Shifting Trade Networks: Sub-Saharan to Atlantic Exchange in Central Ghana 1355-1725 CE

by

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DEDICATION

To Michael Church, for always believing in me

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ABSTRACT

This project asks how regional, continental, and global processes converged upon a West African village. With a household-oriented focus, I will examine how the activities of daily life were constituted, negotiated, and mediated in part with integration in regional political, economic, and religious structures and interaction with global networks. The Bono Manso region of central Ghana was occupied from the late 12th to mid-18th centuries CE, spanning much of the zenith of sub-Saharan and Atlantic Trade eras. It lay on a primary trade route linking the Malian city of Jenne with the Akan goldfields. Using the satellite village of Kranka Dada, I analyze from the "bottom-up" how household practices linked the household of Kranka Dada to the nascent urban center within the region as well as global markets. This approach enables me to document how local villagers interacted with the larger center (Bono Manso) and how that interaction shaped economic, political, and religious organization from the sub-Saharan to the Atlantic Trade eras. By integrating oral, historical, archival, and archaeological data, I examine: (1) how households and their associated activities were affected by interaction with the political economy of Bono Manso, (2) how integration shaped household participation in regional and global exchange networks, and (3) the evidence for change and continuity over time.

Chapter 1 Introduction

From the 12th to 19th centuries CE, West Africa became embedded in regional, continental, and global trade networks. Sub-Saharan trade connected many resource-rich areas of West Africa via a series of primary and secondary routes. As the Caliphates expanded, Islam, new types of commerce, technologies, and ideas spread into the Western Sudan. Raw materials including gold and goods from the Western Sudan became important objects in the Mediterranean economy. Wanting to cut the Muslim middlemen out the gold exchanges, Europeans travelled to West Africa and established a series of trading forts and castles along the coast. Sub-Saharan and Atlantic exchange networks competed and complemented each other as merchants and traders vied for access to African goods. The transition from overland trade to the opening of Atlantic markets was a tumultuous period in West African and global history.

Much of the archaeological history of West Africa is best known from the investigation of large sites and the study of regional capitals. Much less known are the thousands of towns and villages in the hinterlands of large sites throughout West Africa. Most importantly, we lack information on how these towns and villages participated in regional and global exchange networks. My research examines one such village, Kranka Dada, located in the hinterland of Bono Manso in what is today west central Ghana. My goal was to understand how this era's global, continental, and regional processes converged upon a West African village. This project examines the evolution of a community from its founding to abandonment, and how its residents participated in and articulated with multiple, overlapping regional and global economies.

The Bono: Anthropological Problem

In West Africa, trade relationships and poltical economic dyamics were complex. Trade diasporas faciliated the movement of goods, technologies, and people. Multiple types of markets and different types of trade transactions appeared. New types of sumptuary goods and commodities were traded and exchanged. New systems of value were created and maintained as indiviudals, households, and communties encountered and manipulated new materials. Daily life in villages along the West Africa trade routes was affected as trade brought new ways of life. At the same time, new military technologies, slave-raiding, and exchange relationships doubltessly affected inter-community relationships and geopoltical boundaries. My aim is to understand how village level households engaged with the global and regional processes, especially long-distance trade networks, other centers of state formation, and inter-community political and economic integration during the transition from sub-Saharan to Atlantic exchange periods.

Bono Manso, argued to be the capital of first centralized Bron state of West Africa, developed during the periods of transcontinental sub-Saharan trade and was abandonded during the Atlantic trade in 1722/1723 (Effah-Gyamfi 1985). Bono Manso and its satellite villages were located along trade routes that initially linked them to the Inland Niger Delta and later with Atlantic coastal settlements. Bono Manso, which dates to the late 12th through 18th centuries CE, spanned both the zenith of the gold trade and the Atlantic Trade era. Since historic data are scanty, scholars often disagree about Bono Manso's role as the capital of a state, the extent of its centralization, and its economic control over neighboring villages and provinces. Lying between the large site of Bono Manso and its rural hinterland, Kranka Dada sits on a primary trade route that has deep historical connections with Malian areas and later with European coastal trade.

Kranka Dada is one of several villages near Bono Manso. I use Kranka Dada to analyze (from the "bottom up") how domestic economic practices linked villages to Bono Manso and to regional and global markets. This approach enables me to document how a community interacted with the larger center (Bono Manso) and how that interaction shaped production, consumption, status differentiation, and labor organization from the sub-Saharan to the Atlantic Trade eras. I will examine (1) how households and their domestic activities were affected by interaction with the political economy of Bono Manso, (2) how integration shaped household participation in regional and global exchange networks, and (3) the evidence for change and continuity over time.

I combine cultural anthropology, archaeology, and historical approaches to document regional polities and the strategies those polities use in political economic integration. Previous archaeological research in the Bono area has been restricted to the largest sites. It relied heavily on limited ethnohistorical and archaeological data. My aim is to complement these valuable data with new information on the domestic economies of villages and hamlets arrayed around the large centers. I evaluate the evidence against alternative models of socioeconomic development to explore the extent of the region's political and economic integration.Kranka Dada and Bono Manso's relationship could have taken one of three forms: (1) hierarchical/vertical integration, (2) semi-autonomous relationships and (3) complementary horizontal relationships. These idealized models focus attention on the critical axes of social variation that are paramount in understanding the vertical and horizontal articulation of social systems and households. Such relationships are of broad anthropological relevance in understanding the political, economic, and religious institutions of complex societies.

An approach is needed to document how local villagers interacted with the larger regional center (Bono Manso) and how that interaction shaped production, consumption, and status differentiation from the sub-Saharan to Atlantic Trade eras. Bottom-up approaches have been successfully applied in West Africa (Ogundiran 2007; Stahl 1999, 2001, 2007) and in many other parts of the world (e.g., Arnold 1993; Deagan and Koch 1983; Manzanilla and Chapdelaine 2009). My principal goals in this study are to document (1) how and to what degree Kranka Dada came to be integrated into the political economy of Bono Manso, (2) how integration affected household participation in regional and global exchange networks, and (3) whether or not the type of integration changed over time. I supply evidence to show how domestic economies produced and consumed goods and displayed differences in status, and what items each household obtained from outside sources. By investigating the linkages between Bono Manso and a satellite village, I hope to demonstrate the overall type of integration within the region. This approach will allow me to create a detailed picture of how household economies were shaped by interaction with Bono Manso and supralocal connections; they will provide important results for future research at Bono Manso and other sites in the region.

This project makes new substantive contributions to our understanding of Akan and Bron states and to larger anthropological questions concerning alternative models of complex societies and household-level integration with global economic encounters. In the realm of Bron, Akan, and Africanist history, my research will provide the first archaeological examination of a satellite settlement and address the internal organization of the Bono polity. My research contributes to a broader understanding of political economies and state and urban developments in Africa. Rather than merely shedding light on a largely unexplored area, I document how domestic economies were shaped by political, economic, and ideological activities as a community was integrated into a complex web of global and regional processes.

The Akan and Bono: Historical Problem

The Akan are the largest ethnic group in modern day Ghana and the Asante hold a majority of the political, economic, and cultural influence and power within Ghana. The Akan cultural area has been well documented compared to many other areas of sub-Saharan Africa. Even so, the treatment of the Akan has been very uneven in the literature (Kiyaga-Mulindwa 1980). Information about the prehistoric to historic Akan mainly comes from European documents, ethnography, ethnohistory, and some archaeological data. In terms of a modern political and cultural group, Garrard (1988:1) called the Akan a confederation of people. The confederation includes people occupying south and central Ghana with similar linguistic affiliations, indigenous religious activities, matrilineal structures and inheritance, foodways, and chiefly/political institutions, among other things. The present day Akan are a large diverse group that extends from the coastal Fante, forest/savannah Bono, and the Asante and that occupies much of south and central Ghana and parts of Côte d'Ivoire. They are a Twi speaking group that includes the Asante, Fante, and Denkyira in addition to the Bono. However, similarities between modern Akan groups may be more related to Asante hegemony from the 18th century British colonial policies than to ethnic identity that extends into prehistory. The Bron area is located north of the tropical forests in a forest-savanna transition zone. Some scholars have argued that before the rise of the Asante state, the Bron area may have been a separate ethnicity from the Akan (Wilks 2005). The Asante incorporated Bron groups into the state polity, and British colonial policies forced the Bron groups (e.g., Bono, Wenchi) to adopt Akan standards (Arhin 1979b). Linguistically, Bron is considered an "archaic dialect" of Twi in the sense that its rate of change was slower than Asante dialects (Dolphyne 1979; Wilks 2005). Bron and Akan origin stories are similar, and these groups share similar oral historical knowledge concerning their origins. Many Akan creation stories recount the first inhabitants as emerging from the earth[1] (often a hole in the ground), and began farming the land (Emmanuel Effah-Gyamfi 1974; McCaskie 1995; Rattray 1923; Warren and Brempong 1971; Wilks 2005). The Odomankoma Tales document the earliest places were the ancestors emerged from holes in the ground. Three first born places are recorded for the Bron (Bono Manso, Wenchi, and Hani [Begho]) and five for the Akan (Adanse, Akyem, Assin, Denkyira, and Asante) (Wilks 2005:38).

As early as the late 1200s or early 1300s (if not before), the Bron and Akan developed a complex social system with sedentary village life, agriculture and land tenure systems, and indigenous religious practices. Alluvial gold materials dispersed throughout the forest were one of the primary items that most interested foreign merchants. There is a Twi proverb that translates as "If you cannot use gold, then it would just be called sand" (Wilks 2005:56). Northern merchants from the Mande and Soninke trade diasporas traveling overland throughout sub-Saharan routes established permanent settlements and trading relationships with the Akan by at least the 14th century CE (Posnansky 1971; Wilks 1962, 1982). European traders arrived on the Gold Coast made direct contact with the Akan in the late 15th century CE. The Akan became immersed in global exchange networks and maintained trade relations with both European and African merchants. In the 17th century, the Asante began to consolidate territorial rule and power by engaging in large scale wars with other Akan chiefdoms (Kea 1982; Wilks 1989). The Asante State was successfully formed through expansion and warfare. The Asante, like many Akan groups, were a bound confederacy with a highly decentralized paramouncy.

When dealing with the Bron and Akan whose deep historical roots extend into the late 1200s or early 1300s, the corpus of historical information cannot adequately address

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[1] Non-autochthonous groups or those with foreign status often have origin stories in which they come from the sky (Wilks 2005:24)

the complexities of such a diverse group. During the long period of early European contact and direct trade, Europeans created detailed accounts of changing coastal populations, inter-community power struggles, internecine conflicts, chiefly and elite displays of wealth, and economic preferences and trading relationships on the coast. There are rich accounts from the late 18th century and early 19th century of Asante elites, state practices, and coastal trading. Much of the early ethnographic research privileges elite activities in the Asante capital of Kumase by describing royal performances and festivals. The Bono Manso region is relatively unknown, making it appropriate for developing as a “case study” in archaeology.

Beginning in 1806, British forces began battling with the Akan in a series of wars called the War of the Golden Stool that lasted approximately 100 years. Asante territories became colonies of the British Protectorate on January 1, 1902 CE. This occurred after the queenmother, Yaa Asantewaa, was captured while leading an army against the British during the Battle of the Golden Stool; after her capture, Yaa Asantewaa was exiled to the Seychelles. Following the War of the Golden Stool, the British finally established a colonial government in the Gold Coast.

In many parts of West Africa, such as Benin, Oyo, and Dahomey, colonial officers raided the royal courts and religious areas and absconded with royal arts and objects of material culture important to royal and religious institutions (Coombes 1994). These items were often exported to Europe and dispersed widely among collectors and museums. In contrast, the Akan royal arts remained intact, a feature among the West African forest states (Blier 1998). This provides important context for interpreting elite goods in later prehistory as they are material correlates of social, economic, and religious power.

Bono Manso was located on the northern boundary of the Akan world and was an important political, economic, and religious settlement. There are sharply contrasting views of Bono Manso. Some regard Bono Manso as the urban capital of the first Akan state (Figure 1.1) (Effah-Gyamfi 1985; Flight 1970); others as “simple people, no forest” [as reported on a 1629 Dutch map] (Figure 1.2) (Daaku 1972:200; Garrard 1980:46). The former view reflects the opinions of anthropologist, archaeologists, and 20th century historians while the latter reflects secondary information obtained by African informants on the coast. Written and oral sources indicate that Muslim Dyula merchants from the Malian Empire traveled to the Bono Manso region with textiles, salt, and brass which they exchanged for gold, kola, and slaves (Anquandah 1975; Effah-Gyamfi 1985; Farrar 1996; Goody 1964). Bono Manso grew into a large multi-ethnic merchant center, at least partially in response to new economic opportunities and intercultural contact (Anquandah 1993; Arhin 1978; Effah-Gyamfi 1974; Insoll 2003). Some scholars have debated the degree to which the Akan area was politically centralized prior to the rise of the Asante state in the late 17th century (Goody 1968; Kuper 1965). Related to these debates about the degree of centralization are divergent views about Bono Manso's control over local resources. Some regard Bono elites as having control over the extraction of alluvial gold in nearby rivers (Dumett 1979) or in neighboring provinces (Smith 2008), or as having no control whatsoever over gold extraction (Garrard 1980).

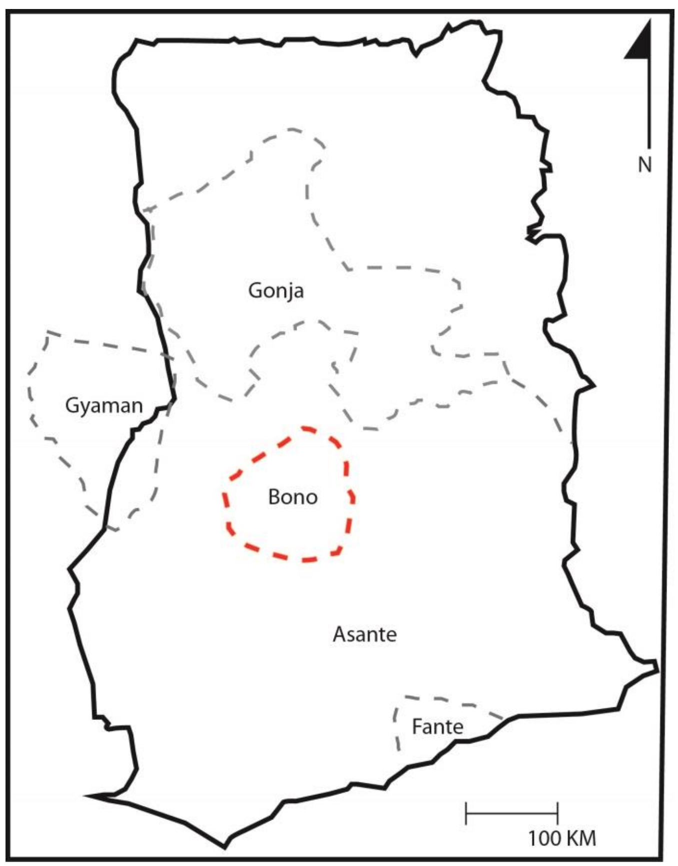

Figure 1.1 Map of the Bono State (Smith 2008:56)

The Bono Manso region is both anthropologically and historically appealing as a case study. Some of the previous scholarship provides contradictory interpretations about the Bono region. It is unclear how similar or different Bono villages were to their Asante and Fante neighbors. Asante royal displays and history have been featured more prominently than those of many less powerful Akan groups. Asante practices often presumed to characterize other Akan groups. Elite social relations, royal ceremonies, and state policies in Kumase may not be an appropriate analog for the rest of Akan society and may not be an appropriate lens through which to view and interpret village-level activities and domestic economies. Regardless of the similarities and differences between Asante and the Bono, having a nuanced understanding of the coastal groups and the Asante is important. Bono access to Atlantic goods was first mediated and filtered through the Asante, who imposed strict sumptuary and consumption regulations. At the same time, new goods and commodities travelled through a highly organized caravan trading network. Atlantic networks bought a quantity of goods that was not possible to carry by overland caravan traffic alone. With such a complex economic system, it is likely that there was differential participation in different types of markets. At Kranka Dada, household strategies for goods/labor acquisition depended partially on households' ability to acquire resources, and on how the households of a village were integrated with or autonomous from Bono Manso. It is unknown how local industries were affected by or altered by involvement with regional and global market economies, and what the social effects of participation in new types of market exchanges were. How did this web of continental and global connections shape political economies between urban cores and their hinterlands?

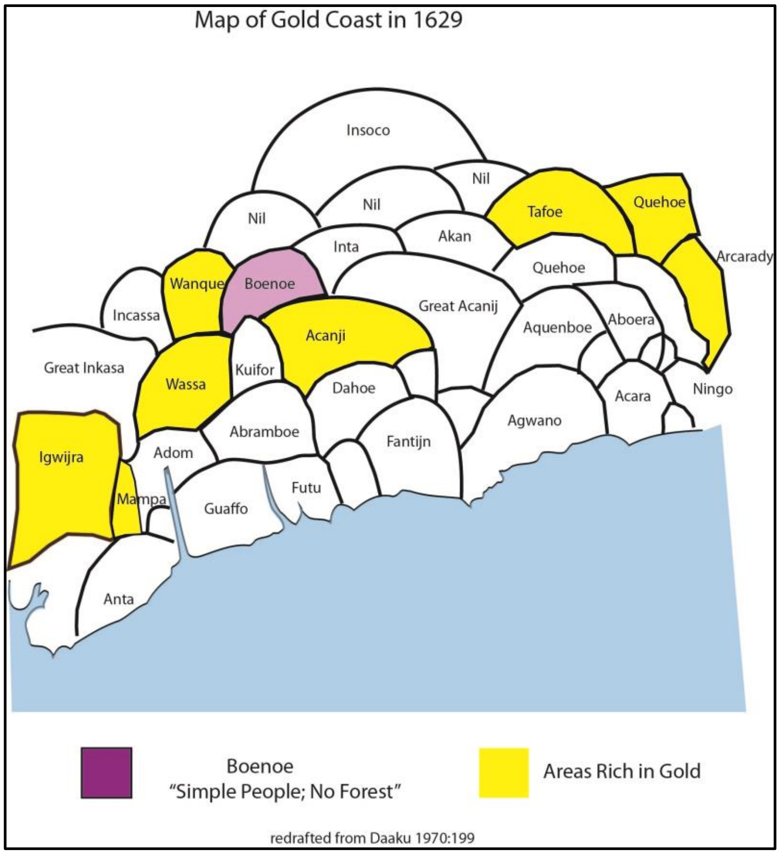

Figure 1.2 Map of Akan Polities

While some household economic activities changed as new opportunities, goods, and global markets became available to village-level producers, it is likely that some domestic activities remained unchanged. Simply mapping the known Asante practices from the ethnographic present onto the Bono past may obscure important cultural differences and strategies. This has implications for creating an anthropological understanding of how early urban centers such as Bono Manso interacted with their hinterland, and more broadly how to create general models that show how households and communities employ variable strategies as they participate in exchange networks, regional polities, and local structures in meaningful ways.

There is no necessary correlation between the Bono polity, Kranka Dada's household economies, Asante state policies, elite activities, and archaeological patterns from sites in other parts of Ghana. Nonetheless, contextualizing the economic, social, and political realms through a lens of Asante history provides a useful starting point. My goal is not to conflate ethnographic and historical sources and directly substitute the colonial past/ethnographic present for the pre-colonial, pre-market past. Rather, I will use archaeological evidence as a basis for creating interpretations about past activities that can be compared with ethnographic sources to determine similarities and differences between Bono and Asante political economies and institutions (Marcus and Flannery 1994; Stahl 2001; Wylie 2002). Archaeological evidence based on research conducted at Bono Manso, Begho, Wenchi, and Banda will be used as a starting point to discuss the previously mentioned models of socioeconomic development.

Outline of the Volume

This volume draws on archaeological research I conducted during three field seasons from 2009 to 2012. I also use archaeological data from contemporaneous sites in the Bono Manso region. I utilize information from many archaeological projects, including the West African Trade Project directed by Merrick Posnansky from 1971-1979, Emmanuel Kwaku Effah-Gyamfi's research on Akan urbanism in the Bono region from 1972-1979 (research conducted as part of the West African Trade Project), the Banda Research Project directed by Ann B. Stahl from 1989 to the present, research at Wenchi and Awhene Koko conducted by James Boachie-Ansah in the 1970s and 1980s, the Asantemanso Research Project directed by Peter Shinnie and Francois Kense from 1989-1990, the Buipe excavations directed by R. N. York in the early 1970s, Elmina excavations directed by Christopher DeCorse from the 1990s to present, and Kofi Agorsah's research in the Volta and coastal areas of Ghana from the 1970s to 1980s.

In addition to archaeological data, I utilize the ethnographic data collected from the 1910s to 1930s by Captain R.S. Rattray, a British colonial officer who received anthropological training from Exeter College in a program for ethnographic fieldwork in territories under British rule (Von Laue 1976). Rattray wrote a detailed three-volume ethnography of the Asante that remains one of the most detailed sources on the Asante of the early 20th century. Much of Rattray's second volume discusses Asante religion; these sections were based on his trips to Techiman (Takyiman[2]). Rattray documents the activities associated with Taa Mensah, one of the top deities associated with the Tano

[2] British colonial spelling

religious institution. In the early 20th century, Rattray did not regard the Bono and Asante as having significant cultural differences, and the Bono region was seen by the British as part of the Ashanti region. Rattray's visit to Techiman is still remembered in Bono oral history (Warren and Brempong 1971). In addition, I use the research of Dennis Michael Warren, a sociocultural anthropologist who documented the intersection of Bono religious and medicinal practices in the greater Techiman region in the 1970s (Warren 1973; 1974; 1975; 1976).

My research is influenced by economic, social, and art historians. The revisionist period in African history created awareness about the complexities of African history and led to a resurgence of scholarship. Political economic historians such as Ivor Wilks developed new models for understanding Akan social complexity and the economic systems of the Akan (Wilks 1961, 1982, 1989, 1993). His graduate students went on to successful academic careers that refined or modified our understanding about African lifeways. Ray Kea (1982) has provided a detailed economic history of the 16th and 17th century Gold Coast, examining changing politics and trade patterns among coastal and inland settlements. T.C. McCaskie created a detailed social history of the Asante, and his work documenting Asante state practices and religious structures is of special importance in my study (McCaskie 1995, 2008). Raymond Silverman's research of Akan religious structures, especially regarding the Atano deities, Akan religious aesthetics, and the influence of Islam on the Akan have influenced my research (R.A. Silverman 1983; 1987, 1998, 2005; Silverman and Owusu-Ansah 1989).

This volume is divided into nine chapters and highlights particular aspects of political economies: production, consumption, and status differentiation. Chapter 2 discusses the historical and cultural background of Ghana and the Akan. I examine the history and historiography of sub-Saharan to Atlantic trade periods using ethnohistory, history, anthropology, travelers' accounts, and archival documents. I examine how historical documents have informed western knowledge about Akan societies, and how anthropological questions and research often remain beyond the purview of documents. I examine how Akan societies have articulated with regional and global processes as long-distance trade networks penetrated into the Akan areas.

Chapter 3 develops a theoretical framework for understanding households and political economies. In West Africa, multiple types of markets, economic transactions, and systems of value overlapped. The types of interactions between a large polity and its satellite villages can play an important role in shaping domestic economies. In this chapter, I examine three different models of socioeconomic development and discuss household participation within political economies.

Chapter 4 provides the archaeological background of the Brong-Ahafo region. I provide details of my own research from my three field seasons (2009-2012). The chapter includes the results of my pedestrian survey and excavation, as well as an overview of field methods.

Chapter 5 discusses the specific research questions and provides detailed explanations and linking arguments for the socioeconomic models of development. Chapter 5 documents the types of data and archaeological correlates required to tackle the anthropological problems addressed in this volume. I discuss how the different themes are conceptualized, quantified, qualified, and analyzed.

Chapters 6, 7, 8, and 9 report on the Kranka Dada excavations. Chapter 6 provides and descriptive overview of counts and weights of artifact excavated. In Chapters 7, 8, and 9 each mound is compared in terms of activities and function. The anthropological themes of production, consumption, and status differentiation are used as meta-categories for the analysis of specific types of material culture such as ceramics, smoking pipes, flora and faunal remains, small finds, and religious materials.

Chapter 10 combines the analyses from the three previous chapters to produce an interpretation of the socioeconomic relationships at Kranka Dada. I also examine the evidence for change and continuity in the relations that tied Kranka Dada to Bono Manso. Chapter 11 provides conclusions and suggests future directions.

Chapter 2 Historical Context

In this chapter I examine the historical and cultural context of long-distance exchange networks in West Africa from the Sudanic trade to the Atlantic trade eras. I discuss Akan and Bono participation in exchange networks, political economies, and ideology. The Bono participated in long-exchange networks in the late 1200s and early 1300s with Sudanic merchants over much of West Africa. Later, European merchants established trading outposts along the Gold Coast to take materials from the auriferous overland exchange from Sudanic merchants. The Akan became participants in local, regional, and global exchange networks. I examine European travelers' and merchants' accounts, social history, and ethnographies in order to create a detailed cultural and historical background of the Bono from the sub-Saharan trade to Atlantic trade eras. I discuss the history of Akan and Bono articulation with trade networks as well as their cosmological origins as known from oral history and traditions.

Early Sudanic Trade Relations

West Africa has a deep history of global connections. Although many regard the Sahara as an empty desert or geographic barrier to trade and development, a vast series of trade routes linked much of the North and West African Sahara and savannah for at least the last millennium. Trade routes connected West Africa with Mediterranean areas and the Caliphates of the Near East. Many of the trade routes used by caravans were based on chariot routes known from Roman times (T. Insoll 2003; Posnansky 1973). Beginning in the 9-10th centuries, Arabic-speaking Islamic traders established trade relations and permanent settlements outside major Saharan cities, including Gao Ancien and Timbuktu. Islamic traders considered the Sahara as something similar to a vast sea navigable by overland caravans, with a series of desert ports connected by known routes. Islamic trade expansion into the Western Sudan followed many of the principles and practices that Islamic trade utilized along the Swahili Coast and East Africa (R.A. Silverman 1983). Commerce flourished in the cities and towns connected by African trade routes. Major commodities traded in the Western Sudan were gold, salt, slaves, and cloth (Daaku 1972; Fage 1969; Klein 1981; Levtzion 1968). Engagement with long-distance trade facilitated the systematic expansion of commercial networks and brought new goods, technologies, people, and ideas in sub-Saharan Africa that were adopted and transformed by West African social and cultural groups.

Overland caravan travel was dangerous and expensive. One of the pillars of Islamic faith includes making the *hajj* to the holy city of Mecca. Because pilgrimages were costly, they were largely financed by earnings and profits gained from overland trade and exchange. Thus, the commercial and spiritual dimensions of pilgrimage were intricately tied together in the Middle Eastern and North Africa Caliphates with the Western Sudan (R.A. Silverman 1983). Trade routes became pilgrimage routes (Figure 2.1). Over time Islamic traders from the caliphates converted the rulers and kings of several Sudanic states and empires including the rulers of ancient Ghana and Mali. Initially the adoption of the Islamic faith in the Western Sudan and West Africa was restricted to the elite and ruling classes (T. Insoll 2003; Levtzion 1968). In the 12th century, a tradition of sub-Saharan royalty making a pilgrimage began, although there is a tradition of Mande pilgrimage prior to the rise of the Malian Empire (R.A. Silverman 1983).

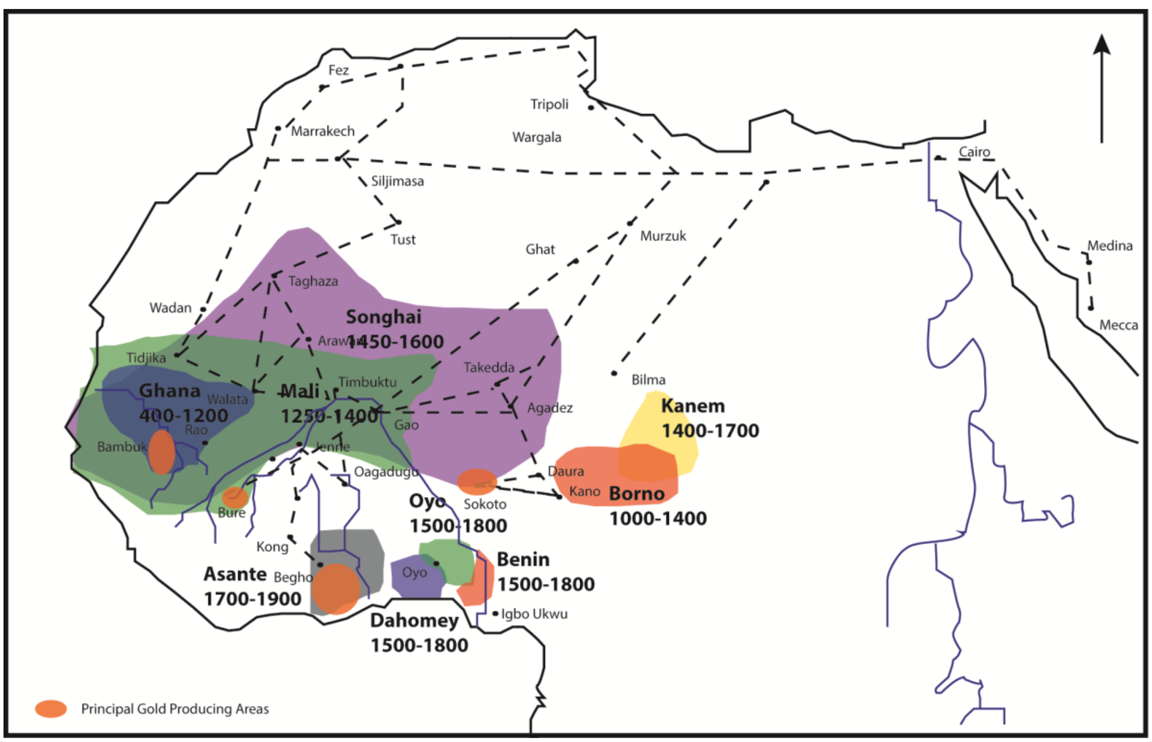

Figure 2.1 Gold Producing Areas, Trade Routes, and Empires

Mansa Musa I, leader of the Malian Empire, converted to Islam and made an infamous pilgrimage to Mecca in 1324-1325. The Malian Empire was at its political peak during the reign of Mansa Musa I in the 1300s. Malian wealth was largely based on gold mined from the Bure and Bambuk goldfields (contained within the boundaries of the former Ghana state), the Lobi goldfields, and the Akan goldfields (Figure 2.1). Mansa Musa I was received in Cairo by the Mamluk sultan, al-Malik al-Nasir Muhammad. This event has been described in detail by multiple sources (e.g., Egyptian and Arab writers al-Umari, al-Mukhtar, Ibn Hajar, and others as well as in the Sudanese chronicles *Tarikh al-Fattash* and *Tarikh al-Sudan*). Musa temporarily resided in Cairo for several months; during the course of his visit Musa bestowed upon the sultan with an estimated 50,000 dinars of gold, and gave large sums to many political office holders (Silverman 83:21). Mansa Musa I's *hajj* was an important event. Royal pilgrimages helped establish diplomatic and economic ties between the Caliphates and the Western Sudan (Africanus 1956). Cultural traditions and material culture from the Caliphates were adopted and integrated into royal West African practice, including the use of writing, legal texts, prayer rugs, ablution vessels, robes of honor, swords, standards, horses (with riding equipment), and cavalry in military operations (ibid.). The introduction and use of horses and cavalry was a significant factor in shaping the political and military history of the savanna states and empires; without horses the conquests by Songhay, Kano, and Sokoto would have been more difficult. Islam spread and was embraced by non-elites after the 12th century CE throughout most Saharan communities. For non-royalty, *hajj* options were more limited. Overland treks traversing the Sahara were dangerous. If one could not afford to sponsor his/her own caravan (as with a royal *hajj*), joining a trade caravan destined for Arabia was a safe and financially feasible option. Sudanic merchants used their wealth gained from sub-Saharan trade networks to fund their pilgrimages. Until the 18th century, gold was the major commodity traded along the pilgrimage routes. Braudel (1995) reports that through the 15-16th centuries, gold quantities moving through the Sahara in Islamic hands increased rather than entering the Mediterranean economy via European coastal ports along West Africa. Trans-Saharan and Sudanic trade were important vehicles for moving resources; however, the impact on religious activities, cultural traditions, and material culture were just as significant. Pilgrims of all kinds returned to the Western Sudan with multiple types of goods acquired from Egypt and Syria, Cairo and Damascus including silks, cotton, Chinese porcelain, coffee, incense, myrrh, chain mail, gold and silver, and brass vessels (R.A. Silverman 1983) (T. Insoll 2003; Levtzion 1968). Pilgrimages from the Western Sudan to Arabia served as stimulus for commerce that linked many areas diplomatically, religiously, and culturally.

The Sudanic states and empires of West Africa were dynamic with changing boundaries and complicated exchange and warfare relationships (Figure 2.1). After the death of Mansa Musa I in 1337 CE, the Malian Empire became weaker. The Bambuk and Bure goldfields were within the boundaries of the Malian Empire at its height. Trade routes from Malian areas were extended into areas peripheral to Malian territory including central (modern) Ghana to capitalize on resources from the Akan goldfields by at least the 14-15th century. In the early 15th century, the important trading towns of Timbuktu and Gao were attacked by the Mossi (Timothy Insoll 2003). In addition, the competing polities of Songhai and Jolof arose on either side of Mali in the early 1400s, facilitating its rapid disintegration. In spite of power fluctuations between polities, trade throughout the Sahara, savanna, and forest continued.

West African trade was a varied and multifaceted process. Long-distance trade routes created networks that were used for multiple purposes. Itinerant and short-distance trading and exchange relationships along trade routes were just as important in the daily lives of individuals in sub-Saharan Africa (Stahl 2014; Wilson 2012). Wilson (2012) argues that relatively few goods were traded across the entire span of the Sahara. Local political and economic networks were instrumental in the movement of new goods, technologies, people, and ideas and may have played a greater role in shaping daily life than “long-haul” trade.

Mande and Soninke Trade Diasporas

Some of the history and geography of West Africa was recorded by medieval Islamic geographers and travelers including Abu Es Haq es Saheli, a 14th century Andalusian poet, who accompanied Mansa Musa on his return from the Middle East, and in documents including the Kano Chronicles that recount the ethnogenesis of the Hausa people and the exchange networks (Palmer 1908). In spite of the rich history, the specific sources of West African gold were not well known to Europeans. Mande speaking merchants from the Malian Empire, often called the Wangara, Dyula, or Juula were frequently associated as a class of merchants that specialized in the long-distance caravan exchange for auriferous materials (Wilks 1982). This perception of the Wangara or Dyula as a specialized merchant class is likely an oversimplification based on European conjecture of interior African relationships and social organization. While there is no doubt that many Mande speaking merchants engaged in trade outside the boundaries of the Malian Empire, a more nuanced view would consider the merchant exchange relationships from the Sahara, savanna, and forest as part of a trade diaspora in which there was movement and migration of people away from their homeland. Some members of the trade diaspora settled in new areas and adopted new ways of life and assimilated into groups along the trade routes while others continued to engage in exchange relationships.

Caravan life was difficult, dangerous, and expensive. Traders were required to remain vigilant about their security because caravan robberies were a persistent problem. Guidelines for exchange relationships established by the Malian Empire included a laissez-faire policy toward local political and administrative matters. At large trading centers like Bono Manso and Begho, foreign merchants often established peripheral permanent settlements outside of the town's boundaries (E. Effah-Gyamfi 1974; Posnansky 1979b). Multiple types of trade and exchange relationships existed. Gold weight standards were adopted using the Islamic *mitkal* and *uqiya* standard measurement systems, and penalties for altering gold weight measurements were severe (Garrard 1980). Exchange relationships in remote areas were often conducted through the silent trade system or dumb barter (dumb meaning "mute"), where the principle agents do not speak the same language, never see one another, leave the materials for exchange in a visible spot, and swap materials until both parties agree that a fair agreement has been reached, which is signaled with drums or a gong (Bovill 1968; de Moraes Farias 1974).

Effects of Sub-Saharan Exchange with the Bron and Akan

Islamic approaches to trade in West Africa involved inclusion and assimilation with new groups rather than violence and warfare. By the 15th century there was a well-developed and systematic trade on the northern fringes of the Akan world (Daaku 1972; Posnansky 1971; Wilks 1982). Begho was established as a large trading entrepôt dealing largely in gold and kola nuts, and was one of the largest Akan markets. Many Muslims from Begho settled in nearby areas such as Kong, Bonduku, and Banda (Silverman and Owusu-Ansah 1989). References to Islamic penetration into modern-day Ghana appeared in Arabic *tarikhs* such as the *Tarikh al-Sudan* and the *Kitab al-Ghanja* as well as Portuguese, Dutch, and British documents (ibid.:327). Contact between Muslim traders and the Akan hastened the adoption of many Islamic elements into the Akan culture in the form of loan words, architecture, diet choices, spiritual protections and amulets, and other types of material culture. *Mamluk* brass ablution vessels with Arabic inscriptions were prized by the Akan and integrated into local religious practices and transformed into shrine vessels. Silverman's (1983) study documents the five Arabic inscribed vessels of Egyptian and Syrian *Mamluk* origin. He examined the inscriptions and discusses how these exotic imports, once part of Islamic culture, became integrated and assimilated into Akan religious practices (ibid.). Silverman convincingly argues that the Arabic inscribed vessels were brought to the Western Sudan by people who returned from the *hajj* (ibid.) Brass basins were brought to the northern Akan area during the height of the trans-Saharan trade from the 14th-16th centuries CE, which later became integrated into Akan religious traditions serving as host vessels that embody important deities (R.A. Silverman 1983; Silverman 1987). How the brass basins were used in religious activities will be discussed in detail later.

In addition to specific objects, technological complexes such as brass and lost wax casting were adopted and mastered by the Akan and Bono (R. A. Silverman 1983). The earliest brass casting was likely in the 14th to 15th centuries, and was present at Begho and possibly Bono Manso (Anquandah 1981; E. Effah-Gyamfi 1974). Brass objects including bells, gold weights, and jewelry from Begho, Banda, and Bono Manso have been recovered from archaeological excavations (Stahl 1999). Garrard documented that the Akan imported large quantities of brass objects from both sub-Saharan (and later European) exchanges, which influenced the types of forms and motifs fabricated by the Akan brass industry (Garrard 1980). Both Bowdich (1817) and Rattray (1910-1920s) documented the presence of a specialized Akan brass and *cire perdue* industry.

