular affairs. They lived in cities like La Venta, Laguna de los Cerros, and San Lorenzo, political and ceremonial centers with massive platforms made of soil and clay, supporting clay and adobe buildings (Adams 2005: 57-60).

Olmec elites were considered connected to the gods, although archaeologists do not always agree on the nature of this relationship. Whether the Olmec elites were considered gods, descendants of gods, or simply people with a stronger connection to the gods than others is unclear. Some of the most well known Olmec art consists of enormous stone heads, probably representations of these elite rulers. The heads may have functioned as thrones or as altars in political and ritual activities (Adams 2005: 75). Depictions of divine beings in Olmec art included a serpent god who may have represented
governance, and a god with a cleft head who may have been connected to maize agriculture (Adams 2005: 74). The elite Olmecs had access to luxury goods such as jade statuettes, cacao, and obsidian, traded or brought as tribute from other areas of Mesoamerica (Adams 2005: 57). In fact, they established exchange connections with people in the Maya highlands in order to gain access to obsidian, which was an important material in Olmec culture (Brown 1984).

The non-elite caste, which comprised the rest of society, was divided less formally into various classes based on occupation. These included the craftspeople, who made tools and did artistic work, and the farmers, whose work fed the rest of the society (Adams 2005: 57). Within each of these classes, social ties were structured around kinship: people were organized into lineages originating from a real or fictitious ancestor. The living person most closely related to this ancestor was the highest-ranked person within the lineage (Diehl 2004: 94).

Farmers and other commoners lived in smaller hamlets and villages scattered across the landscape (Adams 2005: 57). Farmers practiced slash-and-burn farming of maize, beans, and squash, which was supplemented by game meat, fish, tropical fruits, and nuts (Adams 2005: 58-59; Diehl 2004: 84). They usually lived near rivers, which provided transportation through the region as well as fish and water for crops (Diehl 2004: 83).

Olmec technology included pottery; basketry; and stone, bone, and wood tools. The earliest pottery vessels from the Olmec area date to 2300 BC. The Olmec made and used pottery vessels of various shapes, sizes, and designs, as
well as statuettes and masks. Their stone tools included basalt *manos* and *metates* for grinding corn, and cutting tools made of chipped chert and obsidian (Diehl 2004: 89-92).

**The Maya in the Preclassic**

During the Preclassic period, what we think of as Maya culture began to develop. People became sedentary and developed agriculture in the southern lowlands of Belize and Guatemala. This sedentism and the use of ceramics distinguish the Preclassic Maya from the hunter-gatherers who preceded them (Henderson 1997: 87; McKillop 2004: 77). While the first sedentary Maya foraged for food as well as cultivated plants, by the end of the Preclassic period, agriculture was well established as the basis of subsistence throughout the Maya area (Henderson 1997: 72-73).

During the Preclassic, the Maya adopted pottery technology from the Olmecs, and ceramic production techniques spread throughout the Maya area. While some pottery was clearly utilitarian, the wide range of shapes and decoration styles shows that pottery quickly became more than a simple tool. Some archaeologists speculate that pottery and the food and drink it held were important parts of rituals because of the elaborate decorations on ceramic vessels. Ceramic statues and figurines also indicate that that Maya used clay for more than simple utilitarian purposes (Coe 1993: 37).

Some Preclassic sites on the Western periphery of the Maya area show signs of interaction with the Olmec civilization to the west. The pottery found in
this area, as well as some relief sculptures, show the stylistic influence of the Olmecs. The sites with material culture resembling that of the Olmecs also show signs of cultural complexity earlier than the rest of the Maya area (Henderson 1997: 79-80). This Olmec influence continued into later periods despite the collapse of the Olmec civilization itself, and facets of Olmec religious and political structures can be seen in later Maya sites.

During the early Preclassic period, many of the sites that would become politically powerful later first appeared as small village sites. Such sites included Altar de Sacrificios, Seibal, and Tikal in Guatemala and Colhá and Cuello in Belize (Henderson 1997: 81). One of the important characteristics of the Preclassic period was the slow spread of settled village life across the Maya area. Gradually, its inhabitants transitioned from groups of nomadic hunter-gatherers relying on wild plants and animals for subsistence to a sedentary agricultural society subsisting on beans, corn, and other domesticated crops (McKillop 2004: 78).

At first, each village had its own styles of pottery and architecture, but during the middle Preclassic, these styles began to appear more similar, and the Maya culture began to develop as a more coherent entity. Part of this process was the growth of the villages into larger and more socially complex sites (Henderson 1997: 81-82). Maya material culture began to include luxury goods like jewelry and obsidian traded from southern Guatemala and large, public monuments, which indicate the emergence of social and political complexity (Henderson 1997: 87-88). Some of the characteristics of Classic Maya culture,
including carved stelae with hieroglyphic writing and calendrical dates, began to appear during the Preclassic in some parts of the Maya area (Henderson 1997). Throughout this period, social stratification grew, shown in the archaeological record by elite items like jade statuettes and monumental architecture (McKillop 2004: 85).

One of the best examples of the development of complexity at the end of the Preclassic is the site of Nakbé in Guatemala. During the late 7th and early 6th centuries BC, the inhabitants of Nakbé built huge earthwork platforms, which soon became large stepped pyramids with small temples atop them and large plaster faces decorating their sides. Some of the architecture at Nakbé included stone substructures that foreshadowed the stone pyramids of the Classic period (Demarest 2004: 83; Sharer 1994: 82).

**The Classic Period**

**The Maya in the Classic**

In the Maya area, archaeologists see the Classic period as the apogee of complex culture. Elite hierarchies, great monumental architecture, the use of hieroglyphics in codices and on stone monuments, and mathematical and astronomical developments characterized the period. Maya polities during the Classic period are generally categorized as state-level societies in terms of complexity, meaning that they had formalized and bureaucratic governance structures, a highly stratified social hierarchy, craft specialization, and advanced monumental architecture. At the end of the Classic period, various Maya polities
began to struggle for power, and some aspects of the civilization collapsed (Sharer 1994: 138).

Each Maya polity or city-state had a ruler, who was born into the elite caste of society. This monarch was known as the ahau, although other members of the nobility were sometimes referred to with the same word. Carved stone stelae and parchment codices used hieroglyphics to describe the deeds of the ahau at any given site. These included emblem glyphs, which were specific to each site and identified that site’s ruler. Analysis of these stelae has shown that the ahau rulers were members of dynastic systems (Sharer 1994: 140-141; McKillop 2004: 90-92). The Maya retained the Olmec belief in a connection between royalty and divinity, and many of their rituals were both political and religious in character. The coronation and funerary rituals of the ahau, which often included bloodletting, reinforced his power over the rest of society (McKillop 2004: 92-94).

The stelae and codices that told of these rituals and the deeds of the ahau used the long count, a calendrical system that counted the years since the beginning of the world in the Maya cosmology. The long count used a series of numbers of different units, each of which was a number of days, to give the date of a given occurrence. The calendar was tied closely to astronomical observations, with various units of time calculated by watching the sun, moon, and stars (Coe 1993: 184-186).

During the Classic period, various city-states rose and fell in power, as they competed for influence. This struggle between major polities was an
important part of the development of Maya culture, but the lack of fortifications at many sites shows that large-scale warfare was a rarity. Instead, city-states competed economically and politically (Sharer 1994: 143-144). During the Classic period, some of the most powerful polities included El Mirador, Tikal, Caracol, Uxmal, Palenque, Copan, and Quirigua (Sharer 1994: 175).

Classic period city-states were arranged around ceremonial and political centers characterized by monumental architecture. Around these centers were the domestic areas of the elites, who lived in stone complexes of rooms. The areas around the settlements were inhabited by less powerful people, who did the labor to support the elite caste, stretching out into the surrounding areas (Demarest 2004: 99). The temples and palaces of the ruling centers show the high level of social stratification in several ways: not only were people of different statuses living in very different housing, but the amount of work necessary to build the temples and palaces shows that elites had control of the population’s labor force. The temples were often pyramidal in shape, with steep stairs leading to a building at the top, which was used for religious and royal rituals (McKillop 2004: 92).

Demarest (2004: 89-92) points out that many aspects of Classic Maya civilization in fact arose during the Preclassic period. According to his argument, what sets the Classic period apart from the preceding eras is not its monumental architecture or the use of the calendrical system, but the way the Classic Maya used information and symbolism. He uses the huge body of knowledge from Maya codices and stelae to show that the Maya used information to bolster the
political ideologies that define Classic Maya civilization as a unique phenomenon.

**Classic Neighbors to the Maya: Teotihuacán**

During the Classic period, the city of Teotihuacán in central Mexico became a powerful political and economic center, and evidence of Teotihuacano influence, including exchange goods and artistic style, extends throughout the Maya area (Sharer 1994). Teotihuacán was first inhabited during the middle Preclassic period, reached its peak during the early Classic period, and collapsed during the late Classic period. Archaeologists do not know exactly where the Teotihuacanos came from or what they called themselves: the word “Teotihuacán” means “Place of the Gods” or “Place where the Gods were Made” in the Nahuatl language spoken by the Aztecs centuries after the city’s collapse (Van Tuerenhout 2005: 62; Adams 2005: 217).

What is known about Teotihuacano religion comes from their murals in civic and elite domestic buildings. One of the common motifs may have depicted a storm god, who was usually shown with water falling from his hands. Illustrations of butterflies were often present in funerary contexts or on incense burners; they have been interpreted as symbols of a sort of soul in Teotihuacano religion. Jaguars and lightning in murals are often interpreted as signs of an underworld. There were murals showing worshippers who seemed to be chanting and giving offerings at altars. Some murals also showed what seem to be female deities (Adams 2005: 234-235).
The city of Teotihuacán was organized along a north-south axis, what the Aztecs later called the Street of the Dead. Along this roadway were the political and religious buildings that kept the city functioning, including the Pyramids of the Sun and the Moon, and many elite residences. Other parts of the city included domestic compounds, often composed of several apartments: these housed less highly-ranked people. These compounds were built around the time that craft specialization emerged at Teotihuacán and the city's influence began to spread throughout Mesoamerica (Van Tuerenhout 2005: 62-65).

Objects and artistic influence from Teotihuacán are visible throughout Mesoamerica and influences from other places are visible in various ethnically specific barrios, or neighborhoods, of Teotihuacán. Some barrios seem to be devoted to specific crafts, such as pottery and stone tool production (Van Tuerenhout 2005: 65).

Teotihuacán collapsed during the tenth century AD, near the end of the Classic period, around the same time as the collapse of Classic Maya civilization. The reasons for the collapse are unclear, but some theories include internal political strife or revolt, and invasion by another cultural group (Van Tuerenhout 2005: 66).

Maya Collapse in the Terminal Classic Period

One of the central questions of Maya archaeology focuses on the “collapse” of Classic Maya civilization. During the era known as the Terminal Classic period, construction and the use of long count dates on stelae ended at
most Maya sites (Sharer 1994: 338). The archaeological record shows an upsurge in warfare and in ritual activity at the beginning of the collapse. Then, the evidence of Classic civilization began to disappear (Demarest 2004: 111-112). Although some sites in the northern lowlands, such as Chichén Itzá, were powerful during the Postclassic, much of Maya civilization collapsed.

One important aspect of the changes at the end of the Classic period was political. Most Classic stelae had depicted a single ahau, who held significantly more political power than his contemporaries. As the Classic period drew to a close, however, stelae began to show multiple elite leaders, each with his own power (Sharer 1994: 339). Much artistic imagery showing religious beliefs and scientific knowledge stopped appearing at the end of the Classic (Coe 1993: 128).

In most parts of the Maya area, a significant drop in population at urban sites characterized the collapse. The only polities where population grew during this period were the city-states of the northern lowlands, which would become powerful during the Postclassic period (Sharer 1994: 339-340). Yet what collapsed during the Terminal Classic period was not the entire Maya civilization: instead, it was the elite politics and culture. The area continued to be inhabited by rural agriculturists, whose descendants still live there today (McKillop 2004: 97).

Archaeologists have developed various hypotheses about the causes of Maya collapse. Some focus on natural disasters, drought, epidemics, or deforestation by agriculture (McKillop 2004: 97). Others blame social and
political factors, arguing that the Maya elites lost their control of the rest of
society, who may have violently revolted. Yet others propose that the Maya area
was invaded from the west, or that economic competition with other regions led
to collapse (Sharer 1994: 342-348).