Complementary to the adopted Islamic gold weight standards and units of measurement, gold weights became objects of artistic creativity and many Akan artisans embellished gold weights with ornate figures and decorative motifs (Garrard 1980). Silverman (R. A. Silverman 1983) documents a similar process with the Akan *kuduo*, the brass boxes for gold dust. Literacy, as a technology, was an important component of Islamic supernatural aids such as amulets and talismans (Handloff 1982; Owusu-Ansah 1983). Writings from the Quran are sewn into many small exterior pockets of garments that are designed to protect the owner from harm; these types of goods were adopted by the Akan and used by many royal chiefs (Owusu-Ansah 1983). Flat-roofed architecture with ceramic drain pipes was a common style of public and residential architecture in the Sudanic areas of the savanna, which were thought to be adopted by some Akan elites (Posnansky 1975; Prussin 1986). Although many different cultural and technological elements were introduced to the Akan area through Islamic merchants, the Akan did not convert to Islam.

The role of the Wangara/Dyula and Soninke trade diaspora merchants in connecting many resource rich areas of West Africa together cannot be overstated. They participated in a complex series of interconnected exchange relationships with each other, itinerant traders, and elite and commoner consumers from multiple cultural and religious backgrounds throughout much of North and West Africa for hundreds of years. The amazing ability of Wangara traders to have a ubiquitous presence throughout North and West Africa was the subject of much speculation by European traders seeking to capture a piece of the sub-Saharan gold trade. When Europeans finally arrived on the Gold Coast in AD 1471, they were disappointed to learn that the Wangara/ Dyula had already arrived (Wilks 1982). African merchants, also beat the early European traders to the Gold Coast where they established trade networks with the coastal Akan.

European Contact

In the 15th century, Europe was desperate for silver and gold. Medieval and Renaissance wars and the demands of foreign trade with Asia depleted European coffers and banks of precious metals including gold (Bovill 1968). Throughout Medieval times, Islamic merchants traded gold in Mediterranean ports that made its way to Europe.

During the Crusades and throughout much of the Middle Ages, Christian traders operating in North Africa found it impossible to obtain first-hand knowledge of the source of sub-Saharan gold. Europeans launched several failed attempts to locate gold using overland routes through the Sahara (Thornton 1998). From the 12th century, Genoese merchants had the best trading relationships with North African merchants and Crusader states, and thus were able to dominate much of the late medieval trade of good from sub-Saharan Africa of goods to Europe (Greif 1994). Genoese merchants were adept at maintaining the primacy of their trade positions through a series of political, economic, and military reforms; similarly they would ruthlessly attack merchant ports to capture commodities in Pisa, Sicily, Southern France, and Spain. Portugal therefore attempted to created direct exchange relationship with the interior of Africa bypassing the North African coastal ports.

European trade expansion was initially a slow and complex process. Islamic and Christian tension in the Mediterranean was high after the Crusades. In addition to establishing more of a presence in African trade, the Portuguese were hoping to find non-Islamic nations south of Morocco (Thornton 1998). Portuguese mariners studied and mapped ocean currents, continental winds, and the geography of the West African coast beginning in 1312 CE (Boxer 1969; Law 1987). Small colonies were established on the uninhabited islands off West Africa including the Canary, Madeira, and Cape Vert Islands. Wheat was the first lucrative commodity grown and exported from the Islands followed by sugar, wine, sheep, and cattle products (ibid.). Small-scale raids along the West African Coast procured slave labor required for agricultural exports. Once the early Portuguese and Catalan exploration ventures proved to be profitable, European rulers funded merchants, and private merchants from multiple countries began engaging in West African trade and exploration. Europe was a diverse mosaic of political and religious organizations with fierce mercantile competition between Portugal, the Netherlands, France, Germany, England, and the city-states of Italy. Competition ultimately led to the creation of new maritime technologies (including tacking), with development culminating in the Portuguese caravel ship, which allowed for safe return of seafaring voyages from West Africa and eventually the greater Atlantic leading to the Commercial Revolution (Boxer 1969; Law 1987).

Early European explorers were content to engage in trade and/or raiding activities along the West African coast. Raids on African settlements did not last much past the mid-1400s (Thornton 1998). African militias had specialized and highly maneuverable ships that were difficult for Europeans to target in shallow waters. Armed with capable archers and javelin throwers, African naval power made European raids more difficult (ibid.). In the end, it was much easier for the Portuguese to peacefully trade with coastal West Africans. Supported by papacy, many of the West African lands were granted to the Portuguese for their support and protection, and Portugal was given a trade monopoly in the region.

Gold, kola, and slaves were important export commodities for Muslim and European merchants. Gold was a profitable export for the Akan until the Portuguese discovered gold in Brazil in the early 18th century. Brazilian gold flooded the world bullion market, driving prices and profits down dramatically (Maddison 2006). For the Akan, locally grown kola nuts continued to flow into northern markets and they remained an important part of the sub-Saharan economy (Arhin 1970; Daaku 1972; Lovejoy 1986). Goody (1964) wrote that the kola trade was of equal importance to gold. It had a significant impact on the social organization as goods and services entered the complex sub-Saharan trading networks. Slave history has a complicated past, and slaves were routinely moved through Akan markets (Fage 1969; Lovejoy 1986; Metcalf 1987; Perbi 2004; Thomas 1997). Once Europeans arrived on the coastal West Africa, overland sub-Saharan trade and Atlantic trade operated alongside each other in competitive and complementary ways.

Coastal Trade Relationships

When the Portuguese arrived on the Ghanaian Gold Coast in AD 1471, one of their goals was to cut the Muslim middlemen out of the gold trade by procuring gold materials directly from the Akan goldfield traders. There were four main patterns of trade in which the Akan participated: (1) overland sub-Saharan or Sudanic trade, (2) African cabotage trade along the Atlantic Coast, (3) European Atlantic trade, and (4) internal Akan distribution networks linking the urban and rural areas together. The cabotage trade conducted in canoes along the West African coast was quickly shut down by Europeans

(Daaku 1972). The arrival of Europeans complicated African trade networks, but coastal Atlantic trade did not replace overland sub-Saharan trade. European documents recount that the Akan often preferred Dyula goods over European goods (Garrard 1980; Silverman and Owusu-Ansah 1989). By the 16th century, gold from the Gold Coast accounted for a significant amount, approximately one-tenth, of the world's total supply (Bovill 1968; Fage 1978; Thornton 1998). In spite of their attempts, they did not control the gold trade in West Africa. In the 17th century, one European visiting the Gold Coast named William Bosman wrote, *"There is no small numbers of men in Europe who believe the goldmines are in our power"* (Bosman 1721).

Competition among Europeans was fierce as the Portuguese, Dutch, and British merchants vied for access to Gold Coast commodities. When the Portuguese first arrived and founded the settlement of A Mina de Ouro (later Castelo de Sâo Jorge da Mina and shorted into Elmina), there were only a few hundred local inhabitants in the area. Unfortunately, the documentary record (merchant documents, ships records, and travel diaries) is weaker for the Portuguese occupation than for later periods after European contact. Portuguese merchants claimed exclusive trading rights to the Guinea coast with the support of a papal bull. The rights afforded by the papal bull did not stop competing merchants and privateers from raiding Portuguese ships and taking cargo. Attacks on Portuguese ships were common, and Lisbon sent armed galleons to protect merchant cargo. However, Lisbon lacked an effective administrative bureaucracy to oversee merchants' security needs. Other European nations engaged in illicit trade within Portuguese ports with up to 25 ships docking at Elmina simultaneously. Infighting and competition within Portuguese ranks grew as well, and an illicit trade of West African commodities developed. African monarchs, merchants, and communities similarly did not recognize the Portuguese monopoly on West African trade promulgated by the papacy. Portugal became united with the Spanish monarchy, trade with Brazil grew, and West African trade became a greater liability rather than profitable enterprise. Portugal finally lost its Gold Coast holdings in 1638.

The Dutch captured Elmina in 1637 after five previous unsuccessful attempts (1596, 1603, 1606, 1615, and 1625). Dutch commercial and mercantile strategies were efficient, highly organized, and successful through the 17th and 18th centuries. The Dutch imported craftspeople from all over Europe and established factories to fabricate goods popular in West Africa. Moving production areas closer to shipyards, the transport cost for popular goods was reduced thus driving the price of Dutch goods down. With factories in Amsterdam and an efficient ship building industry, the Dutch offered better quality goods than the Portuguese at lower prices. Brass, glass beads, and textiles were among the most important and popular durable goods traded with coastal Africans (de Marees 1987 (1602); Thornton 1998). Through the 17th and 18th centuries, the volume of trade imports that disembarked at West African ports steadily expanded. By the mid-18th century, the coastal population at Elmina is estimated between 18,000 and 20,000 inhabitants. Dutch trade at Elmina did not go unrivalled; the British established their primary Gold Coast fort at Cape Coast Castle 8 kilometers away. In 1872 the Dutch and the Danes ceded their Gold Coast holdings to the British ushering in the colonial period of indirect rule.

Slaves, Metals, and Textiles

Trade within Akan areas was a dynamic process governed by rules, regulations, taxes, and penalties. Some of the most detailed information about the European trade era comes from travelers' accounts and merchants' documents from the Gold Coast including Pieter de Marees, Bowdich, Joseph Dupuis, Jean Barbot, William Bosman, and others. Many of these have been synthesized by social and economic historians including Ivor Wilks, Ray Kea, T.C. McCaskie, and Kwame Arhin. Chris DeCorse's excavations from Elmina provide detailed insight into daily life, and will be discussed in some detail. Many of these accounts show a diversity of African responses to the opening of Atlantic trade. Africans fought, cooperated, and played the Europeans against one other for their own interests. Although Atlantic trade never totally replaced overland trade, the Atlantic trade era introduced a greater amount and diversity of goods into the region (Thornton 1998). The increase in the overall availability of goods provided new opportunities for internal Akan interaction with reciprocal and competing social and economic relationships. Akan merchants were explicit with coastal traders about which goods were earmarked for trade with the interior, and large quantities of goods were hauled to interior markets (Elbl 1992; Kea 1982; Thornton 1998). On the coastal areas, there were a variety of African merchants, from Mande traders to Asante state traders (some references indicate ca. 1,000) (DeCorse 2001a).

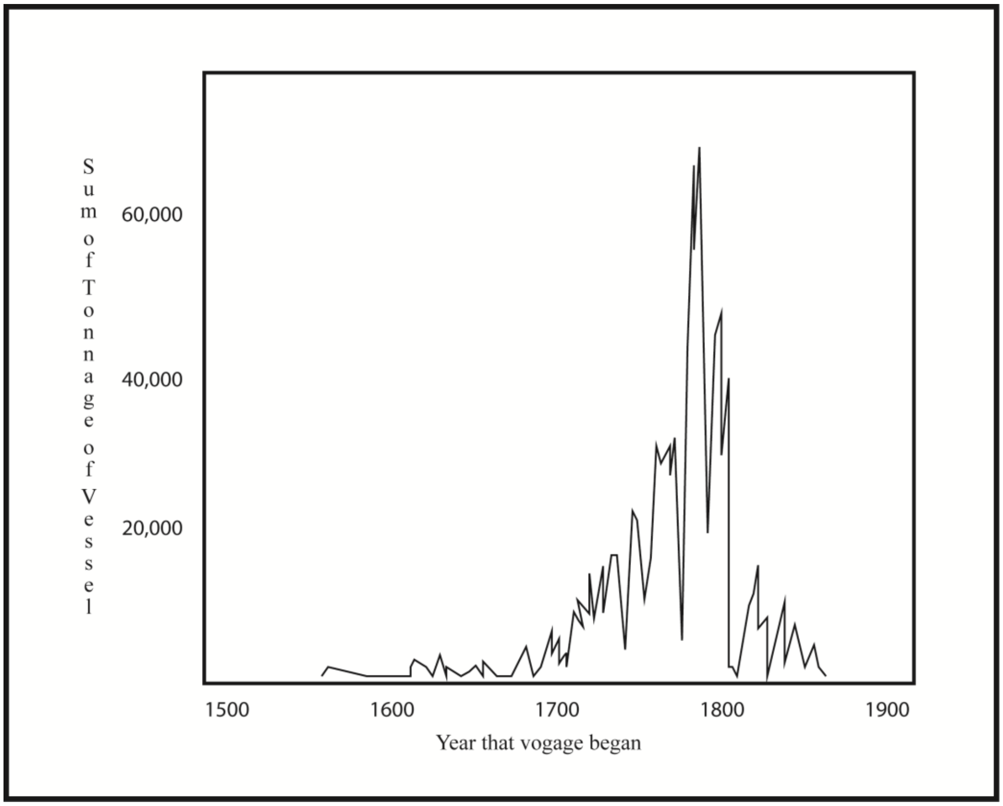

Figure 2.2 Sum of Vessel Tonnage (data obtained from Voyages Database)

Some of the earliest European administrative accounts from the Gold Coast allude to complexity in the exchange relationships with interior and coastal groups. In 1479, Eustache Delafosse wrote that slaves could be profitably traded for gold at two ports on the Gold Coast. The Portuguese records from 1529 to 1531 indicate that gold was exchanged for metal hardware including brass manilas and vessels (50%), woven textiles, undyed cotton, and ready to wear clothing (25%), slaves mainly from Benin (19%), and trinkets (6%) (Vogt 1975). De Marees (1987 (1602)) provided some of the earliest Dutch accounts of trading activities and cultural practices from the Gold Coast. He documented how Gold Coast individuals were discerning consumers of European goods. Imported textiles and glass beads transformed coastal dress for both men and women of different classes and occupations. Müller (1673 (1969)) wrote about both elites and commoners, “[The Akan] are so vain about what they wear…and whatever appeals to them at a particular time they must have it, even if they have to pay twice as much for it". The Gold Coast markets imported some of the largest quantities of textiles in Africa, importing approximately 20,000 meters of European and Asian cloth annually in the early 17th century (Thornton 1992:49). Imported textiles were unrolled and inspected; weather-worn, dirty, and damaged goods were rejected. Large quantities of brass basins were imported and sold; however, de Marees documented that they were not observed in the same quantities in which they were imported. He speculated that "there must be a huge population in the Interior which uses and employs such quantities of imperishable goods (de Marees [1602]; 1987:52). Knives and other metal tools were popular trade goods, but were quickly rejected by African consumers if they were of sub-standard quality. Keys were initially popular trade items, and they were transformed into objects of personal adornment. Seeing their initial popularity, the Dutch increased the supply of key and flooded the market. When keys were readily available, they were no longer desirable as objects of adornment and thus rejected from Africans' trading preferences.

By de Marees accounts, some European imports were quickly rejected such as eyeglasses, cups with handles, and stirrups. Barter and standardized gold measurements were used in exchange relationships. De Marees observed that even peasants had some access to gold dust. Inspecting and checking the weight measurements of instruments was an elaborate part of the exchange process. The weight of brass goods and textiles earmarked for interior populations created a demand for human porters. Slaves were often imported from Benin, Niger Delta region, and Kongo from the early 1510s by the Akan to serve as human porters (Elbl 1992, 1997). Establishing and maintaining trade relations was a complex process. Because the triangular European trade voyage took approximately one year's time, prices and profits from trade were realized at different ends of the journey. European exporters had to make calculations and projections of what types of goods to import to Africa and the Americas based on the constantly changing popularity of goods; fluctuating prices, changing preferences, and supply and demand principles. It was not uncommon for some types of goods that were considered out-of-fashion to be returned to Europe at great loss and expense (Thornton 1998). Many of the goods imported into West Africa were items that were already made in Africa including iron and textiles. Thornton (Thornton 1998) argued that European trade goods were neither vital nor essential to African economies; rather most European goods were important in displays of conspicuous consumption and as items of prestige. In many ways Atlantic and sub-Saharan trade networks complemented each other as they operated simultaneously.

Trade relationships between Africans were just as complex as trade relationships with European merchants. De Marees described exchange relationships and market structure on the coast (de Marees [1602]; 1987:44-65). He distinguished between elites and commoners, and observed African markets were highly regulated with different regulations for elites and commoners. Markets days were fixed and adjacent days between coastal towns[3] (e.g., Monday market in X, Tuesday market in Y). Women and peasants (some from the nearby interior) were the first to arrive in the market trading their agricultural products to coastal residents and European traders. Coastal town inhabitants came to markets to sell and barter goods acquired from European importers including linen, cloth, mirrors, beads, knives, and pins (de Marees implied that it was mostly female merchants operating the markets). After mid-day, the palm wine sellers came to the markets, and men laid down their weapons and would come to drink. Peasant women from areas ca. 5-6 miles inland would come to coastal markets laden with goods in both directions and were not required to pay tolls to the king on subsistence articles; however, a tithe was appropriated, approximately 1/10th of their goods were paid to the gods. Professional merchants were required to pay tolls. State sanctioned merchants were present as well (Arhin 1970).

Wilks (1977, 1993) argues that the earliest social development in the southern and forested Akan areas was linked to forest clearing that opened land for agricultural purposes. Forest-clearing was labor intensive. Slave laborers were acquired and purchased with gold from Mande and Portuguese merchants. Each slave labor production team was responsible for clearing the lands for new communities to form, which paved the way for the formation of matriclans as corporate groups in new communities and villages formed (ibid.). Wealthy individuals allowed free farmers to occupy and farm the

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[3] This practice of fixed but rotating market days continues today. Women still play a large role in controlling market commerce of some types of goods. See Clark, Gracia 2010, Fagerlund, V. and Smith, Robert 1970, and Hill, P. 1966

cleared lands and pay rent in agricultural surplus and corvée labor. The use of slave labor allowed for families to expand their corporate holdings, create agricultural surpluses, develop property rights, and establish elite versus commoner status. As corporate groups formed, population density increased, new forest areas were cleared, new settlements were founded, and secondary administrative districts grew throughout the coastal and littoral areas of the Gold Coast. Corporate matriclans were in conflict with each other over land and settlements and early village life lacked vertical social organization and hierarchical integration. Competition between corporate groups, population growth fueled by the development of agricultural surplus and a highly developed agricultural industry, and the extension and growth of trade networks led to the growth of central places. Akan matrilineal practices favored the assimilation of foreigners as populations grew (Wilks 2005:19). Some settlements grew and developed into central places and urban areas while other communities were relegated to hinterland status. New political and military institutions developed as territories expanded and city-states formed. Wilks argues that this process of increasing social complexity fueled by slave labor, commerce, and agriculture paved the way for the development of hierarchical social organization and the expansion of the Asante State, replacing horizontal organization linked by mercantile activities.

Building on Ivor Wilks seminal works (including Asante in the Nineteenth Century (Wilks 1989) and The Northern Factor in Ashanti History: Begho and the Mande (Wilks 1961)), that examined the Asante geopolitical order, government institutions, trade relations, and land/ labor relations, Ray Kea (1982) argues that there were two distinct hierarchies, one political and one commercial. Akan political hierarchies were defined by a territorially based administrative system whereas commercial hierarchies had a wider distribution and were defined by the geography of trade routes and markets. The two hierarchies overlapped, but were not identical. In the 17th century, coastal towns and villages were organized in a variety of ways although they were integrated via political hierarchies closely linked through agricultural production, military organization, and regional trade. Towns were socioeconomically heterogeneous with concentrations of elites, full-time craft specialists, and religious practitioners (ibid.). Agricultural and craft production were separated into different urban and rural spheres (ibid.). In the 17th

century, craft production and craft specialists became concentrated around urban centers. Craft producers, including potters, leather workers, and others created products to sell their goods within markets. In contrast, coastal villages and hamlets were more socially and economically homogeneous. Village commoners created a major source of revenue for elite officeholders through land taxes and rent payment in agricultural surplus, corvée labor, and gold dust. Villages were the primary producers of agricultural products, and towns and urban areas were dependent on rural agricultural production. Peasant market production was a widespread occurrence in the 17th century (ibid.). Commoners would exchange their agricultural surplus for salt, fish, craft goods, and gold dust in town markets. Both villages and towns had mixed free and slave populations. Rural hinterland and agricultural villages tended to be located in a 5-10 km radius of towns. Unlike craft production in urban areas, craft production in rural villages was likely a seasonal or complementary activity. Exchange between towns and villages were important for the circulation of goods.

The cultural geography and expansion of Akan territories was dependent on slave labor and agricultural surplus (Wilks 1993). Gold mining, human porter activity, and forest clearance were labor intensive activities and the Akan routinely imported slaves from other parts of Africa to offset costs for these activities (Terray 1974; Wilks 1993, 2005). Trade caravans operating in the coast and forest sometimes used between 200-300 slaves as porters (Rodney). Records of slave imports into the Gold Coast are patchier than slave exports. One estimate indicates 10,000 slaves were imported from 1500-1540 CE (Vogt 1973:454). Elmina records indicate 2,140 slaves imported from April 1529 to August 1535 (Rodney 1969). The expansion of arable land suitable for farming through massive forest cleanings allowed for rapid population growth and expansion during the 16th-17th centuries; however, labor shortages remained a perennial problem. In Akan society, purchased slaves could be incorporated into households through marriage or adopted to renew labor in lineages diminishing in size (Arhin 1970:386). Rattray (1929) noted that slaves acquired via trade were considered to be heritable property. In addition to trade, elites could acquire slaves through war and tribute. The ethnohistory indicates that slave labor could be used alongside household labor, and that slaves were easily incorporated into Akan structures and society (Daaku 1972). Slave labor provided a supplementary source for labor-intensive activities such as gold-mining and kola harvesting (ibid.). Households successful in acquiring resources and in generating profits were able to invest in slave labor to boost their productivity. The expansion of imports and use of slave labor are correlated with the transition of clan/ lineage labor into the formation of Akan corporate groups and allied elite families. The acquisition, movement, and relationships between slave, middleman, and owner were constantly changing. At different points in time, a group could be a source of slaves, middlemen, or slave raiders (Daaku 1972; Stahl 1999). These relationships became more complex following the worldwide drop in gold prices, when slave exports from the Gold Coast dramatically increased (Figure 2.3). European documents repeatedly noted that the Akan areas had a conspicuously higher population density than other West African areas such as Yoruba, Benin, and Dahomey (DeCorse 1992). With such expansive growth, the political elite altered commoner taxation policies to accept gold dust and corvée labor as trade expanded.

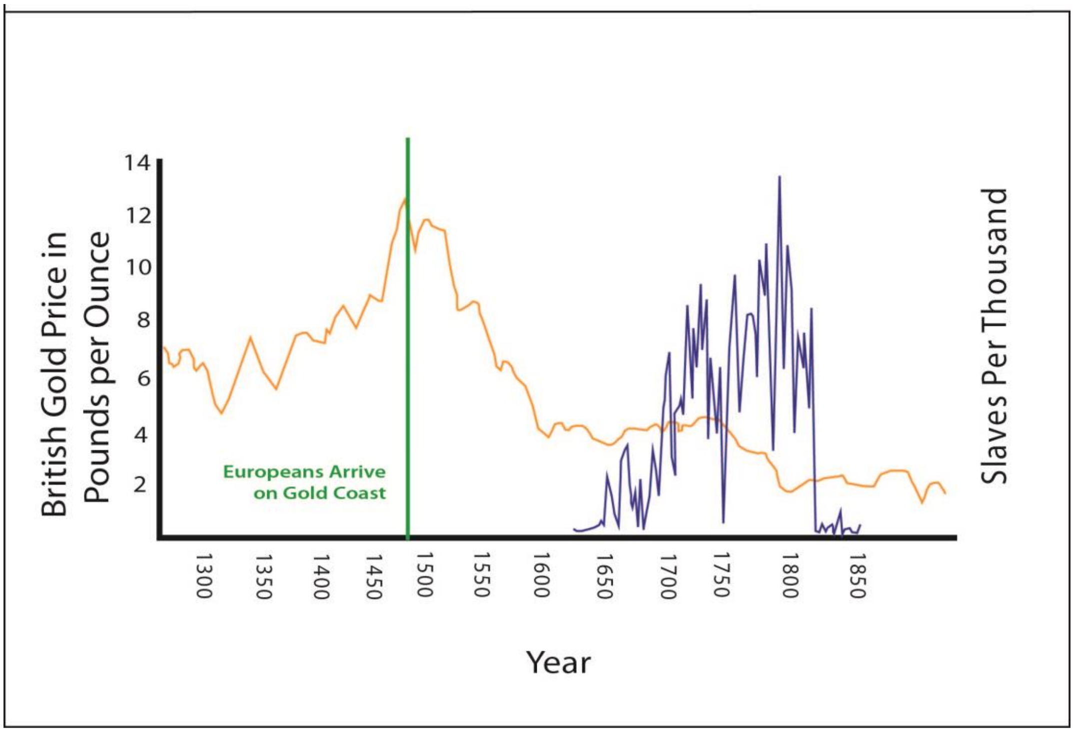

Figure 2.3 Gold Prices and Slave Exports for the Gold Coast (2009; Maddison 2006)

The ruling class was concentrated in towns because towns were centers of administrative, judicial, and military institutions. Elite status was internally differentiated, and the elites were a heterogeneous class hierarchically structured with respect to wealth, status, and concentration of power (Kea 1982:98). There were differences in noble classes based on how elite status was acquired and ascribed through a combination of factors including military activity, trade pursuits, high birth, administrative activity, etc. Elite status could be obtained by anyone who possessed the requisite qualifications such as noble birth/ ancestry, service or merit, and had the ability to purchase a title or stool. Stool titles were generally acquired rather than ascribed to members based on birth (although McCaskie documents several exceptions). Honorific titles could be obtained through military service. Enstoolment and succession to a political office was a complex process that involved several factors (Kea 1982; McCaskie 1995). Due to the complexity of status relationships and because of the heavy dependence on acquired status based on profits from land tenure and trade open to all members, some scholars have argued that the Akan were essentially egalitarian (Daaku 1972). The process of ennoblement was expensive, but awarded specific rights (see Table 2.1). Counterbalancing the rights and obligations of royals were taboos and legal restrictions (Arhin 1970; McCaskie 1995; Rattray 1923, 1927). At the highest level of the paramouncy, the *Omanhene* is a sacred leader with religious, political, and judicial responsibilities (Blier 1998). As a sacred ruler, the paramount king is responsible for maintaining spiritual and political order; failure to perform the required ceremonies, ritual performances, and other duties required are grounds for destoolment (McCaskie 1995). In the 17th century, as coastal populations grew and new settlements appeared, the frequency of elites and stool holders increased as new political offices were created. The process of becoming an elite title holder was so costly and exorbitant, that many elites spent the bulk of their resources obtaining noble titles. Kea (1982) discusses the large number of poor nobles in the coastal provinces that had status without wealth or power. Property and sumptuary goods acquired as an elite became part of the stool and title; and could not be transferred though matrilineal inheritance. If material wealth was acquired by an elite outside of the stool property, the 18th century Asante taxed heritable wealth at 50% (McCaskie 1995).

Elite structure and status differentiation were important parts of Akan daily life. De Marees (de Marees [1602]; 1987:34-35) wrote that high status individuals would often not speak to those of lower rank in the streets lest they be humiliated. Elaborate rituals and ceremonies such as the *mena* (elephant tail ceremony) reinforced social differences (McCaskie 19955:42-49). In the 17th and 18th centuries, there were multiple types of elites with varying amounts of wealth, status, political power, and number of retainers. Conflicts, factional competition, assassinations, revolts, and court battles were commonplace between and among urban and rural elites. At the same time, cooperation, collusion, and shifting alliances between elite office holders and adjacent communities were common. McCaskie (1995:49-56) documents how elite pre-colonial Asante society revolved around the competitive accumulation of goods, land, and people from warfare and trade, and that paramount rulers often observed, monitored, and intervened when elites had accumulated large amounts of wealth.

Table 2.1 Elite Rights and Obligations[4]

Right to buy, own, sell slaves and other commodities
Right to trade anywhere
Attend town/ state meetings as a participant
Right to own items of elite regalia (elephant tails, drums, shields, umbrellas)
Hold feast day whenever desired
Receive portion of levies from town courts
Exempt from slavery

Inland trade networks were complex and integrated systems of central and secondary markets connected by a series of trade routes and toll areas. The merchants who operated within the market networks achieved social rank and wealth apart from political institutions, and Akan merchants could be commoners with social rank derived solely from mercantile activities (Kea 1982). From Asante history we know that different types of merchants and market transactions were recognized: target, professional, and state/chiefly (Arhin 1970). Target/ occasional transactions were not regulated, values of commodities were not fixed, and exchange was negotiated between parties. Professional long-range merchants (as opposed to internal traders) were generally foreign or non-Akan, and their participation in market activities ranged from continuous to ephemeral (Arhin 1970). State-sanctioned traders generally worked intermittently with schedules

[4] Taken from Kea 1982:101-102

designed around peak resource availability, especially of kola nuts (ibid.). In the 17th century, the Akan merchants supplied approximately half of the gold Europeans purchased on the coast (Kea 1982). It is believed that the Akan were state-sanctioned merchants from the Assin polity until they were destroyed by the expansionist regimes of Denkyira and Asante (ibid.). In the 19th century, kola nut sales were suspended to everyone but state-sponsored merchants in order to obtain profits through an artificially created monopoly. In addition, the Asante limited the numbers of Akan merchants to restrict the number of individuals with large accumulations of wealth and material; who were seen as potential threats to leadership.

Kense (1987) argues that Asante urban areas were disproportionately affected by long-distance trade and had greater access to sumptuary and prestige goods, while rural economies remained largely unaffected. However, it is unclear how much access Bono villages or satellite sites had to sub-Saharan and European long-distance trade, and what the social effects of participation in overlapping exchange networks were. There are multiple lines of evidence to suggest that the large settlement of Bono Manso and its satellite villages participated within long-distance exchange networks. Wilks (1989) argues that profit-rich activities such as gold mining and ivory hunting were Asante state-organized enterprises. This assertion has been questioned by Arhin (1970), Austin (1996), and McCaskie (1995). The Asante lacked total coercive power over their constituents and territories (McCaskie 1995). Households were more likely to have been the dominant unit of production that organized and balanced subsistence practices with wealth-generating enterprises to engage in multiple exchange networks. Private ownership and accumulations of wealth had a complex relationship with the Asante state (Daaku 1972; Kea 1982; Kense 1987; McCaskie 1995). In the 1700s the Asante promulgated a series of regulations akin to sumptuary laws prohibiting massive accumulation of capital and material wealth by non-chiefs. While there were restrictions designed to limit concentrations of wealth in private hands, the Asante created state-sanctioned incentives for individuals successful at generating wealth from market transactions. Once a sufficient amount of wealth was generated from engaging in market activities, an individual was ranked higher in potential eligibility pool for chiefly political office (Brempong 2000). Wealth generated from exchange networks led to higher political status; high political status did not necessarily lead to wealth. Regional trade was not controlled or regulated by imperial and state powers as prestige items from global markets were (Kense 1987).

Transitions: Production, Consumption, and Status Differentiation after European Contact

As the Atlantic markets opened and the volume of trade goods expanded, this creating many conflicting social effects. Coastal trading areas that were once peripheral to the major markets in the Bron zone (perhaps with the exception of sea salt production), became centers of new commerce. Inland markets such as Begho were centers of early Akan trade, but their primary status waned as Atlantic markets opened (Garrard 1981). Coastal populations grew rapidly through migration, population growth, and incorporation of slaves; coastal communities were ethnically heterogeneous. In spite of the introduction of new types of goods, some continuity in cultural traditions remained (DeCorse 1992). Food preparation and consumption continued even with the incorporation of new foods into the diet. Use of space documented by the Elmina excavations indicated continuity in the creation of the built environment. Ritual practices including burial activities show cultural continuity against a rapidly changing backdrop and articulation with global exchange networks (ibid.). However, some significant changes occurred within coastal organization. As European trade expanded, there was an increase in coastal craft production (DeCorse 1992, 2001a). Specialization and standardization within some classes of goods such as ceramics increased. The formation of specialized pottery production areas and villages were recorded by Europeans (ibid.). Although iron goods were present on the coast (DeCorse 2001a), large slag mounds like those documented at Begho and Bono Manso have not been observed. It is likely that interior groups specialized in iron production and exported iron goods to coastal groups. For example, products from the highly specialized iron working industries in Bassar region of northern Togo were exported to the Akan, sometimes through coercive means part of Asante tribute and taxation requirements imposed on the Dagboma (de Barros

2001). A skilled ivory carving industry appeared with workshops on the coast; raw materials would have originated in the interior[5] (DeCorse 2001a, b).

Understanding how the introduction of new goods and technologies played a role in shaping the production, consumption, and status differentiation of Akan/ Bono society is one of the primary goals of my study. During the Atlantic period, these questions have often been tackled by economic historians. These scholars place market-value or "volumetric-valuemetric" systems on goods imported into Gold Coast economies (Arhin 1978; Kea 1982; Wilks 1993). Target/ commodity transactions in informal economies were based on goods without standardized bullion market values. Goods are classified as commodities if they were not intended for re-exchange, and Arhin (1978) argued that it is unlikely that such commodities were acquired in sufficient quantities to constitute conspicuous consumption. Guns, gunpowder, rum, and Indian silks are considered prestige goods while commodities like tobacco and New World crops became incorporated into households for domestic use[6]. Feinburg (Feinberg 1989) defined trade goods in terms of durable and non-durable goods with the latter (mostly alcohol and tobacco) accounting for approximately 47% of the European trade in 1727. This traditional distinction between prestige and consumer goods are static, and do not account for how the newly exposed cultural system incorporated new goods. Goods and commodities can take on new meaning and new values, and become incorporated into cultural systems in innovative ways, and have complicated life histories (Appadurai 1986; Kopytoff 1986; Thomas 1991).

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[5] Distinct ivory carved objects and industry collectively known as the Afro-Portuguese Ivories, appeared in a few areas of Africa (e.g., Benin, Sierra Leone, and Kongo) Bassani, E., W. B. Fagg, S. M. Vogel, C. Thompson and P. Mark
1988 *Africa and the Renaissance: art in ivory*. Center for African art.
, Blier, S. P.
1998 *The Royal Arts of Africa: Majesty of Form*. Prentice Hall, New Jersey.
, Ryder, A. F.
1964 A Note on the Afro-Portuguese Ivories. *Journal of African History* 5:363-365.

Bono Manso

Bono Manso was one of the largest historical settlements located at the forest-savanna transition. Bono Manso and its satellite villages were located along primary trade routes linking the northern portion of the Akan forest to the Middle Niger (Effah-Gyamfi 1985; Levtzion 1968; Wilks 1993). More specifically, the Bono node on the trade route was approximately 75 kilometers southeast of Begho (the largest of the Bron/Akan markets). The route was later extended approximately 110 kilometers southeast to Kumase (the Asante capital). Boahen (Boahen 1986) documents that the primary trade route that connected the Inner Niger city of Djenne ended at Bono Manso. At its height, Effah-Gyamfi estimated that Bono Manso had approximately 500 houses with 5,000 inhabitants and covered an area of 150-230 hectares (Effah-Gyamfi 1974:222-223). Bono Manso was located in the forest-savanna transition zone in west central Ghana near the headwaters of the Tano River in an area of unique resource abundance and availability. This location north of the forest margin is significant as it was the southern limit for pack animals to safely travel without risk of trypanosomiasis (due to tsetse fly distribution), and red kola nuts, important for trade with Muslim groups due to their stimulant properties, grow in this ecotone. These resources would have made Bono Manso and its satellite villages important in regional trade.

Information about Bono Manso comes mainly from archaeology, Bono oral history, and brief mentions in European documents (although Bono Manso was not mentioned directly in Arabic documents). Bono Manso was occupied as early as the late 1200s/early 1300s through the mid-18th century when it was conquered by the Asante. Based on these dates, overlapping economies existed in the Bono Manso region that introduced a plethora of new objects from local, regional, and global sources. Market centers were established at Begho and Bono Manso on the northern margins of the tropical forests to facilitate trade in gold, kola, and slaves, first with merchants from the Mande and Soninke trade diasporas and later with European goods.

Bono Origins: Archaeology and Oral History

The modern-day Bono claim autochthonous heritage and ancestry in what is today west-central Ghana (Effah-Gyamfi 1974). In the Twi language, Bono translates into

English as "pioneer" (Emmanuel Effah-Gyamfi 1974) or "first born on the land" (Wilks 2005:23) and Manso translates into English as "place of"; Bono Manso means "place of the pioneers." The Bono trace their geographic origins to the Amowi caves, approximately 11 kilometers west of Bono Manso. As pioneers or first born of the land they claim to be the first to settle the area and cultivate the land. Oral traditions[7] indicate that the Bono pioneers broke their way out of the earth and began farming the land. The cave complex at Amowi collapsed, and it is remembered in social memory as a supernatural disaster caused by the anger of the supreme god. In a rage, the supreme god Biakuru killed all but a few inhabitants of the Amowi caves for violating taboos and handling food improperly. At the time of the Amowi cave collapse, the shrine priest for Biakuru ordered some of the surviving inhabitants to found new villages, while leaving some people behind to care for the shrine. A small group was left at Amowi to care for the God Biakuru and his associated shrine, but the remaining settled in a village named Yefri, whose name can be translated as "we are coming out" [of the cave complex].

Subsequent settled places, including Bono Manso, were founded in the nearby region, just beyond the God Biakuru's reach. Many Akan gods are associated with volatile and vindictive personalities (McCaskie 1995). The creation of a spiritual buffer zone separating shrines from habitation areas is a strategy the Bono have continued to use to the present day. Some shrines dedicated to specific gods are located on the outskirts of

[7] Oral history and traditions from the Bono area used here were predominantly collected by Effah-Gyamfi as part of his master's research at the University of Ghana, Legon. In his research, he interview 50 informants, including chiefs, sub-chiefs, royal custodians, artisans, palace functionaries, elders/commoners, and members of the royal house. Much of his work contradicts the early work of Eva Meyerowitz. She was a self-taught ethnohistorian who recorded oral traditions, history, and chiefly lineages in the northern Akan and Bono areas in the 1930s through 1950s. She was a prolific writer and wrote seven books about Akan origins and traditions. One of her notions is that the Akan kingdom was related to ancient Egypt. Several scholars have refuted her work, and thus her work is not considered here

Boachie-Ansah, J.
1986 *An Archaeological Contribution to the History of Wenchi* African Occasional Papers No. 3. The University of Calgary, Calgary.
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1974 Oral Tradition and Archaeology: A Case Study of the Bono State, Unpublished Master's Thesis, Department of Archaeology, University of Ghana, Legon.
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1970 The Chronology of the Kings and Queenmothers of Bono-Manso: A Revaluation of the Evidence. *The Journal of African History* 11(2 Problems with African Chronology):259-268.
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1959 Ethnohistory and the Akan of Ghana. *Africa: Journal of the International African Institute* 29(1):67-81.

settlements, which are thought to offer some amount of distance and protection from a god's wrath. The shrine priest acts as a medium that communicates with the gods, cares for the shrine, performs rituals, and observes the taboos associated with individual gods.