The Postclassic Period

The Maya in the Postclassic

During the Postclassic period, a restructured version of Classic Maya
culture remained at some Maya sites. For example, while Classic-period
iconography had shown rituals, including some representing sacrifice and
bloodletting, Postclassic-period iconography seemed to focus more exclusively
on this type of bloody ritual activity. Although the Maya had long traded with
faraway neighbors, reliance on long-distance trade seems to have increased
during the Postclassic at those sites that continued to thrive. Power was more
broadly distributed among groups of elites, rather than being focused in one
ahau (Henderson 1997: 241-242). This organization was sometimes known as
the multepal system, in which councils made up of the heads of various lineages
made political decisions (Demarest 2004: 277).

Most Maya sites, particularly in the central and southern parts of the
Maya area, were abandoned during the Maya collapse during the Terminal
Classic period. Yet the city-states of the northern Lowlands continued to flourish
during the Terminal Classic period and well into the Postclassic period
(Henderson 1997: 199). In the western Puuc area of the northern lowlands,
sites like Uxmal, Sayil, and Kabah reached their peak during the terminal Classic. The Puuc architectural style, characterized by façades ornately decorated with faces, mosaics, and lattice-work designs in stone, spread across Yucatán during the Postclassic (McKillop 2004: 101-102). In the north, the site of Dzibilchaltún thrived and Chichén Itzá came to power as the most influential site in the area. Chichén Itzá’s architectural style had foreign as well as local and Puuc influences, leading archaeologists to infer that a new ethnic group, the Itzáes, may have had authority there (Henderson 1997: 213).

The Itzáes, who were foreign to northern Yucatán, were important players there during the Terminal Classic and Postclassic periods. They came from the west, from Central Mexico, and may have spoken Nahuatl, or a related but separate dialect from the local Yucatec Maya, according to Maya codices that survived Spanish destruction (Henderson 1997: 199-201). At sites like Chichén Itzá, they worshipped Kukulcán, a feathered serpent deity similar to the Aztec Quetzalcoatl.

In the mid-Postclassic period, Chichén Itzá declined and the northern lowland site of Mayapán took its place as the most powerful site in the region. While Mayapán was a smaller site than Chichén Itzá, with a smaller sphere of influence, it was more centralized and densely populated. It resembled Chichén Itzá in many ways, particularly in its architectural style and its veneration for Kukulcán (Henderson 1997: 242-243).

Despite the collapse of elite culture, Maya people in the southern highlands survived into the Postclassic, although most of lived in small villages
rather than large urban sites. In the Postclassic highlands, connections to other Mexican cultures are evident in codices and architectural styles (Henderson 1997: 252-254).

The Postclassic period ended with the arrival of the Spanish conquistadors in the early sixteenth century AD. Francisco de Montejo established the city of Mérida in 1542 in northern Yucatán, but the struggle for power between Spanish and indigenous Maya people continued for several centuries (Coe 1993: 164-165). The Spanish destroyed the codices they could find and ripped down Maya temples and other buildings, using the stone to build Catholic churches. They forced the Maya to pay them tribute, and the diseases the Spanish brought, such as smallpox, decimated indigenous populations (McKillop 2004: 105).

Postclassic Neighbors to the Maya: the Aztec Confederacy

The Aztec Confederacy in central Mexico, which Cortez would later conquer, developed in the late Postclassic period, after many Maya city-states were already abandoned (Sharer 1994). The Aztecs settled in the Basin of Mexico, far to the northwest of the Maya area, in the thirteenth century AD, during the late Classic period. They spoke Nahuatl, a language still spoken in central Mexico today. Their political power spread to control much of central Mexico in the two centuries of Aztec civilization before the arrival of the Spanish conquistadors (Van Tuerenhout 2005: 7).
The Aztec capital city of Tenochtitlán (meaning “Among the Stone-Cactus Fruit”) was established on an island in a lake in the Valley of Mexico in AD 1325. The early Aztecs ate marine and terrestrial animals and established floating gardens in the lake surrounding the island. They established a shrine to their deity Huitzilopochtli in what would become a religious precinct of the city (Van Tuerenhout 2005: 38).

As the city grew, the Aztecs began to interact with their neighbors, and in 1428, they became part of the Triple Alliance with the cities of Texcoco and Tlacopan. The three cities worked together militarily and economically, distributing tribute from the peoples they conquered among themselves (Van Tuerenhout 2005: 40). Since the Aztecs and their allies did not have standing armies and fortifications, they do not fit the typical definition of an empire. They did, however, extend their territory by coercing neighboring leaders to pledge their allegiance to the Triple Alliance, and some archaeologists refer to the Aztec civilization as an empire (Van Tuerenhout 2005: 70).

In the Aztec social structure, there were two castes: the pipiltin, or governors, and the machualtin, or the governed. The pipiltin controlled the politics, economy, religion, and military of the civilization. The highest-ranked member of the pipiltin caste of a city was its king, or tlahtoani, whose power was supported by tribute from his subjects. The pipiltin included both hereditary nobles and commoners who had shown great heroism in battle, and were promoted, giving a limited kind of social mobility to Aztec society. The machualtin caste included slaves, laborers, and servants to the nobility.
Laborers and servants were called upon to fight whenever an army was needed (Van Tuerenhout 2005: 123-129).

The Aztec religion included a pantheon of deities, called teotl. Some of these included Tezcatlipoca, who represented the malevolent power of the universe; Quetzalcoatl, the feathered serpent god who represented creativity and was the patron of priests; and Huitzilopochtli, the deity of war and sacrifice and the particular patron of the Aztecs. It also included Tlaloc, a rain god; Chalchiuhtlicue, a goddess of rain and water; and Centeotl, a god of maize (Van Tuerenhout 2005: 180). Many Aztec rituals centered on the sacrifice of both animals and human beings to appease these deities (Van Tuerenhout 2005: 186-187).

Like the Maya, the Aztecs developed advanced mathematical and calendrical systems. They observed the movements of the stars and planets, and often aligned their buildings with these celestial movements. Scribes recorded the accomplishments of Aztec mathematicians and astronomers, poetry, and the religious beliefs they held. Aztec arts included sculpture, painting, poetry, dance, feather work, and music (Van Tuerenhout 2005: 225-262).

The Aztec civilization remained until the Spanish conquest. In 1519, Hernán Cortez came to the Mexican mainland and defeated the Aztecs, bringing them eventually under Spanish control (Van Tuerenhout 2005: 73).
Conclusion

This overview is meant to situate Maya society within the larger Mesoamerican world. This understanding of the region’s history and politics informs studies of obsidian use and exchange. Maya civilization was not isolated: it shared many cultural traits with other Mesoamerican societies, as well as exchanging goods with neighbors. Obsidian was used and exchanged throughout Mesoamerica, by all of the cultural groups described in this chapter. In order to understand its importance to the Maya, it is necessary to understand the wider context of its use in the region.
2: Archaeological Theory and Maya Archaeology

All research is guided by theory. In the Maya area, archaeology is influenced by broader developments in Anglo-American archaeology as well as regionally specific trends. Joyce Marcus’s (1983) article “Lowland Maya Archaeology at the Crossroads” gave a critical view of Maya archaeology's cyclical and insular theory. Although the article was published almost thirty years ago, her critique and recommendations for the future are still relevant to archaeology in general as well as Maya archaeology specifically.

According to Marcus, each new generation of Mayanists worked in reaction to the theoretical outlook of the previous generation. Although new trends in Maya archaeology saw themselves as unique, they tended to mimic the theories of two generations earlier, giving research on the Maya a cyclical nature over time. This repetition was limiting and led to a lack of attention to new questions and new ways of thinking about the past.

Marcus identified three factors causing these cycles of theory. The first was a lack of attention to disciplinary history: many Mayanists did not realize that they were echoing earlier work. Second, Mayanists were too wary of collaboration, particularly among epigraphers, ethnohistorians, and archaeologists. By working in partnership, they might be able to develop new ideas and ways of thinking about the past. Third, researchers tended to feel threatened by new ideas and to ignore new methodologies. Mayanists needed to pay attention to archaeologists working in other parts of Mesoamerica and the
world for new theoretical outlooks. The critique called for a new awareness of
disciplinary history, collaborative possibilities, and new theoretical perspectives
in order to make Maya archaeology a more dynamic field. As we will see, this
call has not been satisfactorily answered.

Marcus’s view of Maya archaeology can be seen as a microcosm of the
broader discipline: the tendency toward reactive and cyclical theoretical trends
holds true for Anglo-American archaeology in general. The two most important
theoretical approaches of the last fifty years were processual archaeology, which
was a reaction to culture-historical archaeology before it, and postprocessual
archaeology, which was a variety of reactions to processualism. Not only were
these trends reactive, they had a cyclical element: postprocessualism drew on
some of the same ideas as culture-history had two generations earlier.

It is important to note that not all research fits neatly into one category or
the other. Many archaeologists working in North America do work that falls into
what has been called the “processual-plus” category (Hegmon 2003). These
archaeologists have a generally processual point of view, but are influenced by
postprocessual ideas about gender, symbolism, and agency. Many Mayanists
also fall into this category: processualism and postprocessualism serve as
influences rather than strictly delineated schools of thought.

**A Brief History of Anglo-American Archaeological Theory**

Culture-historical archaeology dominated archaeological theory from the
late nineteenth century until the mid-twentieth century, when processualism
emerged (Trigger 1996; Willey and Sabloff 1993). Culture-historians were interested in ethnic identity, as shaped by cultural, linguistic, and racial unity. They classified the archaeological materials they studied into cultures, which they believed represented ethnic groups in the past. They spent much time and energy classifying artifacts into these cultures and building chronological frameworks for them. Many culture-historians rejected evolution as a cause of cultural change in the past, instead attributing changes to diffusion and migration. The processual archaeology of the 1960s rejected culture-history, and the postprocessual archaeology of the 1980s, in turn, reacted against processualism.

**Processual or “New Archaeology” (1960s-present)**

The New Archaeology movement, often referred to as processual archaeology, emerged in the early 1960s, coalescing around the work of Lewis Binford. Processual archaeology was a reaction against what its adherents perceived as culture-history’s static view of the past. Rather than simply classifying artifacts as belonging to one culture or another, and ascribing change to diffusion between established cultural groups, Binford and the New Archaeologists sought to understand cultural processes of change: hence the name “processualism.” Influenced by structural-functionalism and systems theory, they saw archaeology as a science that could explain how cultures changed over time (Willey and Sabloff 1993: 223). Joseph Caldwell first coined
the term “New Archaeology” to describe these changes in archaeology in 1959 (Trigger 1996: 392).

Processual theory drew on work in various disciplines. Structuralist and functionalist theory in social anthropology were important influences for Binford and his coterie. Cultural anthropologists like Malinowski and Radcliffe-Brown had argued since the 1920s that societies were systems consisting of a variety of elements with interdependent functions (Trigger 1996: 319). Malinowski and Radcliffe-Brown were, in turn, influenced by Durkheim, who sought to understand internal workings of human groups and the ways in which changes in one element of a social system affected the whole structure (Trigger 1996: 320-321).

Julian Steward’s ecological archaeology also influenced the New Archaeology. Steward was an ethnologist who worked closely with archaeologists. He believed that people interacted with their environment in important ways that shed light on their culture. In the 1950s, Steward, Willey, and others began to analyze the patterns in which people settled across landscapes. Steward advocated for a multidisciplinary approach to archaeology and anthropology, which would combine ethnological knowledge, subsistence data, and settlement patterns to understand how people in the past interacted with and adapted to their environments. Willey used this kind of data to examine past political, social, and economic organization, with a more functionalist worldview (Trigger 1996: 372-377).
Steward was also an advocate for neoevolutionism, a movement within the discipline of ethnology that gained favor in the 1950s and served as an important influence for processual archaeology. Neoevolutionists saw culture as a means of adaptation to the natural world. They believed that culture was evolving and progressing in order to adapt more effectively to the natural world. Neoevolutionists rejected cultural relativism in favor of the belief that all cultures were evolving in similar ways and directions. For these archaeologists, aspects of culture that could not be explained as adaptation seemed unimportant. Their application of the idea of evolution to the study of culture reinforced their belief in archaeology as a strictly scientific discipline (Trigger 1996: 386-392).

Lewis Binford’s (1962) essay “Archaeology as Anthropology” was one of the New Archaeology’s calls to arms. Binford, who was known for his polemical support of processualism, argued against culture-history, taking the kind of reactive approach that Marcus discussed. Binford contended that archaeology should take a more active role within the larger discipline of anthropology, the goal of which he defined as “to *explicate* and *explain* the total range of physical and cultural similarities and differences characteristic of the entire spatial-temporal span of man’s existence” (1962: 217; emphasis original). He asserted that, while archaeology had contributed much to the description of human cultures, it had failed, as a discipline, to apply itself to the explanation of culture.