The Bono area grew in population and power for several reasons. As the Bono pioneers expanded their farming activities and founded new settlements in the region, small groups of hunters were absorbed into the new settlements (Effah-Gyamfi 1974:219). Incorporation of new groups through intermarriage was common (Effah-Gyamfi 1974:47). Hunting camps in suitable areas grew into villages. Effah-Gyamfi reports that hunting camps were converted into farming areas; some served as areas that produced goods commanded by Bono Manso. For example, the village of Besedan was founded by the Bono queen's slaves to solely produce kola nuts (ibid.). Non-Bono "minority" groups or groups claiming non-local origins were rapidly integrated into the Bono political structure. In spite of their non-indigenous origins, the early leaders of the Gyamma and Dewoman people are remembered in Bono oral history as "sons of the Bono kings who performed important roles in the courts" (Effah-Gyamfi 1974:222). Finally, the "peace and prosperity" of the Bono state attracted groups of multiple ethnicities including the Mo, who are reported to have established villages within the Bono Manso region and became local producers of ceramic vessels (ibid.).

Little is known about the earliest periods in Bono history that explicitly discuss periods between emerging from the hole in the ground through the rise to statehood. Effah-Gyamfi conducted archaeological excavations at the rock shelter and hole in the ground at Amowi I. He recovered materials indicating two components of occupation. The artifacts associated with the early occupation were similar to Kintampo Complex artifacts. The Kintampo Complex[8], the earliest agricultural and village complex recorded

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[8] The Kintampo Complex or Tradition is associated with the Late Stone Age ca. 4000-2000 BP. Elements of the Kintampo Complex include some early semi-sedentary villages. Some of the earliest examples of figurative art in Ghana are associated with the Kintampo Complex. Kintampo objects have been recovered from a variety of sites within multiple ecological zones of Ghana (e.g., forest, savanna, etc.). Faunal and botanical research indicates some mastery over food production and perhaps some early attempts at domestication Watson, D. J.

2010 Within savanna and forest: A review of the Late Stone Age Kintampo Tradition, Ghana. *Azania: Archaeological Research in Africa* 45(2):141-174.. It is likely that networks of regional exchange appeared and facilitated the movement of raw materials such as greenstone used for groundstone celts Casey, J.

in Ghana, dates to approximately 4000-2000 B.P., its type sites are located approximately 40 kilometers northeast of Bono Manso and Amowi (Anquandah 1982; Casey 2000; D'Andrea and Casey 2002; Stahl 1994; Watson 2010). While there is no direct connection between the Kintampo Complex and the Bono Manso state, this region has a history of mixed agricultural and arboriculture economies and semi-permanent to settled occupation (Wilks 2005).

New settlement areas were selected based on four main criteria: availability of suitable agricultural land, adequate water supply, proximity to Bono Manso, and consultation with the gods (Effah-Gyamfi 1974:54). By the 15th century, the Bono Manso state was a decentralized organization administered by king and council. In addition, the political organization and institution that relied on the incorporation and allegiance of vassal areas. Although some sub-chiefs resided permanently in the capital, secondary villages were governed by the installation of the members of the Bono royal family and some appointed officials (Effah-Gyamfi 1974:84). The paramount leader of Bono Manso required that new areas be settled under the supervision of elders in unoccupied parts of the territory (Arhin 1979a). In part, this was a security measure. With a large territory and trusted elders occupying new areas, Bono Manso could keep tabs on military threats ore enemies entering its territory (ibid.). At its maximal extent, the Bono area was described as extending to Begho in the west, Tafo, Okwin, Kaase, and Offinso in the south, Gonja in the north, and Waise in the east (Effah-Gyamfi 1974:70). The Bono military conquered lands associated with the Gonja state effectively pushed Gonja territory north of the Volta River (Arhin 1979a). Effective occupation and territorial control was established over a 30-40 km radius of Bono Manso (Effah-Gyamfi 1974:84). Effah-Gyamfi (E. Effah-Gyamfi 1974) reports that in the 17th century, Bono Manso controlled the alluvial gold sources within the upper Tano and Tain Rivers in the Banda area (Arhin 1979a; Smith 2008).

2000 *The Kintampo Complex*. Cambridge Monographs in Archaeology No. 51. BAR International no.906, Cambridge Monographs in Archaeology No. 51.
, Stahl, A. B.
1994 Innovation, diffusion, and culture contact: The Holocene archaeology of Ghana. *Journal of World Prehistory* 8(1):51-118..

Control over gold led to the rise in ruling elites and successfully attracted foreign traders (Dumett 1974). A strong army and treasury facilitated the growth and power of the Bono state. Effah-Gyamfi argues that the Bono people contributed to the rise of Akan states in other areas; Bono emigrants helped to establish the Fante state on the coast and may be related to ancestors of the Denkyira. McCaskie (1995:134) and Bowdich (1819:171) cautiously date the arrival/appearance of the Fante to the late 15th to early 16th centuries; the migration is recorded in Bron oral traditions and drum language (Wilks 2005:31). In addition, the Bono are reported to have been the originators behind much of the political and religious symbolism and rituals associated with Akan states (Dumett 1979; Effah-Gyamfi 1985). This includes many of the symbols associated with political and religious power such as stools, golden regalia, ceremonial swords, umbrellas, and palanquins (ibid.).

The importance of trade at Bono Manso cannot be overstated, yet the Dwabirim market was the main Bono market and located approximately 16 km southwest of Bono Manso (Effah-Gyamfi 1974:92). The Bono market could be reached in a day or two after leaving Begho (ibid.). Commodities, prestige goods, and human capital were acquired from regional and global exchanges using silent trade, barter, and monetized transactions.

Prestige goods acquired from northern merchants became important signals for Akan socio-political differentiation (Arhin 1970). Elites used prestige goods to distinguish themselves from commoners, and chiefs used them to distinguish themselves from other chiefs in a complex ranking system in which many symbols were derived from foreign trade. Goods acquired from northern trade included woven cloth, carved ivory goods, horses, smocks, and beads. while goods acquired from southern trade included cloth, alcohol (rum, gin), and guns/gunpowder (Arhin 1970:369).

Prestige goods were also important in Bono ritual contexts. Early brass vessels were acquired through overland Sudanic and sub-Saharan trade networks (R.A. Silverman 1983). Brass bowls, often with Arabic inscriptions, served as mediums in shrines that embodied deities. As Atlantic ports opened, brass vessels became popular trade items as previously mentioned. One such vessel without Arabic inscriptions, the Ayaa Dasuo, appeared at Bono Manso and it still used in religious activity today (Figure

2.4). Ethnohistorically, a wealth of offerings and gifts were presented to shrines, where they remain on display and accumulate over time (R.A. Silverman 1983). Prominent modern Tano shrines display the same type of regalia associated with political authority (Silverman 2005).

Figure 2.4 Ayaa Dasou at Bono Manso

According to oral traditions, daily life for non-elites at Bono Manso was also heavily shaped by trade, both on primary and secondary economic activities and intra- and inter-state trading (Effah-Gyamfi 1974:90). Bono Manso was known for its crafting industry; following the 1722/1723 war with the Asante many Bono artisans were forcibly taken to Kumase to support the burgeoning Asante craft industries (Effah-Gyamfi 1974). Primary economic activities included a range of subsistence activities, farming with an emphasis on yams, collecting fruit, snails, nuts, and mushrooms, fishing, and hunting. Hunting was divided into big game and small game hunting. The former was a highly respected industry and required special skills as well as special medicine to prevent injury from dangerous animals. Big-game hunting targeted edible and non-edible animals (e.g., leopard, loin, hyena, etc.). This was strictly a male oriented activity with knowledge transmitted through father-son apprenticeships (ibid.). Small game hunting focused on antelopes, duikers, grasscutters, and other giant rats; it required no special skills and often passive hunting implements like traps were used. Secondary economic activities included bark cloth manufacture, blacksmithing, potting, and gold working (Effah-Gyamfi 1974:69-83). Europeans observed (e.g., Pacheco Pereria) that Gold Coast bark cloth was finely made and of a durable quality. Cloth manufacture and weaving were widespread activities. Labor was reciprocal and complementary within households; men wove cloth and women spun thread. Weaving was mainly performed as a part-time activity, although oral history indicates there were some professional weavers who made garments for the Bono royals (Emmanuel Effah-Gyamfi 1974).

The Bono economy was likely diverse and composed of trade and the acquisition and manufacture of multiple types of goods. Blacksmithing was part of a hereditary industry and not open to the general public (Emmanuel Effah-Gyamfi 1974). Iron smelters were located away from settlements in order to keep the specialized knowledge of iron smelting clandestine. Potting activities were not restricted to specific clans or classes of people. Potting was typically considered a part-time activity of women, although some families and villages were known for making superior quality vessels. Gold working was divided into two categories: gold collecting (mining and panning) and gold working (Arhin 1978). Alluvial gold was panned out of rivers (Warren and Brempong 1971). In bedrock, gold was mined through the creation of vertical shafts as it was located in the veins of granite (Arhin 1978; Dupuis 1824). Gold was often mined by freemen or slaves; however, when it was mined by the former gold was divided equally by three parties (miner, village chief, and the Bono king) (Emmanuel Effah-Gyamfi 1974). Similar gold division schemes occurred later with the Asante (Arhin 1978). How gold mining was organized in the greater Akan area historically is unclear, and they may have been variation between polities. Dupuis (1824) reported that gold was mined by thousands of slaves, although slaves could have included free persons (Arhin 1978). Gold served multiple purposes and could be used as currency (for trade and settling debts with interest), making armaments, and regalia (Arhin 1978; Bowdich 1819). Gold-smithing and fabricating it into objects were activities restricted to special artisans associated with the royal court. Reindorf (2007) argues that the first gold weights and scales were perhaps made in the Bono Kingdom as part of the Mande-Dyula trade and later spread to the southern Akan area. Goods and commodities produced by non-elites were exchanged at local markets. Yams, sorghum, baskets, ceramics, bark cloth, and farming implements were traded widely between villages within the Bono area (Effah-Gyamfi 1974:90). The neighboring areas and states of Bono Manso, Yendi and Yabo (Gonja), Tafo, Ohwim, Kasse, and Denkyira (south), Begho and Wenchi (west), and Atebubu and Wiasse (east) are reported to have been the main trading partners with Bono Manso.[9] (Effah-Gyamfi 1974:91). Iron ore and other raw materials for blacksmithing were traded widely. Salt was traded through southern exchange partners. Bark cloth was an important good for exchange with the people of Begho.

Fall of Bono Manso

In the early 18th century, the Asante began waging large scale wars against many outlying and adjacent territories (Figure 2.5.) The Asante were successful in many of their military exploits, leading to the creation of the Asante Confederation. Many neighboring states, chiefdoms, and polities were absorbed into Asante territory. Once an area was conquered, depending on its distance from Kumase, administrate officers and sub-chiefs were sent to monitor activities in districts not adjacent to Kumase. Coastal trade with Europeans brought large amounts of guns and gunpowder into the Gold Coast (Inikori 1977). The Asante created laws restricting the sale of guns to certain types of people and to certain areas. Merchants were prohibited from selling large quantities of arms in areas north of Brong districts. However, the Asante needed a minimal quantity of guns in the northern frontiers, sufficient for obtaining demanded human tribute but not enough to threaten the political order (Arhin 1970).

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[9] Trade with the Asante came later

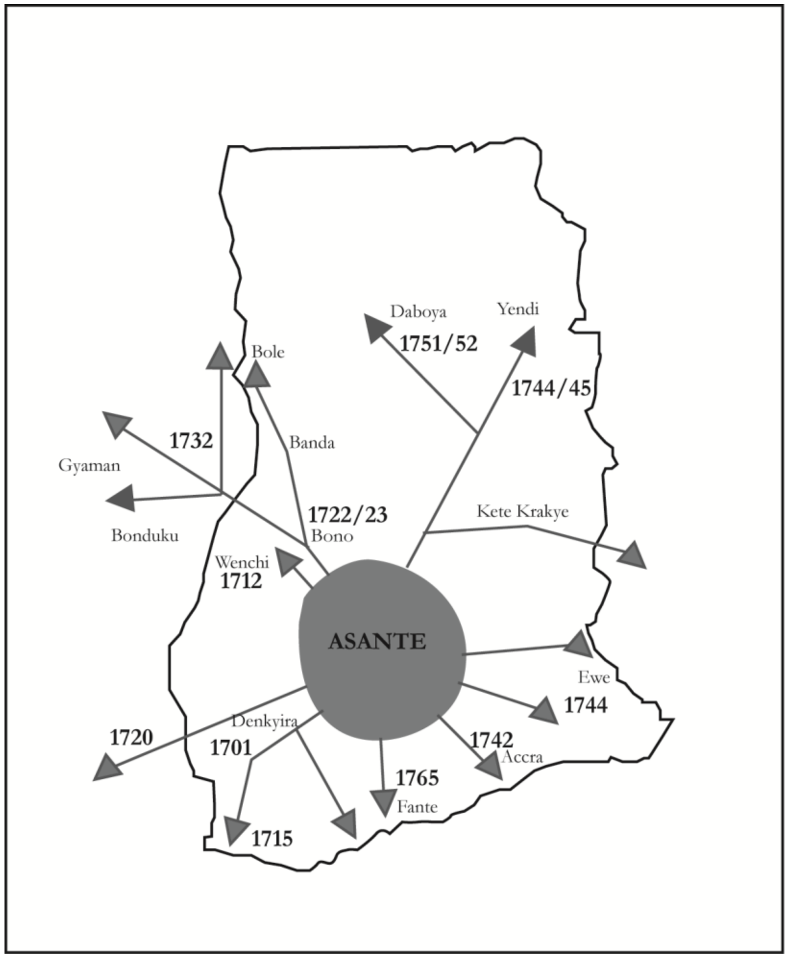

Figure 2.5 Routes of Asante State Expansion (Wilks 1975:19)

Bono oral history recounts oscillating periods of tension and cooperation with the Asante (Warren and Brempong 1971). Oral history indicates that the Bono Manso king sent a gift of gold dust to the Asantehene via an emissary, Baffo the Nkornzahene. In an event known locally as “Baffo’s treachery”, Baffo swapped the gold dust for gunpowder. The Asantehene, Opoku Ware, took the gunpowder as a sign of aggression and declared war on Bono Manso. Dupuis, a European traveler who resided in Kumase in the early 19th century, documented that the Asante invasion of the Bono area was planned to follow the Denkyira invasion (Dupuis 1824). The first Bono-Asante war in 1722/1723 lasted eight days, and the Bono area became a vassal state to the Asante and was responsible for paying taxes and supplying soldiers to fight alongside Asante warriors in military campaigns. Bono Manso was conquered, and its inhabitants fled to the town of Techiman (12 km southwest). The Bono king and queenmother were captured and taken to Kumase (Effah-Gyamfi 1974; 1975). Important artisans were taken to Kumase, and much of the area was plundered. The contents of the Bono treasury, largely in the form of regalia, were taken to Kumase (Emmanuel Effah-Gyamfi 1974; Warren and Brempong 1971; Wilks 1989). Dutch documents from Elmina indicate that the Asante "*have again won a very big battle against a district that lie behind them and was quite three times as stronger than the Ashantees. It was done thro' treachery, and was at once ruined. Much booty was plundered by the Ashantees much of this they will bring to Elmina to sell which will give a considerable trade.* (Effah-Gymfi 1975: 226 from the Furley Collection). While the Bono were not specifically mentioned, Effah-Gyamfi argued that this description fits the first Bono-Asante war (ibid.). The Bono Manso ruler, Ameyaw Kwakye, was taken to Kumase and given a position in the royal court[10]. There are strong oral traditions that mention that the Bono ruler suggested changing the Asante revenue system to reflect the Bono system. A new administrative position was added, the *Fotosanfohene* (Wilks 1989). The duties of the *Fotosanfohene*, are to serve as an appointed royal treasury officer who is in charge of accounts and monitors the gold weighers but who is not of chiefly rank. Ameyaw Kwakye encouraged the Asante ruler to claim the estate of deceased chiefs and generals and promulgate laws with punishments that carry heavy fines; these changes to Asante policies added to the power of the paramount ruler by reducing the power of his subjects and co-consul (Reindorf 2007; Wilks 1989)

Oral history recounts how many Bono inhabitants were unable to fight against the Asante after they were tricked into burying their guns in the river just before the invasion. The wet guns did not work properly, and thus Bono Manso was easily defeated by the Asante invaders. Although Effah-Gyamfi says the traditional story of Bono Manso's defeat by the Asante details "*technical incompetence*", he argues that the state's fall was due to a complex set of factors represented by the gun burying metaphor (Effah-Gyamfi 1975:226). Succession disputes and factional competition within the Bono royal family became common. The last king of Bono Manso was Ameyaw Kwakye; his enstoolment created some internecine conflicts between the pool of eligible successors and the royal

[10] Later Ameyaw Kwakye escaped and returned to Techiman

family. Ameyaw Kwakye used his office to levy higher taxes and extort gold from Bono controlled areas. Oral traditions report that Ameyaw Kwakye's officers went from house to house collecting tax payments. Tension caused by egregious over-taxation within the Bono-controlled areas spurred some inhabitants to migrate to the coast. In addition, Ameyaw Kwakye ignored many of his traditional and religious responsibilities as the paramount ruler, and refused to heed the advice of oracles. At the Dwabirim market, Ameyaw Kwakye committed many adulterous acts with women, so flagrant was his lust and abuse of power that many of his subjects were offended. Ameyaw Kwakye's sons were considered menaces to local security; they rode around on horses killing commoners indiscriminately (Effah-Gyamfi 1975). Effah-Gyamfi argues that on the eve of the Asante invasion, the Bono State was not functioning properly due to the king's avarice. Those dissatisfied with the royal family refused to fight and buried their guns in the river. A Twi saying from this time is still remembered, "*Se hene Ameyaw anya ne ko a onko nhye*" meaning "*If king Ameyaw has got his war, let him fight it all"* (Effah-Gyamfi 1975:227). The fall of Bono Manso is remembered as an allegorical story that captures the general discontent of the Bono subjects and the rivalry and constant shifting relations with neighboring polities.

After the 1722/1723 war many Bono inhabitants fled to other states such as Gyaman, Abeasi, and to the north while others remained in the vicinity of Techiman. Many Bono villages were given to King Baffo of Nkoranza for his loyalty to the Asantehene. Asante loyalists were moved into newly conquered Bono territories to prevent the Bono from returning to occupy Bono Manso and their place of origin at Amowi. Nine villages were associated with Bono traditions from "time immemorial" including Bouyam, Nchiraa, Tanoboase, Subinso, Nwoase, Branam, Offuman, and Tanoso (Warren and Brempong 1971:65). Following the 1722/23 war these nine villages were also made subordinate to Kumase. Taxation and military conscriptions extended to these Bono villages as well. Diplomatic relations between Bono and Asante areas remained a crucial element of Asante state-building practice (Arhin 1979b). The Asante sent administrators to sit alongside the new rulers of conquered territories. The Bono and Brong areas were considered by the Asante to compose the ninth *omansin*, or constituent, of the Asante Union, which was differentiated from the Asante concept of a greater coalition including Akan and non-Akan groups. As such, the Bono rulers were considered members of the Asante general assemble of power and remained important figures in Akan authority, although they were required to pledge allegiance to the Asantehene (ibid.). Other conquered territories were not extended the same privileges.

Sometimes the Bono and the Asante fought alongside each other in a pattern that continued to British colonial rule. After the first Bono-Asante war, Techiman military forces were conscripted by the Asante to fight in the Adinkra War in the Gyaman area (Warren and Brempong 1971). Bono soldiers fought again alongside the Asante during an Asante conflict with Baffo and Nkoranza. After participation in two successful military campaigns, the Bono requested control over the nine villages consolidated into Asante territory. When the Asante refused, an oracle told the Techimanhene to prepare for war. The Techimanhene feared that there wasn't sufficient time to prepare for war with the Asante. Instead, the Techimanhene guided many Bono into exile in the Gyaman area. The Asante military chased the Bono into exile. At Gyaman, after the second Adinkra War, the Bono fought back successfully and later returned from exile. As the Bono returned from exile to Techiman, the Asante launched an unsuccessful attack (ibid.).

Bono oral histories can be contradictory between sources and informants with differential knowledge, biases, and contradictions. However, one pattern within the oral data is that the relationship between the Bono and the Asante was complex and dynamic. From an Asante perspective, there was a symbiosis between forest and savanna relationships. The Asante rise to power in the 18^{th} century would not have been possible without trade and resources from the savanna. Asante conquest of Bono Manso was one part of the larger Asante conquest over forest and savanna areas. The militaristic spread of the Asante system of political order was a way to ensure that savanna wealth could be channeled through Kumase as well as consolidating and strengthening commercial ties (Arhin 1979b).

Forest kola was traded for valuable savanna resources including shea butter, agricultural products, cotton, silk, iron, blankets, threads, leather goods, and slaves. Domesticated livestock for food and skins could not be reliably procured in forest area (due to the diseases spread by the forest tsetse fly). In addition to material goods as resources and commodities, savanna goods were important in the Asante social and symbolic realm (Arhin 1979b; Silverman and Owusu-Ansah 1989). Skins, leather goods, and elephant tails were important in the creation of political and religious regalia (McCaskie 1995). Human capital acquired through conquest of areas like Bono Manso was important for the Asante political economy. Population decline was felt severely with respect to agricultural communities. Slaves acquired through warfare were employed as infantry soldiers, court personnel, and farmers. In addition, human capital acquired through large-scale warfare was sold on the coast financed Asante wars. European travelers frequently commented on the intense nature of farming activities in the area around Kumase. Artisan labor was important for the Asante political institution as well. Regalia were ornate and labor intensive to create. Chiefs engaged in a complex system of competitive accumulation with each other. Its circulation of elite regalia to division I and II chiefs played a role in preserving, maintaining the political and ritual order especially as the frequency of stool positions increased.

Tano Religious Institutions

There are a number of Bron and Akan deities and beings with special powers found throughout the modern Akan world. Atano deities are anthropomorphized gods that derive their power from the Tano River, one of the longest rivers in Ghana (Rattray 1923). These Tano (Atano) deities play a prominent role in the overall religious structure with places designated for Tano worship in each of the Akan states. Some of Tano deities are called *tete abosom*, meaning ancient gods in the Twi language. Their presence likely predates the rise of social complexity and Akan state formation by the 16th century (Silverman 1987, 1998). Silverman (2005:24) writes that Tano worship may be the most ubiquitous religious institution within Akan culture. Historically, Tano deities were held in high esteem in the greater Akan area. While their historical preeminence has diminished among the Asante and Fante in part due to the spread of Christianity, Tano deities are still held in high regard and play important roles in the Bono region of Ghana.

The Atano deities revealed themselves individually at sacred bodies of water. Each of the Tano deities is associated with the Tano River—even though some of their shrine houses may be quite geographically removed from the river itself. Tano River headwaters surface near the town of Tanoboase and empties into the Atlantic Ocean. Located at the Tano River headwaters are the Tanoboase Sacred Grove at the outskirts of the modern village. The sacred grove forms a liminal space between the spiritual and living realms. The first Atano, Taa Kora, first appeared in this region. Taa Kora is the father of all Atano deities. Tano deities have been documented throughout the greater Akan area, in places that are not immediately associated and quite removed from the Tano River. With the exception of Kranka Afie(a), situated in the village of Kranka, all remaining Tano deities are the offspring or grandchildren of Taa Kora. In the 1970s, Warren documented 394 shrines in the Bono region, 175 of which are Tano (Warren 1974; D. Warren 1976). Taa Kora was a particularly fecund deity. The effectiveness of an individual deity waxed and waned over time. Atano deities are generally viewed as being benevolent gods that protect the local population; however, when tragedy occurs after adequate veneration activities and taboo observances are followed, some measure of deity potency and effectiveness is lost by the constituent population. Within the Akan belief system, deities continuously appear, disappear, and become dormant (McLeod 1981). New deities can appear and replace deities lacking power and strength; it is likely that this process is correlated with the large number of Atano deities.

Embodiment is a common feature of Akan deities and the gods are often enshrined in vessels. Many of the Atano deities are embodied by brass basins, oral historical traditions record that such vessels have celestial origins, descended from sky (not of local origin), and possess supernatural powers (Rattray 1923; Silverman 1983, 1987; D. Warren 1976). There are six documented Arabic-inscribed brass vessels of *Mamluk* origin in the Brong-Ahafo region venerated as deities. In his doctoral research Silverman (1983) discusses how these exotic imports, once part of Islamic culture, became integrated and assimilated into Akan religious practices. Brass basins were brought to the northern Akan area during the height of the trans-Saharan trade from the 14th-16th centuries CE perhaps serving as ablution vessels, which later became integrated into Akan religious traditions (ibid.). The vessels are found at many northern Akan/Bron villages of considerable antiquity. The brass vessels which appear to have the earliest dates of manufacture are often associated with the early history of Bono towns (ibid.). Additional brass vessels have been documented at other important ancestral Akan villages, although some do not have Arabic inscriptions and cannot be dated in the same manner (including the Ayaa Dasuo brass basin from Bono Manso and a reported vessel at Kranka Dada).

Some of the Atano are associated with Akan state origins, military prowess, and may serve as the tutelary deities of artisans (Rattray 1927; Silverman 1987). One powerful Atano residing in Techiman, Taa Mensah, is regarded as equal and the spiritual counterpart of the Techimanhene, or paramount chief. There are complex relationships between political and ideological power within Akan society. One often provides a check-and-balance system that complements the other's power. However, the relationship between the chieftaincy and the abosom custodians may also be adversarial. McCaskie (1995) documents pre-colonial tension between the Kumasehene (King of Asante) and abosom priests as they often had conflicting motives and engaged in public displays of subterfuge designed to limit the power and efficacy of the other. Material culture and public performances by both Atano priests and chiefs both display and harness similar types of objects. Chiefs and brass basins embodying Atano deities are carried through the streets either using palanquins or the deity's custodian. Item of regalia such as stools, state swords, head gear, umbrellas, fly-whisks, ivory trumpets, kente cloth, and gold jewelry are prominently displayed; these material objects serve as visual representations of power (Silverman 1998; 2005).

Most historical and ethnographic accounts of the Atano indicated that they were benevolent gods that play an important role in protecting and healing their constituents (Rattray 1923; Silverman 1998; Warren 1974); however, they can be vengeful if shown disrespect (McCaskie 1995). During specific rituals, festivals, and state functions, the Atano deity is dressed and publically carried outside of the shrine house by the priest/ custodian responsible for maintaining and communicating with the deity. Shrine priests are often covered in white *hyire*, a white chalk like substance, which visually indicates the possession of a shrine priest. Possession is an important dimension as it allows a priest to communicate with the deity. *Hyire* markings are similarly found on brass basins (representing the face of the deity), shrine pots, and covering the dais upon which many shrines are located (D. Warren 1976).

Atano deities embodied in vessels are placed in shrine houses or shrine rooms where they can be venerated. There are similarities in architectural layouts, shrine placement, and material culture displays among shrine houses and rooms. Shrine compounds are composed of four separate rooms arranged around a central courtyard (Silverman 2005). Deities occupy a single room within a shrine compound, and within this ritual space the abosom is placed on a raised dais. One of the distinct features of Tano shrine houses and compounds is the display of accumulated materials (Silverman 1998; 2005; D. Warren 1976). Items of regalia, shrine priest costume, medicine bundles, broken or discarded items amass in shrine rooms. The sheer quantity and high-quality of these items are designed to serve as a visual reminder of the potency and efficacy of the particular deity. Within the shrine room the vessels embodying the particular deity are often filled with water or other liquids, and water pots used for divination purposes may be present. Older and more prominent Atano deities may be accompanied by a host of lesser deities, such as offspring Atano, non-Tano deities, and asuman. Within a shrine room, the deities will be hierarchically arranged often with the most prominent gods resting on a stool and often with objects of political regalia used by chiefs. A shrine room may contain ceramic vessels, *abusua kuruwa*, with figurative decorations. Faunal remains of animals sacrificed in an offering contexts may accumulate in a shrine room over time. Blackened stools of deceased priests may also become part of the display.

The location of shrine compounds has consistent patterning across villages. Deities of all types often make themselves known on the outskirts of town within forested regions. Forest margins are considered to be liminal spaces that bridge between human life and the spiritual realm, order and chaos, and culture and nature. McCaskie (1995:115) writes “the *abosom* were situated as properties of and in nature. By corollary, they were outside human society, ubiquitously surrounding and pressing in on it”. This premise plays out in a predictable spatial pattern with shrine compounds and fetish priest being located at the margins of a community near the forest fringes.

When Bono villages were incorporated by the Asante, the Tano deities associated with the Bono state, Taa Mensah Kwabena, Taa Kora, and Tuobodum Twumpuduo, promised to help the Asantehene in his military exploits including the Adinkra War.[11] Unlike many other areas conquered by the Asante, Bono deities (in their embodied form in brass vessels) were permitted to remain in Bono areas. Tano shrines appeared throughout the Asante territory, but the Asante Tano religious practitioners were required to practice their tutelage under the two to three year guidance of Bono priest in the greater Techiman area. British colonial ethnographer R.S. Rattray observed and documented Akan religious activities in his Asante series and based his religious observations on Tano deities, priestly activities, and festivals in Techiman prominently discussing Taa Mensah. Thus, Rattray did not distinguish between Bono and Asante religious activities as related to the Tano deities.

To summarize, the Asante invasion and conquest reinforced cultural and commercial linkages between the Asante and the Bron regions. Tension between Bron and Asante is frequently recounted in oral history; relations were sometimes reciprocal and friendly and sometimes antagonistic. Bono accounts discuss shifting trust and questionable alliances between the two. Bono and Asante leaders never seemed certain as to how the other group would react and carefully monitored surges/trends in political authority and the military prowess of each other's soldiers. Before the colonial period in the Brong district, the Asante recognized four areas that were permitted to have a chief with paramount status: Techiman, Nkoranza, Banda, and Dormaa (Arhin 1979b). The Bono made important economic, cultural, political, and religious contributions to the Asante. While there are many similarities between Bono and Asante areas, there are some differences. There are dialect differences (Asante Twi versus Brong Twi), important festivals are similar although fall on different days, and Bono state festivals focus on state deities whereas Asante state festivals focus of ancestors and stool history (Arhin 1979b). Today, the main settlement of the Bono is the town of Techiman (Takyiman) as well as many subsidiary villages in the surrounding region. The paramount chief and the division I chiefs mainly reside in Techiman. Today, modern Techiman is a growing urban area

[11] Some of these are disputed by the Asante, which continues in present day to be a source of tension between Techiman and Asante

with a population of more than 100,000 residents, and is the site of one of the largest agricultural market complexes in West Africa.

Chapter 3 Understanding how Households Intersect with Political Economies

This chapter provides the theoretical framework for my study. I have drawn primarily on anthropological literature that examines households and political economies. Conducting research in Africa presents some interesting avenues for anthropological research, in part due to the uniqueness of African households. Due to their flexibility, sub-Saharan African households, institutions, and polities have proven difficult for researchers to examine and classify using rigid evolutionary trajectories and schemes (McIntosh 1999; Southall 1999). This pattern of institutional flexibility has continued, and is prevalent in current research on the dynamic nature of African modern nation states as they are formed through the process of "negotiation, contestation, and bricolage" (Hagmann and Péclard 2010:539; Herbst 2000). In this chapter, I examine the anthropological and historical context of African representations in the West as they have shaped popular perceptions about Africa. I examine how current scholarship has problematized and nuanced African institutions by exploring the dimensions of their complexity. Next, I examine how scholars working outside of Africa have examined the organization of complex societies and their institutions with political economies. As an alternative for evolutionary typologies, I discuss the concepts of examining the articulations of nascent urban and rural communities through horizontal and vertical linkages. I conclude by proposing a minimalist model for examining the socioeconomic, political, and ideological ties between communities. My goal is to create a descriptive minimalist model based on ethnographic and historic data, which can be used across multiple types of complex societies and distills the anthropological variables of interest in a way that facilitates comparison with other world regions.

Negative perceptions and images of Africa and the African past have circulated since the pre-colonial Victorian era (Coombes 1994; Pieterse 1992). Negative representations of Africa as the "backwards" "dark continent" have appeared in popular culture media, literature, advertising, World's Fair exhibits, etc. and have shaped historical, anthropological, and archaeological investigations of the African past (Bonsu 2009; Moore 1994; Ramamurthy 2003; Stahl 2001), as well as early ethnographic research and the “civilizing” efforts of missionaries and colonial officials (Moore 1994). However, these perceptions still shape our understanding of African history and cultural processes. Until recently, many West African cultures and societies were treated as either (1) decentralized states thrust into social complexity by contact with Islamic states, contacts, and merchants or as (2) decentralized societies holding onto primitive lifestyles since time immemorial.

In a world-systems approach and in mercantile-capitalist history, Africa was usually viewed as peripheral to Europe. Changes to African systems were considered the result of (or reaction to) expansions in global exchange. Thus, the impetus for change for West African societies was presumed to be external, while continuity was presumed to be related to backwardness and resistance to progress. The effects on West Africa of being integrated into the global economy and Atlantic exchange were similarly viewed in a bipolar fashion. Integration into the global economy was seen as a monolithic process that affected all aspects of West African life, including trade relations, shifting power alliances, authority, warfare, ecological changes, population movement, and chronic African underdevelopment past and present (Nunn 2008; Rodney 1972). At the same time, assimilation into world systems was seen as having little to no long-term effects on the decentralized or closed societies of West Africa (Fage 1969; Inikori 2004). These false dichotomies have distorted our perceptions of Africa’s past and limited our understanding of the complex ways in which West Africans interacted with, challenged, and maintained culturally meaningful practices with increased interaction and integration into a global economic sphere.

Analyzing the agendas of scholars who wrote about West Africa’s past and analyzing the historiographical processes in creating revisionist history will help us create a more accurate understanding of the past. Acknowledging the complexity of West Africa’s past is essential for explaining Africa’s transformation into a global power. Rather than a periphery, Africa was a center for global exchanges and commerce in the medieval era, a role that continues into the modern era. Two-thirds of the world’s gold was produced in Africa in the medieval era, making Africa a crucial player in the rapidly expanding 15th century commercial-monetary system (Braudel 1982; Kea 2012).

Approximately 12.8 to 14.6 million enslaved individuals from Africa were transported to other areas of Africa, as well as Brazil, Caribbean islands, North American colonies, and Europe. The slaves supplied the labor and commodities demanded by a dynamic world economy (Curtin 1972; Lovejoy 1986). By the 1650s, Africans accounted for the majority of inhabitants in the Atlantic Americas (Thornton 1998). Africa was wholly integrated into global systems, not a marginal and passive recipient. Islamic and European contact in West Africa were not just events that spontaneously ignited a domino reaction of social changes. Global processes were actively transformed into meaningful practices throughout West Africa. Social organization, linguistic relationships, cultural and social systems, political systems, social networks, and the "structures of everyday life" were dynamically maintained, discontinued, transformed, fractured, negotiated, and reimagined as the "wheels of commerce" spun within West Africa.

The historian Kea reminds us that an event is a differentiated phenomenon experienced in different time scales across space (Kea 2012:344). The history of events can be experienced individually (*l'histoire événementielle*), socially or conjecturally (*l'histoire conjuncture*), or geographically (*long durée*); there is variability in each scale as to the impact, amplitude, intensity, and capacity for each event to produce effects (Braudel 1981; Foucault 1980; Kea 2012). The social effects of integration into the global market system were experienced asymmetrically in time and space in the landscapes of West Africa, and the effects of contact were felt in the West African interior prior to face-to-face contact. In turn, African responses to global integration at local levels, expressed by social formations, institutions, ideology, authority, political economies, and domestic economies were neither continuous nor homogeneous.

In this volume I explore how political economies intersect with domestic economies using an anthropological and historical approach. The anthropological significance of this project lies in how I assess the impact of interaction and integration at the level of a village and its domestic economy. The results contribute to a broader understanding of political economies and social complexity in West Africa. The project is of broad anthropological interest because it examines political and economic integrations, both vertical and horizontal, within socially complex societies. These methods are applicable to other complex societies in the world. Recently, West African-focused archaeological research into "pathways to complexity" has been important for examining empirical and theoretical research (McIntosh 1999) (Monroe and Ogundiran 2012) (Richard 2010; Stahl 2004)., a change from the omission of African cultures and societies from theoretical and empirical anthropological archaeological debates in the 1980 and 1990s that broadly examined the development and structures of complex societies (McIntosh 1999; Monroe and Ogundiran 2012).

Contrary to the assertions by Oxford historian Trevor-Roper on the BBC that Africa had no history as "there is only the unrewarding gyrations of barbarous tribes in picturesque but irrelevant corners of the globe" (Stahl 2001:9; Trevor-Roper 1966), West African societies over the past two millennia have varied in sociopolitical organization, from acephalous societies to chiefly and state societies (Connah 2001; McIntosh 1998; Southall 1999). Chiefly and state societies, the latter varying widely in their degree of centralization, internal organization, types of institutions, administrative functions, and engagement with the regional political economy (Kelly 1997, 2001; MacEachern 2005; McIntosh 1995, 1999; Monroe 2003, 2007; Phillipson 2005; Stahl 2005). There was tremendous variability within the socially complex societies and cultures of West Africa with ebbs and flows in horizontal and vertical integration and interaction between urban areas and their rural hinterlands. Horizontal and vertical linkages between urban areas, satellite villages, and peripheral areas were formed, maintained, and changed over time.

Regional manifestations of power and authority varied, likely with some cycling between periods of centralization and decentralization, and there can be varied articulations of vertical and horizontal institutional linkages. Monroe and Ogundiran (2012:21-31) identify three types of political authority within West African landscapes of the Atlantic Trade era: fragmented landscapes, state generated landscapes, and internal frontiers. Fragmented landscapes are areas shaped by factional or horizontal competition. Aggrandizing elites competed for power and authority within regional vertical control hierarchies, fracturing sociopolitical institutions; however, no lasting control was usurped or maintained over a region. In some cases, competition was ignited by increases in material wealth within trading entrepôts such as in the Hueda kingdom of Benin and its subsequent takeover by Dahomey (Norman 2009). In other cases, the opposite was true. The Eguafo of the Gold Coast benefited from the trade routes bisecting their territory. Unable to effectively to capture the external economy, the Eguafo used wealth and commodities from global trade networks to maintain a decentralized sociopolitical network between horizontally integrated settlements with that shared administrative and ritual duties with the paramount ruler (Spiers 2007, 2012). In contrast, state generated landscapes including the Segou, Dahomey, and Oyo (Nigeria) concentrated power and authority in ways that diminished the autonomy of satellite communities in vertical control hierarchies. In Segou (Mali), state capitals were functionally differentiated from surrounding agricultural and crafting villages and hamlets and military garrisons (MacDonald 2012). After conquering Hueda and Allada, Dahomey established a complex bureaucratic network maintained through palace construction in outlying areas as a means of exerting ideological and economic control over its territory (Monroe 2007). Following Kopytoff (Kopytoff 1989), the third type of landscape and power articulation are internal frontiers areas. Away from coastal areas and direct trade with European merchants, smaller-scale polities emerged on the peripheries of larger states. In some cases, frontier polities and cultural groups lacked time depth and ancestral claims to land (Kopytoff 1989). Such societies were shaped by the migration of people of multiple ethnic origins forging new types of socio-political systems, kinship, and religions (Stahl 1999, 2001, 2007). Individual, family, and/or groups of migrants found themselves in "institutional vacuums" that were subsequently overcome by establishing organizing principles through complex cultural negotiations (ibid.). This is not to suggest that internal frontier societies were isolated from the effects of contact and the expansion and integration into global commodity networks (MacEachern 2012). Although MacEachern's research largely deals with communities in the Mandara Highlands of Cameroon, the anthropological implications of the research are widely applicable.