According to Binford, “explanation” would require approaching culture as a system that changed over time through processes that could be investigated
through empirical scientific research. He wrote, that archaeologists “must seek explanation in systemic terms for classes of historical events such as migration, establishment of ‘contact’ between areas previously isolated, etc. Only then will we make major contributions in the area of explanation and provide a basis for the further advancement of anthropological theory” (Binford 1962: 218).

Scientific positivism was an integral part of the New Archaeology’s self-image as a movement. Like researchers in other social science disciplines at the time, archaeologists believed they could form objective and verifiable theories about the past. These theories were often formulated as generalizations about human nature and culture. They also tended to focus on technological problems, in attempts to be relevant to the present by understanding how people interacted with their environments in the past (Trigger 1996: 408).

In summary, there are three major characteristics of processual archaeology. First, the New Archaeology was deeply connected to cultural anthropology. Second, processualists believed that they could understand the “laws” of culture and explain cultural processes in an empirical way. Last, New Archaeologists believed that their explanation of past cultures could be relevant to the present (Willey and Sabloff 1993: 221). These three points neatly summarize processualism, a body of theory that remains influential today in archaeology.
Postprocessual Archaeology (1980s-present)

In the 1980s and 1990s, some archaeologists began to criticize key tenets of processual archaeology. While these reactions were diverse, rejecting processualism for various reasons and proposing various alternatives, they are often grouped together under the name “postprocessualism.” The principle that unites the various strands of postprocessual archaeology, or archaeologies given their diversity, is that the past cannot be understood in a scientific and objective way. Its supporters believe that archaeology, as a social science, is not, cannot be, and should not be a positivist endeavor (Willey and Sabloff 1993: 298).

Postprocessualism emerged in the 1980s with the work of British archaeologist Ian Hodder and his students at Cambridge University, including Michael Shanks and Christopher Tilley. Hodder, who coined the term “postprocessual” in 1985 (Hodder 1985), saw the archaeological record as a text to be read and interpreted by the archaeologist, informed by his/her own theoretical and personal background. Along with the historical context of the researcher, Hodder emphasized the historical context of archaeological remains, eschewing what he saw as processualism’s ahistorical view of the past. (Trigger 1996: 444; Willey and Sabloff 1993: 298-299).

Hodder’s (1982) introduction to Symbolic and Structural Archaeology, a volume of papers originally presented at a conference of the same name, was postprocessualism’s equivalent of Binford’s “Archaeology as Anthropology.” It called for a new body of archaeological theory and articulated the main ideas of this new theoretical corpus. Hodder attacked functionalism, arguing that it was
inadequate for the explanation of the complexity of culture in general, and particularly the important role of individual action and creativity within societies. He also rejected functionalism’s propensity for cross-cultural generalizations, insisting on the necessity of specificity in discussions of culture. Hodder also denied that archaeologists could be objective, and saw archaeology as a historically contingent pursuit.

Hodder advocated for an archaeology inspired by post-Marxist structuralism, defining structure as the set of rules and codes that govern and create social interaction. Like functionalism, the structuralism that interested Hodder investigated how social systems worked, but focused more on underlying rules than on the superficial social interactions that functionalists saw. While he acknowledged the importance of poststructuralist critiques, particularly the call for a theory of practice, Hodder held on to some structuralist ideas. He promoted a focus on the symbolism of material culture in order to understand social processes (Hodder 1982).

Postmodern thought in various disciplines inspired the postprocessual rejection of positivism. Since postmodernists believed that objective truth did not exist, and that all human observations were affected by the particular position of the viewer, they inspired archaeologists to interrogate their own biases and beliefs about the past. Postmodernism also had an overtly political flavor that influenced some archaeologists: it sought to destabilize structures that empowered some people while disempowering others on the basis of race, class, or gender. This outlook embraced relativism to the degree that it inspired
research with explicit political aims (Trigger 1996: 446-447). For example, two subfields of postprocessual archaeology were feminist and Marxist archaeologies, which were explicitly biased by their grounding in particular political and ethical belief systems.

Postprocessual archaeologists used these ideas as a basis for their rejection of positivism. Some claimed that people in the present have no moral right to interpret the past, while others asserted that positivism as a belief system produced technical knowledge that could then be used by elites to oppress minority groups. Postmodernism inspired new theories of cultural anthropology in the United States that paralleled and influenced its effect on archaeology (Trigger 1996: 446-447, 452).

Informed by postmodern thought, a new wave of cultural anthropologists in the 1970s questioned their own positions and the context of colonialism in which they worked. They believed that all statements about culture were historically contingent, and that neoevolutionism as theorized by Europeans and Americans was ethnocentric and ethically unacceptable. Instead of studying similarities in the developments of various cultures, anthropologists focused on the diversity, idiosyncrasy, and specificity of the cultures they researched (Barnard 2000).

Postprocessual archaeologists tend to focus more on the way ordinary people lived in the past than on grand histories or the larger systems of culture. Rather than retaining the economic focus of many New Archaeologists, postprocessualists chose to concentrate on noneconomic aspects of the past,
such as religious and cultural beliefs. They saw the ideologies of people in the past as primary factors in history (Trigger 1996: 450-451). Postprocessualists like Shanks and Tilley (1988) adopted and espoused Giddens’s (1976) idea that individuals in society have agency, or the power to effect change through their decisions and actions. This idea inspired many researchers to investigate the ways in which people in the past navigated their situations and resisted or changed oppressive social institutions in subtle or obvious ways (Trigger 1996: 468-469).

Some archaeologists focused more on Bourdieu’s (1977) practice theory than Giddens’s agency theory, or found ways to combine the two. In contrast to the theory of agency, practice theory held that the behavior patterns of individuals in a society, often unconsciously learned and reproduced, shape and reshape that society and its members. Bourdieu used the word “habitus” to describe these sets of behaviors and beliefs that people learn from their cultures and replicate. Through the repeated practice of culture, according to Bourdieu, we reproduce our society and become who we are as individuals (Trigger 1996: 469-470).

Some postprocessual archaeologists were also influenced by phenomenology, a branch of philosophy that holds that people engage with the world around them reciprocally. These archaeologists may have believed that human beings are always interacting with the material world, or even that objects themselves are social agents. They attempted to interact with and experience material culture the way ancient people did, in order to understand
an ancient society. Some studied materials and the intrinsic meanings they may have had in the past (Trigger 1996: 472-473).

Its very name showed that postprocessualism was a response to the previous theoretical corpus. Postprocessual archaeology was an excellent example of the cyclical nature of theoretical movements that Marcus discussed. Some postprocessual arguments resembled the culture-historical archaeology of two generations earlier. The postprocessual focus on the specificity of individual cultures echoed culture-historical studies of individual and distinct cultural groups. Both rejected cross-cultural generalizations in favor of an understanding of how each culture worked within its own context.

**Themes in Archaeology**

Processual and postprocessual theories have affected the ways archaeologists talk about more specific issues. Throughout the period discussed above, archaeologists have asked some of the same questions, although in varying ways based on their theoretical perspectives.

**Cultural Complexity**

The question of the social structure or complexity of past cultures is one of these running themes of archaeological inquiry. Complexity refers to a society’s size, stratification, and organization. A larger society, with a population organized into many classes or castes and a more formal government, is considered more complex than a smaller, more egalitarian group.
Service (1962) created a system of classification that divided societies into four levels of complexity. A band is usually a nomadic group, composed of fewer than one hundred people, who subsist by hunting and gathering, with an egalitarian, informal system of leadership. The societies in the second category, tribes, also known as segmentary societies, are slightly bigger, and generally sedentary and agriculturally based. Chiefdoms have hereditary leadership, monumental architecture, and some craft specialization. The most complex societies, states, have centralized and bureaucratic governments, are highly socially stratified, and have urban sites.

Although many societies do not fit neatly into one of Service’s four categories, the idea that social stratification and formalized leadership make a society more complex is still important in archaeology. Generally, the signs of complexity in the archaeological record include monumental architecture, urban sites, evidence of social stratification in housing or burials, and evidence of craft specialization.

Johnson (1996) described how stone tools in the archaeological record could tell researchers about Maya cultural complexity. Hieroglyphic inscriptions describing governmental and social systems and monumental architecture have long been used to prove that Maya city-states were complex societies, usually states in Service’s conception. Johnson argued, however, that evidence of specialized stone tool production could be used to corroborate this other evidence and to show complexity just as clearly.
In the late 1970s and early 1980s, Mayanists began to use lithic evidence of craft specialization to show the organization of Maya society. Shafer (1983) asserted the presence of craft specialization based on the high density of lithic artifacts and debitage and the high level of standardization of the form and production sequence of the chert tools found at Colhá. This type of argument was relevant to studies of Maya obsidian because their method of making prismatic blades (to be discussed in the next chapter) required specialized knowledge: thus, the presence of obsidian prismatic blades shows craft specialization, and, therefore, cultural complexity.

Johnson (1996) discussed another way that lithic data could be used to document complexity: through evidence of regional exchange. If it was possible to show that stone quarried or tools made at a site like Colhá were exchanged to other sites, archaeologists could argue that the site specialized in this type of craft production as part of a complex regional economy. This line of argument informed the literature about Maya obsidian, which often investigated the locations of quarrying and production activities in its inquiry into obsidian trade as a manifestation of ancient Maya exchange economies.

Exchange

Another issue that archaeologists study worldwide is trade and exchange, both of material goods and currency and of ideas and culture. As Baugh and Ericson (1993) described in their history of archaeological views of exchange,
each new theoretical movement affected how archaeologists hypothesized about these issues.

Culture-historical archaeologists tended to view exchange in terms of migration and diffusion. They tried to map the movements of groups of people and the diffusion of ideas based on material culture (Baugh and Ericson 1993: 5). In the 1920s, V. Gordon Childe, a prominent culture-historian, began to turn away from diffusion as an explanation for all cultural change. He investigated the ways that movement of materials between complex civilizations and the areas around them, particularly the exchange of raw materials for finished products, also entailed the spread of ideas, using Europe and its colonies as examples. Childe also recognized that exchange of goods and ideas did not always work the same way in different cultural contexts and that it was important to define what was meant by “trade” in any given situation (Trigger 1996: 323-324).

As the New Archaeologists reacted to culture-history, they objected to diffusionist hypotheses about exchange. Because of their belief in social processes, they believed that cultural change did not necessarily occur through diffusion, and tried to show the complexity of exchange processes. They sought to understand the relationships between sites, as well as regional sociopolitical dynamics, by examining exchange routes. New technologies to determine the sources of materials such as ceramic temper and obsidian increased the opportunities for this kind of research. Processualists studying trade tended to
use quantitative models, calculating trade indices and mass-distance indices for sites to describe their roles in regional economies (Baugh and Ericson 1993: 8).

Postprocessualists reacted strongly against these quantitative approaches to the study of exchange. They accused the previous generation of ignoring the people in the past in their focus on larger economic and demographic questions. In the effort to learn about people in the past rather than systems, postprocessual archaeologists focused on what data about exchange could teach them about social and cultural dynamics as well as the economy. Because of their relativist beliefs, these postprocessualists created models of exchange based on the specific conditions of the cultures they studied, attempting to avoid biases based on their own societies’ economic systems and recycling Childe’s ideas about the cultural specificity of exchange systems (Baugh and Ericson 1993: 9-10).

In order to understand obsidian exchange and how archaeologists have investigated it, one must understand the larger context of exchange in Mesoamerica. Since the Maya area was large and geographically diverse, with different resources available in different areas, it is easy to see exchange networks in the archaeological record. The common conception of the Maya area as being composed of the northern lowlands and the southern highlands has strongly influenced the way archaeologists study the movement of materials in the region (Sharer 1994).

Exchange occurred within and between these zones, as well as with people outside the Maya area, by water and by land. Porters carried heavy loads
on their backs across the land, or paddled wooden canoes laden with goods along river routes or along the coastline. Once these goods arrived at their destinations, they were distributed in centralized markets not unlike the contemporary markets of Yucatán and Central America (Sharer 1994).

Along with obsidian, which was brought from the highlands of Guatemala to other areas, many other raw materials and goods were traded through the Maya area and beyond. The Maya of the southern highlands had access to basalt, a hard igneous stone that made good *metates*, or grinding stones for corn. Basalt *metates* were essential tools in the Maya corn-based subsistence system. The highland Maya also had access to deposits of mineral salts, which could be used to preserve meat and season food. These were the most important utilitarian goods from the highlands, but highland Maya people had access to other materials that were important in Maya culture. They exported minerals like jadeite, hematite, serpentine, and magnetite as well as feathers from quetzals and other jungle birds, which were used in the making of ritual or luxury objects. Cinnabar, a red mineral from the highlands, was often placed in elite burials (Sharer 1994).