Although there were heterogeneous sociopolitical landscapes, they were part of vibrant communities integrated together with continuous and dynamic shifts of power and authority. Such is the case with the Abron Kingdom of Gyaman[12] (Ghana/Ivory Coast) where political/judicial and economic institutions were operated by different social groups (Terray 1974). The Abron, the warrior aristocracy of the Akan, held political and judicial power, while trade largely remained in the hands of the Dyula (ibid.). This is a good example of both vertical and horizontal institutional linkages. In societies of the Koinadugu Plateau of Sierra Leone, rulers retained some ritual and economic power, but this was counterbalanced by horizontal linkages between settlements; cooperative groups within settlements were able to rapidly reorganize and mobilize to ensure protection and security of its inhabitants during periods of intense slave raiding and invasion by neighboring polities (DeCorse 2012). Recent anthropological archaeological research from West Africa has been at the forefront of examining variation of the different articulations of horizontal and vertical linkages geopolitical and sociopolitical structures.

As previously mentioned, migration is a central theme in the West African past. Set against a backdrop of trade routes and networks, slave trading/ raiding, and warfare, individuals and groups from different linguistic, ethnic, and religious groups were constantly moving in and out of new geographic areas. The inhabitants of many settlements in internal frontier landscapes were in a constant state of aggregating, fissioning, collapsing, migrating, and reforming (DeCorse 2012). Kopytoff's model of the internal frontier suggests that community formation was a conservative process (Kopytoff 1989). Guyer and Belinga (1995:94) argue that while Kopytoff's model was influential it overstates the conservatism of community formation as many papers in the Kopytoff volume indicate high levels of social innovation with rapid growth and expansion of knowledge particularly with the use and incorporation of new cultigens and monies. Thus, complementary relationships with horizontally integrated institutions may be more likely to visible within internal frontier landscapes. Fluidity in settlement composition was likely commonplace constant migration and movement. Short- and long-distance trade brought new settlers, goods, and technologies.

[12] French for Bron.

In order to document the vertical and horizontal institutional linkages between core settlement and hinterland community, I examine the activities that operated and integrated at the level of the community and the household. Understanding materiality through production/consumption and trade/exchange is essential for interpreting and documenting the Kranka Dada political and domestic economies. Richard writes (2012:79), "Investigating African life through the lens of materiality can shed light on a constellation of object-oriented or spatial practices…that mediated Africans' interactions with the broader world". Recovering items from meaningful archaeological contexts and documenting how they came to be incorporated into daily use informs us about social processes. Overlapping continental, Atlantic, and regional economies in the Bono Manso region introduced a plethora of new objects. Commodities, prestige goods, and human capital were acquired from regional and global exchanges using silent trade, barter, and monetized transactions. Until recently, this type of Atlantic era and global exchange research was the domain of economic historians. Economic historians largely rely on formalist approaches that quantify the volume and value of imported goods as a way of understanding how trade affected African societies. Economic historians have examined exchange systems via the market-value of goods imported into Gold Coast economies (Arhin 1978; Kea 1982; Wilks 1989; 1993). Arhin (1970) classifies guns, gunpowder, and Indian and Venetian silks as prestige goods, while he did not consider commodities like tobacco to be prestige items. These traditional categories of prestige versus consumer goods were static, not accounting for how Bono households incorporated new goods and exotic commodities into their daily lives. Goods and commodities can take on new meaning, new values, become incorporated into cultural systems in innovative ways, and have complicated life histories (Appadurai 1986) (Gijanto 2011; Kopytoff 1986) (Ogundiran 2002; Richard 2010; Thomas 1991). Material culture can both express and embody social, economic, and political relationships but can challenge them as well (Hodder 1977). Spiers (2007:17) argued for two-way impact/meaning of most objects in cultural contexts in that meaning is transferred and transformed from the cultural to the consumer by possession, exchange, and divestment. In short, meaning comes from the context of an object's use rather than its presence or absence within an archaeological assemblage.

Understanding material objects that were important in daily life has implications for documenting how political economies intersect with domestic economies. Documenting how regional and global economic processes affected village life requires an examination of the full range of domestic behavior. Political economy is defined as organization, production, distribution, and consumption in relation to political institutions and structures. A political economy is composed of set of socially embedded practices best examined from the bottom up (Pauketat 1997). Interaction between social institutions can occur in multiple ways as large towns and their hinterland communities are articulated by a range of institutions with varying degrees of strength across economic domains (Bermann 1997; Earle 1987; Marcus 2000; McIntosh 2005; Mehrer 2000; Norman 2009; Sinopoli 2003). In addition, there are multiple ways in which complex societies develop, maintain, usurp, or monopolize control over political economies; however, there is no single relationship between social complexity, exchange, and specialization (Brumfiel and Earle 1987). The organization and types of goods and services produced at village levels and their continuity or change over time lies at the other end of the economic spectrum from consumption. Imported goods from long-distance sub-Saharan and Atlantic networks can inform us about supralocal connections, social distinctions, consumer preferences, while locally created objects for daily use and the specialized production of such goods for exchange have the same capacity to inform us about social, economic, and political relationships within the Bono Manso region. In this study I examine the types of relationships that existed between household labor and production, local and global commodity chains, and systems of value as they articulated with political, economic, and ideological power relations and institutions.

The types of institutional interactions that take place in complex societies can play an important role in shaping domestic economies and integrating them with political economies (Bermann 1997; Brumfiel and Earle 1987; D'Altroy 2002; Hare 2000; McIntosh 2005; McIntosh 1995; Mehrer 2000)(Flannery 1972; Minc 2006; Morrison and Sinopoli 1992). Brumfiel and Earle (1987) identify three types of general models that articulate the relationship between complex societies, specialization, and exchange: commercial, adaptionist, and political development models. Commercial development, according to Engels, was an extension of economic growth entrenched in surplus production made possible by technological advancement. In this scheme, there is a distinction between sumptuary/elite goods and utilitarian goods. In general, the economy is autonomous from the political administration, although elite demands for sumptuary goods may stimulate the economy (Parsons and Price 1971). While commercial development may stimulate social complexity, Wallerstein (1974) and Wolf (1982) both argued that on the peripheries of commercial systems, social complexity may be reduced. In contrast to the commercial development model, the adaptionist model assumes elite intervention into a specialized economy. Brumfiel and Earle (1987:2) argue for different iterations of the adaptions model. Specialization and exchange occurred through centralized, elite-organized redistribution systems (Sahlins 1960; Service 1962). In areas with high levels of resources diversity, specialization and redistribution would promote productivity, provide some insurance against food failures, and diversify local economies (Friedman and Friedman 1979; Halstead and O'Shea 1989). Accumulated goods in the hands of centralized elite management could be used to sponsor specialized attached craft production and/or public works. In some areas, centralized leadership develops where resources are diverse enough to promote and facilitate market exchanges whereby administrators and intuitions help ensure the peace and security of petty market systems. It is possible that urban growth (as opposed to resource diversity) may have the same stimulating effect on specialization, intensification, and exchange (Brumfiel and Earle 1987). Within the adaptionist models, centralized management may elect to focus on production rather than exchange (Wittfogel 1972; Wright and Johnson 1975), or long-distance exchange (Rathje 1971).

The third model of specialization and exchange identified by Brumfiel and Earle (1987:3) is the political model where economic specialization and exchange were organized by elites who made sure that they were the primary beneficiaries. The fundamental part of the political economy is resource mobilization and the commoner-to-elite transfer of goods where goods were used to maintain inequality, strengthen political alliances/coalitions, and create new institutions of control (2009; Costin and Earle 1989; DeMarrais, et al. 1996; Earle 1987). In many cases, new institutions are created that require managers/administrators to perform civic duties including: levy taxes, military organization, judicial services, and etc. Elites may act as underwriters patronizing attached craft specialization, which can allow for a relative elite monopoly over certain types of goods/articles of social prestige/wealth that allow them to extend the domain of their social and political prestige. Control over commerce and markets serves as a power base for elites. Rulers usurp power by monopolizing accesses to certain resources (food, tools, etc.) and economies are reorganized; the differential access to these goods allows other forms/institutions of power and authority to form (Blanton, et al. 1996; Johnson and Earle 1987). However, in some cases, political elites have appeared without elite patronage of crafts and expansion of the resource base (Gilman 1981). The manipulation of wealth is an essential component of the political model as objects important in social ranking are acquired and transformed. This may be through the use and display of foreign objects whose symbolic importance has been routinized in established hierarchical systems, or through manipulating sacred symbols (DeMarrais, et al. 1996; Peregrine). In the political model, staple finance systems are often replaced by wealth finance systems, although many consider this to be a false dichotomy (Blanton, et al. 1996; Hirth 2009). Differential access to wealth items can be used in attracting, negotiating, and establishing relationships and horizontal alliances with new clients and neighboring allies in regions where sociopolitical relationships and institutions are in flux (Brumfiel and Earle 1987). In addition, prestige objects can be used for establishing vertical relationships and vertical integration (Blanton, et al. 1996). There are many types of vertical and horizontal relationships within the institutions of complex societies as related to political and domestic economies and their intersection with production, specialization, consumption, and status. With any complex system, linkages between institutions can often be tenuous and require constant maintenance. Gender and class groups have different relationships with technologies, institutions, and rulers can influence specialization, political, and domestic economies (Brumfiel 1992; Kent 2000). Competing factions can disrupt, challenge, and modify political economic systems (Brumfiel 1992). Agricultural factors including changes in productivity, diminishing returns, and intensity of use as well as ecological changes can alter how the relationships between staple and wealth finance systems in complex societies (Earle 2000; Tainter 1990). There is more than one kind of relationship that the institutions of complex societies have with political and domestic economies; in some, markets are linked to the effective coordination of production and consumption. In general, market systems in late states support increasingly complex and specialized production in both craft and agrarian sectors (Minc 2006). Organizations and institutions are not fixed entities; rather they are relational and their activities are constantly shaped and continuously evolving as a myriad of factors interact, such as self-aggrandizing elites, commoner gender and class relationships, ecological factors, social factors, changing ideology, and new systems of value brought by local and global exchange.

Complicating the relationship between complex societies and their economies is that in West Africa, multiple type of markets, economic transactions, and systems of value overlap and intersect in diverse ways (Boahen 1986; Guyer 2004; Monroe and Ogundiran 2012; Ogundiran 2002; Richard 2010). Anthropological writing on markets often creates binary distinctions between pre-industrial and capitalistic markets, primitive and modern markets, command economies and free markets, and redistribution and market exchange (Polyani 1944). These categories simplify the complexity of market systems and systems of use and exchange value, particularly in African contexts. Pre-industrial market exchanges, marketplaces, market transactions, and the diversity of market activities can have multiple expressions and be independent of one another (Feinman and Garraty 2010; Garraty and Stark 2010). The levels at which households are integrated into markets and market systems can vary due to the scale, structure, and intensity of markets and market systems (Hirth 2009; Minc 2006). Market exchanges are economic transactions where alienable commodities and supply and demand forces are negotiated along with socially-embedded ideas of fairness and value shaped by social, cognitive, cultural, structural, and political contexts (Feinman and Garraty 2010). Transactions can involve multiple types of exchange media including money and bartered items exchanged via interpersonal communication; the value of goods and services can be set or established through negotiation. Changes in the flow of goods/commodities can affect scarcity and abundance, which can in turn influence how the institutions of complex societies interact with market systems (from regulation to market-autonomous solutions).

If the economy is managed by powerful elites, there may be barriers to commoner participation, goods acquisition, and wealth accumulation. In Benin, the wives of Hueda rulers monopolized specific market activities and goods such as beer (and beer brewing) and the sale of "high-status basketwares" (Norman 2012). In Dahomey, elite women controlled the sale of imported and locally produced tobacco pipes (ibid.). Records and diaries from Bowdich's travels to Akan areas indicate that the full range of European imported goods was not for sale at the markets of Kumase during the Atlantic triangular trade period (Bowdich 1819). For example, the sale of guns, gunpowder, and horses was highly restricted, yet they were widely distributed and used freely in public ceremonies by elite office holders (McCaskie 1995).

Goods can be regulated and exchanged in different ways within market economies (e.g., Hausa vs. Yoruba markets, Cohen 1969; Falola 1991). Historical scholarship from the Senegambia supports the idea of a "dual sellers' market" (Searing 2003). One market dealt with alienable goods and commodities for commoner consumption, while another market dealt in prestige goods valued by elites. In Rattray's Asante ethnography, he observed that some goods and commodities were produced and exchanged in different ways. In general, females were responsible for producing ceramic wares and there were a series of taboos associated with all stages of ceramic production (Rattray 1927). In his ethnographic research of Bono potters, Effah-Gyamfi documented similar restrictions, taboos, and production processes (Effah-Gyamfi 1980). Ceramic vessels could not be exchanged for money, but could be traded for agricultural products (Rattray 1927). The 1602 travelogue from de Marees indicates that women played important roles in market exchange along the communities of the Gold Coast (de Marees 1987 (1602)). Coastal exchange relationships were complex, with different types of taxes and tariffs for market patrons based on gender, class, ethnicity, and occupation (de Marees 1987 (1602); Kea 1982).

Household integration with local, regional, and global economies can vary. Participation and access to markets, market transitions, and goods similarly varies. This is in part based on how households were integrated into and articulated with Bono institutions, as well as the organization and interaction of African regional market systems. Horizontal and vertical commodity flows between markets of the same size, the scale of inclusiveness, and the political congruence or spatial organization of market systems as mapped against geopolitical boundaries affect how goods are produced and consumed, transport costs, etc. (Minc 2006:84). Outside of the major markets of Bono Manso and Begho, it is unknown how deeply the expanding and dynamic global markets penetrated into household activities of those living in the hinterland of Bono Manso. It is unknown if Bono elites were active purveyors of market exchanges and expansion and how political or other institutional polices intersected with market activities. Political-market relations can be simultaneously collaborative and antagonistic (Garraty and Stark 2010). Due to such complex and interacting factors, I use a bottom-up approach to document how different households participated in local, regional, and global exchange networks, how these relationship were mediated and articulated with Bono Manso institutions, and how such relationships continued and/or changed over time.

Many of the daily activities carried out by households in satellite villages may or may not be of interest to political officials and ruling elites (e.g., Cahokia; Mehrer 2000). Alternative exchange networks supplement market economies. Informal economies can serve as an alternative to the formal market with goods traded under the radar by those integrated into a centralized polity but unable to participate in formal markets. Households may rely on a network of kin connections and long-distance exchange partners to facilitate acquisitions and circulate inalienable goods (e.g., Kula Ring) (Small 1995; Weiner 1985). Sumptuary restrictions may limit the acquisition of certain types of objects to elites (e.g., Asante, Erlitou China, Renaissance Florence, Frick 2002; Liu 2003; McCaskie 1995). In cases of differential wealth distribution, sumptuary restrictions are unnecessary as some goods are too expensive for most households to consume. However, economic practices are not only reflections of circumstance shaped by elite activities, but also complex social processes shaped by local preferences that can be transformed in dynamic social settings (Guyer 2004; Ogundiran 2002; Richard 2010; Roitman 1990; Stahl 2002). Contact periods may prompt individuals and groups to redefine status relationships in flux (Leone 1995), often through objects as practices of distinction (Stahl 2002). Muslim and European contact in the Bono area likely created multiple types of economic transactions and systems of value.

There are many types of possible articulations of household production, consumption, and status relationships with Bono Manso institutions shaped by multiple factors. As such, having some understanding of how ideological, economic, and political principles intersect in African contexts is helpful. McIntosh argues (McIntosh 1999) that western notions of power and authority have been inadequately and uncritically applied to Africa. Power itself is a nebulous concept that can have different meanings and be applied in different ways. Following Merquior, Rowlands distinguishes between “power over” and “power from;” the former refers to a coercive power whereas the latter “emanates from sacred tradition, origin, and the very essence of things” (Rowlands 1987:52). “Power from” can be embodied by many types of individuals with specialized knowledge and age/gender sodalities or segments of society. In African contexts, leaders and chiefs often played limited roles in economic exchanges in local and regional economies, and larger roles in political and religious exchanges (Feinman and Neitzel ; Freidman and Rowlands 1977; Taylor 1964). In many African contexts, the wives and children of chiefs and kings were directly involved with subsistence activities and attached craft specialization was rare (McIntosh, et al. 1995). Leaders were often revered for their knowledge and access to goods procured through long-distance exchange (ibid.). The ritual nature of pre-colonial African leadership has been well documented (Blier 1998; Fortes and Evans-Pritchard 1940; Freidman and Rowlands 1977; McIntosh 1999). Ritual leadership often involves non-coercive power fortified through the creation and maintenance of a network of alliances with other ritual leaders. Alliances are geared toward the legitimization and socialization of “morally warranted” power (McInstosh 1999:17). This type of leadership often contrasted with coercive power and was decoupled from economic power over local and regional systems. Political economies are often part of knowledge based systems (as opposed to wealth based).

Coquery-Vidrovich (1972) discussed the “African mode of production;” under systems with land abundance and low agricultural productivity, African states could not emerge by exploiting and controlling surplus. Instead social complexity emerged as individuals and minority groups manipulate goods procured through long-distance exchange. The concept of the African mode of production inspired the “prestige goods” models in which exotic or high-value goods are circulated through a series of personal networks connections. Access to and redistribution of prestige goods assists individuals in maintaining personal networks and alliances with distant elites and may serve as an instrument of political expansion. In addition, the goods acquired via prestige-goods networks helps to materialize an ideology of power (DeMarrais, et al. 1996). Knowledge-based systems of leadership often operate simultaneously with prestige-goods economies (McIntosh 1999).

Households

Household approaches have been useful in documenting domestic practices and their relations to larger regional economic processes (Brumfiel and Earle 1987; Deagan and Koch 1983; Flannery 1976; Hagstrum 2001; Hendon ; Netting 1993; Wilk and Rathje 1982). Following Wilk and Rathje (1982) and Blanton (1994), I define households as social units that participate in task-oriented domestic activities. Households are social units involved in providing structure to daily life and work found in every unit social organization (Goody 1972; Johnson and Earle 1987; Netting 1993). Households are responsible for securing and providing resources for their needs. In general, households strive for autonomy and self-sufficiency in food and craft production (Hagstrum 2001). While households strive for autonomy and self-sufficiency, this goal is difficult to realize. Household economies generally interdigitate with the larger political economy in some way (Netting, et al. 1984). In addition, household actions are embedded and shaped by interaction and integration with a wider social web of relations with kin, fictive kin, friends, and neighbors as well as local and regional institutions (Halperin 1990).

Household activities vary, but tend to include one or more of the following: production, consumption, distribution, reproduction, co-residence, and transmission (Netting, et al. 1984; Pluckhahn 2010). Within a community, households vary in their internal organization, membership, activity schedules, and how they respond to external pressures and opportunities (Agorsah 1988). Households vary in age and gender composition, which influences household activities. Households may or may not be cohesive units. Conflicts can arise between household members (e.g., elder/junior, male/female) (Guyer 1981; Lamphere 1974), and/or domestic economies can be built on reciprocal labor within complementary craft industries (e.g., spinning by women/weaving by men, Etienne 1977; Stahl 1999). In short, household relations are linked to a society's larger economic and political structure (Hendon 1996). Documenting household-level social processes is key to understanding economies and inter-site interactions. Furthermore, for archaeology the activity area and the house are typically the smallest visible economic decision-making units.

African households are malleable units. Guyer (1980:98) argued that household approaches rely on the assumption that the household is a unit that controls resources and makes joint decisions about labor allocation. However, where resources (such as raw materials) and commodities are different, one needs to invest in the social and political activities that grant ongoing or continued access to raw material resources (ibid.:102). In many areas of Africa, the products/income earned from women's and men's labor is kept separate. In the Asante region, women have the right earn a living, the right to own and inherit property, and the right to return to their birth village at any time (Fortes, et al. 1948). In addition, high rates of migration are a common feature of African societies (DeCorse 2012; Guyer and Belinga 1995; Kopytoff 1989; Stahl 2004). When migration is common, household membership can be fluid. When mobility is present, individuals can have access to or control rights/resources and have obligations beyond the household. Household membership can change, particularly during culture contact situations and in urban/rural networks (Kuper 1965; Ross and Weisner 1977; Trigg 2005). During the Atlantic exchange period, large numbers of slaves were brought into Akan and Bron areas and incorporated into lineages and households (Perbi 2004). The descendants of slaves in Akan areas were able to obtain de facto equality by assimilation and economic mobility (Klien1981:39). In addition, there are taboos about disclosing one's origins to another (Klein 1981; Rattray 1923). Klein (1981) argues that by not disclosing one's origins, personal histories and genealogies were rewritten in order to facilitate assimilation into Akan culture. The institution of slavery complicated household formation and membership as forced migration brought new individuals into households without lineage or family connections.

Due to the flexibility of household composition and internal dynamics, particularly in African contexts(Agorsah 1986; Guyer 1981; Wilk and Netting 1984), I look for patterning in material culture in different archaeological units (e.g., features, rooms, floors, and houses) to document variability in household organization over time. This approach provides a useful starting point for examining the variability within and between domestic structures, and will help link household archaeology studies from other world regions to an African case study. Historical evidence from the Akan world indicates that households were responsible for organizing their own labor and domestic production. However, household production was likely balanced with a variety of other activities including corvée labor and taxation. As such households are an enduring social unit, and it is an appropriate unit of analysis for this volume.

Stone and Netting's research of the Kofyar of Nigeria examined how the agricultural activities were seasonally divided with a flexible system of intensification, division of labor, labor mobilization, and labor pooling (Stone 1996). Systems of Kofyar agriculture are analogous to Akan systems of agriculture in terms of crops grown (e.g., yams, millet, sorghum, cowpeas, etc.) wet versus dry seasonality, and some technological inputs. At the same time, there are clear differences in Bono and Kofyar agricultural production including the cash crop agriculture, introduction of new crops, macro- and micro-environmental differences including rainfall variability, soil conditions, technologies, differences in social relations and networks, wage labor, etc. Kofyar research indicates that in seasonal West African environments, agricultural activities are performed on a seasonally balanced calendar. Activities such as field preparation, planting, weeding, and harvesting required different amounts of labor at discrete times of year in accordance with wet and dry seasons. Mean daily labor inputs into Kofyar agricultural systems varied seasonally; however, individuals worked an average of 4.4 hours per day (Stone, et al. 1990:10). Their results are consistent with Cleave's study of labor allocation by African farmers where most adult members of farming families work an average of 120-160 days in the field for 4 to 6 hours per day for a total of 480 to 960 annual hours (Cleave 1974). It is unknown what the specific historical Bono agricultural inputs were, and obtaining that level of detail and specificity is beyond the scope of an archaeological project; however, these figures suggest that the households of Kranka Dada would have been able to engage in multiple types of simultaneously and complementary activities including both food and craft production.

The rhythms and timing of domestic activities can vary depending on household composition, levels of skill, aptitude with specific tasks, and a multiplicity of other social and economic factors. In striving for domestic self-sufficiency, a household may engage in targeted strategies of craft production. Following Hagstrum, the term craft is used here as artisanal work (as opposed to agricultural), and broadly includes the production of architecture, culinary pursuits, ceramics, lithics, metal, textiles, and etc. (Hagstrum 2001:48). As self-reliant and autonomous social units, households have much control over their own schedules which allows them to balance subsistence and craft production activities. Householders generally seek to minimize their non-household obligations; in complex societies, however, duties may include corvée labor, communal labor, and/or taxation/tribute requirements (Brumfiel and Earle 1987; Hagstrum 2001). In tropical and seasonal environments with multiple annual growing seasons, balancing craft production activities and non-household obligations would have required different household labor management strategies arranging schedules, labor, skill, and technical knowledge. Crafts can be produced on part-time or on a seasonal basis. Complementary technologies are the combination of different activities on a daily or seasonal basis (Hagstrum 2001:49). For example, some crafts such as basket-weaving or textile production may be easily interrupted and resumed within the course of a day. Different phases of ceramic production (clay collection, clay processing, forming, etc.) can be performed when agricultural labor requirements are not as great. Raw material for lithic industries can be acquired via embedded procurement strategies (Torrence 1989).

One measure of the degree of economic integration in a society is how much autonomy a household must forego to produce and consume resources (Rathje 1971). Day-to-day activities form the basis of domestic economies and affect how households articulate with larger regional practices (Appadurai 1986; Dobres and Hoffman 1994). Households may have the autonomy to participate in exchange networks and market economies depending on their ability to create a surplus of marketable goods. It is therefore advantageous for the anthropologist to divide the household into different dimensions that can be used to analyze the political economy (e.g., household size, use of space, domestic architecture, status markings) (Bermann 1994:27). Material culture associated with individual households can be used to document the nature and intensity of local and regional interaction (e.g., trade/ imported items, adopted ceramic designs, shared storage features). These attributes can be used to document production and consumption activities between and within simultaneously occupied domestic structures. Because households are the most basic fundamental socioeconomic units, major changes in household patterns over time can be linked to changes within the larger geopolitical sphere (Bermann 1997; Costin and Earle 1989; Ogundiran and Falola 2007; Smith 1987).

Scenarios of Vertical and Horizontal Institutional Integration

The goals of the previous sections were to illustrate how complex household relations and their intersection with political economies can be. More than one type of relationship can occur. Societies and cultures have different developmental paths which can be influenced by a myriad of interacting factors including population density, availability of arable land, ecological conditions, access to resources, exchange relationships, interaction with neighboring groups, individual agents acting in self-interest, kin relations, and inheritance laws.. The creation of institutions is a process. Even though there is considerable diversity, I think it is wise to start with three simple scenarios. Political and economic interaction can be organized in at least three ways: (1) a hierarchical relationship between a capital and subordinate villages with vertical integration, (2) a combination of horizontal and vertical linkages, and (3) complementary economic relationships with horizontal integration (Figure 3.1).

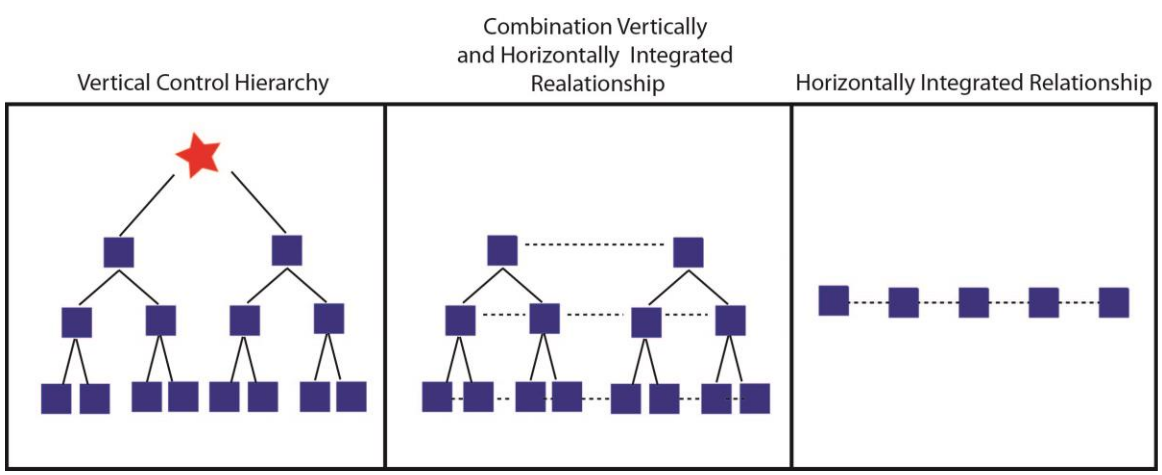

Figure 3.1 Schematic of Vertical and Horizontal Linkages

These models are based on historic and ethnographic data. These relationships may have changed over time. The models are designed to focus attention on the critical axes and key social and economic variables that will aid in documenting how vertical and horizontal relationships articulate with households. The long-term goal is to refine the models with archaeological data; premature integration of historical, oral, and ethnographic sources without working through archaeological methodology and epistemology may lead to questionable reconstructions (Robertshaw 2004; Stahl 2001).

My principle interest is documenting how shifting global, continental, and regional economic and political relations play out at a household level from the sub-Saharan exchange to Atlantic exchange period. The relationships highlighted by the models are of wide interest, and the data from Kranka Dada's houses and features will contribute to rethinking some of the models and inferences being drawn from the excavation of houses in satellite sites below their respective capitals in Mesoamerica, Asia, Europe, and elsewhere. I will use the models/scenarios as a starting place that can build comparative knowledge by evaluating different aspects of daily life and documenting how they are articulated with larger global and regional processes (e.g., political, economic, and ideological). The reality of how political, economic, and ideological institutions articulated with and were shaped by households and domestic economies is complex. However, the elegance of minimal models lies in their ability to parsimoniously capture variables of interest, and at the same time allow for specific anthropological and historical data for explanations as to *how* and *why* different variable are related..

<u>1. Hierarchical vertical integration</u> between settlements occurs when a higher order of control is imposed by installing or promoting administrators/managers (Flannery 1972). Vertical integration occurs when a centralized unit is able to create subordinate elements; a change at one level effects change at other articulated levels (Figure 3.1). In vertical relationships, some social units have unequal access to power or are unable to effectively promote collective action. Authority may be present in multiple forms including political, military, economic, and ideological, although it is unlikely that any specific "prime mover" accounts for the formation and maintenance of vertical control (Earle 1987). Just

as there are different types of leadership in vertical hierarchies, there can be different strategies for implementing vertical control. In many cases, “power over” is established through coercive means (Carniero 1981). This type of vertical integration often occurs rapidly and may be effective in the short term, but may be unstable in the long term (DeMarrais, et al. 1996). In political vertical control hierarchies, authority is delegated to local administrators who act as nodes articulating the different strata in a hierarchical arrangement. Military prowess, by threat or success, may be used to extend the footprint of vertical control political hierarchies. Economic control can lead to the creation of subordinate elements in a vertical control hierarchy as land tenure systems and property rights control and limit production and exchange relationships (Brumfiel and Earle 1987; Gilman 1981). Economic vertical control can occur in areas where the “means of destruction” is controlled (Goody 1980).

Subordinate households and individuals in vertical control systems are more than powerless rubes consigned to a life governed by the changing whims of a coercive or self-aggrandizing ruler. Complex social systems are fragile; establishing and maintaining control is a process that requires constant attention. Safety, quality of life improvements, and increased access to goods and services are benefits for those at the bottom of the social pyramid for being incorporated into vertical hierarchies. In order for vertical hierarchies to be maintained, there must be an establishment and materialization of legitimate power, often expressed through ideology (DeMarrais, et al. 1996). Ceremonies, symbolic objects, monumental architecture, and systems of writing are ways in which “ideologies are materialized” and they can become a source of “power over” and authority. Materialization makes it possible to strategically extend an ideology beyond the local group and to communicate the power of a central authority to a broader population by molding beliefs for collective social action (ibid.;16). DeMarrais et. al. argues that social power is developed through access to specific resources strategically employed in a political strategy (ibid.). The “mobilization of ideology” can take countless forms. Ritual ceremonies can define and integrate groups. Symbolic objects including badges of office or social status can be transferred to individuals, given as rewards, and used to build alliances and supralocal network loyalties. Portable symbolic objects facilitate communication between individuals, settlements, and regions, and can be very effective in long-distance communication and alliance building (Brumfiel and Earle 1987; Hodder). The creation of monumental architecture can transform a space into a central place and create a center for political activity that serves as a symbolic focus of a village, town, or polity.

In contrast to vertical relationship, horizontal or lateral integration occurs when sociopolitical and economic structures are unranked or can be ranked in multiple ways (Crumley 1979; Ehrenreich, et al. 1995; McIntosh 2005). Lateral relations can be complex, inter-dependent, and can continuously change. In a horizontally-integrated relationship, the political, economic, religious, and/or social powers of opposed elements/institutions are mediated or adjusted in response to each other. Low levels of articulation between sociopolitical institutions are expected, but activities can be coordinated between institutions and their personnel. Although non-hierarchical schemes of sociopolitical organization can be quite varied, two modal forms are recognized: semi-autonomous and complementary.

<u>2. Semi-autonomous relationships combined with vertical integration</u> occur when some village-level political, economic, or ideological activities are linked to the institutions in the larger settlement while other activities remain under the control of the household. Ranking systems are flexible and competitive at the level of the village as both vertical and horizontal relationships link settlements together. It is possible for two or more discrete hierarchies exist alongside each other acting as equals, or that poorly integrated social and political structures can have flexible ranking within status hierarchies (Ehrenreich, et al. 1995; Small 1995). This relationship goes beyond the elite/commoner dyad, and the successful maintenance of multiple loci of power and authority are observed (McIntosh 1999). “Power over” and “power from” relationships can be differentially distributed among corporate systems. The combination of vertical and horizontal linkages within structures and institutions acts as a systems of checks and balances on coercive forms of rule.

3<u>. Horizontally integrated/complementary relationships</u> occur when the economic, political, religious, and social institutions have either the flexibility to be unranked or ranked in a multitude of ways, when institutions may be weakly integrated with each other, and when institutions operate autonomously from regional centers (Brumfiel 2008). This scheme is more than "horizontal complexity;" rather, there are continuous shifts of power (Cobb 2009). This scheme may also follow the "wealth-in-people" model in which a community invests in the accumulation of knowledge through the diverse composition of inhabitants (Guyer and Belinga 1995 see also (Bledsoe 1980).

Wealth-in-people was originally proposed in the 1970s as a way of examining control relationships (see Guyer and Belinga 1995:105-106). Social networks with a wide breadth of knowledge bases were actively and dynamically composed at the expense of accumulating material goods and/or surplus. The concept of wealth-in-people has been widely popular in across the social science disciplines of African Studies particularly in anthropology. It has been used to examine slavery, marriage patterns, social networks, power relations, traditional medicine, and oral history in Equatorial Africa (Guyer and Belinga 1995; Kopytoff 1989; Vansina 1962). Wealth-in-knowledge focuses on creating a diverse composition of people with knowledge about ecological, technical, religious, and aesthetic matters. Groups and leaders seek and attract other with knowledge they do not possess (Guyer and Belinga 1995:112).

Chapter 4 Archaeology and History of the Brong-Ahafo Region

This chapter provides an overview of the geography and a summary of the previous archaeological and historical research in the central Volta Basin and Brong-Ahafo region (Figure 4.1). I conduct a brief survey of the sites that were contemporaneously occupied to Bono Manso. Some archaeological research has focused on large town sites, central places, market centers, and/ or areas along primary trade routes. I discuss the West African Trade Project and the historic settlements of Begho, Bono Manso, and the Awhene Koko/ Wenchi area. The exceptions to the focus on towns come from the Banda region and New Buipe excavations (Stahl 2001, 2007; York 1973). One of the goals of Stahl's long-term research was to document daily life within a peripheral area, the Banda sites were located in the hinterland of Begho (Stahl 1999, 2001; 2008). As such, the Banda Research Project documented village sites not directly associated with primary trade routes and central market places.

Each of the previously mentioned sites provides important comparative data enabling me to contextualize and interpret the material from my Kranka Dada excavations. Chronological indicators within and between these sites show some contemporaneous occupations. Additionally, there is evidence for participation in regional exchange networks between these areas. Given the dynamic exchange processes funneling trade goods and commodities through these important sites, their participation in local and regional exchange networks comes as no surprise. My research builds upon the chronological foundations and time-space systematics established by previous researchers. My research also heavily relies and builds upon the reconstructions of previous research, specifically how commodity flows and "global encounters" affected the "rhythms of daily life" from the sub-Saharan to Atlantic exchange era (Agorsah 1976; Anquandah 1982; DeCorse 2001a; Logan 2011; Spiers 2012; Stahl 2001, 2007) . As existing interpretations and data have allowed, I have highlighted each site's relationship to production, consumption, and status differentiation activities as best I can in order to facilitate anthropological comparisons and analysis between Kranka Dada and contemporaneously occupied other sites.

Second, I provide a description of the survey and sites within the Bono Manso region. I combine data from my pedestrian survey as well as Effah-Gyamf's and Anquandah's survey (Anquandah 1964; Emmanuel Effah-Gyamfi 1974). Here, I discuss the Bono Manso excavations in detail to create categories for comparison for my excavations at Kranka Dada. I discuss field methodologies used during my three field seasons.

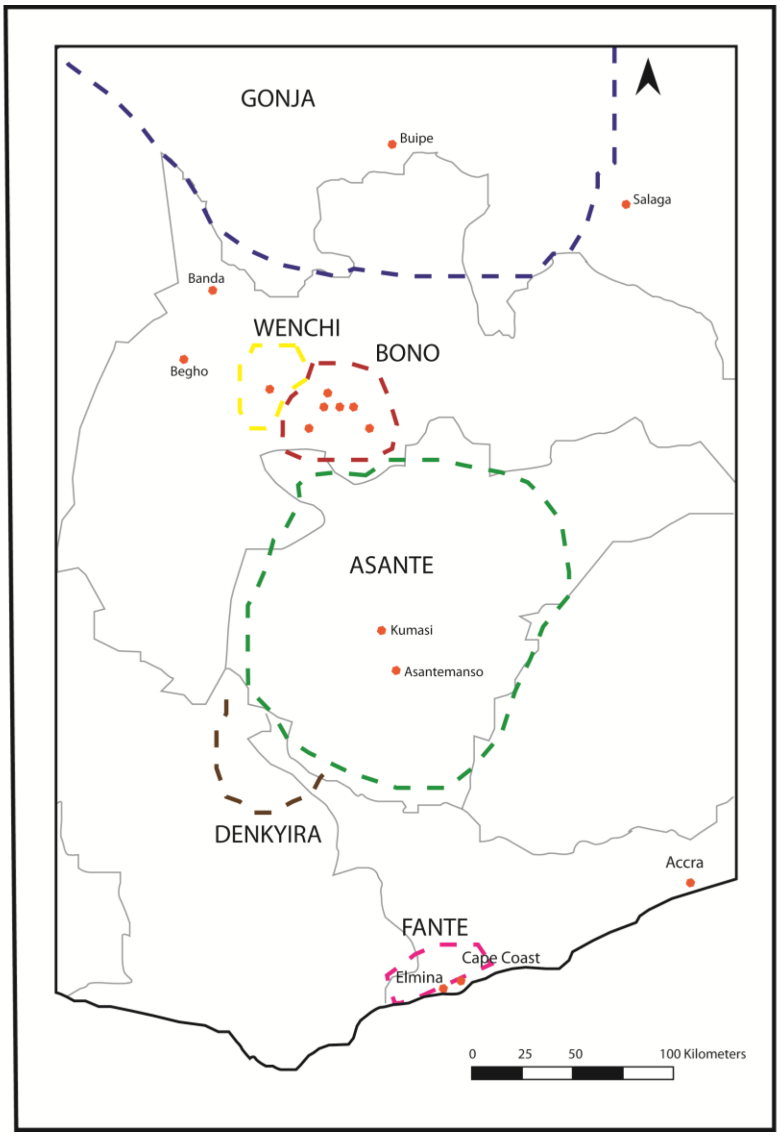

Figure 4.1 Sites Mentioned in this Chapter

Physical Setting

The Bono region is located in the Brong Ahafo region of western central Ghana (Anquandah 1975; Boachie-Ansah 2007). The area's physiography is characterized as the forest-savanna woodland transition in an undulating landscape (Wills 1962). The relief and topography of the Bono Manso area consists of a mixture of low-lying areas about 100 m above sea level mixed with hills and ridges, rising an average of 300 m above sea level (ibid.). The geology mainly consists of Upper Voltarian formations with deposits of lateritic clay, silty clay, shale, and sandstone (Kortatsi and Quansah 2004). Within the low-lying areas, there are often beds of mixed conglomerate pebble beds.