Mayanists have also used exchange to show connections with much farther-away places than the various areas of the Maya world. The Maya imported gold, silver, copper, rubber, and other materials from southern Central America and metals, textiles, turquoise, and green obsidian from central Mexican societies like Teotihuacán (Sharer 1994).
Mayanists have drawn on various processual and postprocessual theories about exchange in order to understand the larger social, political, and economic context of a society. For example, William Rathje’s processualist work in the 1970s used trade as a tool for understanding the rise of cultural complexity in the Maya lowlands. In the 1970s, most archaeologists believed that all of the important resources in the Maya area were in the highlands, and were mystified by the appearance of complex society in the lowlands. A common belief in archaeology was that low, tropical areas lacked resources and that complexity simply could not develop in such environments. Rathje hypothesized that the lowlands had needed the resources of the highlands in order to become complex. He believed that, in fact, the lowland Maya had developed social hierarchies in order to manage and distribute the influx of goods from the highlands. As the highlands exported metates, obsidian, and salt, they “imported” complex cultural ideas (Rathje 1971, 1972).

Since the 1970s, however, Mayanists have come to believe that the lowland Maya did have their own important resources. The Yucatán peninsula is a very flat platform of limestones and dolostones, soft sedimentary rocks that can be carved into blocks for building, or burned, crushed, and mixed into plaster. Important non-food crops like cotton, henequen, and tobacco, as well as food crops, grew well in the lowlands. Lowland people who lived along the Caribbean and Gulf coasts had access to various kinds of seafood and shells, shark teeth, and stingray spines that were important for ritual and craft use. The
lowland Maya also harvested and traded copal, a kind of tree sap that they burned as incense (Sharer 1994).

Other paradigms of exchange, such as the core-periphery and prestige-goods models, have been applied to the ancient Maya and to their exchange of obsidian. The prestige-goods model for economies argues that elites use their access to luxury goods to create and consolidate their political and social power. The core-periphery model understands regional cultural and economic systems in all of their complexity by investigating unequal relationships between a powerful center and its surroundings. The broader theories of archaeology affect and create hypotheses about specific issues like exchange, which, in turn, influence the ways archaeologists discuss their specific sites and research.

**Conclusion**

Maya archaeology is structured by this theoretical history. Most research on the Maya tends to be more inspired more by processualism than by postprocessualism, but much of it falls within Hegmon’s “processual-plus” description of Americanist archaeology. This theoretical positioning has affected how Maya obsidian has been studied: it has largely been used to document systems of exchange and the rise of cultural complexity. More post-processual kinds of questions, such as the symbolic meaning of the material itself, have been ignored. In order to understand how archaeological theory has shaped Maya obsidian studies, a basic understanding of the material, including processes of
obsidian procurement and tool production and the possibilities for source analysis, is necessary.
3: What is Obsidian?

Obsidian is volcanic glass formed by rapidly cooling lava. The Maya and other Mesoamerican civilizations prized it for its sharp edges, which make it an ideal material for certain forms of stone tools. It was widely exchanged throughout Mesoamerica, and production of obsidian tools required specialized knowledge, making it an ideal material for archaeological studies of regional exchange and cultural complexity.

Around the world, obsidian can be found in many different colors, but the obsidian used in Mesoamerica was usually black, gray, or clear. Some obsidian from central Mexico was green. Obsidian tools were much thinner and sharper than those made of other types of stone, such as chert. The Maya, as well as other Mesoamerican peoples, used obsidian to make prismatic blades: long, slender, slightly curved knives with two cutting edges. Prismatic blades required no retouching to maintain their sharp edges, could cut many materials, and were an efficient use of obsidian because of their small size (see figure 7). These tools may have been used for domestic utilitarian purposes, for crafting, as weapons, or in ritual bloodletting or sacrificial ceremonies.

The Maya obtained obsidian from several sources in the Guatemalan highlands, as well as from Teotihuacán through trade (Haines 2000). The three major sources in the Maya area are San Martín Jilotepeque, El Chayal, and Ixtepeque, all located in the highlands of southern Guatemala. Obsidian nodules
Figure 7: Near-Complete Prismatic Blade from Ka’Kabish

Figure 8: Expended Cores from Ka’Kabish
and tools from these areas were exchanged throughout the Maya area (Haines 2000).

**Obsidian Procurement**

The most commonly exploited obsidian sources in the Maya area are San Martín Jíilotepeque, El Chayal, and Ixtepeque. All are located in the highlands of Guatemala. Each is a large source area comprising various outcrops, where obsidian is accessible from the surface. The outcrops generally consist of domes or veins of obsidian that are embedded in bedrock (Sidrys, Andreson, and Marcucci 1976).

Little research has been done about the processes of obsidian mining in the Maya area, but work at La Joya in Jalisco, Mexico, sheds some light on how quarrying may have been done (Weigand and Spence 1982). At La Joya, Weigand and Spence found quarries of various sizes, ranging from small circular holes about 5 m in diameter and half a meter deep to large pits up to 20 m in diameter and 2 m deep. They inferred that wooden tools such as picks and levers were used in the quarrying process, but did not fully explain how this may have been done. The nodules of useable obsidian that were extracted from these quarries were often encased in cortex, a rough exterior surface. In order to use the obsidian, the cortex had to be removed. Basalt hammerstones and deposits of flakes with cortex were found around the edges of the La Joya quarries, indicating that the cortex may have been flaked off immediately. The process of
decortification made the nodules of obsidian into cores, which were lighter for transport and ready to be made into tools.

The San Martín Jilotepeque source area is the smallest of the three, but contains at least four obsidian outcrops. Sidrys, Andreson, and Marcucci (1976) surveyed the major obsidian source areas and found no formal quarry sites at San Martín. Later survey research by Braswell (2002) contradicted this conclusion. He found evidence of occupation and obsidian work at San Martín beginning in the Middle Preclassic period and continuing through the Classic period and into the Postclassic. Braswell did not describe the process of quarrying in great detail, but he demonstrated that obsidian quarrying and tool-making at San Martín occurred on a household or small workshop level. Instead of finding a few large workshop sites with assemblages of obsidiandebitage, Braswell found many housemounds with obsidian deposits scattered throughout the area.

In the El Chayal source area, there were at least two quarry sites, several other outcrops that may or may not have been exploited by the Maya, and several workshop sites, identified by a high density of worked obsidian (Sidrys, Andreson, and Marcucci 1976). Coe and Flannery (1964) were the first archaeologists to investigate El Chayal. They noted the prevalence of worked obsidian deposits, which included exhausted polyhedral cores (see next section) as well as tools of various types. Coe and Flannery also described a quarry site that consisted of several wide holes dug by the ancient Maya to extract obsidian.
They suggested that because of the lack of domestic structures and ceramic artifacts, the site must have been very old, from before the Preclassic period.

Eleven years later, Sheets (1975) responded to Coe and Flannery, contending that the artifacts they had described were stylistically dateable to the Classic or Postclassic period. According to Sheets's vision, the Maya who exploited the El Chayal obsidian may not have lived at the outcrops, but the source was certainly used much later than Coe and Flannery had hypothesized. Sheets's hypotheses were widely cited and accepted (e.g. Asaro et al. 1978; Ford et al. 1997).

The Ixtepeque source area is very large, about 300 square kilometers in area. There are several outcrops, quarries, and workshops within the source area. One of the largest outcrops is a dome of obsidian at the top of the Ixtepeque volcano. The mountain itself is also littered with obsidian debris (Sidrys, Andreson, and Marcucci 1976).

**Making Prismatic Blades**

Most of the obsidian found at Maya sites, including Ka’Kabish, is in the form of prismatic blades and the exhausted cores left behind during the creation of the blades. Sheets (1972) described core/blade technology, the methods by which this obsidian was worked. His research at Chalchuapa, a Late Preclassic lithic workshop site in El Salvador, as well as the experimental work of Crabtree (1968) and Sollberger and Patterson (1976), gave archaeologists a good idea of how Maya lithic crafters shaped the stone.
The first step in the process of turning a nodule into prismatic blades was to make it into a core. This part of the process most likely occurred at the mouth of the quarry, as seen at La Joya. Nodules were presumably quarried to be more or less round. First, the crafter struck the nodule against a stone anvil or other hard, stationary object in order to break it into two rough hemispheres. The flat, broken sides of these hemispherical pieces became the striking platforms for future work. S/he struck the edges of the platform with a hammerstone, breaking off flakes. Obsidian nodules, like geodes, are often covered by cortex, a layer of rougher stone that cannot be flaked as well. This preliminary core-preparation flaking removed cortex and other irregularities on the surface, leaving only the glassy, high-quality obsidian.

The blade-making process required ridges running down the long axis of the core on the sides: the places where these ridges met the platform at the top of the core formed the striking platforms for blade-making. If these ridges were not naturally formed by the general shaping and cortex removal, the craftsperson would continue to form the core through percussion flaking, the method of striking the core with a hammerstone. The hollows left by these flakes left ridges running down the edges of the core, which was now becoming more cylindrical as its edges were flaked off.

Once the core was thus prepared, the crafter flaked off prismatic blades. This occurred in quarry-side workshops or far away from the quarry after a core had been brought to another part of the Maya world. The first blades were large and removed by percussion with a hammerstone. These were the first pieces in
the process to be defined as blades because they were at least twice as long as they were wide. As blades were flaked off the curved face of the core, it decreased in size, becoming a thinner cylinder. Soon, the craftsperson shifted to pressure flaking, a procedure in which a crutch is used to press, rather than strike, the material until a piece pops off. The smaller, narrow blades created by this process were true prismatic blades. S/he then continued to work around the edge of the core, removing new blades, using the ridges as striking platforms. The blades created were progressively smaller as the core decreased in size.

Prismatic blades were very long and narrow, and slightly curved. The inner sides were perfectly smooth except for small bulbs of percussion, round bumps left behind near the platform when the stone broke, at the proximal ends. The outer sides had ridges running along their lengths, formed by the edges of the flake scars on the previous core surface. Most blades had either one ridge, making them triangular in section, or two, making them trapezoidal. These ridges are what made the blades prismatic in shape, giving them their name (Crabtree 1968; Sheets 1972).

The blades were very sharp: Crabtree described shaving his face with one of his reproductions. He claimed that he had not heard of any tool of any material, even metal, that was sharper than a well-made obsidian prismatic blade, and compared his blades to the glass tools used by surgeons in the 1960's. More recent experimental studies using tool replication have shown that obsidian blades are sharper than steel, and that their edges may be no more than a few molecules thick (Dewbury and Russell 2007).
Crabtree’s obsidian tools maintained their sharp edges long after they were first made: they did not become dull with use on soft substances such as hair, textiles, plant foods, or meat. Crabtree told of an Apache man skinning a bear with an obsidian prismatic blade that showed no signs of use-wear on its edges when the job was done. The results of Crabtree’s experimental work taught the archaeological community that the obsidian tools of the Americas were not, in fact, less advanced than the metal tools of Europe, and that the indigenous knapper was an expert crafter who deserved respect (Crabtree 1968).

There are various ways to prepare a prismatic blade for use, including wrapping its proximal (handle) end with plant fibers or animal sinew to protect the user’s hand, and dulling one edge of the blade so it can be touched without injury. The blades are fragile despite their sharpness, and the edges must be protected from contact with hard surfaces like stone and bone in order to keep them sharp. They must, therefore, be wrapped in something soft between uses to maintain their edges (Crabtree 1968).

The expended cores left over when the knapper finished making blades can also be found in the archaeological record, in workshop contexts (Sheets 1972) or in caches or religious contexts (Hruby 2007) (see figure 8). Most are roughly cylindrical in shape, with scars from blade removal around the long sides, the remains of the striking platform at the top, and a slightly rounded bottom. Some cores are flatter, with flake scars on only one or two sides, and some still have cortex, showing that the core was not completely prepared
(Crabtree 1968). Others are formed into eccentrics, deliberately shaped stone items with no practical purpose, some of which are representational of animals or deities (Hruby 2007).

**Sourcing Obsidian**

There are several ways to determine which source area was the origin of an obsidian artifact. Laboratory methods for chemical obsidian sourcing include x-ray fluorescence spectrometry and neutron activation analysis. At first, chemical sourcing was complicated by a lack of chemical uniformity of obsidian from any given source and a lack of standardization in testing and reporting practices (Asaro et al. 1978). More recently, laboratories have taken into account these differences and archaeologists have worked to make their data accessible for comparison (Braswell et al. 2000). Some Mayanists have developed methods of visual source analysis, although some believe it inaccurate and contest the validity of visual source data.

The x-ray fluorescence (XRF) spectrometry method entails exposing samples of crushed obsidian to x-rays, energizing the electrons of individual atoms (Nelson 1985). This energy causes the electrons closest to the nucleus of each atom to rise to higher energy levels. The movement of electrons creates a charge vacancy in the lower level, and some electrons fall back toward the nucleus, causing the emission of fluorescent x-rays. Since each element creates x-rays of a unique energy and wavelength, the measurement of these rays using an XRF spectrometer shows the chemical composition of the sample. Once the
chemical composition of a sample has been determined, the percent compositions of different elements present are compared to those of samples from known sources.

Neutron activation analysis (NAA) is the second common method of chemical source attribution (Dreiss 1993). NAA involves exposing crushed samples of obsidian to radiation, causing some of the elements in the stone to radioactively decay. By measuring the energy and quantity of gamma rays emitted from decaying elements like manganese and sodium, researchers can determine the concentrations of these elements in the obsidian. Since obsidian from different source areas has different concentrations of sodium and manganese, these calculations can show which area is the likely origin of a sample.

Some researchers choose to visually source their obsidian, whether or not they also chemically source a small sample (Braswell et al. 2000). Visual source determination depends on the color, degree of translucence, inclusions, and texture of the obsidian. San Martín Jilotepeque obsidian is usually clear or gray. It contains many inclusions of various sizes ranging from dust to sand-sized grains, and is less lustrous and glassy than the other sources. Obsidian from El Chayal is characterized by its milky or waxy appearance, created by ubiquitous tiny inclusions, and its gray or black bands. Ixtepeque obsidian is browner than that from other sources, lacks inclusions, and is highly lustrous. Obsidian from the Pachuca source near Teotihuacán is a bright bottle-green, and is sometimes found in the Maya area.
While some researchers have used a combination of chemical and visual sourcing, many have argued that one method is better than the other. On the pro-visual sourcing side of the debate, Braswell et al. (2000) contended that visual sourcing could be reasonably accurate. They conducted a blind test in which four independent observers each sourced the same sample of obsidian visually, and then compared results. They agreed on the source attribution for a given piece of obsidian 97.2% of the time. They then chemically sourced the sample using neutron activation analysis, and found that each researcher was accurate at least 92% of the time. This study showed that visual sourcing was reproducible and fairly accurate.

Braswell and coworkers argued that visual sourcing is quicker and less expensive than chemical methods, and therefore capable of providing more data at less cost (Braswell et al. 2000). Because chemical sourcing is destructive and expensive, usually only a small sample is chosen for testing. Visual sourcing, on the other hand, can be used to investigate much larger samples. One side effect of small sample sizes for chemical testing, they posited, was the limited scope of obsidian research. Small sample sizes encouraged archaeologists to ask simpler questions about obsidian procurement, such as which source areas were used during which times, rather than broader questions about use and consumption. Braswell and coworkers suggested that while chemical sourcing of small samples could be useful to verify that visual sourcing is accurate, visual sourcing of obsidian was an inexpensive, accurate way to source large collections of obsidian. They argued that visual sourcing was suitable for large samples, to
give a general idea of where the obsidian came from. In order to source an individual object, chemical tests may still be desirable, since the accuracy of visual sourcing in Braswell’s test was imperfect.

Despite the results of this study, some Mayanists continued to dispute the accuracy of visual sourcing. For example, Hattula Moholy-Nagy wrote in 2003 that “advocating visual source attribution for the Maya area is a lot like recommending that people ignore their clocks and watches and learn to tell time by the sun” (Moholy-Nagy 2003: 302). Her argument was based on the variability and diversity of visual characteristics within any given obsidian source. She asserted that because visual sourcing is based on already known visual characteristics of obsidian sources, it might mischaracterize unique pieces.

**Conclusion**

All of this information contributes to a fuller understanding of arguments made about obsidian, which is the focus of the rest of this thesis. Obsidian was a highly prized substance among the ancient Maya, and has been used by archaeologists to investigate various aspects of Maya society. In the next three chapters, I will explore trends in obsidian studies in the Maya area. First I will examine the questions that have dominated Maya obsidian studies: the sources of obsidian and the processes of obsidian tool production. After discussing the questions that have been asked, I will explore some questions that have been
ignored in the Maya area and how they might inform new ways of looking at obsidian.
4: Studies of Obsidian Source Data

Since the early 1970s, the availability of chemical sourcing technology for obsidian has strongly impacted archaeological research in the Maya area. The invention of x-ray fluorescence spectrometry and neutron activation analysis and their application to Maya obsidian revolutionized the field (Sidrys, Andreson, and Marcucci 1976). Suddenly, archaeologists had access to concrete evidence showing where specific pieces of obsidian had originated. It became a standard procedure for archaeologists to submit a small sample of a few pieces of obsidian to a laboratory for XRF or NAA testing.

In the mid-1970s, Norman Hammond (1972, 1976) delineated his hypothesis of changing source area use over time. Since then, many researchers have responded to his model. Most fit their own obsidian source data into the Hammond scheme, showing how their findings supported his hypothesis (e.g. Stross et al. 1978; Sidrys and Kimberlin 1979; Rice 1984; McKillop 1996). A few found that their data did not perfectly fit into Hammond’s model, but did not explicitly question the paradigm itself (e.g. Moholy-Nagy, Asaro, and Stross 1984; Healy et al. 1996). Few explicit critiques of the Hammond hypothesis have been published. Those that do exist call for more nuanced models of obsidian source use (Healy, McKillop, and Walsh 1984; Haines 2000).
**The Hammond Model and Related Approaches**

Hammond’s (1972) work set a strong precedent for research about Maya obsidian. He identified El Chayal and Ixtepeque as the most commonly utilized source areas during the Classic period. He hypothesized that while El Chayal obsidian had been transported largely by river and on foot, Ixtepeque obsidian had been transported by canoe down the Río Motagua to the Caribbean, and then up the coast (see figure 9). Hammond (1976) subsequently refined this model, arguing that sites along the coast of Belize, particularly those on small islands, served as way-stations for obsidian traders. Each cay was located near the mouth of a river, and would have served as a way-station en route to various inland sites.

In 1984, Hammond extended his model to account for change over time (Hammond, Neivens, and Harbottle 1984). The authors continued to maintain that El Chayal obsidian had been traded via land and river routes while Ixtepeque obsidian had been traded mostly via river and sea routes. They added a chronological argument to the model, hypothesizing that during the late Classic period, the Maya had begun using more obsidian from Ixtepeque and less from El Chayal.

During the 1970s, many studies followed Hammond’s lead, investigating which sites had obtained obsidian from which source areas. Moholy-Nagy (1975) showed that obsidian from the sources in the Guatemalan highlands and from Pachuca in central Mexico was used at Tikal. A study of a group of sites in
Figure 9: Hammond's Hypothesis of Obsidian Trade Routes (Hammond 1972: figure 1)
what is now Campeche, Mexico, by Nelson and coworkers (1977) showed obsidian transport from the Guatemalan highlands.

Although Hammond focused on the El Chayal and Ixtepeque obsidian sources, others recognized the importance of the San Martín Jilotepeque source area. Almost immediately, Johnson (1976) called for the incorporation of San Martín into the Hammond model. Sidrys and Kimberlin (1979) argued that San Martín was the most important Maya obsidian source during the Preclassic period, and anticipated Hammond’s hypothesis of change in source use over time by positing a shift from San Martín to El Chayal in the late Preclassic. Nelson (1985) found evidence for shifting source exploitation over time at the sites of Cerros in Belize and Yaxchilán in Mexico. He also argued in favor of a San Martín-El Chayal shift during the late Preclassic. Rice et al. (1985) supported the San Martín-El Chayal-Ixtepeque shift hypothesis with data from the central Petén area of Guatemala and Fowler et al. (1989) fit their data from El Mirador, Guatemala, into the model.

The Hammond model for obsidian trade was widely accepted to explain changes in source exploitation over time: even those who focused on other questions have published data that supports the model (e.g. Michels 1976; Guderjan et al. 1989; Dreiss 1993). A 2010 article about Portable X-Ray Fluorescence technology cited Hammond, showing that his work still has influence almost four decades after publication (Nazaroff, Prufer, and Drake 2010).
Hammond’s model was not the only processual hypothesis about obsidian use. Some researchers, while they did not disagree with Hammond’s hypothesis or his processual approach, sought other ways to investigate Maya obsidian exchange systems. Seeking to determine whether or not lowland Maya city-states were commercial centers and whether the volume of obsidian traded changed during the Postclassic period, Sidrys (1977) applied mathematical models to obsidian samples from various sites.

To investigate the roles of city-states as commercial centers, he compared the density of obsidian artifacts found at various sites. A commercial center, he believed, would have a higher obsidian density than the surrounding area. At each site, he calculated the density of obsidian artifacts and the distance from the nearest obsidian source, and tried to fit the data into standard fall-off models, which predict that sites farther from the source of a particular material will have less of that material. He found, however, that larger sites had higher obsidian densities than smaller sites located the same distance from the source. In order to more effectively compare the obsidian densities of different sites, Sidrys established a Trade Index of each site (Trade Index = Obsidian Density * Source Distance by analogy to the physics formula Work = Force * Distance). He found that the largest sites, with the most impressive monumental architecture, indeed had higher Trade Indices than smaller sites.

Sidrys also wanted to see whether the Maya used more obsidian during the Classic or Postclassic period. This time, rather than analyzing the obsidian density from each site, he used the ratio of the number of pieces of obsidian
found to the number of ceramic sherds found. The results of this analysis showed that the Postclassic Maya had access to much more obsidian than they had during the Classic period. Sidrys fit this change over time into the Hammond model, arguing that because the Postclassic Maya were more likely to trade by sea, it was easier to trade more obsidian over longer distances during the later period.

There were several weaknesses in Sidrys’s argument. One was the way he used the physics work formula in an attempt to quantify the effort put forth to obtain obsidian at different sites. This showed the capability of each site to obtain obsidian and, therefore, its complexity. Yet he ignored several factors in the process of obsidian procurement. He simply used the distance as the crow flies from the nearest source area, rather than measuring the length of routes that might have been used or taking into account data about which source areas were the origin of the obsidian at any given site. Sidrys did not use available information about which source obsidian had come from or by which route it had been brought: such evidence would have made his trade indices more believable. Another weakness was his use of the word “trade,” despite its capitalist baggage. This showed Sidrys’s assumption that a certain kind of exchange was occurring, limiting his view of what might have been happening in the past.
Critiques of the Hammond Model

Healy, McKillop, and Walsh (1984) wrote one of the few articles disputing the accuracy of the Hammond model. They examined the obsidian found at Moho Cay, off the coast of Belize. According to Hammond (1976), Moho Cay was a way-station for coastal trade of Ixtepeque obsidian during the Postclassic period. Healy and coworkers agreed that the island site was important for coastal traders, particularly because of its location near the mouth of the Belize River. Yet the obsidian found at Moho Cay was not all from Ixtepeque, or found exclusively in Postclassic period contexts. In fact, there were Classic-period obsidian deposits that were overwhelmingly from El Chayal. The researchers used these assemblages to show that Hammond’s model was not always a perfect predictor of obsidian finds.

Healy and coworkers did not argue that Hammond was wrong about large trends in obsidian exchange, but contended that the exchange was much more complex and intricate than the Hammond model described. Moho Cay, which certainly played an important role in coastal exchange, did not fit the model that most archaeologists had accepted. They reasoned that it was impossible to create a model as simple as his – El Chayal by land, Ixtepeque by sea – that accurately described what happened in the past. Hammond assumed that it was possible and desirable to describe a system of exchange, while Healy and coworkers argued that simplistic modern models could not describe the complexity of the past. Yet this criticism does not undermine Hammond’s use of models: instead, they argued for a more complex model.
Helen Haines (2000) leveled another critique of the Hammond model in her dissertation, *Intra-Site Obsidian Distribution and Consumption Patterns in Northern Belize and the North-Eastern Peten*. In her introduction, she described the way Hammond-style studies, focusing on the geographical and temporal distribution of chemically sourced obsidian, were limiting:

While identifying the different sources of obsidian used by the Maya and documenting changes in this pattern through time provides us with an understanding of *what* material was being used and *when*, it does little to aid in our understanding of *how* these sources were used and, perhaps more importantly, it fails to contribute to our understanding of *why* these sources were used or *why* variations in the consumption patterns for each source occurred (Haines 2000: 26) (emphasis original).

Instead, Haines proposed an archaeology of Maya obsidian based on context. Hammond’s articles and those that followed tended to ignore which pieces of obsidian were found in which areas of a site. Haines examined obsidian assemblages from various sites in Belize and Guatemala, including Ka'Kabish, trying to discover which types of contexts contained obsidian from which source areas. She found that, while several sites did fit cleanly into the Hammond model, the data told a more interesting and complex story when examined contextually.