This region experiences both semi-equatorial and savannah climates. Mean annual rainfall is between 1250 and 1400 mm, with the major rainy season between March and July and minor rainy season between September and November. The Tano River is the major drainage in the area. It is a perennial-flowing river that surfaces near Tanoboase which flows south and forms a portion of the Ghanaian boundary with Côte d'Ivoire. There are several smaller and ephemeral drainages within the low-lying areas in the Bono Manso region. Soils in the region are highly suitable for agriculture. Cash crops currently grown in the region include maize, yam, cocoyam, cassava, cowpea, groundnut, plantain, cashew, mango, tomato, and tobacco. Slash-and-burn agricultural practices are common.

Archaeological Background

Bono Manso in modern day Ghana was one of the largest historical settlements in the region perhaps reaching 230 ha (Effah-Gyamfi 1985:29). Archaeological research indicates that it was settled as early as the 12th century CE, and reached its peak between the 15th and mid-18th centuries, when it was conquered by the Asante. Historical and oral sources indicate that Muslim Dyula merchants from the Malian Empire traveled to the Bono Manso region with goods including textiles, salt, and brass to exchange for gold, kola, and slaves (Anquandah 1975; Arhin 1979b; Effah-Gyamfi 1985; Farrar 1996; Goody 1964). Bono Manso grew into a large multi-ethnic merchant center, at least partially in response to new economic opportunities and intercultural contact (Anquandah 1993; Arhin 1978; Emmanuel Effah-Gyamfi 1974; Timothy Insoll 2003). Some scholars have debated the degree to which the Akan area was politically centralized prior to the rise of the Asante state in the late 17th century (Goody 1968; Kuper 1965). Related to these debates about centralization, are divergent views about Bono Manso's economic control over local resources. Some regard Bono elites as having control over the extraction of alluvial gold in nearby rivers (Dumett 1979), neighboring provinces (Smith 2008), or others suggest that Bono elites had no control over gold extraction whatsoever (Garrard 1980).

Bono Manso

Although Begho has received more attention in the historical and archaeological literature, Bono Manso was an early urban center and an important trading town located at the forest savanna transition (Effah-Gyamfi 1979; 1985). Bono Manso was a large historical settlement in the southern portion of the Volta basin, and its residents participated in regional and sub-continental exchange networks along with other large sites like Begho, Kumase, Awhene Koko, Kintampo, Buipe, Daboya, and others (Bravmann and Mathewson 1970; Daaku 1972; Posnansky 1973). Economic historians have argued that Bono Manso created the terminal node of the primary trade route that linked the Middle Niger with the Akan areas (Boahen 1986). Bono Manso had a strategic location, and was a major settlement located at the forest-savanna margin, at the southern limit of travel for pack animals to move without risk of trypanosomiasis (due to tsetse fly distribution).

Effah-Gyamfi (1974; 1979; 1985) conducted his masters and doctoral research in the Bono Manso region from, and was awarded the first doctorate in archaeology offered by the University of Ghana. His master's thesis research was mainly focused on identifying archaeological sites that were featured in oral history and creating a regional chronology (Effah-Gyamfi 1974). Effah-Gyamfi was interested in exploring Bono Manso, as the urban center of one of the first precolonial states within the West African tropical forest (1979; 1985). Through survey, Effah-Gyamfi argued that Bono Manso was the apex settlement of a four-tiered settlement hierarchy with a series of provincial capitals, towns, and villages serving as subsidiary units linking the urban space with its hinterland. The Bono area was the northern most Bron area, a boundary between southern Ghana with its similar Akan cultural traditions and northern Ghana non-and mixed-Akan traditions (Arhin 1979b; Posnansky 1979a; Wilks 1982). Effah-Gyamfi was the first to create a systematic map of the surface of the site (Effah-Gyamfi 1985:30). He calculated that the site covered an area of 2.3 km^2 (Effah-Gyamfi 1985: 31). From 1973 to 1976, Effah-Gyamfi conducted doctoral excavations at Bono Manso as part of the West African Trade Project under the supervision of Merrick Posnansky. Effah-Gyamfi's research abruptly ended due to his untimely death after his completing his dissertation. As such his promising career was cut short. He identified 13 sites. Using the ceramic rim typology he created from Bono Manso excavations, he created associated dates based on ceramic finds at the sites with and excavations from 2 open air sites and surface artifacts from the remaining sites[13]. Using the ceramic rim typology he created from Bono Manso excavations, he worked to assign dates to the other 12 sites. Artifacts from regional sites were obtained mainly through surface collections, although some sites were targeted for test excavations.

At Bono Manso, the site was divided into 254, 100 meter squares (Effah-Gyamfi 1985:31). Fifty-five were randomly selected for surface collections (21.7%). Through this process, Effah-Gyamfi identified both high and low mounds. High mounds were roughly rectilinear and approximately 2.5 m high with an average area of 30 m (Effah-Gyamfi 1985:32). Low mounds were often conically shaped with lower densities of ceramics (ibid.).

Unfortunately, the research from Bono Manso ended at the beginning of a promising career. Like many archaeological projects, the research from Bono Manso answers some questions, but new questions arise. Bono Manso did not appear in Arabic or European historical documents in the same manner as Begho, nor has it received the same amount of archaeological attention. However, Effah-Gyamfi's research provided some tantalizing glimpses into daily life in a large town along a primary trade route from the 13th-18th centuries CE. The early phase of occupation is thought to have had a large population although likely dispersed and less compact than later phases. The frequency of imported trade goods was low. Some copper/ brass was recovered, but it may have been

[13] Some test excavations were conducted at Amowi I and II (Effah-Gyamfi20}. Some of the surface artifacts were collected by James Anquandah during his 1960s survey of the region (Effah-Gyamfi 1985:27)

procured though down-the-line trading. Regional ceramic imports from polities and towns further away were recovered in larger frequencies in Phase I than subsequent periods of occupation. Steady population growth led to the rapid population expansion in the 15th and 16th centuries (Effah-Gyamfi 1985:214). It is also likely that growing towns attracted emigrants, contributing to steady population growth.

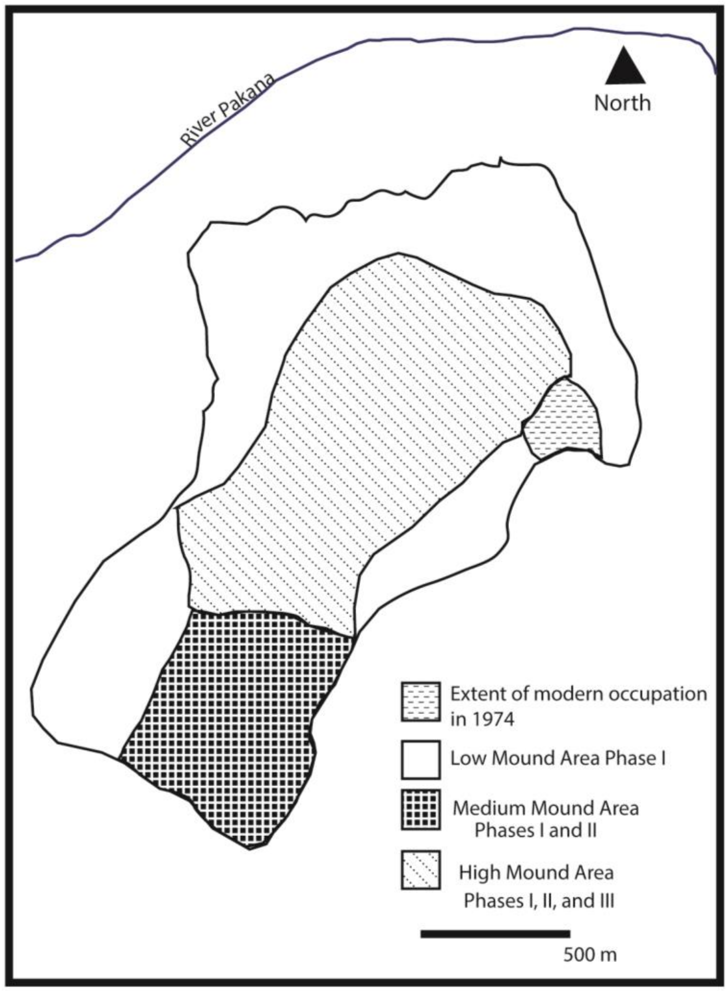

Figure 4.2 Plan View of Bono Manso (Effah-Gymafi 1981:30)

Since one of his main goals was to establish a chronological sequence for the area, Effah-Gyamfi created an excavation strategy to sample different areas of the site. He excavated in both trenches and $2m^2$ excavation units. Eight separate areas of the site were selected for intensive excavation. Excavations targeted the four types of features identified: high and low mounds, an iron smelting industrial site (Abam), and the horse path (1974; 1985). The site was divided into three areas with different occupational phases based on radiocarbon dates from charcoal and pottery styles. Four areas and types of features were identified: low mounds, high mounds, horses' pathway, and an iron working industrial area (Effah-Gyamfi 1985:40). A total of nine radiocarbon dates were obtained from the 1970s excavations (ibid.:204). Calvocoressi and David dated additional materials from multiple Ghanaian sites including Bono Manso (Calvocoressi and David 1979). Dates and population estimates are provided in Table 4.1. Three phases of continuous occupation were identified. Low mounds were associated with the earlier phase I occupation; whereas the high mounds were associated with the later phases of occupation (Figure 4.2). In addition to the mounds, Effah-Gyamfi documented the horses' pathway (*aponkowan*) (Effah-Gyamfi 1985:76). There was no stratigraphic evidence that the horses' pathway was intentionally created, and it may have been a pathway used by the residents of Bono Manso and other hooved animals (bid.). It is mainly through oral history that the pathways were associated with horses (Effah-Gyamfi 1974). According to oral traditions, horses were acquired from northern merchants and used solely by Bono royalty (ibid.). The industrial area was located approximately 100 m on the eastern boundary of Bono Manso near the Abam stream. There are 6 large slag mounds similar to the slag mounds outside of Begho. The slag mounds vary in size, but range from .75 to 1.2 m in height each approximately 25 m wide (Effah-Gyamfi 1985:79). Remnants of smelters were documented as burned daub and tuyere fragments associated with the slag mounds. The single radiocarbon date associated with the Abam industrial area was anomalous when compared to the occupational sequence at Bono Manso. A radiocarbon date from charcoal of 320±30, cal. 372 from the iron smelting site may be a reflection of old wood, and may not accurately date the use of the industrial iron smelter area. Within the site itself, six mounds were excavated not including the horses' pathway and the iron smelting area.

Table 4.1 Overview of Bono Manso Occupational and Population History

Bono Manso Occupational Phases	Dates	Radiocarbon Dates	Population Estimates[14]
Phase III	17th-18th Century CE	1710±75, (240±75 BP)* 1710±75 (240±75 BP)+ 1760±75 (190±40 BP)+	ca. 8,000
Phase II	16th-17th Century CE	1520±75, (420±75 BP)* 1635±30, (315±30 BP)* 1520±30 (430±75 BP)+ 1635±30 (315±30 BP)+	ca. 10,0000
Phase I	13th-16th Century CE	1235±85, (715±85 BP)* 1370±75, (570±75 BP)* 1530±30, (430±30 BP)* 1585±70, (385±70 BP)* 1615±70, (335±70 BP)* 1380±75 (570±75 BP)+ 1235±75 (715±75 BP)+ 1595±70 (335±70 BP)+ 1585±70 (365±70 BP)+ 1530±30 (420±30 BP)+	ca. 4,600
Abam (Industrial Iron Smelting Site)		320±30, (1630±30 BP)*	Nil

* Radiocarbon dates from Effah-Gyamfi 1985: 203-204
+ Radiocarbon dates from Calvocoressi and David 1979

Table 4.2 calculates the area and chronology of the each of the mounds excavated. A total between 79 and 105 square m of Bono Manso was excavated, or approximately .004565% of the site. Effah-Gyamfi's Table 9 (1989:88-91) lists all non-ceramic finds recovered from his excavations at Bono Manso. I have attempted to create some comparable data by examining his specific finds from his Table 9. However, it is difficult to create meaningful comparisons with artifact frequencies by time periods because there are major differences in total area excavated. It may be better to examine the differences in artifacts between Bono Manso (presence or absence) within occupational phases.

[14] Population estimates are provided by Effah-Gyamfi 1985:213

Areas 104 and 159 received the largest excavation units; they covered an area of 54.5 out of 79.5 square meters (69%). Higher frequencies of artifacts associated with participation in long-distance exchange networks were recovered from these two contexts. Similar to Begho, Bono Manso artifact frequencies of prestigious items including copper/brass, beads, and ivory are low (n=55). These items were mainly recovered from BM 104 and BM 159 high mounds from temporal Phases II and III.

Low frequencies of trade items were recovered from Phase I contexts. Utilitarian items made from iron (e.g., arrow points, bracelets, knives, and spoons (n=14)) were recovered from the same spatial and temporal contexts for the most part. Grinding stones were recovered from the same BM 104 (n=17) and BM 159 (n=49) spatial contexts. The grinding stones occurred in each of the chronological phases. Twenty-nine grinding stones were recovered from Phase I depression in BM 159, which may have been a cache. Smaller quantities of grinding stones were documented in BM 60 and BM 245. Fifteen spindle whorls were recovered from a single context in area BM 139.

A total of 347 smoking pipes and smoking pipe fragments were documented. Some were recovered during excavations, but many were recovered as part of surface collections. The distribution of smoking pipes were associated with mounds from chronological phases II and III from the 16th century onward. Again, Effah-Gyamfi's main goal to establish a chronology, and as such he compared the base styles of Bono Manso smoking pipes to typologies from other parts of southern and northern Ghana. Ozanne's (1963) typology of smoking pipes from coastal Accra and Shai does not easily map on to smoking pipes from the interior (Afeku 1976; Boachie-Ansah 1986; Campbell 2006; Effah-Gyamfi 1985). Effah-Gyamfi (1981) was careful to not only equate the smoking pipes with tobacco, and though that smoking was an activity that predated Atlantic trade. He suggested that the variety of smoking pipe shapes indicated a complex network of exchange relationships, rather than pipe styles diffusing from the coast (ibid.). In spatial terms, smoking pipes were widely distributed across the later phases of Bono Manso's occupation, which may indicate fairly widespread access to tobacco. However, the collection strategy used for smoking pipes was different than strategies for other materials.

Ceramics provided further evidence for interaction and trade, some of the ceramics recovered from Bono Manso excavations. Some resembled ceramics from other sites in the Volta Basin, Begho, Ahwene Koko, and New Buipe in all three occupational phases suggesting some levels of trade between these areas (Effah-Gyamfi 1985). Some of the vessel forms documented are thought to be copies of metal vessels (based on carination) illustrating Sudanic connections (ibid.:217). Although spindle whorls were recovered in small quantities, Effah-Gyamfi has documented that oral traditions mention high quantities of cloth were produced for exchange in the Bono and Banda regions.

Table 4.2 Mounds Excavated at Bono Manso

Area Excavated	Mound Size	Chronological Phase	Excavation Strategy
BM 104	High	Phase I Phase II Phase III	Trench: 1.5 x 15 m
BM 60	High	Phase I Phase II Phase III	1 unit at $3m^2$ 1 unit at $1m^2$
BM 159	High	Phase I Phase II Phase III	2 trenches at 1.5 x 6 m 1 unit at 2 x $3m^2$ 3 additional units: 1 unit at 1 x $3m^2$ 1 unit at $2m^2$ 1 unit at $1m^2$
BM 139	Low	Phase I	1 unit at $2m^2$ 1 unit at $1m^2$ 1 unit at $.5m^2$
BM 171	Low	Phase I	1 unit at $1.5m^2$
BM 245	Low	Phase I Phase II	2 units at $1.5m^2$

Consistent with many Iron Age sites in the region, ceramic sherds composed the bulk of surface and excavated material at Bono Manso (ca. 99%) (Effah-Gyamfi 1985:101). Sherds were recovered from excavations as well as controlled and uncontrolled surface collection contexts. Effah-Gyamfi analyzed a total of 16,888 sherds, although more were recovered. He identified eight types of ceramic wares. Bono Phase I, II, and III wares accounted for the bulk of the ceramic assemblage, and the Begho, Silima, Micaceous, and Awhene Koko wares were recovered in lower frequencies and presumed to have been regional imports (Table 4.3) (Effah-Gyamfi 1985:101-169). All eight ceramic wares were present in each of the three occupational phases of Bono Manso, although they were recovered in different proportions in each time periods. Phase I, II, and III ceramics were classified as a continuously evolving and locally produced good, indicating a Bono Manso ceramic tradition (ibid. 1985:130). The local wares (Phase I, II, and III) were the most abundant within the assemblage. Phase I ceramics were present in Phase II and Phase III contexts, but accounted for 10-15% of the sherds in each subsequent phase. Phase II wares were most common in Phase II (60-70%), but present in Phase I contexts at low levels (less than 10%) and Phase III (30-40%). Finally, Phase III ceramics were most common in Phase III contexts (40-50%), but present in Phase I (less than 10%) and in Phase II (approximately 10%). Effah-Gyamfi argues that the presence of Phase I, II, and III wares within different occupational phases can be attributed to the continual evolution of local pottery styles (Effah-Gyamfi 1985:43). He does not discuss the possibility of post-depositional mixing. Different types of Phase I ceramics were fairly widespread throughout excavated areas, leading Effah-Gyamfi to conclude that “in the earlier part of the town’s life, the people at Bono Manso used virtually the same pottery types.” (ibid.1985:119). Forms include jars with restricted and non-restricted openings, open bowls and inverted rim bowls; bowls were less abundant than jars.

Effah-Gyamfi’s analysis of Phase II wares suggests close linkages between Begho and Bono Manso. Pottery from both areas shared composite decorative motifs, similar morphology, and vessel finishing techniques. Maize cob roulette was a common decorative motif in Phase II, but not Phase III ceramics, leading Effah-Gyamfi to argue that (pending additional research), maize cob roulette may be a useful temporal marker. Phase II sherds recovered from excavated contexts indicated different proportions of vessel forms at different times. This may indicate that as the site’s population density increased, the settlement became more nucleated, and areas of the built environment became more differentiated. Households and artisans may have divided space and labor to utilize different areas of the site and/or mounds. Differences in vessel forms dispersed in time and space may reflect some functional site attributes such as areas used for cooking, storage, crafting, and special uses. How intra-site status relationships articulated with the spatial distribution of activities associated with ceramics is unknown.

Phase III vessels forms were mainly jars with slightly restricted orifices and some open bowl forms. Changes in vessels forms may indicate changes in activities and use of space. The spatial distribution of the different forms of Phase III wares in not discussed by Effah-Gyamfi, and I cannot make inferences about how spatial organization and utilization of space relationships were created, mediated, perpetuated, and changed from previous periods. Phase III wares were very similar in wares from Awhene Koko (neighboring polity) in terms of vessel form and decorative motifs suggesting interaction between the two areas. Muscovite inclusions were common in Phase III wares, but not in the previous phases. Ethnoarchaeolgical ceramic research indicated that Akan potters do not intentionally add temper; all inclusions are likely associated with the natural inclusions in the clay source utilized (Effah-Gyamfi 1980:108). Whether or not this was the activity pattern for potters at Bono Manso is unknown; however, each of the ceramic wares from the different occupational phases is associated with differences in inclusions. Systematic observations documenting types, frequency, or density of inclusions is not available. How this related to raw material availability, innovation, regional interaction, potter’s intention, emigration into Bono Manso, and exchange with the hinterland is unknown. There is no quantitative or qualitative data available for the ceramic assemblage at Bono Manso that would help elucidate the types of activities represented or the spatial and temporal distribution of different activity areas.

Regional ceramic imports including ceramics from Begho and Silima were treated as present or absent within the occupational phases Bono Manso ceramic analysis (Effah-Gyamfi 1985). No published data are available about the spatial distribution of imported ceramics. A total of 568 sherds of Begho wares were recovered at Bono Manso accounting for 3.4% of the excavated assemblage (Effah-Gyamfi 1985:140). Of the 568, 63 rims (11.1%) were used to create a vessel form typology. Jars (n=35) and bowls (n=28) were imported in roughly equal proportions. However, out of the 63 Begho specimens, the majority were recovered from Phase I contexts (52%) with Phase II (25%) and Phase III (22%) accounting for less. Phase I imports slightly favored jars over bowls

(1.5:1 ratio) as did Phase II (3.6:1 ratio). Phase II imports favored bowls over jars (3:1 ratio). How these vessels were used at Bono Manso is not documented. It is not clear if imported Begho vessels were used for cooking, serving, or other special purposes that would indicate food production, consumption, or status differentiation activities. Silima or design painted wares was first classified by York as part of the New Buipe excavations (York 1973). Since York's 1973 report, Silima wares have been documented at several sites throughout the Volta Basis (Stahl 1992). Some of the design painted wares recovered from Bono Manso resembled ceramics from New Buipe, while others showed no resemblance (Effah-Gyamfi 1985:150). Design painted wares may have been manufactured at multiple sites/areas and traded widely within the Volta Basin (Bravmann and Mathewson 1970; Effah-Gyamfi 1985; Stahl). Of the Silima wares, 128 rim sherds were recovered resulting in 17 types classified by Effah-Gyamfi (1985:151-161). Quantitative data classifying the spatial and temporal provenience of each Silima ware sherd is unavailable. Seventy-nine of the Silima ware rim sherds were from jars (62%), and were recovered from all three occupational phases. The remaining 49 bowl rims (38%) were similarly recovered from all three occupational phases. While exact frequencies of Silima vessels from occupational phases in unknown, Effah-Gyamfi reported that the majority of Silima ware sherds were recovered from Phase I contexts.

Thirty rim sherds of Micaceous wares were recovered from all three occupational phases (ibid. 1985:161). All Micaceous rim sherds were from closed vessel forms and are very similar to the forms recovered from Begho. The final type of imported wares was from Awhene Koko, the polity located between Begho and Bono Manso along the primary trade route. A total of 446 sherds were recovered, accounting for 1.9% of the analyzed assemblage. Effah-Gyamfi reported that Awhene Koko wares were similar to the Bono Manso Phase III wares, except that ceramics from Awhene Koko were poorly fired, friable, and that horizontal grooved/ incised decorative motifs were more common than the wavy lines from Bono Manso (ibid. 1985:167). Awhene Koko wares were most abundant in occupation Phase I of Bono Manso. Out of the 43 Awhene Koko rim sherds, 9 vessel types were created; all jars (ibid. 1985:165-167). Similar to the locally produced Bono wares, the spatial and temporal distribution of the body sherds from imported vessels were not discussed by Effah-Gyamfi, and as such I cannot make inferences about how the spatial organization and utilization of space that could help clarify production, consumption, and status differentiation activities over time and space. Again, there are no quantitative or qualitative data available for the ceramic assemblage at Bono Manso that would help elucidate the types of activities represented or the spatial and temporal distribution of different activity areas. However, as previously mentioned, Effah-Gyamfi's research was geared toward establishing a chronology of the area, in order to examine urban developments in other areas of West Africa. He primarily focused on creating a descriptive and temporal typology using rim sherds, paste descriptions, and descriptions of decorative motifs that could be used to obtain dates of sites within the Bono Manso region.

Table 4.3 Description of Ceramic Wares from Bono Manso

Ceramic Ware	**Description**
Phase I	Sandy paste without quartz or laterite inclusions Slightly porous Predominantly hand-smoothed finish Decoration on a small percentage of sherds Mainly discontinuous, horizontal grooves/ incisions Some fine cord roulette Decoration mainly restricted to necks 15 different types, based on 131 rim sherds
Phase II	Sandy paste with quartz and laterite inclusions Smudging was a common feature Burnished finishing technique more common than Phase I Decoration often associated with burnished vessels; mainly cord roulette with grooving; maize cob roulette Carination shape common More angled profiles than Phase I 15 different types, based on 153 rim sherds
Phase III	Very distinctive with large muscovite inclusions (up to 2.5 cm) Burnished finishing technique more common than hand-smoothing Red slip absent Decoration common with many composite decorative motifs Curvilinear, parallel, wavy banded incisions Decoration mainly restricted to necks and shoulders 12 different types, based on 115 rim sherds
Begho	Sandwiched black and brown paste with lateritic inclusions Rim, neck, shoulders were red slipped and burnished Decorative motifs mainly fine-cord roulette and fine-cord roulette with incisions

Silima	Design Painted Ware Diverse vessel forms Hard paste with a concrete texture Thicker and longer rims than locally made ceramics Round or beaded lips
Micaceous	Coarse texture Exterior surface has a thin slip with a high concentration of muscovite Interior surface frequently red slipped Comb-stamped decorative motif on the neck or rim
Awhene Koko	Very similar to Phase III in profile and decorative motifs Porous fabric with quartz and mica inclusions Texture more likely to be friable Poorly applied red slip may peel

A total of 329 animal bones were recovered at Bono Manso. Of this sample, approximately 95% were too fragmentary to be diagnostic (Effah-Gyamfi 1985:98). The remaining 5% are listed in terms of spatial and temporal presence (Table 4.4). The majority of identifiable faunal remains were recovered from two main contexts, BM 60 and BM 159. Without more detailed information about counts, weights, family, and skeletal part from each unit/ mound, it is difficult to make inferences about Bono Manso food production, consumption activities, and inter-and intra-mound status differences. The species identified from the 1970s excavations are similar to faunal remains from the Banda excavations as well as the high percentage of fragmented and unidentifiable remains (Stahl 1999:27-35). The combination of wild species and domesticates suggests mixed strategies of opportunistic hunting, skilled hunting, and animal husbandry. Similar to the interpretation of faunal remains from Banda excavations, some of the wild species such as grasscutter (*Thryonomys swinderianus*) would have been attracted to agricultural clearings (ibid.). Snails (*Achatina achatina*) were opportunistically and seasonally hunted. Roan antelope (*Hippotragus equinus*), porcupine (*Hystrix cristata*), and bush pig (*Potamochoerus borcus*) would have required more skill and experience. Goat (*Capra hircus*) and chicken (*gallus gallus*) presence indicate that some domesticates were incorporated into the diet. The potto (*Perodicticus potto*) is a small strepsirrhine primate. Potto remains were recovered from Phase I (13-16th century) of the Bono Manso excavations. Smaller primates were identified more frequently in the Kuulo phase (14-17th century) than the other occupational phases of the Banda excavations (Stahl

1999:29). The frequency of potto remains from Bono Manso is unknown, but hunting of small primates during the earlier phases of Banda and Bono occupations may indicate similar use of animals. Plant remains were not collected as part of Effah-Gyamfi's study.

Table 4.4 Faunal Remains from Bono Manso (frequencies not available)

Scientific Name	Common Name	Area Excavated	Chronological Phase
Gallus gallus	Chicken	BM 159	Phase III
Canis familiaris	Dog	BM 159	Phase II
Hystrix cristata	Porcupine	BM 60	Phase III
Thryonomys swinderianus	Grasscutter	BM 60 BM 159	Phase II Phase I
Perodicticus potto	Potto	BM 159	Phase I
Achatina achatina	Snail	BM 60	Phase II
Hippotragus equinus	Roan antelope	BM 60	Phase III
Potamochoerus borcus	Bush pig	BM 159	Phase I
Capra hircus	Goat	BM 60 BM 159	Phase II Phase II

Bono Manso architecture differed by chronological phase and mound size. Low mounds were generally no more than 1.5 m high and not more than 25 m across (Effah-Gyamfi 1985:67). The stratigraphy of the low mounds was more variable than the high mounds. Low mounds did not have central depressions typically associated with courtyards. Low mound deposits were likely the remains of round or square structures. Based on an ethnoarchaeolgical study of wall debris in 1976, Effah-Gyamfi reported that wattle-and-daub structures typically had daub without broad grooves. Daub recovered from the Phase I structures in both the low and high mounds lacked broad grooves, and were thought to be the daub from wattle-and-daub buildings. Postholes were the only architectural features documented from the low mounds (Effah-Gyamfi 1985:76). High mounds were at least 2.5 m high and 30 m across (Effah-Gyamfi 1985:42). They were rectilinear in shape and each had two summits at right angles to each other with a central depression, thought to be a courtyard. Although some of the high mounds varied in depth, cultural deposits were continuous to the subsoil suggesting a continuous occupation. Effah-Gyamfi reported that high mounds appeared to represent two or more houses built successively; although the BM 159 units showed some shifts in intra-mound structure placement. Daub from occupational Phases II and III had grooves and are associated with terra pisé pooled mud architecture, known locally as *swish* [15]. Architectural features documented in the high mounds include red clay wall stumps, depressions, postholes (some large with diameters between 15-27 cm), and a cistern (Effah-Gyamfi 1985:59). Based on the existing data, it is not possible to examine how architectural differences between occupational phases related to mound function or social status of the occupants. Structure sizes may have increased in Phases II and III due to reorganization in family structures and labor organization. Swish architecture is often associated with Sudanic connections as a northern style of architecture. Changes from wattle-and-daub to more substantial swish may be related to increasing interaction with merchant groups and sub-continental exchange networks (Posnansky 1973; Prussin 1986). The exception may be with the high mound at BM 60. It was large and covered an approximate area of 48 x 45 meters^2; the summit was more platform shaped than the other large mounds (Effah-Gyamfi 1985:49). Based on oral history, BM 60 may have been associated with the horses' pathway (ibid.).

A small number of burials were documented at Bono Manso. Three adults and one infant burial were recovered from the trench at BM 159. All of the adult burials were female and approximately 30 to 40 years of age (Effah-Gyamfi 1985:66). One female was interred with an eastern orientation in a crouched position. One offering bowl was placed in her left hand, with a second by her knees. Eleven beads were around her neck. The second adult burial in the same trench had a western orientation. A bowl was placed 20cm north of the cranium. Burial II had a healed pathological fracture on the right tibia. The cranial and rib elements of an infant were recovered from BM 159. The remains were placed in a ceramic vessel and buried. None of the teeth had erupted, indicating that the person died at a very young age, likely less than 6 months. BM 159 is associated with all three occupational phases, and it is not entirely clear which period the individual burial were associated with. The third burial was recovered from BM 104 and associated with Phase I (Effah-Gyamfi 1985:66). Like the other adult burials, the skeletal remains indicated she was female from the ages of 30 to 40. She was interred in the same

[15] See McIntosh, R. 1976 for a discussion of mud wall construction and decay from Hani located near Begho

crouched position with an eastern orientation. Three small Phase I bowls were associated, one placed in the hands, one by the knees, and one 25cm from the knees. The crouched position of the burials suggests that each of the adult individuals was interred within a burial chamber (Effah-Gyamfi 1985:67). The associated grave goods with the burial bowls were not observed in the Brong quarter of Begho, Buipe, or Banda. Effah-Gyamfi named this the "burial bowl tradition" and suggested pending additional excavation that it may be exclusively associated with Bono state practice. Bono oral traditions indicate that outside of the royal family, there were no public ceremonies for burials (Effah-Gyamfi 1974; 58-59). The commoner dead were usually placed within vertical chambers in their homes with their most important items including clothing, food, and a cup used for drinking along the journey to the underworld (*nsamankuruwa* dead man's cup) (ibid.). As Bono Manso was a large site occupied for centuries, it is difficult to make generalizations about how widespread and consistent these burial activities were and how burial reflected status differences. The human remains documented as part of the Bono Manso excavation do provide good comparative cases for human remains excavated in future research.

Phase II was the height of occupation. Bono Manso transitioned from a "*loose political unit*" into "*a stronger political authority*" (Effah-Gyamfi 1985:216). Evidence for trade and interaction increased during Phase II. The evidence for Sudanic contact illustrated by increases in copper/ brass imports, architecture changes, and oral history records the royal use of horses (Effah-Gyamfi 1985). New vessel forms appear that were thought to be copies of brass vessels (Effah-Gyamfi 1985; Ozanne 1962; Posnansky 1973). Brass vessels are discussed in detail elsewhere, but they are imports that take on ritual properties and their presence deserves special consideration. Into the Phase III transition, there was some population decline although the higher standards of living and wealth accumulation from Phase II continued into Phase III (Effah-Gyamfi 1985:214). Oral history may provide some insight into population decline; Effah-Gyamfi informants suggested that a great famine adversely affected Bono Manso during Phase III occupations. He correlated the great famine with the death of a Bono king, Brempong Katakyira and the Gonja Wars providing a date of the 16th to 17th centuries. Precipitation records from Lake Bosumtwi indicate a persistent drought from the 1400s through the 1700s (Shanahan, et al. 2009).

During Phase III occupations, the Atlantic markets opened and coastal areas transitioned from once peripheral areas at the end-of-the-line within sub-continental exchange networks to core areas important in global exchange networks. Although coastal areas never totally replaced overland trade, once important forest-savanna market centers were somewhat eroded. In addition, oral history documents that many commoners grew weary of the greed of the Bono royal family in terms of their high taxes/ tariffs, unfair demands, and their indiscriminate killing of commoners who failed to comply with royal demands. There is a Bono proverb said to date to this time period, "*to meet a horse is to meet your death*". Sumptuary restrictions meant that only Bono royals were permitted to travel by horse. Bono oral history reports that on the eve of the 1722/23 Asante invasion, many Bono inhabitants had already begun migrating to other areas including the coast (Effah-Gyamfi 1975; 1976; 1985). It is likely that a constellation of factors lead to population decline. At the same time of population decline, evidence for participation in regional and global exchange networks expands. Higher frequencies of ivory and copper/brass were recovered. Tobacco pipes were widely distributed across much of the site. Spindle whorls were recovered suggesting the adoption and local production of textiles. Artifacts and archaeological deposits suggest "*a continuity of a tradition and a reflection of the political, social and economic dynamism [at Bono Manso]" (Effah-Gyamfi 1985:218). Effah-Gyamfi argued that Bono Manso served as the northern boundary between the "pure Akan" and the "mixed and non-Akan" groups to the north (ibid.:219). In spite of the addition of new technologies including brass, textile, and architecture, and the addition and incorporation of new foods and items, some Bono practices showed continuity over time including burial activities in terms of preparation and grave goods.*

At the same time, details from the Bono Manso archaeological record are incomplete and additional research is needed. Information that could be used to determine class or ethnicity between occupied areas is missing. Differences in artifact quantities and types are helpful, but in order to create meaningful inferences about inter-mound differences that could point to class versus ethnic differences, more data are required. Ceramics could be examined for functional attributes, and the spatial and temporal distribution of cooking, storage, alcohol, and serving vessels could provide *some insight into the domestic economies as many sub-continental and global processes coalesced on the inhabitants. Additionally, more faunal and botanical information about food practices could point to dietary changes, preparation and consumption changes, how new foods were incorporated into the diet, and how status and change reflected personal taste, class/status, or ethnicity.*

More detailed spatial and temporal information of architectural features and associated artifacts could help in the identification of different activity loci such as craft production areas. The range of activities and crafts could be determined as well as their organization: division in labor, seasonal vs. full time activity, complementary versus reciprocal craft organization. It would be interesting to know how craft activities were organized in time and space by autonomous households, by full-time specialists, attached specialists supported through elite patronage, or other possible scenarios. Organization of craft activities may have been diverse; one scenario does not preclude the existence of another. Crafting organization may have varied by material (brass, ivory, textile, ceramic production, etc.). Effah-Gyamfi relied on oral traditions as the means of framing and guiding his archaeological research (1974). We know little about the political, economic, and religious institutions that structured the behaviors at Bono Manso and how they affected the daily lives of its inhabitants. Outside of chronological data, no data are available for the articulation and integration of Bono Manso institutions and its hinterland.

Begho

Begho was a large trading town located along the primary trade routes that linked the Middle Niger cities to the Akan gold fields (Odoom 1979; Posnansky 1971, 1975, 1980; Wilks 1961, 1982). Begho was mentioned as a center of long-distance commerce within European documents and Arabic *tarikhs*, the earliest historical texts in sub-Saharan Africa (Agorsah 1973; T. Insoll 2003; Posnansky 1977; Wilks 1961). Begho has been referred to as Bighu, Beco, Bew, and Bitu in the literatures and historical documents (Wilks 1961). Similar to the claims about Bono Manso made by Effah-Gyamfi (Effah-Gyamfi 1985) and Boahen (Boahen 1966), Posnansky reported that Begho was the southern limit for caravan traffic due to its location 20 km north of the forest (Posnansky

1973, 1977). Begho is an area with deep connections in long-distance and exchange networks, although the term Begho most likely refers to a region or area rather than a discrete market locus (Stahl 2001). Archaeological and historical evidence indicates that the inhabitants of Begho participated in regional and global exchange networks, trading durable goods and commodities such as gold, kola, slaves, textiles, ivory, shea butter, and many other items (Posnansky 1979b, 1980). Oliver Davies first collected archaeological surface materials from Begho in the 1930 (Davies 1970). Later Begho became the center of the West African Trade Project, was the focus of archaeological excavations led by Merrick Posnansky at the University of Ghana and later the University of California at Los Angeles from 1970-1979 (Posnansky 1976, 1979b, c). Posnansky conducted eighteen excavations units at Begho, each within a 6 km radius of the modern town of Hani (Posnansky 1987:15). The goal of the project was to examine how medieval Sudanic exchange relations affected Akan societies on the forest fringe (Posnansky 1971, 1980).