Haines used two cross-cutting systems of context classification. One way of classifying contexts is by function: what purpose did an area serve in ancient society? Haines used the functional categories of ritual, burial, utilitarian, and waste contexts. Another way she thought about context was social: where did an area fit into social systems and hierarchies? She used the social categories of elite, non-elite, ritual, and workshop.
In terms of functional contexts, ritual and burial contexts at all sites tended to contain much more obsidian from El Chayal than from other sources. Even during periods when El Chayal was the most common source, there were disproportionate amounts of El Chayal obsidian in ritual contexts. Obsidian from San Martín Jíotepeque, on the other hand, was found almost entirely in utilitarian and waste deposits, except for a single piece from a ritual context. Ixtepeque obsidian was occasionally found in ritual contexts, but usually was found in utilitarian and waste deposits, like that from San Martín. Obsidian from different source areas appeared in different social contexts as well: San Martín Jíotepeque obsidian tended to be found in non-elite contexts, while El Chayal and Ixtepeque were more common in elite and ritual contexts. While Haines did not fully examine the ways that functional and social contexts fit together (What kind of obsidian was found in elite domestic structures, for example?), she argued that El Chayal was the most prestigious source in terms of both functional and social contexts.

Haines saw Hammond’s way of researching Maya obsidian as very limited. As she put it, “Without knowing the who and what of obsidian utilisation, understanding the why of obsidian reliance and exchange will always be beyond our reach” (Haines 2000: 26-27) (emphasis original). The move from where/when to who/what was an important step towards asking why obsidian was used as it was. In her conclusion, Haines alluded to the potential religious significance of obsidian, but did not fully explore this angle of inquiry. She took a
step toward the study of obsidian as a material, beginning to create a framework for studies of its materiality.

**Conclusion**

Since the invention of XRF and NAA sourcing technology, obsidian source data has been a defining feature of Maya obsidian studies. Mayanists have asked, over and over again, “which source is this obsidian from, and what does that mean?” This question began with studies like Hammond’s, and continues to be asked, albeit in modified forms, today.

Even Haines’s analysis drew on some aspects of the very model it rejected. Haines continued to assume that which source obsidian was from was an important fact. Although her evidence on this point was convincing, the structure of her study, with its focus on obsidian source data as compared to other factors, was similar to Hammond’s. Haines moved beyond Hammond by adding context to geographic and temporal location as factors through which to analyze obsidian source data. She asked new versions of the same questions: where did the ancient Maya procure obsidian, and what does that mean?

Haines’s approach is reminiscent of Hegmon’s (2003) “processual-plus” archaeology. Her step toward asking the “why” of obsidian exchange showed a postprocessual influence. Rather than assuming that people in the past acted in order to adapt to their environment, Haines shows that the Maya may have had complex reasons for using obsidian from different source areas. Her analysis
moves Maya obsidian studies beyond systems theory, toward an investigation of what obsidian may have meant to those who used it.

These questions are important, and NAA and XRF provide Mayanists with a wealth of data with which to attempt to answer them. Yet the overwhelming prevalence of studies that say no more than, “yes, obsidian source data from this site fits the Hammond model,” shows that an exclusive focus on these questions can be limiting. They are only two of many questions that could be asked; yet they have been asked over and over again, to the exclusion of many other interesting topics of study.
5: Studies of Obsidian Tool Production

Sourcing has not been the only major theme in Maya obsidian studies. The other set of questions that Mayanists have tended to ask focus on the production of obsidian artifacts, primarily prismatic blades. How did the Maya make prismatic blades? What does the information we have about obsidian use and core/blade technology say about wider Maya society?

During the 1960s and 1970s, experimental archaeologists like Crabtree (1968) and Sollberger and Patterson (1976), as well as lithic specialists like Sheets (1972), studied the technology of prismatic blades, trying to understand how they were made and how and why they were superior to other tools. Others, such as Clark (1981, 1987; Clark and Lee 1984), used obsidian to investigate craft specialization and its role in the rise of cultural complexity. Around the same time, William Rathje (1971, 1972) began to argue that obsidian had played an important role in the development of the culturally complex Maya civilization in the lowlands. Archaeologists working at urban sites near obsidian sources, particularly Kaminaljuyu and Teotihuacán, investigated the relationship between obsidian and complexity (e.g. Michels 1976; Sidrys and Kimberlin 1979; Santley 1983; Santley 1984; Charlton 1984).

As new postprocessual ideas began to influence Maya archaeology, the form of these questions shifted. Rather than focusing on what obsidian and craft specialization meant about the level of complexity of Maya society as a whole, archaeologists began to ask what obsidian blade production might have meant
to the people who made and used the blades. Johnson (1996) investigated how social status and obsidian crafting may have interacted at Nohmul. Anderson and Hirth (2009) hypothesized that some of the crafters making obsidian implements at Kaminaljuyu were domestic multicrafters who produced tools to use in other crafts. Some archaeologists looked at crafts other than obsidian tool production, but made arguments that might also apply to obsidian. For example, Shafer and Hester (2000) discussed craft specialization at Colhá, focusing on chert tool production; Inomata (2001) examined evidence for elite craft specialists at Aguateca; and Hruby (2007) discussed the ritual aspects of chipping stone.

Core/Blade Technology and its Social Meaning

In the late 1960s and early 1970s, archaeologists began to investigate the process of making prismatic blades by examining lithic debris and conducting experimental studies. Crabtree (1968) conducted an experimental study of prismatic blade-making technology based on the writings of Fray Juan de Torquemada, a Spanish missionary and historian who recorded his experiences in central Mexico in the sixteenth century. Torquemada described the indigenous craftsmen sitting on the floor, holding obsidian cores between their feet while they shaped them and flaked blades from them. To make blades, he wrote, they used long pieces of wood as crutches, placing one end against the platform of the stone core and the other against their chests and pressing forward until the flakes popped off.
Crabtree rejected some parts of Torquemada’s description, claiming that the ridges left by the blades flaked off a core would be sharp enough that it would be dangerous to hold cores between bare feet, and that Torquemada’s suggestion that the crutches were five cubits long made them much too long to be useful. He did, however, find that using a chest crutch made of wood and tipped with bone or horn, in a standing position, with the core held in a vice on the floor, created blades that looked very much like those found at Mesoamerican archaeological sites. His creation of a vice to hold the obsidian core on the ground was a problem: he gave no evidence that the ancient Maya used such tools, stating only that they had the materials to do so.

Crabtree’s study did, however, reveal much about the process of prismatic blade production. He set the precedent for future experimental studies (e.g. Sollberger and Patterson 1976), and proved that blade/core technology required a high level of expertise. Crabtree showed that prismatic blades were impressive tools. This new appreciation of prismatic blades paved the way for many of the studies discussed in this thesis, which are founded on the idea that obsidian was important in Maya society and can teach archaeologists much about social, economic, and political aspects of Maya civilization.

A study of lithic debris from El Salvador by Sheets (1972) supplemented Crabtree’s work on the procedures of prismatic blade production. Lithic assemblages from a late Preclassic period workshop site near Chalchuapa, El Salvador, showed that a procedure similar to that described by Crabtree was
used there. The significant difference between Sheets’s and Crabtree’s discussions was Sheets’s emphasis on the smoothing and shaping of the striking platform. This was done by scraping or rubbing a hammerstone across the platform to flatten it and remove any excess material. Sheets’s analysis confirmed Crabtree’s assertion that blade production required great expertise, an idea that would become central to studies of obsidian craft specialization.

Clark followed up on these arguments in the 1980s, focusing on obsidian craft specialization’s relationship with cultural complexity. First, he examined the early Preclassic obsidian industry at the site of Paso de la Amada (Clark 1981). Because prismatic blade technology was not yet widely used during this period, the industry at Paso de la Amada primarily produced simple flaked tools. Clark’s analysis concluded that because of the simplicity of the technology and the wide distribution of tools and debitage across the site, obsidian tool production must have been a non-specialized craft. He deduced that ordinary people must have made the tools they needed in their own homes or workspaces, rather than relying on a craft specialist. This kind of production indicates a low level of economic complexity at Paso de la Amada during the early Preclassic.

Clark and Lee (1984) collaborated to expand this analysis to other sites in Chiapas, with material from throughout the Preclassic period. They showed that in that part of the Maya area, obsidian tool production had shifted from a flake industry to a prismatic blade industry during the middle or late Preclassic period. More obsidian was used in the region over time, in the forms of more
advanced tools, which were exchanged more widely. Clark and Lee connected this shift to increasing cultural complexity: according to their analysis, a blade industry would have required a ranked society or chiefdom, since it required craft specialists with a high level of expertise. Around the same time, monumental architecture, elite house mounds, and differentiated burials began to appear in the archaeological record, pointing to a less egalitarian social system.

Clark (1987) continued to explore the connection between complex culture and core/blade technology. He hypothesized that obsidian prismatic blade technology, which included the use of imported blades as well as the local production of blades from imported cores, had spread through the Maya area “follow[ing] the emergence of complex chiefdoms in any given area” (Clark 1987: 260). He described the process of blade production in detail, emphasizing the expertise and the tools required, and argued that these necessities meant that obsidian crafters must have been specialists within a highly organized society.

Since tools made of local chert were available for cutting, and prismatic blades required such advanced knowledge to create, Clark argued that the spread of core/blade technology must have been a function of political rather than simple economic processes. A leader of a more organized society would have had the resources to subsidize obsidian specialists and regulate raw material importation and the distribution of finished blades. Control of this technology and of blade exchange, in turn, would have given leaders more
economic power as well as social influence: prismatic blades could have been elite goods showing the social status of their owners or ritual objects symbolizing the esoteric knowledge of religious figures. Thus the presence of obsidian blades is, in Clark’s view, closely tied to social and political complexity.

This use of obsidian production specialization to investigate complex social systems was part of a larger trend in Maya obsidian studies. Rathje (1971, 1972) had also tied the use of obsidian to cultural complexity. Rathje wrote in a time when many archaeologists did not believe that complex civilizations could develop independently in low-lying rainforest ecosystems, and many were trying to understand how the Olmec and Maya civilizations had done just that. He hypothesized that there were three necessary resources that were only available in the highlands of the Maya area: hard igneous rock for grinding stones, obsidian for cutting, and mineral salt for food preservation. Because they were so far from these resources, the lowland Maya relied on “suprahousehold organizations” to obtain them. Thus, Rathje argued, the lowland Maya organized themselves into a complex society in order to gain access to resources that were only available in the highlands, including obsidian. The institutions of complex society were “exported” from the lowlands along trade routes back into the highlands. Obsidian, in Rathje’s conception, played a major role in the development of Maya civilization.

Rathje’s work has continued to be influential and to be cited by Mayanists in the decades since its publication (e.g. Sidrys 1976; Marcus 1983; Rice 1984; Fowler et al. 1989; McKillop 1989; Arnauld 1990; McAnany 1993; Braswell
Rathje’s idea that lowland Maya civilization emerged at least in part to obtain resources like obsidian from the highlands has been widely accepted. Some have disputed parts of his hypothesis, but the main elements have remained intact. For example, McAnany (1993) argues that, while the lowlands did not contain obsidian or basalt outcrops, the lowland Maya could produce or obtain some very important resources, such as honey, fish, cacao, and amber. Braswell (2002) did not accept that highland Maya played only the passive role of ideological consumer, arguing that complexity cannot be “imported” as simply as Rathje implied.

This theoretical link between obsidian and complexity influenced some analyses of sites that were particularly important to Maya obsidian production and exchange, such as Kaminaljuyu (Michels 1976; Sidrys and Kimberlin 1979). Kaminaljuyu was a chiefdom located about 20 km from the largest outcrops of El Chayal obsidian, and the site controlled most of the source area. Michels argued that obsidian procurement and blade production were specialized activities that played a central role in Kaminaljuyu’s economy and that different classes and lineages had more or less control of obsidian during different chronological periods. Obsidian played a central role in Kaminaljuyu’s complex social, political, and economic systems.

Kaminaljuyu’s rise to power in the region corresponded chronologically with the increased use of El Chayal obsidian throughout the Maya area, during the late Preclassic and early Classic periods (Sidrys and Kimberlin 1979; Arnauld 1990). As Sidrys and Kimberlin argued, Kaminaljuyu became a ceremonial
center in the region and began quarrying more extensively and producing more obsidian tools suddenly around the same time that El Chayal became the most popular obsidian source. Kaminaljuyu’s cultural complexity was integrally tied to its obsidian industry.

This type of argument was also applied to Teotihuacán, outside the Maya area (Santley 1983; 1984). Santley argued that Teotihuacano exploitation of the Pachuca obsidian source was an important factor in the site’s process of urbanization. Teotihuacán’s economy was largely based on long-distance trade, and green Pachuca obsidian was one of the resources exchanged throughout Mesoamerica.

These various arguments about the connections between obsidian tool production and the emergence of cultural complexity are not surprising, given that they were written in a time when archaeology was heavily influenced by processualism. They focused on the ways ancient societies changed over time: how they became more economically and socially stratified and more politically complex over time. They put forward models for how societies worked on a large, general level, influenced by processualist systems theory.

**The Social Meaning of Crafting**

Postprocessual archaeology, with its rejection of systems theory and focus on small-scale questions about how ordinary people may have lived, inspired a change in how questions about obsidian crafting were asked. In the 1990s, archaeologists began to ask what it meant to be a crafter in ancient Maya
society. They investigated who crafters were and the interactions among craft specialization, religious ritual, and social class hierarchy.

Johnson (1996) examined the obsidian found at Nohmul in the context of Clark’s arguments for the elite control of obsidian tool production in Maya society. Excavations there found areas with high densities of obsidian artifacts: which were likely obsidian tool workshops. These artifacts included flakes that appeared to be the result of unsuccessful attempts to make prismatic blades. Others appeared to come from core rejuvenation, the processes of reshaping a used core so it can be reused.

Another interesting obsidian assemblage from Nohmul was found in a late Classic-period tomb: the tomb contained jade, two chert eccentrics, and obsidian cores and blades. This assemblage led Johnson to argue that obsidian must have had ritual or religious significance. It was evident from the workshop site that obsidian tool production was specialized at Nohmul. Johnson argues that this specialization, controlled by the elite according to Clark, was tied to religion. Since religion was also controlled by elites, Johnson argued that the religious importance of obsidian showed that obsidian crafting was a political act that bolstered the religious and social power of the Maya elite class.

Shafer and Hester (2000) examined chert production at the site of Colhá in a similar light. Colhá was located in northern Belize, in an area rich with chert outcrops. During the Preclassic and early Classic periods, Colhá was a regional center of chert tool production: chert items from Colhá are found throughout northern Belize. During the mid Classic period, the site of Altun Ha south of
Colhá came to power in the region, and large-scale chert tool production at Colhá petered out.

The chert items manufactured at Colhá included several types of utilitarian implements, but also included eccentrics and stemmed macroblades, bifaced blades in the shape of an isosceles triangle with a handle extending from the short side of the triangle. Since eccentrics have no utilitarian purpose and stemmed macroblades are depicted in artistic depictions of Maya rituals, Shafer and Hester argued that both were religious objects. Like obsidian blade production at Nohmul, chert implement production at Colhá was a craft specialization that was closely tied to religious activities. Unlike Johnson, Shafer and Hester did not claim that the material and craft must have been controlled by elites: they leave the question of control of chert manufacturing to future research.

Inomata (2001) used evidence from the site of Aguateca to further refine archaeological understanding of the significance of crafting in Maya society by examining the relationship between crafting and systems of power. He argued that, “for the classic Maya, the manufacture of art objects was an act of creation loaded with symbolic meaning” (Inomata 2001: 321). Inomata cited assemblages from several structures that seem to be both elite dwelling spaces and craft workshops: they contained domestic tools, elite goods such as jade, and specialized craft tools. The structures contained raw materials and tools necessary to make shell ornaments, spindle-whorls and needles for textile work, and mortars, pestles, and inkpots used by scribes to make ink. At Aguateca,
many crafters were elites in society, and their specialized knowledge was part of what separated elites from other members of society, according to Inomata. While he focused on crafts other than obsidian tool production, the hypothesis of elite craft specialization has contributed to the discourse about the meaning of obsidian crafting.

Hruby (2007) drew on these hypotheses about the connection between lithic specialization and religious ritual in his study of obsidian production at Piedras Negras. He examined obsidian eccentrics found in caches at Piedras Negras, which had been made from pieces of obsidian formed during different parts of the blade-making process. Some eccentrics were shaped like animals and the profiles of faces, presumed to be those of deities. Others were incised with drawings of mythical figures. Hruby suggested that since great knowledge and skill was needed to create these eccentrics, their production, as well as their placement in caches, served as a ritual. Furthermore, the presence of eccentrics made during different parts of the process of making blades showed that the whole process may have been imbued with religious meaning.

Most recently, Anderson and Hirth (2009) examined how obsidian crafting was related to other craft specializations. They investigated the possibility of “domestic multicrafting,” in which Maya craftspeople were specialists in multiple crafts. Multicrafters might have made obsidian tools for their own use in other activities such as processing cacao or cutting organic materials such as reeds or gourds. If a prismatic blade was used in other craft activities, it generally showed a large amount of use wear.
Anderson and Hirth examined obsidian from a midden at Kaminaljuyu and argued that its users engaged in this type of activity. The midden contained large numbers of percussion blades created early in the production sequence, and relatively few of the smaller, more regular pressure-flaked prismatic blades and expended cores. Had the workshop associated with the midden been primarily used for the production of prismatic blades for exchange, there would be more obsidian from later in the production sequence present. Most of the pieces in the assemblage showed a high degree of use-wear, implying that they had been used in crafting activities. Anderson and Hirth posited that the crafters that created the midden obtained a core, percussion-flaked it to create tools for other work and to shape it for later pressure-flaking, and then passed it along to another crafter to make pressure-flaked prismatic blades.

**Conclusion**

The developments of archaeological theory have affected how archaeologists investigate obsidian use and crafting in ancient Maya society. In the 1970s and 80s, archaeologists tended to focus on how obsidian craft specialization functioned within the system of Maya society. They examined how the spread of core/blade technology related to the development of complex Maya civilization. As postprocessual theory emerged and encouraged a focus on how people may have lived rather than how the larger system functioned, Mayanists with an interest in obsidian craft specialization shifted their focus. They explored where craftspeople may have fit within Maya social structure, and
what the religious significance of obsidian blade and eccentric production may have been.

Yet none of these approaches pay attention to the materiality of obsidian. Many have discussed how blades were made and what that might say about social structure, but almost none have explored what obsidian as a material meant to the Maya. In the next chapter, I will examine this gap in our knowledge of ancient Maya obsidian use and how it might be filled.
As discussed in the previous chapter, some archaeologists have recently begun to investigate the religious aspects of obsidian blade production (e.g. Johnson 1996; Inomata 2001; Hruby 2007). Johnson posited that obsidian blades had some sort of religious significance based on their presence in graves. He speculated that they may have been used in sacrifices and blood-letting rituals, but did not elaborate. Inomata and Hruby investigated the religious character of obsidian crafting processes. All of these analyses claim to show that obsidian tools and their production had religious significance.

However, almost no Mayanists have discussed the religious importance of obsidian as a material. The single exception is Orellana (1977), whose study of obsidian use in a community in the Guatemalan highlands drew on surviving Maya codices to show the spiritual significance of the material. Mayanists have largely ignored her study. Textual evidence (e.g. Recinos and Goetz 1953; Tedlock 1985) does, however, support her claims that obsidian as a substance had religious meaning for the Maya. Research conducted in central Mexico by Heyden (1988) and Saunders (2001) provided examples of the kind of work that could be done in the Maya area if archaeologists focused on the materiality of obsidian.

Investigation of the materiality of obsidian is also a key to new questions about obsidian sources and crafting. To examine what obsidian source data means, archaeologists could explore how people saw and interacted with
obsidian from different sources differently, and what each source meant to its users, if anything. Discussions of what was done with obsidian can expand to include objects other than prismatic blades, such as eccentrics, with a focus on the meaning of the material itself.

**The Materiality of Obsidian in the Maya Area**

Although the conquistadors destroyed many indigenous documents in the name of Christianity, a few documents have survived that describe prehispanic Maya cosmology. Indigenous Maya people from the Cakchiquel group from the southern Guatemalan highlands learned how to use the Latin alphabet and wrote *The Annals of the Cakchiquels* soon after the arrival of the Spanish (Recinos and Goetz 1953). *Annals* discussed obsidian as part of the creation myth: “Then the Obsidian Stone was created by the wondrous Xibalbay, by the precious Xibalbay. Then man was made by the Creator and the Maker, and he gave homage to the obsidian stone” (Recinos and Goetz 1953: 45-46). *Xibalbay*, sometimes written as *Xibalba*, referred to the Maya underworld, a beautiful place where the gods dwelled. A later part of the text described the establishment of an idol called *Chay Abah*, meaning “obsidian stone” when the Cakchiquels moved into a new area (Recinos and Goetz 1953: 84).

Since *Annals* was written after the Spanish conquest, it belonged to a much later time than most of the obsidian discussed in this thesis. Yet this portrayal of obsidian as an entity from *Xibalba* to be worshipped by human beings showed that the material itself was tied to religion by the time *Annals* was
written. It seems unlikely that obsidian’s central role in the Cakchiquel creation story was a recent addition. Even if the Preclassic and Classic period Maya did not view obsidian in the same way that the Cakchiquel Maya did during the Colonial period, its significance in the Cakchiquel mythology must have had precedents in earlier belief systems. After all, people throughout Mesoamerica, from the Olmecs to the Maya to the Aztecs, have procured obsidian from distant quarries for use in rituals and other contexts.

Despite its potential import for Maya obsidian studies, Sandra Orellana (1977) is the only Mayanist to have referenced this textual evidence for the religious character of obsidian. In the introduction to her study of the obsidian found on a survey project in southern Guatemala, she outlined the evidence from the Annals. Even Orellana did not explore the evidence in much depth: she used it as background information to introduce a more conventional study of the obsidian tools found and a description of the flaking process by which they were made.

Orellana’s citation of Annals has been largely ignored. No other articles about Maya obsidian have cited the material’s status as a deity or its connection to Xibalba. Perhaps this evidence was disregarded because of the theoretical climate in the discipline. At the time, processual approaches emphasizing systemic models and positivist epistemologies dominated archaeology. Archaeologists saw ideology as a manifestation of the way a culture adapted to its environment, and tended to study the adaptive processes themselves. The discipline was not ready to be receptive to evidence about the symbolic meaning
of obsidian, and this line of questioning has not been picked up in the decades since. No work about the materiality of obsidian in the Maya area has been published.

Outside the Maya area, the religious character of obsidian has been more fully explored. While arguments from other parts of Mesoamerica may not apply directly to the Maya, they open new lines of inquiry to be explored. In central Mexico, Heyden (1988) and Saunders (2001) asked what obsidian might have symbolized for ancient people. Heyden (1988) was the first to explore the materiality of obsidian in central Mexico, focusing on Teotihuacán and the Aztec civilization. In the context of research on the centrality of obsidian to the development of Teotihuacano economic power and complexity (e.g. Santley 1983; 1984), she discussed the spiritual significance of obsidian at Teotihuacán. She posited that the generally accepted meaning of the word “Teotihuacán,” “the place where gods are made” might be incorrect or too simplistic. Since “teotetl” is the Nahuatl word for “divine stone,” Heyden suggested that “Teotihuacán” means “place of the divine stone,” namely obsidian. Alternatively, she cited linguists who had argued that “Teotihuacán” might mean “place of the owners of streets of stone.” While this meaning of the name might refer literally to stone-paved streets, Heyden suggested that it could have referred metaphorically to obsidian as well.

Heyden also discussed obsidian’s place in Aztec religion through an exploration of various Aztec deities associated with the stone. One deity, Itzpapalotl, or “the obsidian butterfly” predated the Aztec confederacy. She was
depicted in early codices ornamented with prismatic blades. According to the
mythology, Mixcoatl, a god of the hunt who used flint arrows, killed her. Yet
despite her defeat, Itzpapalotl was an important deity for the Aztec, to whom she
symbolized victory in battle and human sacrifice.

Heyden argued that the most important Aztec god, Tezcatlipoca,
represented obsidian itself. One of his attributes was an obsidian mirror, which
he used, according to myth, to divine the future and to watch his followers.
Obsidian statues of Tezcatlipoca were central elements of temples in
Tenochtitlán. At smaller sites, where people did not have the resources to obtain
obsidian statues, wooden statues of the deity were painted black to represent
obsidian. Heyden also mentioned that indigenous priests painted their bodies
black using pitch and ground insects and herbs. This paint was meant to protect
them from danger and to allow them to communicate with Tezcatlipoca.

Saunders (2001) followed up on Heyden’s argument and created a more
comprehensive theory of the materiality of obsidian in Aztec society. As a
British archaeologist, he was more influenced by postprocessual ideas about
phenomenology and materiality than many of his American counterparts. He
made an explicit call for more work in this vein, explaining that,

Hitherto, obsidian has been subject mainly to studies which have
privileged such issues as the economic dynamics of production,
trade and exchange. Yet obsidian’s full ‘biography’ must include
an assessment of its unique ideological positioning as a bridge
between symbolic and physical realities (Saunders 2001: 221).