Posnansky (1980) defines Begho as a town, with a highly nucleated and populous settlement that was ethnically heterogeneous. Economic and political status of inhabitants was diverse. Wilks (1962:338) argues that Begho was colonized by Dyula merchants, and was a center of gold collection for the southern districts. Begho was divided into spatially discrete neighborhoods with Dwinfour (artisan), Brong (Akan), and Kramo (Dyula/ Mande) districts (Figure 4.3). The market is thought to have been located between the Kramo and Brong areas, although physical remains were not observed (Posnansky 1973:157). Each residential quarter was composed of a series of mounds, often L-shaped, representing the remains of collapsed houses and middens (Posnansky 1977:51). Estimates of mound numbers are between 1000-1500 mounds within all quarters (Anquandah 1993; Posnansky 1980). Posnansky (1980:9) created different population estimates for Begho, but conservatively suggest population estimates at 5,000-10,000 inhabitants (1980:9;1987:14). Archaeological research documented the remains of the Nyarko quarter, an earlier but indigenous component with an initial radiocarbon date from the 11th century, indicating a thriving populace that were already exploiting gold resources prior to the expansion of sub-Saharan trade routes and Mande trade diaspora contact (Posnansky and McIntosh 1976). Oral history of the Akan inhabitants of the modern town of Hani documents their autochthonous origins and deep historical connection to the area (McIntosh 1976; Posnansky 1971). Begho's peak occupation was from the fifth to second centuries B.P. or 1400s to 1700s CE, which coincided with contact and trade with groups from the Middle Niger (T. Insoll 2003; Posnansky 1979a; Stahl 1994). Unfortunately, a final report on the West African Trade Project has never been created. However, many of the results have been published elsewhere.

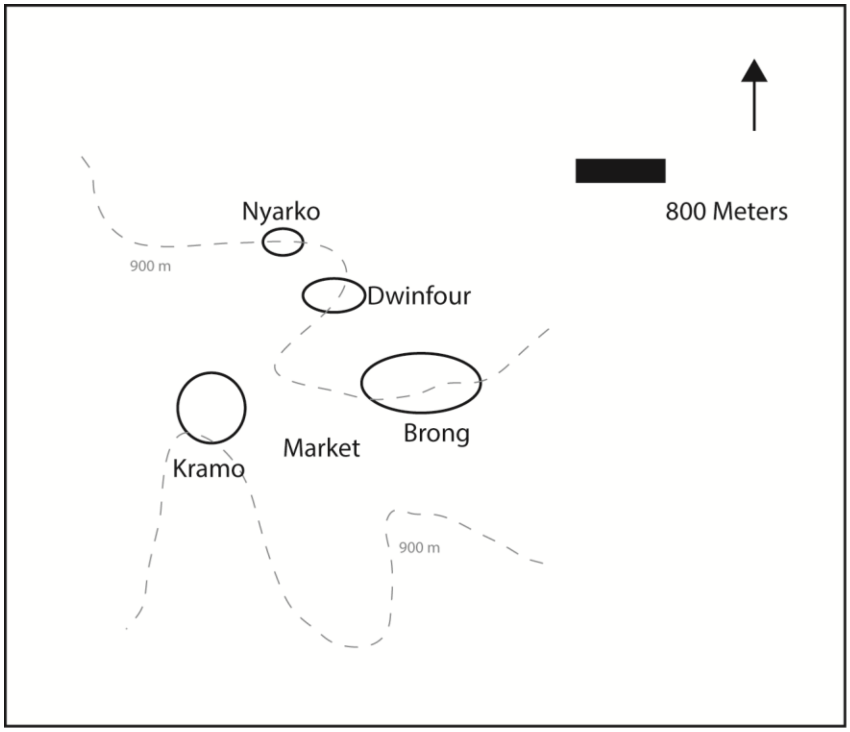

Figure 4.3 Plan View of Begho

Table 4.5 Radiocarbon Dates Begho (Posnansky 1976:62)(Posnansky and McIntosh 1976:166)

Quarter	Radiocarbon Dates[16]
Dwinfour	1595 ± 60 CE 1520 ± 75 CE
Nyarko	1710 ± 100 CE 1120 ± 80 CE 1095 ± 80 CE 1045 ± 80 CE

Archaeological research at Begho documented a diverse and specialized economy within its region that has been corroborated by historical documents as an entrepôt in sub-

[16] In the same article, Posnansky (1976) writes that of the additional radiocarbon dates from Begho, "four fall within the 16th century, two from the 15th century, and one in each the 12th century and 17th centuries".

continental trade. As a result of interaction and participation with exchange networks, new items of material culture and technologies from the Middle Niger were incorporated, assimilated, and embellished within local activities and economies including weaving, flat-roofed and solid mud architecture, bead making, brass casting, and weight systems of measurement (Posnansky 1980). In addition, production and consumption activities of Begho residents greatly expanded and contracted with participation in local, regional, and global exchange networks. Gold weights consistent with Islamic and Mediterranean standards were recovered archaeologically; the earliest weights were created from locally made, chipped ceramics (Garrard 1980). Gold weights are indicative of involvement in exchange relationships. The Dwinfour artisan quarter had evidence for a copper (possibly brass) foundry with over 500 crucibles as well as and iron metallurgical facilities where utilitarian implements and luxury goods including knife blades, arrow points, and rings were manufactured (Anquandah 1981; Garrard 1980; Posnansky 1980). There are no copper sources native to Ghana; all copper was likely imported from the Sahara (ibid.). Stylistic links between Middle Niger and Akan brass wares suggest some technological transfers between the two regions (Posnansky 1987: 19). Twenty six large slag mounds dating to the 1300-1650 were documented 7 km away from Begho suggesting a large scale and specialized iron smelting industry (Posnansky 1980). Numerous spindle whorls were recovered that were decorated and had similar morphological shapes to Jenne spindle whorls (Schildkrout, et al. 1987). The widespread presence of spindle whorls indicated the Mande introduction and spread of new textile technology. Narrow looms and strip weaving were introduced by the Middle Niger diaspora. Textiles were highly valued in African and Akan contexts and often the narrow strips of weaved fabric were treated as currency (Goody 1964). As an additional line of evidence, Dutch records mention Begho as an inland center known for its weaving and dying industry (Agorsah 1973). Excavations documented possible dye pits (Posnansky 1987). Flat-roofed architecture was assumed to be present at Begho based on the presence of ceramic drain pipes; flat-roofed styles are assumed to have a northern origin diffused through contact with Middle Niger groups (Posnansky 1973; Schildkrout, et al. 1987; York 1973). Solid mud or swish architecture is considered to be a Sudanic architectural style of northern origin that replaced the indigenous wattle and daub architecture (Posnansky 1987).

Oliphant fragments or side-blown trumpet fragments recovered suggest there was an ivory carving industry at Begho (Posnansky 1975, 1979a).

Begho's ceramic industry has been well documented (Crossland 1989; Crossland and Posnansky 1978). Crossland's research documents large-scale local production of ceramic wares with borrowed decorated elements and forms from Malian groups. Faunal remains from horses were recovered in small quantities as well as a metal spur, which suggest Sudanic connections (Schildkrout, et al. 1987; Stahl 1999). Tobacco pipes were recovered which indicate access to tobacco after the 1590s (Alpern 1992; Posnansky 1980). Non-local trade items were recovered attesting to diverse production and consumption patterns including Chinese porcelain, Rhenish European stoneware, Venetian glass beads, and cuprous objects (Posnansky 1973, 1977). However, the total frequency of global imports was low given the historical prominence of the site and its involvement in overlapping global exchange networks. Rather than evidence of absence, low frequencies in trade goods may be a reflection of percentage of the site excavated.

Many archaeological materials and features documented indicate status differences between the residential areas in each of the neighborhoods. Objects recovered via excavations indicated a wealthy population occupying some Brong areas (Posnansky 1980:11). Oral history from Hani mentions the presence of domestic slaves and an active clan system at Begho (Posnansky 1980: 13). In addition, Posnansky (1980:12) argued that each quarter likely had a chief. Excavations in the Brong district uncovered items associated with elite status and Akan political power including side-blown ivory trumpets (Posnansky 1977). A large cache of 50 upside down bowls is thought to be a cache of ritual bowls in perhaps an abandoned shrine room where offerings would have been made to deceased chiefs (Posnansky 1987:19). The Brong district was occupied the longest and the latest. Higher quantities of meat consumed in some Brong houses corroborate status differences. The Kramo district (literally *people of the book* after to Quran) was the area of Muslim occupation (T. Insoll 2003:334; Schildkrout, et al. 1987:17). Although low frequencies of burials were documented, two Kramo district burials were fully extended with the same orientation (Posnansky 1987). Directional orientation is not clear as to whether the interred were facing Mecca, but the Kramo burials were different from the

Brong and Dwinfour burials. The latter were flexed with no consistent orientation. Faunal remains recovered from the Kramo quarter differ from the other residential areas. Notably the remains of grasscutter and giant rats are missing from the Kramo quarter; although these were/ are ubiquitous and commonly consumed species in the Akan culinary practices rodents are not generally incorporated into a Muslim diet. The earlier settlements in the Kramo district lie approximately 1.5 km west of the Brong quarter. Maintaining separate settlements near large settlements by Muslim groups is a pattern seen throughout much of West African prehistory, especially in the 10-13th centuries[17] (T. Insoll 2003). As the Kramo district grew, it spread toward the Brong district. By the 18th century, the differences between ceramic assemblages in the different quarters were minimal. While initial Kramo residents may have been itinerant or professional merchants, it is likely that over time Kramo residents began adopting local lifeways including new languages, farming activities, and sedentary occupation. Intermarriage scenarios are plausible. Over time, the differences in artifact assemblages between the Kramo and other residential quarters became minimized with the exception of burials and some food consumption patterns.

The Dwinfour quarter was for artisans suggesting a high degree of specialization (Anquandah 1981). The quantity of materials used in copper and/or brass production recovered from the foundry suggests both a large-scale and specialized occupation (Posnansky 1981). Anquandah (Anquandah 1981) uses ethnoarchaeolgical methods to provide additional lines of evidence; vessel forms recovered from metal production areas were consistent with vessel forms used by modern smiths. In Anquandah’s documentation of the Dwinfour areas, he shows that artisans had access to tobacco, European ceramics, and glass beads (1981). It is not clear how quantities of imports per unit volume from the Dwinfour quarters compared to the other residential areas. Domestic debris in the form of cooking vessels, serving vessels, palm wine containers, and animal bones were recovered. Economic and status differences were present in Begho’s hinterland. Begho was surrounded by smaller farming settlements and hamlets

[17] Insoll offers a historical and archaeological overview of the dual city phenomena at Gao,Do/ Yarsena, etc. However, excavations at Buipe conducted by York show indigenous and Muslim populations occupying the same spaces

that likely would have been economically and ritually dependent on Begho (Posnansky 1980:9).

Begho's collapse has been a matter of debate. Begho was attacked by the Asante in the 1720s and by Sudanic rulers attempting to reverse the flow of gold back through the Middle Niger and away from the Atlantic ports; however, it is unlikely that the attacks were the sole cause of Begho's decline (Garrard 1981; Wilks 1961). Begho's decline was more likely due to a combination of factors, internecine strife, environmental degradation, attacks, dwindling population with migration to new areas, and shifting trade networks (Garrard 1981; Goucher 1981; Stahl 1994; Wilks 1982). Craft production shifted to Asante urban areas and many Begho artisans relocated (some perhaps forcibly) to Kumase (Posnansky 1987). The Asante sent state traders to and supported markets at Salaga and Kintampo as the Hausa began to dominate the sub-Saharan kola trade (Arhin 1970; Goody and Mustapha 1967). Atlantic and Gold Coast markets eclipsed the former importance of Mediterranean markets, exacerbating the erosion of Begho's importance as a major trade entrepôt.

The West African Trade project was instrumental in demonstrating that Begho's initial occupation predated contact with the Mande trade diaspora and that Sudanic merchants came into contact with people probably exploiting local gold resources. The primary trade routes which linked the Middle Niger with the Akan forest and savanna provided a steady stream of, goods, people, ideologies, and technologies with Begho as a major nexus of contact and interaction. At its pinnacle, Ponsansky argued that Begho was a commercial center rather than the urban center of a state or political formation. Although Begho likely had an economy of scale larger than Bono Manso and its hinterland, archaeological information from Begho can provide comparative frameworks for interpreting regional exchange patterns and articulation with sub-continental and global networks.

Wenchi/ Awhene Koko

Archaeological research of the Wenchi region was conducted by James Boachie-Ansah in the early 1980s as part of his graduate research at the University of Ghana (Boachie-Ansah 1986). Wenchi was located adjacent to a primary trade route in between

Begho and Bono Manso. The Wenchi and Bono states have similar origin stories where their ancestors emerged from a hole and began farming the land (Boachie-Ansah 1986). Two sites were the main focus of the Wenchi excavations, Awhene Koko and Bonoso (ibid.). The Wenchi area has a similar occupational history with Bono Manso during with its major period of occupation dating to the sub-Saharan and Atlantic trade eras. Radiocarbon dates (Table 4.6) recovered from Bonoso (710±90 CE and 980±85 CE) are earlier than Bono Manso, and this site will not be discussed further in this study (Boachie-Ansah 1986:133). Awhene Koko produced a radiocarbon date indicating some temporal overlap with Bono Manso (1585±80 CE) (Boachie-Ansah 1986:205). Migrations of Muslim groups brought new settlements and expanded market opportunities into the Wenchi area. European documents indicated that the Wenchi area had a high proportion of Muslim settlement in the area (Dupuis 1824). The Asante successfully invaded Wenchi in 1712 as part of their state building campaign (Wilks 1989). The Wenchi area was turned into a vassal polity of the Asante after it was conquered by Asante military forces (ibid.). Awhene Koko, the former capital of the Wenchi state was the primary settlement that ruled over six nearby villages (Boachie-Ansah 1986).

Archaeological excavations conducted at Awhene Koko were small in scale (11.75 m^2). Two main areas were selected for excavation with three units. Due to the nature of excavations, archaeological finds will be discussed as present vs. absent. Boachie-Ansah documents that the inhabitants of the Wenchi's primary economy was subsistence focusing on agriculture and fishing; however, the inhabitants engaged in multiple types of metallurgy: gold, iron, and brass-working as well as cloth and ceramic production (1986). Similarities between the Bono and Wenchi regions exist in terms of elite and commoner architecture (swish vs. wattle and daub), general subsistence patterns, and material culture. Similarities in artifacts include smoking pipes forms, smoking pipe designs, ceramic forms, ceramic finishing techniques, and ceramic designs. Artifacts including Begho ware sherds, beads, cuprous/ brass objects, maize cob roulette, and smoking pipes may indicate some participation in regional and global exchange networks. How these specific finds correlate with inter-household patterns of production, consumption, and status differentiation is unknown without additional data.

Table 4.6 Radiocarbon Dates from Awhene Koko Area

Site	Radiocarbon Dates
Bonoso	746 ± 90 1008 ± 85
Awhene Koko	1692 ±80

Banda

On the Akan periphery is Banda, the focus of Stahl's long-term archaeological research (Stahl 1999, 2001, 2007, 2008, 2013; Stahl, et al. 2008). The Banda region is located in the hinterland of Begho. There may not have been institutional ties between Begho and Banda; rather Banda's residents likely benefited economically from the proximity of a large trading town (Stahl 2001). Much of Stahl's research has examined daily life through the last millennium by documenting change and continuity in craft production, subsistence, and political economies (Cruz 1996; Smith 2008; Stahl 1999, 2001, 2007; Stahl and Cruz 1998; 2008). Her research has combined archaeological data with oral history, ethnographic data, and documentary records (Stahl 1999, 2001; 1998). Stahl directed excavations that created large-scale horizontal exposures that targeted a range of mound shapes, structures, and activities from domestic, refuse/midden, and crafting areas from multiple sites in the region (Stahl 1999). Stahl's research documents the Volta, Ngre, Kuulo, and Makala phases of occupation within the Banda region. These were contemporaneous with Bono Manso and Kranka Dada occupation, and in many ways provide great comparative data for the Bono region especially with respect to the anthropological themes of this dissertation: production, consumption, and status differentiation.

Banda residents had access to regional global goods from sub-Saharan African and Atlantic sources (e.g. copper, cowries, etc.). INAA data from clay sources and ceramics indicated that local production and exchange networks were dynamic; they expanded and contracted over time (Stahl, et al. 2008). She shows that participation in local and supra-local exchange networks co-vary and had different temporal footprints (Stahl 2007). Using ceramic compositional analysis, Stahl, et al. (2008) has identified seven distinct compositional groups. Differential distribution in tempering agents, trace minerals, and clay composition indicate that resources selection areas changed through the last thousand years (ibid.).Kuulo Phase data suggests that ceramic production was specialized by community, a pattern which did not occur in the earlier Ngre or later Makala Phases (ibid.:378). Partly due to Banda region's close proximity to Begho and inhabitants' preference for specific trade goods, Banda households created different types of goods with varying scales of production over time (based on production debris per unit volume) (Stahl 2001, 2007).

Table 4.7 Banda Chronology (Stahl 2007)[18]

Phase	Dates
Volta	cal 1000- 1300 CE
Ngre	cal 1250-1400 CE
Kuulo	cal 1400-1650 CE
Makala	cal 1750-1890 CE

Within each of the temporal phases listed in Table 4.7 from Banda, residents participated in exchange networks. There were long-standing connections to Sudanic networks beginning in the Ngre and Kuulo phases (Stahl 2007; 2008); however, despite Banda's peripheral status it became enmeshed into Atlantic world as trade networks overlapped (Stahl, 2007; Stahl, et al. 2008). Data from the Ngre Phase is more limited that the later periods due to the size of excavations (Stahl 2007:60). Ngre Phase mounds were irregularly shaped ranging from sub-rectangular, ovoid, to linear/curvilinear mounds (ibid.). Iron smelting occurred within sites indicated by surface heaps of slag, slag presence in middens, and tools associated with metal production (Stahl 2007). New ceramic technologies appeared during the Ngre Phase. The presence of slag inclusions were observed in Ngre Phase ceramic, and vessel formation techniques lost coiled construction (Stahl, et al. 2008). Stahl is careful not to equate the technological changes with a shift in cultural identity, as some elements of the chaîne opératoire , such as clay source choices, remained constant from the preceding Volta period (Stahl, et al. 2008: 379). Ceramic analysis indicates a wide range of local exchange without specialization in terms of vessel morphology or size (Stahl 2007; Stahl, et al. 2008). There are a number of

[18] See Stahl 2007:53-55 for a detailed list of radiocarbon dates, provenience, and lab.

similarities between the Ngre Phase ceramic material with ceramics recovered from Bono Manso and Kranka Dada, which will be discussed later.

The Kuulo phase dates to cal 1400-1650 CE based on diagnostic imports, radiocarbon dates, and thermoluminescence dates. In addition to global exchanges, Kuulo Phase sites show a complex integration into regional exchange networks. Occupants participated in localized yet differentiated craft production, including metal-working and ceramic production in a similar fashion to Begho, although on a smaller scale (Stahl 1999:19). The volume of debris recovered from middens and domestic areas was higher in the Kuulo phase than the subsequent phases of occupation. Artifact frequencies per unit volume including pottery, slag, faunal remains, and small finds were high when compared to Makaala phase occupations; the abundant and voluminous quantity of Kuulo debris suggests participation in market exchanges partially through production (Stahl 2001). In return, Kuulo inhabitants were able to acquire goods including items of personal adornments including copper jewelry and glass beads from Sudanic and European sources (Stahl 2001, 2007). It is unknown whether or not goods were acquired through intermediaries or directly from participation in market exchanges; however, the presence of figurative gold weights indicates there may have been direct exchanges with merchants (Stahl 1999). In either case, it was a common practice for the Kuulo era inhabitants to display exotic goods as items of personal adornment in a way that "*inscribed subcontinental exchange on local bodies"* (Stahl 1999:38). Stahl does not correlate items of personal adornment with elite status within the Kuulo phase sites.

Textiles were also likely mainly acquired from Begho. Spindle whorls were recovered from Kuulo contexts in low frequencies. Not wanting to equate absence of evidence with evidence of absence, the textile industry at Begho is argued to have been highly developed and specialized. Low frequencies of tools associated with textile production from Banda sites may be correlated with Begho as a large scale producer.[19] In addition to decorative items, tobacco pipes were recovered from Kuulo contexts indicating another layer of global connections and exchange relationships. Analysis of botanical remains including macrobotanical remains, phytoliths, and starches reveal that

[19] Maybe describe intricacies of textile production and manipulation here

New World crops including maize were incorporated into subsistence and consumption but did not dramatically alter local food choices (Logan 2011). Rather, maize was present in low levels, perhaps suggesting its use and incorporation as a novel crop, and used alongside staple crops such as pearl millet and sorghum (Logan 2011). The faunal remains from Kuulo period sites indicated that multiple acquisition strategies were employed: opportunistic hunting, skilled hunting, and trapping of a variety of wild species. Evidence of domesticated animals incorporated into the diet was less abundant, but this may be correlated with the fragmentary nature of faunal remains associated with food processing and consumption activities (Stahl 1999:33). Kuulo Phase sites were not abruptly abandoned; however, there were changes to the scale and intensity of settlement and an overall decrease in multiple types of craft production. As Banda was located on the periphery of the Begho region, changes in the social, economic, and political environment of Begho likely had consequences for those occupying the hinterlands of Banda.

Following the Kuulo phase was the Early Makala phase ca. 1725-1825 (Stahl 2007). Disruptions in regional political economies and Begho’s decline had notable impacts on the daily lives of the Banda inhabitants. Asante war campaigns likely drew males into coercive military service for the Asante against Nkoranza (Stahl 1999). Dutch records from Elmina indicated that there was an influx of Banda prisoners brought after the Asante conquest of the Banda hills destined for the Middle Passage, which is correlated with the Makala Phase (Yarak 1979). Production and consumption patterns from daily live activities during the Early Makala phase changed as well. Stahl documents that one main difference between the Kuulo Phase and Early Makala Phase was a disruption in iron production and consumption patterns as the abundant evidence for on-site iron production during the Kuulo Phase was absent from Early Makala contexts (Stahl 1999, 2007). Early Makala residents likely acquired iron product via exchange. Patterns of disjuncture in craft production and consumption were similarly observed within the ceramic and ivory industries (Stahl 1994, 1999, 2007; 2008). The voluminous quantities of ceramic debris from the Kuulo Phase were sharply decreased in the Early Makala Phase. Decorative motifs were altered with some styles dropping out of the repertoire completely (Stahl 1999, 2007). Neutron activation analysis indicates that the geologic sources of Early Makala Phase ceramics were more varied than Kuulo Phase (Cruz 1996; Stahl, et al. 2008). Bowl and jars were produced from different clays and traded within different and (likely) smaller-scale networks (Stahl 2007). Spindle whorls were produced from local clays, and their presence was more widespread within Early Makala structures (Stahl, et al. 2008). Colonial documents describe textiles as part of household production in the early 20th century at Banda settlements (Stahl and Cruz 1998). Consumption patterns indicated by faunal remains shows marked differences between the Kuulo and Early Makala phases. NISP averages declined from in the Kuulo Phase from 195 per cubic meter during the Early Makala Phase from 19 per cubic meter (Stahl 1999:65). Mammals were more abundant in the Early Makala, although the exploitation of wild reptiles and birds suggest some continuity with the types of habitats utilized for hunting even if the proportions were lower (Stahl 1999: 52). Stahl argues that the most frequent species in the Early Makala faunal assemblages were grasscutter, giant rats, and lizards. The decrease in large/dangerous animals including hippopotamus, crocodiles, and carnivores suggested a greater reliance on opportunistic hunting within cleared areas, agricultural plots, and watering holes during the Early Makala phase (Stahl 1999).

In addition to dietary preferences, changes in the faunal assemblage from the Kuulo to Makala Phase deposits may indicate some changes to ethnic and ritual systems (Stahl 1999, 2007). In terms of ideological practices, Stahl's research shows that ritual activities associated with shrines were dynamic and took many forms over time. In the Banda region, religious activity is archaeologically visible by bundles and clusters of objects assembled in patterned ways (Stahl 2008, 2013). In the Kuulo Phase, formal shrine areas often contained canid body parts including mandibles and drilled teeth (Stahl 2008: 180). By the Makala Phase, canid remains were largely absent from shrines, while snake vertebrae from constrictors became more prominent. Shrines vessels, lids, groundstone, iron, and quartz objects were commonly incorporated into shrines in specific ways that indicate broad communities across time and space that shared some sense of aesthetics as communities of practice (Stahl 2013). One of the difficulties in documenting shrines in the Banda region is due to the everyday or quotidian nature of objects incorporated into religious action (ibid.). The meaning of an everyday object can be transformed through its incorporation into ideological practices (Stahl 2008). Thus, the biographies of everyday objects can be complex.

In spite of Begho's decline, Banda's Early Makala residents had increased access to some New World crops indicated by a more ubiquitous presence of tobacco pipes and maize botanical remains (Logan 2011). However, it is possible that agricultural crops were grown locally. Other material correlates of participation in subcontinental exchange, including European ceramics, beads, brass/ bronze, glass, and gunflints, were recovered in lower frequencies from Early Makala Phase deposits than Kuulo Phase deposits. The combination of Begho's demise and Asante state expansion and incorporation of new territories altered how Banda's Early Makala households were able to articulate with regional political economies and interact with regional and supralocal exchange networks (Stahl 1999, 2001, 2007).

Gonja

The Gonja state was located north of Akan occupied areas; its borders stretched from the Black Volta River, White Volta River, and Banda region to the Wa area. The Gonja State was not Akan, but it is discussed briefly here as it was occupied contemporaneously with the previously mentioned Akan sites (Shinnie and Kense 1989). Several major trade routes bisected the Gonja territory, and there is evidence for exchange, interaction, and warfare between Bono Manso, other Akan areas, and Gonja (Shinnie and Kense 1989; Stahl 1994; York 1973). Thus, the Gonja region had a strategic location in north-south trade routes. Major Gonja sites include New Buipe, Yendi, and Bole. The founding of the Gonja state may date to ca. 1552 CE when a reconnaissance party of armed cavalry from Mali came to investigate a stoppage in the flow of gold (Jones 1962). Shinnie (1987:28) has questioned the correctness of this version of history based on linguistic evidence. In spite of origin disagreements, there is wide agreement that the Gonja State was an expansionist and militaristic regime (Goody 1964; Law 1976; Smith 2008). Many of the indigenous inhabitants were captured and sold into slavery. Gonja settlements were brought under Asante hegemony in the 1740s (Arhin 1967).

Archaeological research indicates that many of the large sites in the Gonja region had long occupations, some more than two thousand years (Shinnie and Kense 1989).

Excavations of early occupation phase of Gonja sites recovered artifacts associated with the Kintampo Complex (Davies 1962; Flight 1970; Shinnie and Kense). Later occupational phases, coeval with medieval trade showed considerable evidence for participation in regional and sub-continental exchange networks. Non-locally produced ceramics (most likely from southern networks) were recovered from New Buipe in the highest proportions during the 15-17th centuries CE (Stahl 1992; York 1973). Heterogeneous ceramic assemblages, like those documented from Daboya, are thought to indicate ethnic diversity (Shinnie and Kense 1989). European imports were rare, although some kaolin pipe fragments were recovered from late contexts (Stahl 1992). Maize cob roulette decorations on ceramics and tobacco pipes were recovered in much higher quantities across sites indicating some access to New World goods and commodities.

Settlement patterns within many Gonja sites differ from Akan settlement patterns with respect to ethnic and religious diversity. Muslim occupation and settlements often tended to be established on the periphery of Akan communities, like the Kramo quarter at Begho. This "dual town" settlement pattern was archaeologically and historically observed throughout the Sahara and savanna (T. Insoll 2003). At Buipe, York's excavation indicated that the indigenous population lived alongside Islamic populations; religious differences were determined by differences in burials (York 1973). Much of the archaeological research conducted in Gonja territories was used to create ceramic typologies for the elucidation of time-space systematics (Stahl 1992). For the purposes of this study, it is important to be aware of sites in the Gonja territory as they interacted, traded, and fought with the Akan and Bono Manso. Differences in production, consumption, and status differentiation practices within and among Gonja inhabitants are beyond the scope of this study.

To summarize, occupation in the Bono Manso region and Begho, Banda, Wenchi, and Gonja overlap in time, but there may be differences in political integration, inter-polity relations, and institutions—each of which can influence domestic economies, household production, and their participation in regional/ global exchange networks. . Nevertheless, there is no expectation that Kranka Dada household economies will closely correspond to archaeological patterns from other sites in Ghana. Similarities and differences between the case studies may speak to different types of political economic integration in global and local spheres. My study helps to delimit the political and economic mosaic networks operating in central Ghana (see Stahl 2004).

Field Methods Summary

Survey: 2009 and 2011 Pilot Seasons

In two field seasons, I surveyed 35 square kilometers (Figure 4.4). The goal of the survey was to identify new sites and features within the Bono Manso region. Previous archaeological research had identified a number of large sites within the greater Bono Manso area; however, the sites recorded by Anquandah (1964) and Effah-Gyamfi (1974) were previously known through oral history and social memory. I revisited some of the sites originally recorded by Effah-Gyamfi and Anquandah in order to examine their current condition, features, mound topography, and surface artifact assemblages to create baseline expectations of Bono sites in forested areas.

The goal of my survey was to complement previous research, while adding to the site inventory of the area. My survey differed from previous research in that I concentrated on obtaining full coverage survey. I wanted to document the full range and types of sites within an entire geographic area. This full coverage pedestrian survey strategy was designed to complement previous research by locating the smaller sites not likely mentioned in oral history and therefore not visited by previous researchers. A hand-held Garmin GPS was used to record site locations. Each site was documented, photographed, and surface artifacts were analyzed in the field.

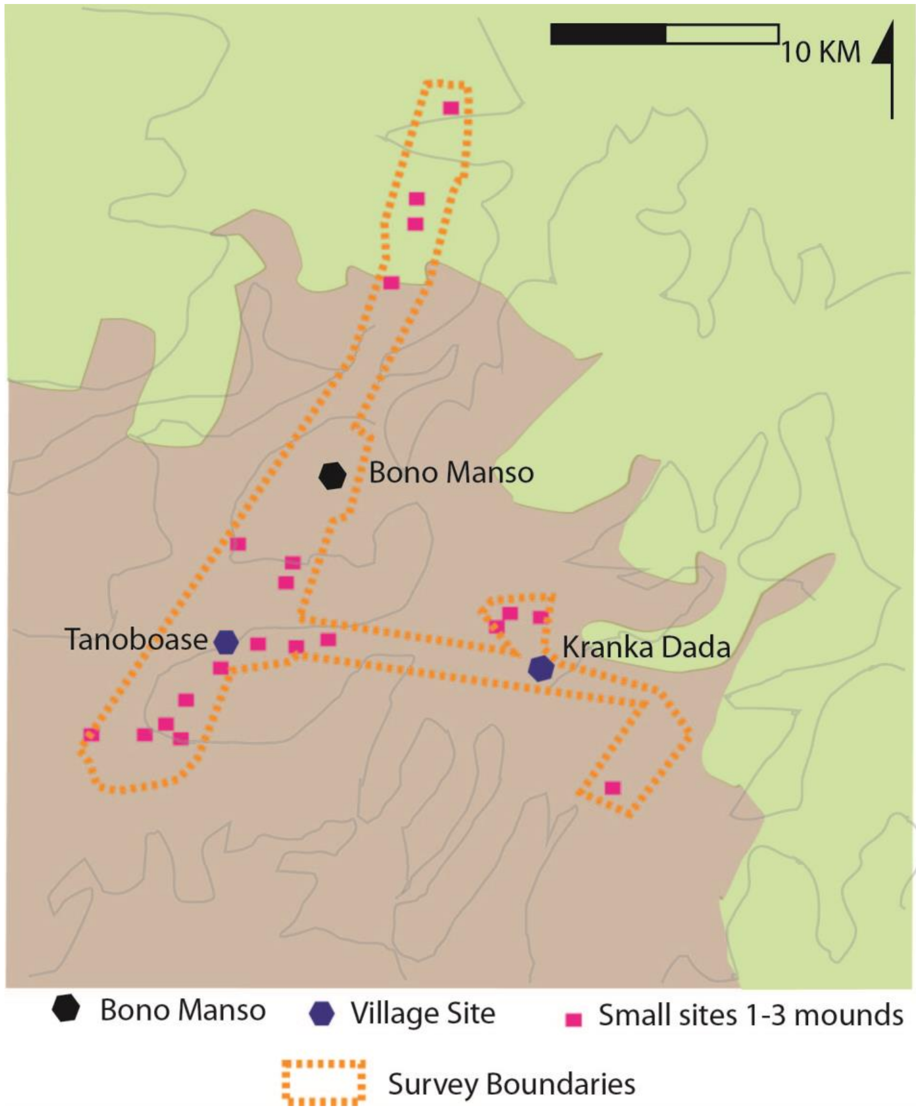

Figure 4.4 Sites Recorded via Pedestrian Survey

Due to early rains in 2009 and subsequent poor surface visibility, the areas selected for survey were biased. I selected some areas for survey based on the distribution of roads and walking paths between modern villages. Areas flanking roads and paths were surveyed up to 100 m on each side in 20 m transect intervals. In 2009, large scale profiles were created by heavy machinery as infrastructure improvements were made on the Techiman-Kintampo Road fortuitously exposing profiles up to12-15 m in some areas. Smaller paths and roads for survey were selected based on the locations of the oldest Tano Shrines in the region. The Tano religion is one of the oldest documented religions in the greater Akan area (Rattray 1923). Tano shrines are located at Tanobaose, Kranka, and Siika, and it seemed likely that prehistoric settlements associated with the oldest Tano shrines. This is the first survey in region to systematically search for small sites.

Three archaeological types were identified through survey. Sites, features, and isolated surface finds were recorded. Sites are defined as activity areas with the remains of at least two types of artifact classes. Features are defined as human-created or modified surfaces that are immovable. All recorded features consisted of modified bedrock, bedrock mortars, or “grinding grooves”, most often in rockshelters. Isolated surface finds are individual or a small group of a single class of transportable objects not associated with sites or features.

In his graduate career, Effah-Gyamfi recorded 13 sites in the greater Bono Manso area. I visited as many of the sites as time allowed in 2009 in order to obtain GPS coordinates and photographs. However, I was unable to relocate several of the sites. All of the sites were originally recorded with degrees and minutes without seconds. I used his site descriptions from his master’s thesis as a guide as well as local informants to assist in relocating sites. Several of the sites recorded had neither features nor artifacts (E. Effah-Gyamfi 1974). I interpreted these areas as significant places of social memory, and did not attempt to relocate these areas due to time constraints in the field. In general, my survey differs from Effah-Gyamfi’s survey in that his survey covered a larger geographic and temporal span than mine. Although the areas I selected were biased, my goal was to document the range of sites within a geographically bound area using methods as close to full-coverage survey as I could.

My pilot seasons established the feasibility of finding (1) sites associated with Bono Manso and (2) material culture and data indicating participation in multiple, nested exchange networks. My survey identified 22 new sites including Kranka Dada. By increasing the site inventory of the area, I group the 32 known sites in the Bono area somewhat differently from Effah-Gyamfi. Effah-Gyamfi (1985) classifies Bono Manso as a state based on its paramount position in a four-tiered settlement hierarchy; however, his survey covered a larger geographic and temporal span than mine. I identified three types of sites that fall into a three tiered hierarchy: large settlement (Bono Manso), villages (clusters of multiple mounds), and hamlets (1 to 3 mound complexes). Bono Manso and its outlying villages are located on ridges often with line-of-sight visibility, while smaller hamlets are scattered on the low-lying flat areas between larger sites. Bono Manso and its satellite villages have evidence indicating their participation in supralocal market exchanges, while profile cutting and surface collections from third-tier sites did not yield evidence suggesting global market participation.

Description of Sites in the Bono Area

The following section provides details of the specific archaeological sites located during pedestrian survey. Some of the sites were previously documented by James Anquandah and/or Effah-Gyamfi, and some sites were discovered through my survey.

Kranka Dada

Kranka Dada translates from Twi as “Old Kranka”. The town of Kranka gets its name from the Atano deity, Kranka Afia, who is considered to be one of the oldest Tano deities. Kranka is divided into five settlement areas, four of which are archaeological sites and one town with modern day occupation. Kranka Dada is the oldest of the five settlements and the one that will be discussed in this study. It covers a 7.6 ha and composed of a minimum of 13 mounds with a quarry most likely used to obtain mud for sites (Figure 4.5). Site boundaries are based on the distribution of features and surface artifacts. The mound complexes cluster in two areas, and fall into three different volume classes: 4 large (1200-2485m^3), 5 medium (400-625m^3), and 5 small mounds (75-225m^3). Mounds located in the core cluster are from all size classes; however, they are taller than small mounds in the northwestern sector of the site. Table 4.8 lists the mound sizes by ordinal rank and square meters. Immediately northwest of the core cluster of mounds are the remains of a quarry. Most likely this is a large borrow pit where inhabitants excavated sediment suitable for construction materials. Ceramic artifact types within the core cluster area were similar to each other in terms of rim morphology, paste, and decorative techniques. Similar tobacco pipes also occur. Surface artifacts styles were consistent with artifact styles from Bono Manso.

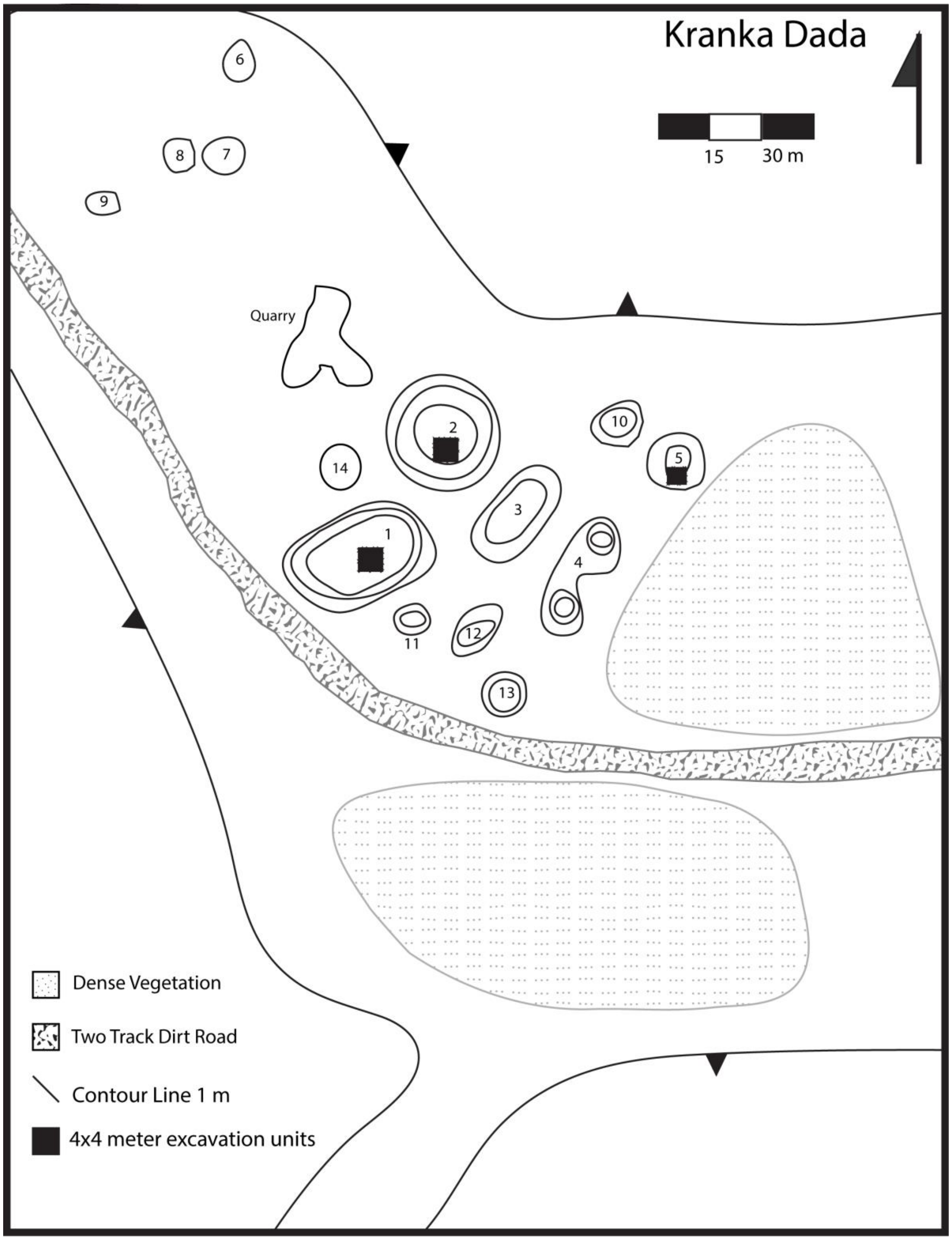

Figure 4.5 Plan View Map of Kranka Dada

Mounds at Kranka Dada are in excellent condition and were minimally affected by agriculture, modern village development, and aeolian/alluvial erosion. During the course of my survey, I collected diagnostic surface materials from each of the mounds. In addition, I excavated a 2 x 2 m test unit in Mound 1 to expose features and stratigraphic levels. Remains of multiple structures were visible in the mound stratigraphy. I documented a minimum of three superimposed floors with several layers of major and minor plastering/ repair events, wall fall, fill, and midden deposits. Documented features recorded in the test unit include hearths, postholes, postmolds, plastered pits, unplastered pits, interior wall trenches, wall melt, and demonstrated the likelihood of identifying structures in the future. Based on the artifacts I excavated in 2011, I suggested that Kranka Dada's inhabitants were participating in multiple exchange networks (regional, African, and Atlantic). The presence of exotic goods such as copper and beads indicate some level of participation in global exchange networks, just as the presence of marine shell and ceramics with varied paste, temper, and decoration may indicate involvement in regional exchange networks.

Table 4.8 Mound Size at Kranka Dada

Mound	Ordinal Rank	Total Size in m^2
Mound 1	Large	2200
Mound 2	Large	2025
Mound 3	Large	1500
Mound 4	Medium	1100
Mound 5	Medium	900
Mound 6	Small	225
Mound 7	Small	374
Mound 8	Small	400
Mound 9	Small	195
Mound10	Small	400
Mound 11	Small	450
Mound 12	Small	300
Mound 13	Small	400
Mound 14	Small	400

The remaining archaeological areas of Kranka are not spatially associated with Kranka Dada. There appears to have been some shifting settlement patterns where the village moves slightly. Following the Asante war campaigns to the north (most likely in the mid-18th century), the inhabitants of Kranka Dada abandoned the site with the exception of the priestess who cared for the shrine[20]. Kranka's second phase of occupation was north of the former settlement approximately .8 km north of Kranka Dada and in close to the northern drainage. This phase of occupation appeared to be rather small, and composed of only a few small mounds. Heavy vegetation obscured much of the surface visibility; therefore, it was not possible to create a plan map of the site. Surface artifacts were collected, but not were diagnostic. Surface artifacts included a 4cm piece of slag and several undecorated ceramics. The two following occupational areas are located on the outskirts of the modern village of Kranka, and are partially buried from modern village sprawl. Kranka's third phase of occupation is marked by a grove of mature baobab trees on the southeastern portion of the modern village across the road from the schools and approximately .7 km northwest of Kranka Dada. The fourth phase of occupation is located 1 km north of Kranka Dada on the eastern edge of the modern Kranka perimeter. This portion of the site is composed of building foundations that are stratigraphically below homes currently occupied in the oldest section of Kranka. Alluvial erosion has undercut many foundations of older mud-brick homes leaving deep channels and gullies. This process has exposed the remains of many older foundations and washed many artifacts into the modern foot paths. Artifacts accumulated in the footpaths between homes in a palimpsest fashion. However, these artifacts are so mixed that it is difficult to discern which artifacts originate from specific deposits. No data are available on the specific or associated ages of the shifting settlement areas, although they likely post-date 1722/1723 CE.

Siika

The archaeological site of Siika is located approximately 2 km south of the modern village of Siika. The site is composed of a minimum of 6 mounds, tightly clustered together in roughly linear pattern running from northeast to southwest. Two of the mounds are larger than the remaining four with an average height of 2 m. The largest mound is approximately 15 m in length. Similar to other second-tier sites in the region, Siika is located on a natural ridge and hill with an eastern aspect and slope. The site is

[20] Information obtained from oral history interviews from Kranka informants

currently being used as a cassava field, and this activity partially obscures surface visibility. It is possible that there are additional mounds in bushy areas; however, it is likely that any additional mounds are small. Alluvial erosion has affected the site, and there are clusters of artifacts collecting on the eastern low spots. There are no obvious architectural features that could be correlated with the former shrine; however, the village elders point out a location on the southeastern edge of site they believe to be the former location of the Siika shrine. I collected surface materials from the site including iron slag, ceramics, glass, and groundstone. The glass had the highest potential for obtaining a relative date; however, it was badly eroded, melted, and amorphous due to the tropical sun. I thought the glass dated to the early 1900s, because it appeared to be blue milk glass. The cassava farmer vaguely remembered finding a single tobacco pipe near the former Siika shrine.

Village elders accompanied me to the site. They reported that their grandparents were the sites' inhabitants. They report that there were two locations of old Siika (formerly called Diika), and that the location of the site moved according to the wishes of the local shrine deity. We were unable to visit the oldest site due to its location across a river. Following the 1722/1723 the site became Asante property, and it is under the jurisdiction of a different chief. I do not think that the Siika site dated to the Bono Manso period, but it is possible that the Siika site (across the river) I did not visit could have been contemporaneously occupied with Bono Manso.

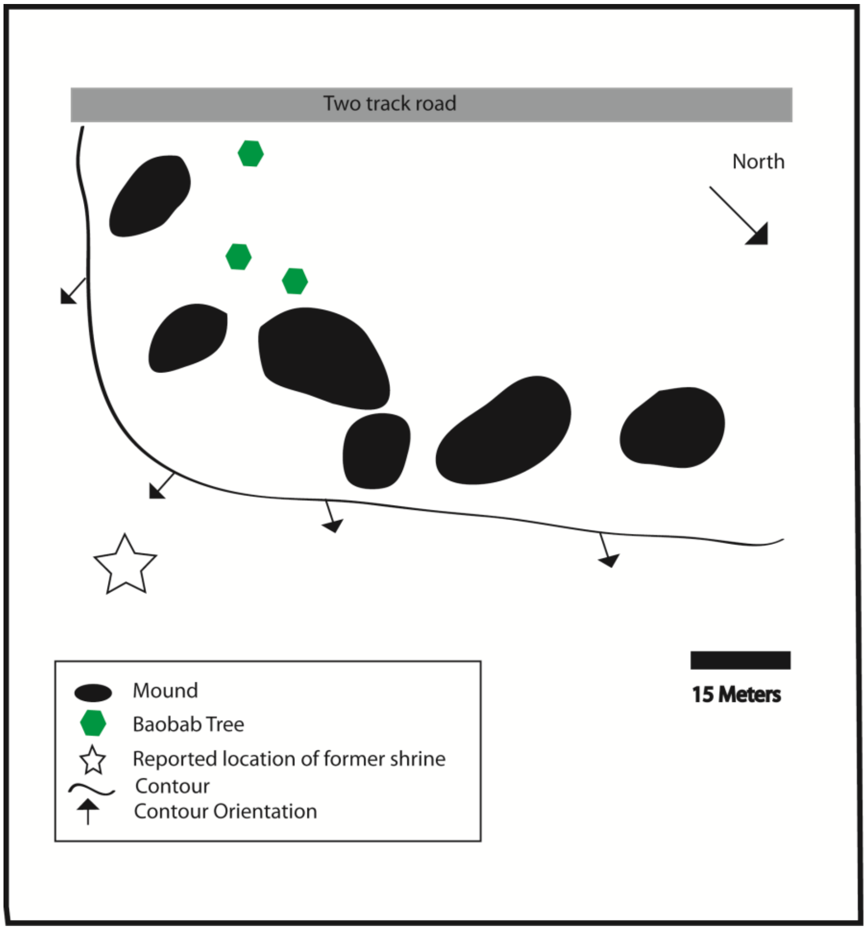

Figure 4.6 Plan View of Siika

Tanoboase

James Anquandah (1964) first documented this site as part of his mid-1960s archaeological fieldwork. Tanoboase is an important area in Bono history because the first Tano deity originates from the headwaters of the Tano River, which surface in the unusual granite formation and outcropping that is part of the site (Lamote 2012; Rattray 1923) . The forested area surrounding the granite outcropping is protected today as a sacred grove. There are a series of taboos associated with the sacred grove, including a no hunting policy. Anquandah (1964) documented the site located within the small gallery forest near the modern town of Tanoboase on the south side of the Techiman-Kintampo Road. He collected surface finds from the site, but was unable to map to site due to heavy vegetation. Anquandah observed that the erosion had negatively affected the site and created additional surface exposure. Diagnostic artifacts recovered include tobacco pipes with quatrefoil bases and stems (Ozanne type E). Two fragments of Rhenish blue-and-white pottery were recovered (Anquandah 1965:117). Black burnished pottery was recovered as well as gritty red pottery with geometric incisions and impressions. Anquandah provided a date of 1700 CE for Tanoboase.

I revisited the site in 2009 and 2011 to obtain GPS coordinates, create a map, and analyze surface finds. In 2009 road crews were expanding the Techiman-Kintampo Road that bisected the modern town of Tanoboase. Road cuts created some large profiles through Tanoboase exposing ceramics. I located four eroded mound on the north side of the Techiman-Kintampo Road. Non-diagnostic ceramic artifacts were present in the disturbed sediment from rodent holes near the mounds. The modern town of Tanoboase appears to cover much of the archaeological site. As such, obtaining dimensions of the site from the surface is not possible. Archaeological remains are unearthed when new construction activities occur. In 2011, I was approached by the Methodist ministers who uncovered some archaeological remains during a construction episode. They showed me some metal objects that appeared to be part of a gold finial. The object was in good condition and did not have much corrosion. The ministers planned to conduct some tests with mercury to determine if the object was gold. Unfortunately, I was working in Kranka at the time and I did not see the object until after the construction was complete. Thus, I unable to examine the stratigraphy exposed from the church's foundation.

By combining all of the previous research from Tanoboase, I argue that the area has a long occupation history. It is likely that there has been some shifting settlement, similar to Kranka. Unlike other areas culturally affiliated with the Bono, Tanoboase has remained under Bono jurisdiction after the 1722/23 wars. When the Asante state was consolidating its power and territory in the early and mid-18th century, Asante soldiers often captured foreign deities and brought them back to Kumase. However, the Asante adopt the Tano deities as state gods and leave them in place. The Asante send priests to the Bono region for a three year apprenticeship in order to learn how to communicate with and observe the taboos associated with the powerful Tano deities. Tanoboase has been a prominent Bono settlement since at least the 1700s, but the occupation likely extends further in time.

Amowi

Amowi is a multi-component site located 14 km southeast of Bono Manso. The earliest component is associated with a rock shelter (Emmanuel Effah-Gyamfi 1974). Oral traditions trace the emergence of the Bono people to the Amowi rock shelters (Rattray 1923), where the Bono first emerged from the earth, breaking their way out of the earth with axes, and began hunting, farming the land, and smelting iron (E. Effah-Gyamfi 1974; Emmanuel Effah-Gyamfi 1974; Garrard 1980). Effah-Gyamfi (E. Effah-Gyamfi 1974) documented several Late Stone Age objects within the rock shelters such as terracotta rasps and groundstone axes. According to oral traditions, early inhabitants from Amowi conducted silent trade from the rock shelter exchanging gold for cloth (Garrard 1980:44). Garrard (1972a, b; 1973; 1973) conducted an extensive study of gold weights from the Akan and Bron areas. He concluded that the ceramic disc gold weights from Amowi corresponded to the Islamic measurement system (Garrard 1982).

The second component of Amowi is a series of an unknown number of mounds covering an approximate area of 238 m^2 (Effah-Gyamfi 1976:158). Test excavations recovered include maize cob roulette and micaceous grooved ceramics. The site is temporally associated with Phases II/III of Bono Manso ca. 1610 ± 80 CE (Effah-Gyamfi 1985:27). Similar to other areas, the mounds are likely the remains of collapsed houses and midden deposits (ibid.). Other artifacts recovered include ground pottery discs argued to be gold weights, metals, groundstone, spindle whorls, cowrie shells, smoking pipes, glass, beads, slag, and faunal remains (ibid.).

Small Sites

Twenty-two small sites were located on survey. Small sites include clusters of multiple artifacts types and are associated with 1-3 mound complexes. When possible, profiles were cut into sites in order to expose stratigraphic profiles of the mounds. Surface artifacts were collected and analyzed from each small site. There was a paucity of diagnostic material from each of the small sites making it difficult to determine relative dates on each small site. I encountered two main problems when surveying for small sites. One, the lack of surface visibility made it difficult to identify small sites. Surface visibility tends to be greater in areas that are disturbed by agriculture and modern developments such as road construction. Because of these constraints, I do not think that the inventory of small sites is exhaustive. Small sites are not discussed in local oral history and they do not feature into recent social memory. Pedestrian survey was the best method for identifying small sites. In the future, a combination of survey and shovel testing would be best for locating small sites.

Each of the small sites had surface assemblages composed primarily of undecorated ceramics with collared, everted rims. One site located in the Kristoboase monastery was particularly informative about the range of household activities in the past. The site is located in the flat-lying areas in a modern cashew grove. The monks had unknowingly excavated a portion of the site while quarrying for mud to fabricate the perimeter fence around the monastery. During the quarrying, portions of two mounds with associated artifacts were exposed. I selected these exposures to create profiles of the mounds. There was no visible architecture within the mounds and there was a limited architectural debris (e.g., daub). The majority of artifacts recovered were from within the mounds: slag, groundstone, and undecorated ceramics. Remains of two nearly complete collared, everted rim small jars were recovered from the mound interior.

Other small sites were negatively affected by modern development. Two sites north of Bono Manso were located, but they were so badly damaged that it was difficult to extrapolate much information from either site. Both sites were near the modern village of Dwenewohu. One area has been turned into a staging area for road construction crews. All that remains is one large mound with a high concentration of surface artifacts, the bulk of which are ceramic. The ceramics have a different paste; it is much softer and friable than the ceramics of Bono Manso as well as a higher concentration of varied inclusions. The artifact surface scatter continues in a high density into the adjacent agricultural fields. Based on relative dates, based on the pottery characteristics, this site may date to the 1-4th centuries or to the mid-1300s CE.

Iron working sites

Effah-Gyamfi (1985:79) discusses the presence of a large-scale iron-working industrial site located along the outskirts of Bono Manso in areas approximately 100 m away from habitation near the drainage to the east. Industrial sites were identified by the presence of slag mounds and tuyere fragments (Connah 2001; Effah-Gyamfi 1985). My survey from Bono Manso to Tanoboase identified similar slag deposits in concentrations near drainages, a pattern similar to Effah-Gyamfi's findings. The size of individual pieces of slag varied from 3 to 23 cm. I did not locate any large mounds of slag like those at Bono Manso or Begho, rather I located concentrations of scattered slag deposits.

Site 11 of the pedestrian survey included the remains of a disarticulated furnace noted by the presence of slag and tuyere fragments. Adjacent to the furnace was a small mound approximately .5 m in height with surface artifacts. The slag was scattered in a fan-shaped pattern with an east-west orientation. Surface artifacts were collected, but none were diagnostic. All of the ceramics were undecorated, and rim morphology was not sufficient for obtaining a relative date of Site 11.

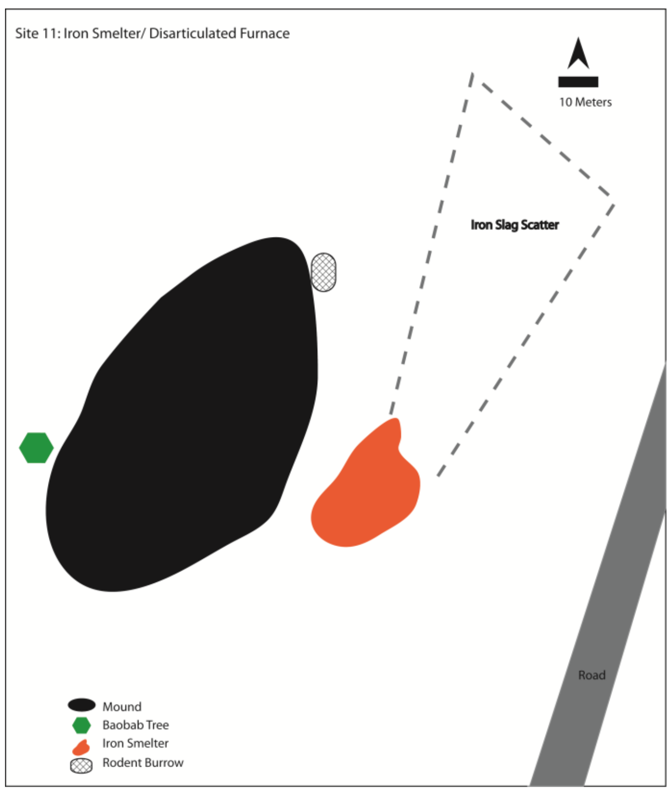

Figure 4.7 Site 11 Iron Working Area

Kramokrom

The Kramokrom is a site identified by Effah-Gyamfi during his survey, reported to have been the Muslim traders' settlement with corresponding dates of Phases I and II of Bono Manso, the 13^{th}-17^{th} centuries (Effah-Gyamfi 1978:99). There are no maps of the site, nor were test excavations conducted. Effah-Gyamfi's informant reported that the Kramokrom was established as the Muslim traders' settlement and that there was no quarter for foreigner settlement at Bono Manso. Oral traditions mentioned that the first Islamic traders appeared before the Bono king who was worshipping a deity by pouring blood (Effah-Gyamfi 1985:216). Muslim traders were unsuccessful in their attempts to dissuade Bono leaders from blood related deity worship, and elected to establish a residential area approximately 4km *west* of Bono Manso.

I have not been able to relocate the Kramokrom, although I have not done so through systematic survey and shovel testing in this area. Large sites are often easy to relocate with chiefly and religious informants, but none of the current Bono and Nkoranza chiefs, fetish and shrine priests, or various Islamic leaders in the greater Bono area are aware of the Kramokrom's existence. Raymond Silverman has also been unable to locate the Kramokrom (Silverman personal communication). Near the end of the West African Trade Project and three years after the Bono Manso excavation, Silverman resided in Techiman, Ghana while he conducted his doctoral fieldwork and had similar difficulty in locating any informants that were aware of the Kramokrom's existence (ibid.). However, the reported location of the Kramokrom is not an area associated with modern settlement. In addition, the area where Effah-Gyamfi reported the Kramokrom is a difficult area to traverse. There are no paths or foot trails, and the thorny vegetation is impenetrable with no surface visibility. Vegetation consists of scrubby secondary growth; perhaps the land was cleared through slash and burn in previous generations for agricultural purposes and the formerly fallowed fields have been left to regrow in their natural state. Many of the Akan sites identified by Effah-Gyamfi are located near modern settlements, as such current chiefs and priests are well aware of their existence and very willing to show foreigners interested in local history. The closest settlement to Bono Manso with a predominately Muslim population is Dwenewohu, located 4km *east*. Elders and community members were generous with their time, and allowed me to attend a town meeting where they discussed their oral history with me. Elders and stakeholders reported settling in the area a long time ago and participating in slave trading activities with Bono Manso. There were some unusual exposed bedrock features that created natural caverns, partitioned chambers, and rockshelters. Dwenewohu informants said these geologic features were used as temporary holding areas for slaves. A survey of the rockshelters and geologic features did not yield any artifacts or archaeological features that indicated use. Slave holding areas were documented at the Salaga market in the form of carved bedrock “plates” and slave “wells” or individual cells (Kankpeyeng 2009). In the town of Techiman, I have interviewed the Wangara/ Dyula Imam. He is aware of former Wangara/ Dyula settlements in the region; however, he said his knowledge of settlement patterns and daily life only extends into the late 18th century. Effah-Gyamfi’s did not describe the architectural or mound features of the Kramokrom. Its dates are based on the presence of Phase I and II Bono wares.

Chapter 5 Research Questions and Linking Arguments

One of my goals is to evaluate how the households of the Bono Manso region were organized in terms of labor and range of daily activities. I focus on production, consumption, and status differentiation. To understand the political economy I need to assess the contribution of the house, its inter-household relations, as well as the relations between Kranka Dada and other sites in the Bono Manso polity. Inter-household comparisons help us determine how household labor and organization articulate with consumption and status differentiation. In this chapter, I discuss the process used in selecting an appropriate site for archaeological study, research questions, and the archaeological correlates of the models/scenarios outlined in the previous chapter. I discuss how I conceptualize production, consumption, and status differentiation. I will include the quantitative and qualitative data to measure, compare, and evaluate household-to-household relationships as well as socioeconomic relations in the Bono Manso region.

Site Selection

Bono Manso is a large settlement, and due to its large size, I thought it was too large a site to obtain a representative sample through excavations given the funds and time constraints faced as part of a doctoral project. I selected Kranka Dada because it was a smaller site in good condition and I could obtain a more representative and larger sample. Furthermore, mounds at Kranka Dada are in excellent condition and were minimally affected by agricultural activity, modern village development, and aeolian/ alluvial erosion. During my pilot seasons, I systematically collected diagnostic materials from the entire surface of each of the 13 mounds. The most abundant surface artifacts were sherds. Similarities in rim shape, surface decoration, and surface treatment indicated Kranka Dada was contemporaneous with Bono Manso. Kranka Dada was a village site, and because of its smaller size, I was able to obtain a more representative sample of village households than I would have been able to obtain through excavations at Bono Manso. Other village sites in the region would have been appropriate for excavation, such as Tanoboase and Amouwi. The modern village of Tanoboase has grown substantially and covers much of the site. To create a detailed map of the ancient settlement would be difficult. Amowi was difficult to reach without a four-wheel drive vehicle, which was beyond my budget. Kranka Dada was in excellent condition, minimally. Kranka Dada was in excellent condition, minimally disturbed by modern development, accessible, and of a manageable size for a doctoral project.

Work at Bono Manso

Previous excavations at Bono Manso did not cover a large percentage of the site. Effah-Gyamfi's and my research questions differ. Each archaeological project focuses on obtaining different types of data. This difference in focus creates some difficulty when comparing the Bono Manso and Kranka Dada political economies. Additional comparative data are derived from Banda and Begho, which can be used to assist in building an understanding the socioeconomic relationships between urban core (Bono Manso) and rural periphery (Kranka Dada). Ethnohistory, history, and oral history can provide glimpses into daily life and regional and global exchange relationships but archaeology provides data on earlier periods and on population sectors often overlooked or deemed irrelevant by historiographical processes, power relationships, and can provide an independent line of evidence into the past (Deetz 1977; Monroe and Ogundiran 2012; Robertshaw 2004). My study was designed to collect sufficient data to develop socioeconomic models to explain the development of West African polities during the sub-Saharan to Atlantic Trade eras, and to examine how households were affected by regional and global economies during this tumultuous era.

Research Questions and Archaeological Correlates

The questions driving my research were (1) How was Kranka Dada integrated into the political economy of Bono Manso? (2) Did that integration affect household participation in regional and global exchange networks? and (3) Did the type of integration change over time? I focus on craft production, consumption (as well as participation in regional and global exchange), and status differentiation (as reflected in architecture, subsistence, and etc.). Three idealized scenarios or models may describe the spectrum of domestic economies of Kranka Dada and how it was linked to Bono Manso and regional networks. I will be evaluating the degree of fit between my excavation data and these three idealized scenarios. Political, economic, and ideological institutions and linkages between Kranka Dada and Bono Manso were likely present. Due to this diversity, the *specific* archaeological correlates based on the scenarios from Chapter 3 are discussed in detail below.

1. **Hierarchical Relationship with Vertical Integration**

If the relationship between Kranka Dada and Bono Manso was hierarchical and Kranka Dada was a Tier 2 site vertically integrated into the Bono Manso polity, I would expect Bono Manso to have imposed its policies, practices, and exercised institutional/ administrative control over Kranka Dada. Administrative control would be delegated to a local authority that operated within the existing structure of the Bono, and some of the local beneficiaries or local elites should be distinguishable by symbols of political authority and sumptuary goods (e.g., elephant/ hippopotamus ivory, linguist staffs, guns). There will be differences between elite and commoner residences reinforcing the politically and socially stratified order (e.g., room plan, size, architectural styles similar to Bono Manso elite houses). Two types of households are expected, commoner and elite.

In this scenario, Kranka Dada's economy was a small component of the larger regional economy, and Kranka Dada was unlikely to be either politically or economically autonomous. Due to asymmetries in sociopolitical complexity and goods or service demands by Bono Manso, domestic economies and networks within Kranka Dada would be organized by elites. Elites would have managed or overseen production of goods commanded/ required by Bono Manso. The village is likely to be a specialized producer of a single craft item (e.g. ceramics, agricultural products, or iron, etc.) reflected by high quantities of production debris associated with the commanded goods in the majority of households. Low levels of inter-household economic diversity are expected as the village economy is managed, regulated, and centered on the production of goods for Bono Manso. As part of Bono Manso's control, access to sumptuary items would be limited to Kranka Dada's elite managers. As an alternative, some commoner households may elect to participate in regional economies via small amounts of simultaneous surplus production. Goods procured by commoner households will be different from elite goods in terms of quantity, quality, type, and diversity of materials while qualitatively similar from commoner-to-commoner households.

2. **Semi-autonomous relationship combined with vertical integration**

Some aspects of Kranka Dada's political economy will be linked to Bono Manso institutions while others will not. For example, Bono Manso may command specific tribute or taxation quotas of certain goods or labor (e.g., gold, foodstuffs, etc.). Apart from specific quotas of commanded items, ruling elites were likely not interested/ did not control remaining household activities. Households would be autonomous in some aspects, but controlled in others. Such a combination of autonomy and control could open the door for the rise of varied participation in global and regional markets. Successful market participation would be dependent on a household's ability to acquire and manipulate resources, and produce surplus goods or commodities after meeting taxation/tribute requirements from Bono Manso. Household economies will show a mixture of taxation requirements and autonomously organized activities. Unlike the previous scenario, there will be inter-household differences reflecting idiosyncratic organization, division of labor, activity scheduling, and breadth of crafting activities indicating the household managed and scheduled production. Household market participation would vary. While the types and quantity of regional and global goods between households may vary, there will be patterning in the variability in the goods procured. Three types of households are expected: commoner, elite with connections to Bono Manso, and elite without connections to Bono Manso. Wealthy households without connections to Bono Manso may have acquired some luxury or exotic items depending on opportunities and preferences, but specific items linked with Bono Manso political authority will be limited in scope and distribution.

3. **Horizontally Integrated Relationship**

In this scenario, there is no evidence for vertical linkages between settlements. Linkages between settlements will be present and will likely be based on dynamic and changing institutions (ritual, economic, etc.). Household economies are expected to be diverse to meet their own needs. Variation between households is expected with some enterprising households succeeding and others having limited ability/interest in participating in regional/ global markets. Wealth, status differentiation, goods accumulation/ acquisition patterns, and associated institutional linkages need not co-occur. Multiple types of households will be present with diversity expressed in different patterns of material culture with different trade items, occupation, knowledge, regional/global network participation. Inter-household goods acquired will be idiosyncratically varied without the structured institutional linkages to Bono Manso, meaning that households will acquire goods based on their own preferences, not associated with political institutional authority from Bono Manso. In addition, patterns of goods acquired and produced will vary substantially by household. Some households may specialize in economic activities, but they will do so of their own volition. Households may seek out different partners in different types of networks—exchanges with Dyula merchants, kin relations, others with specialist knowledge. Horizontal integration is more than horizontal complexity. Rather, horizontal linkages in this model allows for a dynamic decentering and reformulating of local initiative (Cobb 2009) and accumulation of wealth in people as a means of securing differential knowledge, skills, and supralocal network connections (Guyer and Belinga 1995).

Archaeological strategies were designed to obtain appropriate materials to generate data to evaluate the different types of socioeconomic development and institutional relationships between Bono Manso and Kranka Dada. Mound to mound and floor to floor comparisons and household inventories provide the kinds of data that suggest trading partners, patterns, craft production, etc. Table 5.1 lists the archaeological and material correlates that will be used within this study. These models are designed to be simple and contrastive such that they can and should be modified as future excavations from other Bono Manso village sites in the hinterland are completed; the models are based on historic and ethnographic data. Socioeconomic relationships do change over time; however, such shifts would be highlighted by the models. The models focus attention on the critical axes and key variables of social and economic variation that will aid in documenting how vertical and horizontal relationships articulate with households. These models will be refined with archaeological data; premature integration of historical, oral, and ethnographic sources without working through archaeological methodology and epistemology may lead to questionable reconstructions (Robertshaw 2004; Stahl 2001).

Table 5.1 Archaeological Correlates

	Production	Consumption	Status Differentiation
Vertically Integrated Hierarchy	1. Similar tools, materials, and production debris across multiple households and crafting areas associated with commanded goods 2.Similar organization of craft production across households 3. High quantities of commanded good refuse per unit volume	1.Low quantities of commanded goods* 2. Low ratio of luxury/ sumptuary goods to local and regional goods* 3. Different consumption patterns between elite & commoner households in terms of type, breadth, quality, and quantity of goods consumed 4. Sumptuary goods limited to elite households 5. Widespread use of Bono Manso stylistic elements in ceramic decoration, pipes, etc.	1. Two types of households: elite and commoner 2.<u>Elite</u>: insignia of political office reflecting a relationship with Bono Manso (e.g., elephant and hippopotamus ivory trumpets, linguist staffs, brass or gold umbrella finials/handles, drums, stool ornamentation, guns, ceremonial swords, access to horses, etc.),
Semi-Autonomous	1.Similarities across multiple crafting areas for the production of taxation goods (tools, debris, discarded substandard goods) 2. Different organization of craft production across households 3. Low/medium quantities of taxation good refuse per unit volume	1. Three consumption patterns between households: <u>a. low-status</u>: local and regional goods only <u>b. high-status no connection to Bono Manso:</u> luxury items not associated with symbols of political authority <u>c. high-status with connections to Bono Manso:</u> restricted access to luxury items associated with Bono Manso political authority	1. Three types of households (low status, high status with connections to Bono Manso, and high status without connections to Bono Manso) 2. High-status households associated with Bono Manso will have a limited range of items/ badges of chiefly office

		2. Mixed use of Bono Manso stylistic elements in ceramic decoration, pipes etc.	
Horizontally Integrated	1. Differences in types of materials produced by each household (range of crafts, scale of production, organization) 2. No two households appear to be specializing in the same item	1. No strict patterning; each household consumes according to their preferences and ability	1. Multiple types of households (e.g., local elite, entrepreneur, farmer, etc.) 2. Wealthy households/ local elites will not bear any of the traditional marks/ insignia of Bono political office

* Compared to Bono Manso, but not other smaller satellite settlements

The analysis of materials recovered via excavation is oriented toward documenting the organization of daily life activities and their change over time in relation to the regional political economy. As previously mentioned the three gross anthropological categories used to evaluate the various models of socioeconomic development are production, consumption, and status differentiation. In addition, I pay particular attention to developing a fine-scale chronology through radiometric dating which will facilitate an examination of change over time. Small finds from heavy fraction flotation will provide control of micro-material smaller than the screen. Unless otherwise noted, I have analyzed all discussed artifacts.

Houses and Households

Documenting household-level activities and social processes are key to understanding how domestic economies intersect with political economies and inter-site interactions. Furthermore, the activity area and the house are typically the smallest economic decision-making units. Due to the flexibility of household composition and internal dynamics, particularly in African contexts (Agorsah 1986; Guyer 1981; Netting, et al. 1984), my analysis examines patterning in material culture in different archaeological units (features, house floors, courtyards houses) to reconstruct differences and variability in household organization.

Houses are not households. From the houses and associated artifacts in the archaeological record, we work to infer what kinds of activities took place there and what social units occupied those structures. Due to the social complexity and flexibility of households, I apply a restricted definition of "archaeological household" to the research. Following Nash (2009:224), I consider an archaeological household as a coresidential group that utilized interior and exterior occupation surfaces, features, and material culture within the areas of structure(s) or multiple structure compounds. Such an approach provides a useful starting place to examine the variability of the mounds and domestic structures. This approach will allow me to examine variability within and between houses and mounds, and helps link household archaeology from other world regions to an African case study.

Field Methods and Sampling Strategy

During the pedestrian survey, I created a map of Kranka Dada using a hand-held gps. I determined the top of each mound, the limits of each mound, and the limits of the whole site. I used a 50-m tape and a compass to map the site. Mound size and shape were two of the variables I recorded as well as the frequency and types of artifacts present on the surface. I collected diagnostic materials from the surface of each mound. The majority were sherds from everted-rim jars. Fragments of smoking pipes were recovered from 3 mounds, indicating that at least a portion of the site was occupied during the Atlantic Trade era. These data indicated that Kranka Dada was a suitable site for future research. It was assumed that there was some relationship between surface and sub-surface deposits in spite of the agricultural activity (Odell and Cowan 1987; Redman and Watson 1970; Roper 1976). Much of Kranka Dada has been cultivated which has led to the lateral displacement of artifacts. Individual mounds, however, were spaced widely, which created a buffer zone around each mound. There were buffer zones around each mound, which I considered large enough to negate the effects of the lateral displacement of different artifacts from agricultural activity, making the surface assemblage on top of each mound relatively reliable indicators of sub-surface artifacts.

Rather than create small scale excavation units into each of the mounds and sample a higher frequency of the mounds, I used an excavation strategy created large horizontal and vertical exposures in three different areas of the site (3 areas at 4 x 4 m to an average depth of 1.5 m to the base of cultural deposits). I selected three areas of the site for intensive excavation in order to assess degree of variability of structure, functions, activities, and artifacts within the Mounds. I chose Mounds 1, 2, and 5 for horizontal exposures. I selected each of the three mounds for different reasons. Mound 1, the largest mound, had the most diverse and abundant artifact assemblage on its surface; an initial test excavation was placed in Mound 1 to evaluate the stratigraphy and suitability for extensive excavation. I selected Mound 2 because it was large, but without the same abundance and variability of surface artifacts as Mound 1. Mound 5 was selected because the surface artifacts suggested contemporaneity with Mounds 1 and 2; I thought its small size might indicate a different function, which would help establish the range of activities at Kranka Dada. It was important to me to sample larger spatial areas in order to recover artifacts and document structures that were temporally associated with one another. The research questions could be best answered by obtaining larger horizontal exposures.

Household Production, Consumption, and Status

Household production and consumption can represent opposite ends of a long-term process. To evaluate production, I examined production areas of different houses and mounds and documented the types and range of goods and services produced as well as the scale and intensity of production within different types of artifact classes: mainly ceramics, domesticated fauna, and metals. The spatial distribution of tools associated with production, production debris, and discarded substandard goods from house to house are important measures for reconstructing how craft activities were organized. Some evidence for apprenticeship and learning should be present within household production. Production similarities from house to house activities and production beyond the needs of the household suggests some loss in household autonomy in craft choices and over the types of goods produced. Such a pattern would be used as evidence of the presence of commanded or taxed goods by Bono Manso. Differences across household and the organization of their associated activities suggest a level of household autonomy associated with some horizontal integration. Spatial patterning of how goods were produced is important; some types of activities such as weaving may be restricted to certain types of households. Seasonality could play an important role in determining what types of goods are produced at specific times. Quantities of refuse per unit volume are a measure of the scale or intensity of production. Excavation strategies were designed to obtain a sample for a sufficient number of mounds so that the range of crafts and items produced can be documented. There is a temporal dimension as well; the range, distribution, and intensity of goods produced by different households can change over time.

Consumption patterns between households are important measures for determining how households participated in long-distance exchange and interaction with Bono Manso. Analysis of the consumption patterns from Kranka Dada will show how the members of different households negotiated dominant structural and social influences while acquiring goods for their needs based on their own preferences and opportunities. Market forces (like supply and demand networks, trade mechanisms, sumptuary restrictions, tariffs, and etc.) influence how certain types of goods move through space; however, consumers have preferences that are shaped by ideology, symbolic relationships, ethnicity, status, prestige, and social relations. In addition to a utilitarian dimension, goods acquired from regional and global markets have social and cultural meanings. There is an intersection between consumer preferences/ initiative and structural influences as consumers participate in shaping the meaning and materiality of certain types of goods (Dietler 2001; Mullins 2011). Following Mullin (2011:135), consumption is defined as a process of self-definition and collective identification that cannot be examined in the absence of structural relationships that influence the ways people socialize/ attribute meaning to goods through embedded symbolism and active consumer behavior. There is material and symbolic aspects to documenting consumption can be detected by comparing the consumables by different households. This is operationalized through quantitative and qualitative measures designed to highlight the strategies each household used to acquire useful and meaningful goods in overlapping exchange networks.

The patterns of interest in this study are the spatial distribution of goods, the temporal distribution of gods, the relative frequencies of types of goods between households and sites, context of goods recovered, and the association of different types of artifacts recovered together. The documentation of used, modified, recycled, and discarded goods shows the range of household activities from Kranka Dada. Consumption activities can be broad and show a history of food use via staple agricultural products, arboricultural products, meat, and alcohol. The range and relative proportion of serving, storage, cooking, and special use vessels in each household can shed light on the diversity of domestic activities. New types of crops and goods can be appropriated by different households and assimilated into local practices. Consumed goods serve functions beyond subsistence needs, such as tobacco and an examination of smoking pipes. Goods such as beads and other items of personal adornment serve as symbolic markers for social and cultural relationships. The adoption of ceramic designs, architectural patterns, ritual practices, and ritual paraphernalia can indicate assimilation and integration into larger regional networks and political economies. The consumption of locally produced goods is compared to goods from supralocal exchange networks using quantitative and qualitative measures.