This “bridge” between the mundane and the spiritual was an essential
piece of Saunders’s view of obsidian. He highlighted the centrality of caves in the
Aztec origin story, which describes the first people entering the world through a cave. In this story, caves are a liminal space or bridge between this world and the underworld. Since obsidian was found in the mountains, by delving into the earth, Saunders argued that the material itself was seen as a connection between the worlds.

Saunders also drew on some of Heyden’s evidence. He discussed Tezcatlipoca, whose name meant “The Lord of the Smoking [obsidian] Mirror,” as a manifestation of the divine nature of obsidian. He also cited the use of obsidian in sacrifice and bloodletting rituals to describe its use to connect the mundane with the spiritual.

According to Saunders, the use of obsidian as a spiritual substance in central Mexico did not end with the Spanish conquest. The Spanish chroniclers admired the sharp edges of obsidian blades and their functional uses, failing to recognize the importance of the material in indigenous religion. Although the conquistadors brutally suppressed indigenous rituals whenever possible, indigenous converts to Christianity continued to use obsidian as a spiritual substance.

One of the Spanish strategies for the religious conversion of indigenous people was the destruction of religious structures and the placement of crosses and churches at indigenous sacred sites. They often commissioned local crafters to build these crosses, and these crafters often incorporated obsidian in their designs. Prehispanic Aztec idols had often included disks of obsidian inlayed in the torsos of the figures, and Nahua crafters continued this tradition by inlaying
obsidian disks at the intersections of the arms of their crosses. This example of syncretistic religious practice shows that the spiritual character of obsidian was important to the indigenous people. They continued to believe in its spiritual nature even as they relinquished other aspects of their religion.

Saunders argued that people in central Mexico continue to use obsidian in symbolic ways that connected them to spiritual forces. He pointed to the use of obsidian in both art and souvenirs in the region, hypothesizing that for contemporary crafters and for the tourists who visit Aztec and other archaeological sites, obsidian continues to hold meaning. The tradition of obsidian use for spiritual purposes is still alive today. The continuing importance of obsidian shows its centrality in Mesoamerican culture. Saunders argued that obsidian played such a part in Mesoamerican religion centuries before the Spanish arrived in the Americas, and that its continued presence shows the strength of its ancient roots.

Heyden’s and Saunders’s work showed that there were ways to meaningfully engage with the materiality of obsidian in Mesoamerica using written records and ethnohistoric data to form analogies. Yet Saunders’s call for a “full biography” has not been taken up in the Maya area. Perhaps this gap in obsidian studies is a result of the cyclical, conservative, and insular nature of Maya archaeology, as described by Marcus (1983). It is a shame not to explore such an interesting and promising line of thinking: it is time for Mayanists to answer Saunders’s call and investigate the materiality of obsidian and its role as
a symbolic bridge between the mundane and the spiritual in Mesoamerican cosmology.

**Next Steps**

Arguments based on the materiality of obsidian also point to new versions of the kinds of questions that have been addressed before. With the influence of Saunders’s work, research about obsidian sourcing can expand in new directions. Haines (2000) asked who used which type of obsidian as a step toward asking why obsidian mattered. The next step in this trajectory is to investigate what obsidian meant to the people who used it. Did obsidian from different sources have different meanings? If so, were these differences based on their visual differences, or on social or political factors? Why did city-states obtain obsidian from multiple sources, and what might these sources have meant? Did obsidian from El Chayal symbolize a connection to Kaminaljuyu, or was Kaminaljuyu important because of its proximity to El Chayal? Who could tell the difference between the obsidian sources? What did this knowledge say about their social position?

Materiality studies also suggest new ways of investigating obsidian crafting. Most studies of obsidian artifact production have focused on prismatic blades (e.g. Crabtree 1968; Hester 1972; Sheets 1972; Sollberger and Patterson 1976; Clark 1987; Mitchum 1989; Jackson and Love 1991; Johnson 1996; Braswell 2002; Aoyama 2008; Anderson and Hirth 2009). Hruby (2007) begins to examine obsidian eccentricities and what they might have meant. The use of
obsidian for eccentrics suggests new lines of questioning: what does this use mean about the symbolic significance of obsidian? What kinds of eccentrics are made of obsidian? Was obsidian particularly suited for eccentric production, and, if so, why was that? Are obsidian eccentrics different from chert eccentrics? What did it mean to be a producer of obsidian eccentrics? How did obsidian eccentrics create Saunders’ “bridge” between the ordinary and the divine?

It is time for Mayanists to respond to Saunders’s invitation to explore obsidian’s “unique ideological positioning as a bridge between symbolic and physical realities” (Saunders 2001: 221). Maya obsidian studies have continued to use processual approaches even as processual-plus and postprocessual ideas have made new approaches possible. The literature on Maya obsidian procurement and use shows that Marcus (1983) was correct: the discipline has been cyclical, insular, and conservative. It is time to ask new questions about the materiality of obsidian, in order to write what Saunders called its “full biography.”
Ka'Kabish Revisited

What does all this say about Ka’Kabish? I began to read about Maya obsidian in order to understand the obsidian from Ka’Kabish, and how it could fit into larger discussions of Maya obsidian trade and use. In the process, I became interested in how these discussions have changed over time, but Ka’Kabish obsidian is still present in my work.

The truth is that the obsidian from Ka’Kabish does not tell much. The lack of clear context for the majority of the obsidian, found in the humus layer in the center of Plaza D South, and the small size of most of the artifacts, make it difficult to discuss how it may have been used. A study like Haines's (2000), which used contextual data to discuss how obsidian from different sources was used, is impossible with an assemblage like this, with no reliable context. Studies of the meaning of craftsmanship are similarly difficult without obsidian from a workshop context.

It is possible, however, to fit the obsidian source data from Ka’Kabish into the Hammond model of obsidian procurement. The site’s inland location suggests, according to Hammond (Sidrys and Kimberlin 1979; Hammond, Neivens, and Harbottle 1984), that obsidian from El Chayal should be more prevalent than that from Ixtepeque. Since ceramics show that the site was inhabited during the Preclassic and Classic periods, its inhabitants should have used San Martín Jîlotepeque and El Chayal obsidian, rather than Ixtepeque (Sidrys and Kimberlin 1979; Hammond, Neivens, and Harbottle 1984). The data
from Ka’Kabish supports these hypotheses. The visually sourced obsidian includes 56 pieces from El Chayal and 26 pieces from San Martín Jílotepeque. None of the obsidian was visually identified as originating at Ixtepeque.

In my research, I came across many studies that said little more than, “The obsidian from the site I excavated fit the Hammond model chronologically and geographically.” I could write another piece that says the same thing, reasserting the validity of Hammond’s hypotheses, but such a thesis would not answer the questions that matter to me. It would address what obsidian was used where and when, but not why. Since I first began to find obsidian at Ka’Kabish, I have wondered what it meant more than where and when it was used. That is the question that has guided my research.

Another way to write about the Ka’Kabish obsidian would follow the tradition of researchers connecting obsidian, crafting, and cultural complexity (e.g. Rathje 1971, 1972; Clark 1981, 1987). The presence of core fragments and one flake with cortex on its outer face suggests that obsidian cores were imported to Ka’Kabish, where craft specialists made them into blades. This evidence of craft specialization, combined with the monumental architecture of the plazas and pyramids of Ka’Kabish, show a high level of complexity. Without more specific evidence of craft specialization, however, it is impossible to say what obsidian might have meant to crafters.

I do understand the impulse to write yet another piece in support of Hammond, or linking obsidian tool production to complexity. There are hardly any precedents for any other type of study of Maya obsidian. When I first read
Hammond, I was excited to find that Ka’Kabish fit the larger trends that he had outlined. When I read Clark’s work, I thought that the presence of debris from tool production suggested that Ka’Kabish was highly complex. It would be simple to write from one of those angles.

As a newcomer to the field, reading all of the literature at once and looking for trends, I could see how the same questions were asked again and again, sometimes in new iterations, but constant in essentials. I can also understand, however, that for a Mayanist specializing in obsidian, it would be harder to see the limits of the field. When all Mayanists seem to be making the same kinds of arguments, it becomes hard to see new ways of thinking and avenues of research. Marcus (1983) was right about the limitations of Maya archaeology: Mayanists have gotten stuck in an insular community that does not look to other researchers in other parts of the world for ideas. Within their theoretical blinders, it becomes difficult to see any new ideas. One way of removing these blinders would be to explore angles of research used in other parts of the world.

Yet there are new ideas, and reading about them is a breath of fresh air. There were hints of new approaches in Orellana’s (1977) work, when she showed the spiritual significance of obsidian in the Annals of the Cakchiquels. Haines (2000) took an important step towards investigating the significance of obsidian in her contextual study of how obsidian from different source areas was used. Outside the Maya area, Heyden (1988) and Saunders (2001) investigated the materiality of obsidian, pointing the way for Mayanists to move forward with
similar studies. The next step is to bring these approaches together in order to study the significance of obsidian as a material and to write its full biography.


References

Adams, Richard E. W.

Anderson, J. Heath, and Kenneth G. Hirth

Aoyama, Kazuo

Arnauld, M. Charlotte

Asaro, F., H. V. Michel, R. Sidrys, and F. Stross

Barnard, Alan

Baugh, Timothy G., and Jonathon E. Ericson

Binford, Lewis R.

Bourdieu, Pierre

Braswell, Geoffrey E.

Braswell, Geoffrey E., John E. Clark, Kazuo Aoyama, Heather McKillop, and Michael D. Glascock

Brown, Kenneth L.

Charlton, Thomas H.

Clark, John E.


Clark, John E., and Thomas A. Jr. Lee

Coe, Michael D.

Coe, Michael D., and Kent V. Flannery

de la Cova, Antonio Rafael
1997 Maya maps. *Latin American Studies.*

Crabtree, Don E.

Demarest, Arthur A.
Dewbury, Adam G., and Nerissa Russell


Diehl, Richard A.


Dreiss, Meredith L.


Ford, Anabel, FH Stross, Frank Asaro, and Helen V. Michel


Fowler, William R. Jr., Arthur A. Demarest, Helen V. Michel, Frank Asaro, and FH Stross


Giddens, Anthony


Guderjan, Thomas H.


2007 *The Nature of an Ancient Maya City: Resources, Interaction, and Power at Blue Creek, Belize*. The University of Alabama Press, Tuscaloosa, AL.

Guderjan, Thomas H., James F. Garber, Herman A. Smith, et al.


Haines, Helen R.


Hammond, Norman


Hammond, Norman, Mary D. Neivens, and Garman Harbottle

Healy, Paul F., Jaime Awe, Christopher N. Stevenson, and Bobbi Hohman

Healy, Paul F., Heather McKillop, and Bernie Walsh

Hegmon, Michelle

Henderson, John S.

Hester, Thomas R.

Heyden, Doris

Hodder, Ian

Hruby, Zachary X.

Inomata, Takeshi

Jackson, Thomas L., and Michael W. Love

Johnson, Jay K.


Marcus, Joyce

McAnany, Patricia A.

McKillop, Heather


Michels, Joseph

Mitchum, Beverly A.

Moholy-Nagy, Hattula


Moholy-Nagy, Hattula, Frank Asaro, and FH Stross

Nazaroff, Adam J., Keith M. Prufer, and Brandon L. Drake

Nelson, F.

Nelson, FW, Kirk K. Nielson, Nolan F. Mangelson, Max W. Hill, and Ray T. Matheny

Orellana, Sandra

Rathje, William L.

Recinos, Adrián, and Delia Goetz (translators).

Rice, Prudence M.

Rice, Prudence M., Helen V. Michel, Frank Asaro, and Fred Stross

Santley, Robert S.


Saunders, Nicholas

Service, Elman R.

Shafer, Harry J., and Thomas R. Hester


Shanks, Michael, and Christopher Y Tilley
Sharer, Robert J.

Sheets, Payson D.


Sidrys, RV


Sidrys, RV, and Jerome Kimberlin

Sidrys, Raymond, John Andreson, and Derek Marcucci

Sollberger, J.B., and L.W. Patterson

Stross, FH, H.R. Bowman, Helen V. Michel, Frank Asaro, and Norman Hammond

Tedlock, Dennis (translator).

Trigger, Bruce G.

Van Tuerenhout, Dirk R.

Weigand, Phil, and Michael Spence
1982 The Obsidian Mining Complex at la Joya, Jalisco. *Anthropology* 6(1): 175-188.
Willey, Gordon R., and Jeremy A. Sabloff