Household wealth and status are not isomorphic, although they are often related. In agrarian societies, household wealth is often correlated with the size of the household and the occupations of household members (Blanton 1994; Netting, et al. 1984; Yanagisako 1979). Larger households have larger pools of labor and consequently are able to produce more goods and commodities generating more wealth. No single category of artifact correlates with wealth or status; rather, the categories I have presented above are best understood through a constellation of criteria. Household wealth will be evaluated on the basis of material possessions and architectural patterns[21]. Following Haller (Haller), I define *wealth* as access to and accumulation of goods and services. This definition is appealing in that it avoids correlating wealth purely as a financial measure. Although data are available from European sources that quantify the price of durable and non-durable goods entering African markets, this does account for how the Bono households incorporated new goods and exotic commodities into their daily lives and

[21] No burials were recovered or documented from Kranka Dada. Burial data would have been helpful in documenting status and access to wealth goods. Ethnohistoric data indicates that land holdings are a useful measure of wealth and status, but there is no way to measure this archaeologically. In addition, ethnohistoric data indicate clothing, cloth, and silks were important status and wealth markers, yet these are not expected to survive due to poor tropical preservation.

activities. Goods and commodities can take on new meaning and values, which can become incorporated into cultural systems in unexpected and innovative ways, and have complicated life histories (Appadurai 1986; Gijanto 2011; Kopytoff 1986; Ogundiran 2002; Richard 2010; Thomas 1991). By defining wealth as access to goods and services, having access to novel goods and new technologies can be used as a measure of wealth produced in larger networks. Status is a relative measure of one's position or social ranking in relation to others. In the Akan world, status can be acquired and achieved. The ability to obtain political or religious office has some birth/ hereditary requirements, but ability must also be proven via achievements (Brempong 2000). Documenting status without burial data is difficult. Status will be inferred by establishing household links from Kranka Dada to Bono Manso and acquisition of certain goods from long distances. The presence of items, insignia, or badges of office that indicate connections between the two areas are crucial, e.g., chiefly insignia or paraphernalia solely associated with elite or chiefly status. The specific archaeological correlates listed below may best reflect political elite status and differential access. It is possible that documenting the high status of non-political elites involved in ritual and economic institutions may be not as straightforward.

Ceramics

Ceramics are the most abundant artifacts recovered from excavations at Kranka Dada. For this study, I included only rims, bases, lids, and decorated sherds. The undecorated body sherds are stored in the Ghana National Museum for future study. I analyzed a portion of the undecorated body sherds, but since the sample may not be representative I do not consider them here. See Appendix Table 9 for a complete list of all recorded attributes.

Rather than try to create time-sensitive and chronological types, my ceramic analysis strategy is geared to developing a typology of vessels by function from Kranka Dada. I coded information on the technological, descriptive, and use history of vessels (Berns 2007; Haour, et al. 2010; Rice 2000; Rye 1981; Shepard 1956). I wanted to understand how different activities were spatially distributed across Kranka Dada and whether they changed over time. As such, a political economic agenda can be documented by the quantitative and qualitative attributes that relate to how space was organized and used indicated by the distribution of vessels by function. Production of ceramic goods is determined by quantities of refuse, presence of wasters, evidence of learning/ apprenticeship, and tools associated with production.

I analyzed sherds for functional and stylistic traits. In order to document the range of activities each household engaged in, vessel shape and damage to vessels were two key variables. Vessel orifice diameter (open vs. closed) as well as vessel function (bowls, jars, etc.) were used for documenting different activities. Damage to the interior of a vessel including striations, patchy abrasions, and burning indicates that the vessel was used for cooking. Data on thermal damage indicates how vessels were used. Water and grain storage vessels are likely to have distinctive modal sizes and a restricted orifice and thick walls. Water storage vessels may have surface treatments designed to reduce the evaporation. Information from manufacture, use, and discard will aid in my reconstruction of daily activities (manufacture, cooking, storage, and serving) and special occasion/use vessels (e.g., alcohol containers with pitted interior traces [see Smith 2008] (Mayor 2010; Soper 1995; Wallaert-Petre 2001). Documenting the distribution of cooking, storage, and special use vessels aids in reconstructing how individual households contributed to the larger economy. In addition, the context of different types of vessels is an important dimension for understanding how different households were integrated into the regional economy. The use of non-local ceramics by Kranka Dada households indicates access to goods acquired from regional and global markets. The adoption of stylistic attributes, such as decorative techniques, shapes, and finishing techniques on locally produced vessels indicates a voluntary emulation of traits.

Consumption and status differentiation can be closely linked. As such, the spatial and temporal distribution of the different types of cooking, storage, serving ware, and special use vessels allows for an assessment of inter-household status. Higher proportion of special use and serving vessels are expected in higher-status households, and a greater diversity in ceramic forms used in food preparation is expected. New foods were introduced through the Atlantic trade era (Alpern 1992; Logan 2011). There may be elite preference for new foods; food preparation methods may differ and be expressed in new types of vessels. In terms of access to goods and services, information on non-local vessels will enable me to look at large-scale regional and global interaction, and differential access to market goods. Many ceramic attributes (e.g. differences in paste, temper) are used in West Africa for inferring regional movement of ceramic forms (Cruz 1996; Ogundiran 2007; Stahl 1999). Qualitative measures like differential access to ceramic vessels with superior craftsmanship are expected to correlate with wealth and status. Household goods like ceramics are important because they can communicate information. Diversity in ceramic decorative techniques and finishing techniques are expected to correlate with wealth. Some styles may be associated with status. If vessels are stylistically similar to Bono Manso types are recovered from special use contexts (similar to vessel caches and types from Begho), this may indicate institutional linkages and high status.

Faunal Remains

Faunal remains can reveal past food consumption patterns. The Bono Manso region was fortuitously located at the forest savanna transition; one benefit was that wild resources could be procured from different catchment areas. In addition to wild resources, caravan travel introduced some domesticated species into the Akan region. Faunal remains are examined to reconstruct differences in inter-household patterns of diet breadth and quality of resources (Dueppen 2012; Gautier and Van Neer 2005; Schmitt and Lupo 2008). Faunal remains were analyzed to identify their genus, size class, whether they are juvenile or adult, and whether wild or domesticate. Through analysis, an evaluation of the types, range, age, and health of domesticated animals within the faunal assemblage play an important role in documenting production and consumption. In addition, the presence of the production of inedible animal products such as porcupine quills and ivory can indicate the production and use of non-edible animal materials. Meat and animal products such as leather, skins, etc. could have been obtained from multiple sources.

In order to document consumption patterns, I identify and evaluate the taxa present with the goal of identifying families, genus, and species and document how the different taxa were processed and consumed. Consumer behavior is documented via food preparation activities including the identification of cut marks, butchery practices, marrow processing, and patterns of burning. Large bovids and other types of animals were available in the forest savanna transition of Ghana.

In tropical environments, meat would have been processed and consumed quickly. Salt is required for curing meat; however, salt was expensive (Mauny 1961). The nearest salt deposits to Bono Manso and Kranka Dada would be the coast or geologic salt deposits from northeastern Ghana (Neumark 1977:137). Coastal sea salt was traded along the Volta River with the closest port and outpost being Kete Krachi (Sutton 1981). While this cannot be determined archaeologically--it would have taken a minimum of several days for salt to travel to the Bono Manso region's markets. It is likely that the cost of curing animal products obtained from large animals was prohibitively expensive. From ethnohistory and archaeology we learn that aquatic resources including fish were smoked, sun-dried, and fermented (Decorse 2005; Essuman 1992; Rattray 1923). Smoke and salt curing meat from large wild and domesticated game would have also been expensive. Large sections of forest that could be used in charcoal production were cleared for agricultural activities, and charcoal has been documented as a valuable commodity in Akan networks. As such, the cost of curing meat for large game may not have been worth the expense. Distribution and consumption practices of large animals among households may be indicated by cut marks, butchering, marrow processing, and thermal alteration patterns between different skeletal elements of the same animal. A comparison of inter-household faunal remains is used to document different consumption preferences as well as access to different animal byproducts.

Analysis of faunal remains is essential for reconstructing the breadth and quality of resources each archaeological house had access to. Resources include domesticated species, wild species, and imported animals/meat acquired through trade. Higher-status households are expected to show a greater diversity, breadth, and differential access to choice cuts of meat. In addition high status households should have differential access to inedible animal products, such as skins, quills, ivory, etc. These products often originate from the savanna, are from dangerous animals, and often procured by specialty hunters (Kwarteng 2006). Lower status households are expected to have assemblages with higher proportions of species obtained via opportunistic hunting within cleared areas, agricultural plots, and watering holes. As such, both juvenile and adult animals should be consumed indiscriminately. Skeletal elements obtained may correlate with less desirable cuts, and/or low utility indices, and may be associated with smaller size classes of animals. Animal products obtained from the savanna and Sahara was often important in chiefly and religious leader/ shrine regalia (Blier 1998). Preservation bias is likely to destroy these remains, expect for one category, the side blown trumpet. Side blown trumpets were recovered from Begho and interpreted as evidence for a royal court. Although oliphants are rarely recovered, their presence is a particular badge of political office solely associated with the chiefly institution.

Smoking Pipes

Smoking pipes are a special type of ceramic object. All of the smoking pipes recovered from Kranka Dada were ceramic and manufactured in sub-Saharan Africa; no European pipes were recovered. There is no definitive evidence to suggest that smoking pipes were solely used for tobacco. Effah-Gyamfi has suggested that other plants may have been smoked prior to the introduction of New World tobacco based on 2 pipe fragments recovered from Phase I contexts (Effah-Gyamfi 1981; Effah-Gyamfi 1985). While the use of plants other than tobacco is a possibility, the proliferation and abundance of smoking pipes after 1590 CE strongly suggests a rapid expansion of smoking after the introduction of tobacco. The route by which tobacco was brought into central Ghana is unknown. Some suggest tobacco was introduced overland through Sudanic routes (Phillipson 2005). The earliest dates for tobacco in the interior of Africa are from1594/ 1596 from Timbuktu (Alpern 2008; Ozanne 1963). Tobacco was initially demanded by Europeans residing in coastal trading settlements until it became a novel commodity for trade. Along the coast, tobacco was present in Whydah (Benin) in 1580, Senegal in 1607, Sierra Leone in 1612, and Kongo in the early 17th century (Alpern 1992, 2008). Much of coastal Ghana was not suitable for cultivating tobacco, but eventually tobacco was cultivated and traded in the Gonja area of northern Ghana probably from at least 1625 (Shinnie and Kense 1989). Tobacco was traded widely and likely arrived at Kranka Dada through multiple routes. For this study, it is assumed that the majority of smoking pipes were used for the smoking of tobacco.

I evaluated smoking pipes by looking for distal base abrasions and thermal burning within the interior rim and body of the bowl base. Coastal studies of smoking pipes indicate that changes in pipe morphology can be used to create temporal types (Ozanne 1963). Studies of pipes and pipe styles from inland Ghana do not align with the temporal typology established for coastal Accra (Boachie-Ansah 1986; Campbell 2006; York 1973). Some pipe styles popular on the coast have not been recovered from inland sites, and some early styles like Ozanne's Type 1 appear in Brong-Ahafo sites in late contexts or on the surface only (Boachie-Ansah 1986; Campbell 2006; Effah-Gyamfi 1981). Smoking pipes can be analyzed along multiple dimensions, and may show complex temporal and spatial differences. Many ceramic attributes (e.g. differences in paste, temper, decorative techniques) may be used for inferring regional movement of smoking pipes. Documentation of spatial, temporal, stylistic, and the context of smoking pipes is essential for understanding smoking and the use of tobacco.

Because smoking pipes are ceramic objects, many of the same qualitative and quantitative measures between artifact types will serve as the same indicators of wealth. Differential access to smoking pipes is expected to correlate with wealth. In addition to the quantity, smoking pipes recovered from wealthy households are expected to show greater morphological variability, decorative treatments, and surface finishes. Differences in paste and inclusions serve as markers for inferring regional movement and imported pipes. Superior craftsmanship is expected to correlate with wealth.

Stone Tools

Both ground stone and chipped stone tools can be used in documenting a range of household activities from generalized to specialized activities. Chipped or flaked stone technology is a subtractive process. Evidence of that process is visible on both the removed flake or debris and the nucleus from which it originated. Consequently, a lithic artifact can be examined as an individual piece or pattern within the larger lithic technological complex. Stone tool analysis can occur by the item resulting from an individual decision or as an assemblage and part of an aggregate decision-making process. This has implications for documenting different production activities. Patterns at either the individual or multi-individual scale can indicate continuity in practices (e.g., reduction, tool-making, recycling), just as discontinuities in the production and use of stone tools can indicate organizational, social, and/or economic changes (Andrefsky 2001; Gero 1989; Odell 1996; Torrence 1989). I recorded the raw material, measurements, presence/absence of cortex, and completeness of artifact to establish the types of stone tools and debitage produced and for what purposes. I analyzed the debitage, cores, and angular debris. An analysis of formal versus expedient technology can indicate how much labor different households invested into stone tool production.

Ground stone can be used for food-processing mortars, jewelry/ bead production, and the creation of wooden shafts for metal tools (Adams 2002). I recorded the raw material, size, completeness, shape, and use wear (e.g., convex, concave, irregular, etc.). These categories are designed to document the range of activities associated with groundstone. Intensity of household production can be evaluated based on the quantity and types of tools recovered per floor and by volume of the excavation unit.

The range of stone tools recovered from each household is used to document the range of consumption activities by each household. Groundstone artifacts associated with food production will be used in documenting consumption activities and their intensity. The types of chipped stone artifacts can indicate not only what types of objects were produced through different technological means, but why and for what purposes were the chipped stone tools created.

Chipped and groundstone tools are expected to be recovered in much lower proportions in wealthy households, especially those associated with food production. In an agrarian society with wealth in household labor, it is expected that wealthy households will not have an abundance of tools associated with craft or food production because these items are likely be obtained from outside the household. Differential access to groundstone celts is not expected to correlate with household wealth as these are commonly associated with household shrines and medicine making activities. Smith (Smith 1987) has suggested that there may a negative association between household wealth and ritual objects used in household or family shrines.

Metals

Production debris indicating metallurgical fabrication includes smithing slag, smelting slag, and crucibles. Tuyeres indicate the production of metals. Metal objects can be used in the production of other types of goods and commodities including agricultural products and arboricultural products. Objects like metal needles can be used to sew garments and textiles. Historically, metal traps, snares, and knives were used in the hunting and processing of animals (Rattray 1923). Metal objects used in procuring or processing foods will be evaluated to determine presence, use, and types of metal goods.

Metal objects used for specialized craft or food production are expected to have a negative association with wealth and status; however, metal objects used in general household activities (e.g., sewing, repairs) are expected to have no association with wealth and may be distributed between households. Differential access to different types of metal goods (e.g., iron, copper, and brass) is expected to be associated with wealth, especially since copper and brass are likely to have supralocal origins.

Small Finds

Small finds including jewelry, spindle whorls, gold weights, beads, etc. were documented. The spatial, temporal, and contextual data from the small finds will be important for analyzing differential participation in exchange networks between households as well assessing local systems of value (Ogundiran 2002; Richard 2010; Stahl 2007). Because low frequencies of small finds were recovered, I hesitate to put too much weight on their scarcity or absence in a particular context. Differential access to small finds within different household may not be the best indicator of wealth or status. However, descriptive quantitative and qualitative information from small finds will be used to determine if households had differential access to small finds.

Table 5.2 Production, Consumption, and Status Relationships by Artifact Class

Artifact Class	Production	Consumption	Status
Ceramics	1. Intensity by quantities of refuse volume 2. Presence of wasters 3. Presence of tools 4. Discarded substandard goods 5. Evidence of learning/ apprenticeship	1. Vessel form and morphology 2. Evaluation of use and food consumption interior and exterior vessel damage (interior abrasions, striations, thermal burning, residue presence)	<u>High Status</u>- 1. Differential access to storage, serving, and special use vessels 2. Higher proportion of ceramics from non-local origins 3. Adoption of the same stylistic preferences from Bono Manso
Fauna	1. Types, range, age, and health of domesticated animals 2. Evidence for the production of animal goods (e.g., hides, quills, and ivory, etc.)	1. Evaluation of families, genus, and species used 2. Identification of preparation activities: cut marks, butchery, marrow processing, burning patterns	<u>High Status-</u> 1. Differential access to animal of larger size class 2. Differential access to high utility meat 3. Differential access to inedible animals products (e.g., used for skins, quills, ivory, etc.)
Smoking Pipes	1. Intensity by quantities of refuse volume 2. Presence of wasters 3. Presence of tools 4. Discarded substandard goods 5. Evidence of learning/ apprenticeship	1. Presence of use wear damage to vessel including distal base, abrasions, thermal damage to interior	High Status- 1. Differential access to smoking pipes 2. Differential access to pipes from non-local origins
Metals	1. Presence of smelting and smithing slag 2. Presence of production features like tuyeres, crucibles, etc. 3. Use of finished metal goods in the production of other goods (e.g., farming implements, needles)	1. Presence, use, and types of metal goods	High Status- 1. Differential access to metal goods 2. Differential access to metals from non-local origins (e.g., copper/ brass)

Small Finds (beads, gold weights, spindle whorls, etc.)	1. Number by standard units in refuses contexts 2. Presence of wasters 3. Presence of tools 4. Discarded substandard goods 5. Evidence of learning/ apprenticeship		High Status- 1. Differential access to small finds 2. Adoption of the same stylistic preferences as Bono Manso

Chapter 6 Description of Units Excavated and Materials Recovered

This chapter provides a descriptive overview of the areas selected for excavation, field methods, and a description of the archaeological materials recovered by mound. Architecture and a detailed analysis of artifacts from the different mounds are discussed in later chapters. The goal of this chapter is to present an outline of excavation methods and units. I discuss the soil stratigraphy and an overview of the types of architectural features recovered within each mound followed by the counts and weights of the different artifact types recovered by mound.

I assembled a team of 1 University of Ghana graduate student, 2 United States undergraduates, 3 experienced workers, 2 inexperienced workers, and myself. I excavated using both arbitrary 10 cm levels and natural levels to expose house floors with artifacts in situ. Each unit was 2 m x 2 m (unless otherwise noted), and 4 units were placed into each mound. Each level and feature was digitally photographed and mapped using standardized graph paper. In situ artifacts on house floors associated with features were piece plotted. All sediment was screened using ¼" mesh. Three-liter flotation samples were taken from each level and storage feature. All four profile walls were photographed and drawn. Each individual stratum was evaluated for Munsell color, texture, particle size, inclusions, and diffuse/sharp margin contact. A total of 43.2 cubic meters of sediment were excavated at Kranka Dada from 3 different mounds (Mounds 1 ,2 ,and 5) (Table 6.1).

Table 6.1 Sediment Removed from each Mound

Mound	Cubic Meters	Estimated Percentage of Mound
1	17.4	.5%
2	14.4	.7%
5	11.2	1.7%

Much of the site had been cleared with a tractor, for the purposes of growing maize (*Zea mays*). Modern agricultural activities minimally affected the archaeological deposits in part because mechanized farming was limited to tilling. The remainder of the agricultural activities (e.g., planting, maintenance, and harvesting) involves hand-held implements. Mounds 1, 2, and 5 were each affected by agricultural activity in the same way. Agricultural activities affect the top 20 cm of the site, leaving the lower stratigraphic levels intact.

Mound 1

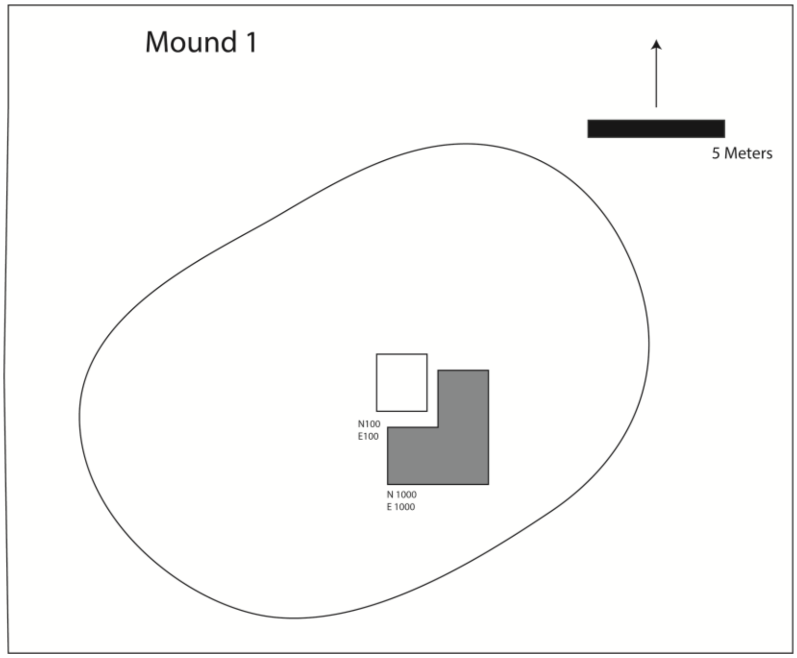

Figure 6.1 Mound 1 Units

Surface collections made during the pilot season from Mound 1 yielded a large number of ceramics and smoking pipe fragments relative to other mounds at Kranka Dada. Mound 1 had the largest surface area compared to other mounds. Thus I selected Mound 1 for a test excavation. Mound 1 is rectilinear in and measures approximately 55 x 35 x 2 m. The mound was been cleared of trees except for one mango tree (*Mangifera indica*) by the family farming the land.

In total, 4 excavation units were placed into Mound 1 removing 17.4 cubic m of cultural deposits. Three contiguous units were placed into Mound 1 at 2 x 2 m each following the pilot season. Agricultural activity conducted after the pilot season disturbed the top 20 cm of sediment. Tilling had aerated the sediment and compromised the walls of the upper levels. Therefore, I created new excavation units slightly offset from the original test excavation unit (Figure 6.1). The test excavation unit at N100 E100 was excavated to bedrock at an average depth at 1.7 m below surface. The N1000 E1000 units were excavated to 90 cm below surface. The 2012 units were not excavated until sterile layers and bedrock were reached. However, they were excavated until the clay deposits with eroding laterite bedrock were reached. Artifact densities and features drop off significantly as the clay is reached. Although the 3 new excavation units did not reach sterile sediment, the key levels had been completed and the majority of information potential was exhausted from Mound 1.

Deposits in Mound 1 varied, but were predominately sandy clay loams. Levels with fill often had thin strata of silty sand that washed into structures. Particle size tends to be fine to superfine with inclusions of charcoal, daub, organic, and small rounded particles. Munsell colors are most often in the 7.5 YR range. With the exception of plaster, divisions between stratigraphic deposits tend to be diffuse. Structure floors often have mottled colors with a weathered daub haze, patchy and disarticulated plastered spots, with some dark organic stains. Overall charcoal content from Mound 1 was high yet evenly dispersed, often accounting for approximately 5% of the individual strata. Structures in Mound 1 were similar throughout the different levels. The presence of architecture was documented by the presence of daub, post molds/ holes, foundations, and plastered floors.

Mound 2

Mound 2 was located 75 m northeast of Mound 1. Mound 2 covers an area of ca. 2,025 cubic meters. It is circular in shape with a slight depression in the center. I placed four excavation units into Mound 2 (Figure 6.2). Three units were 2 x 2 m, and an additional 1 x 2 m excavation unit was added to expand the southeastern wall of the unit to capture a ceramic production/firing feature encountered during excavations. A ceramic production feature was partially exposed in the initial units; therefore, an additional 1 x 2 m unit was added to recover artifacts and document the feature in full. Mound 2 was excavated in 15 arbitrary and natural levels removing a total of 14.4 cubic meters of sediment. Most of the units were excavated to 120cm BD. Due to constraints in the field; units were not excavated to bedrock or sterile sediment. Artifact density decreased dramatically within the lower levels, and it is believed that the majority of structures within the units were exposed. One 2 meter square unit was excavated to 159 cm BD in order to capture additional artifacts and document lower stratigraphic levels and features.

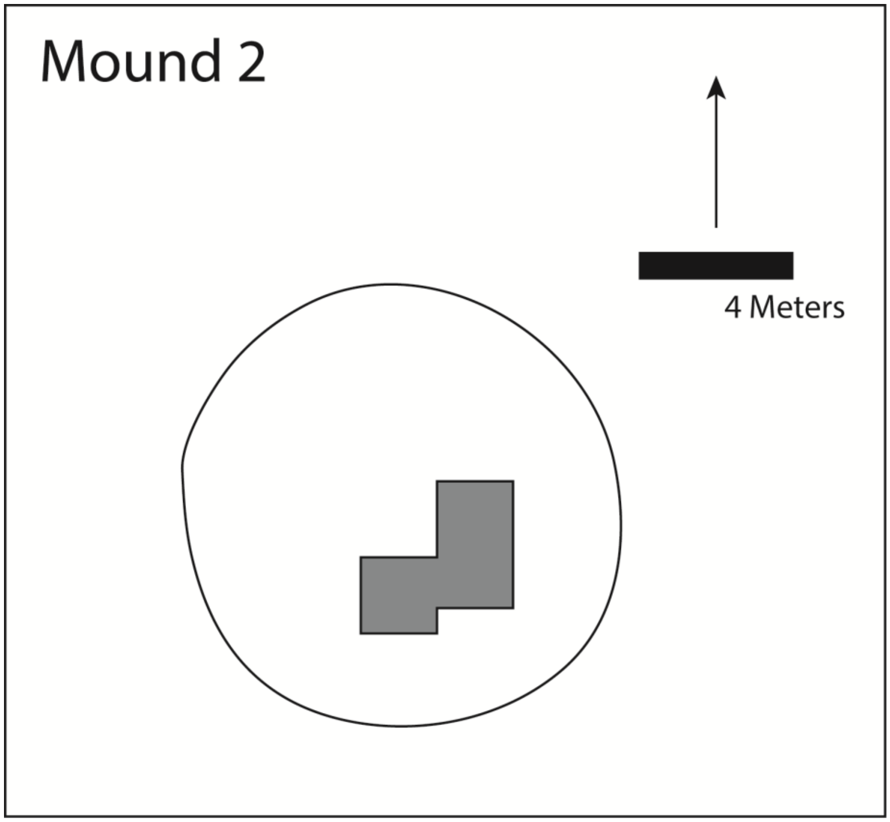

Figure 6.2 Areas of Mound 2 Excavated

Deposits in Mound 2 varied, but most stratigraphic levels were composed of clay loams and silty clay loams. The sandy clay loams found in Mound 1 were not present in Mound 2. Ethnographic sources detailing traditional architecture have documented sand being mixed with clays for building materials; however, architectural debris and deposits from Mound 2 were not mixed with sand. Particle size was fine to superfine with charcoal, daub, organic, and small rounded inclusions. Munsell colors were most often in the 5 YR range. Margins between stratigraphic levels had either clear or diffuse boundaries. Charcoal content embedded in the matrix varied between levels. Some levels charcoal was evenly dispersed accounting for up to 7% of the matrix, but charcoal occurred in some levels as spatially discrete concentrations. The same pattern holds for daub inclusions.

Mound 5

Mound 5 is located 108 m northeast of Mound 1. Mound 5 is a medium sized mound covering an approximate area of 625 cubic meters. It is circular with no depression on the summit. I selected Mound 5 for excavation because it was close to Mound 1, looked to be contemporaneous with Mound 1, (based on ceramic rims and nearby smoking pipes on the surface), and its different shape. I thought Mound 5 might have a different kind of structure and supplement our knowledge about the range of structures that once characterized Kranka Dada. I presumed that Mound 5 would provide a good complement to the kinds of structures that were constructed on Mounds 1 and 2; Mound 5's shape and lack of smoking pipes might suggest that different activities took place on Mound 5, or that it was occupied at a different time, or both.

Four excavation units at 2 x 2 m square were placed in Mound 5 (Figure 6.3). The units were excavated to an average depth of 70-80 cm below datum. Mound 5 was smaller than Mounds 1 and 2. My excavations in Mound 5 removed only 1.7% of the total mound. The units were excavated down to the clay that overlays the bedrock which is nearly sterile, but not all the way to bedrock.

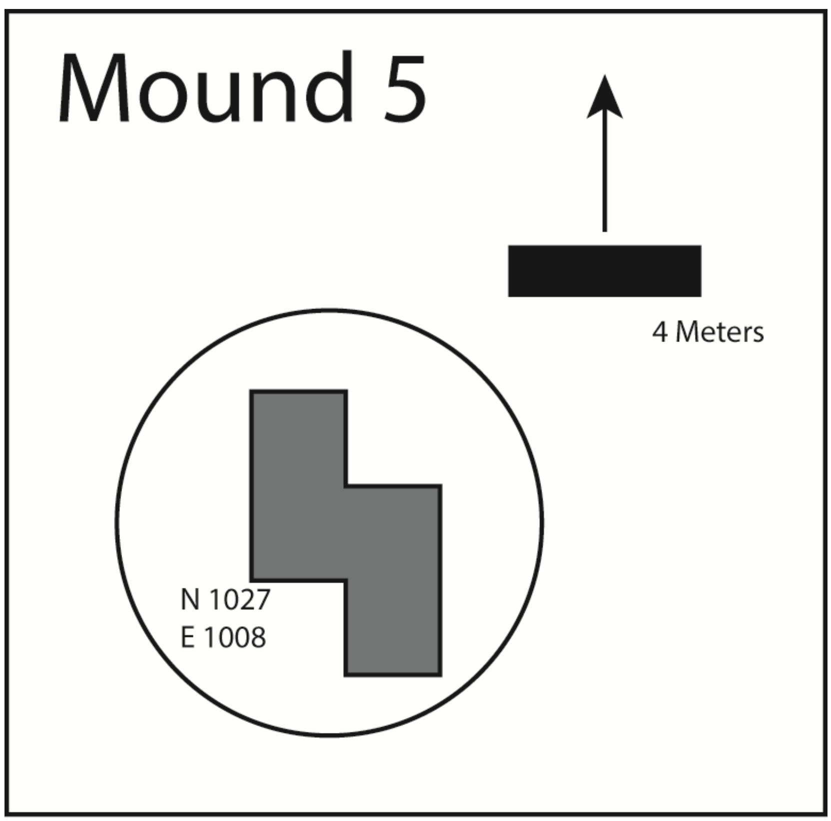

Figure 6.3 Excavated Areas Mound 5

Deposits in Mound 5 varied, but most stratigraphic levels were composed of sandy clay loam or clay. The sandy clay loams were also found in Mound 1, but were not present in Mound 2. Particle size tends to be fine to superfine with charcoal, daub, organic, and small round inclusions. Munsell colors are most often in the 5 YR and 2.5YR range. Margins between stratigraphic levels were mixed with some clear and diffuse boundaries. Charcoal content varied between levels. Some levels had charcoal that was evenly dispersed accounting for up to 7% of the level, but charcoal only occurred in some levels as spatially discrete concentrations. The same pattern holds for daub inclusions.

Descriptive Overview Artifacts

Table 6.2 lists all artifacts recovered by count and weight from all units that are analyzed in this study. This chapter is intended to provide a basic description of the distribution of artifact counts and weights by mound that can be used as a reference for the detailed analysis of artifacts in the following chapters. Within the screened sediment, the most abundant type of artifact recovered was ceramics in both count and weight followed by faunal remains. The third most abundant category is lithic artifacts. Chipped stone and groundstone were analyzed and categorized separately. Smoking pipes account for 3.8% of the assemblage by count and 2% by weight. Other artifacts recovered include: metals, metal byproducts, shell, terracotta rasps, groundstone celts, and small finds that include beads, spindle whorls, stone bracelet fragment, and possible gold weights. These artifacts account for 2% of the analyzed assemblage in frequency and 1.2% of the analyzed assemblage in weight. Although the latter artifact types were recovered in small frequencies, their presence and distribution between households has important implications for participation and exchange in regional and supralocal networks.

Table 6.2 Total Artifact Counts and Weight

Artifact	**Count**	**Percentage**	**Weight**	**Percentage**
Ceramics	5098	78.35%	59916.7	77.20%
Fauna	524	8.05%	2045.2	2.60%
Flaked Stone	323	4.96%	1639.66	2.10%
Pipes	231	3.55%	1409.23	1.80%
Groundstone	195	3.00%	11632.5	15.00%
Shell	68	1.05%	157.9	0.20%
Metals and Metal By-Products	33	0.51%	300.17	0.40%
Small Finds (beads, etc.)	16	0.25%	63.03	0.10%
Celts	11	0.17%	286.22	0.40%
Terracotta Rasps	8	0.12%	161.64	0.20%
Total	6507	100.00%	77612.25	100.00%

Ceramics

A total of 5,098 sherds were analyzed from Kranka Dada, many more sherds were recovered, but only a sample of those was analyzed. Rims, bases, and decorated body sherds were collected and analyzed. Body sherds from undecorated vessels were collected, but not analyzed as part of this study. As such the analysis is biased in favor of decorated ceramics and rims from Kranka Dada, and the proportions of sherd types analyzed may not accurately reflect the proportions of sherd types recovered. The distribution of ceramics by weight and frequency between mounds is not equal (Figure 6.4). The analyzed ceramic sample accounts of 78% total assemblage by count and 76.7% of the total assemblage by weight. Ceramic sherds were identified as: <u>body, rim, base, neck, carination, lid, or indeterminate.</u> Table 6.4 shows how each of these sherd types was distributed by mound. The majority of sherds recovered were body sherds (59%) and rims (36%). The remaining sherd types account for less than 5% of the remaining assemblage from Kranka Dada.

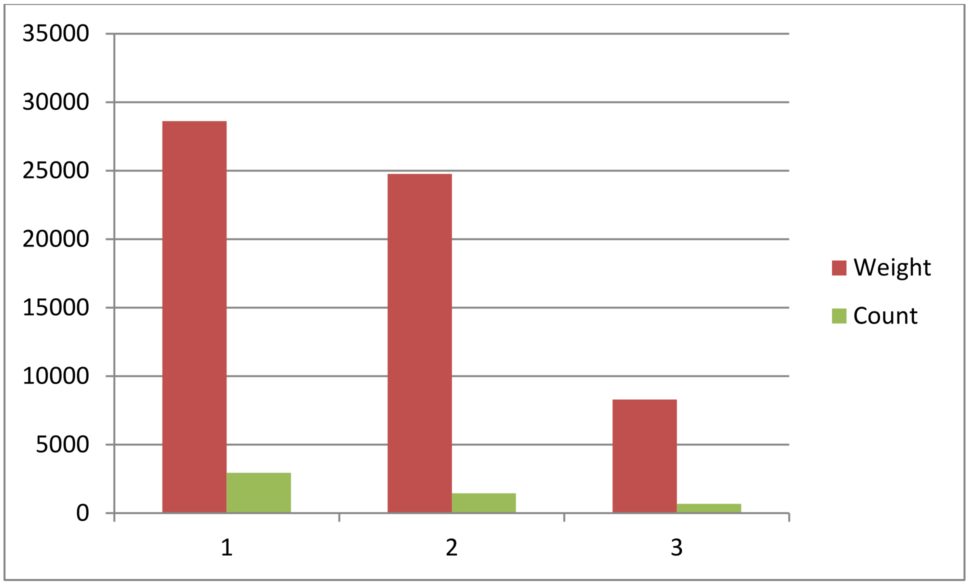

Figure 6.4 Ceramic Distribution by Weight and Count by Mound

Table 6.3 Frequency of Ceramic Sherd Types by Mound

Mound	Body	Rim	Base	Neck	Carination	Lid	Indeterminate	Total
1	2050	789	6	55	31	9	11	2951
2	672	698	5	27	48	2	5	1457
5	282	362	0	24	20	0	2	690
Total	**3004**	**1849**	**11**	**106**	**99**	**11**	**18**	**5098**

Table 6.4 list the types of vessel forms associated with each sherd by mound. The majority of sherds recovered were from closed vessel forms (96.6%). Proportions of open, closed, and indeterminate vessel types between mounds are similar. This suggests that there are no major differences between mounds in the types of ceramic forms recovered. Because the proportion and frequency of closed/ jar vessel forms is ubiquitous throughout the assemblage, this category will not be analyzed further in the following chapters.

Table 6.4 Vessel Forms by Mound

Mound	Open	Closed	Indeterminate
1	20	2873	58
2	10	1401	46
5	9	655	26

Faunal Remains

Faunal remains were the second most abundant item recovered from Kranka Dada. A total of 524 faunal remains were collected and analyzed as part of this study accounting for 8% of the analyzed assemblage by count and 2.6% of the analyzed total assemblage by weight. See appendix (table 10) for a complete account of all attributes and values analyzed within the faunal category. The goal in selecting attributes for faunal remains was to create a system that was oriented toward understanding daily life. Similar to the distribution of counts and weights of ceramics, the inter-mound distribution of faunal remains by count and weight were uneven between Mounds 1 ,2 , and 5 (Figure 6.5).

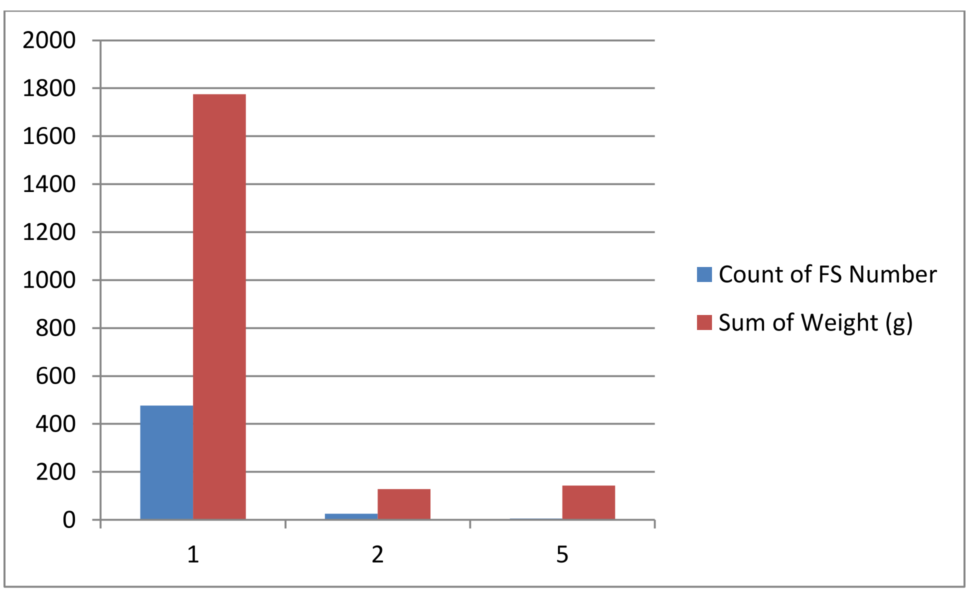

Figure 6.5 Distribution of Weight and Count of Faunal Remains by Mound

Many of the faunal remains were very fragmented, making it difficult to identify remains to genus and species. Each bone was coded to reflect the most specific Linnaean taxonomic category available, which varies between order to species. In general, family was the most specific taxonomic category in which I was able to confidently able to identify remains. Figure 6.5 is a graph of the faunal remains for the Kranka Dada assemblage by family. Approximately 81% of the faunal remains were unidentifiable to categories more specific than family. Much of this is due to the fragmented nature of the recovered bones. The pattern of heavily fragmented remains is very similar to Ann Stahl's analysis of Kuulo Phase and Makala Phase materials with the majority of remains being unidentifiable (Stahl 1999: 32).

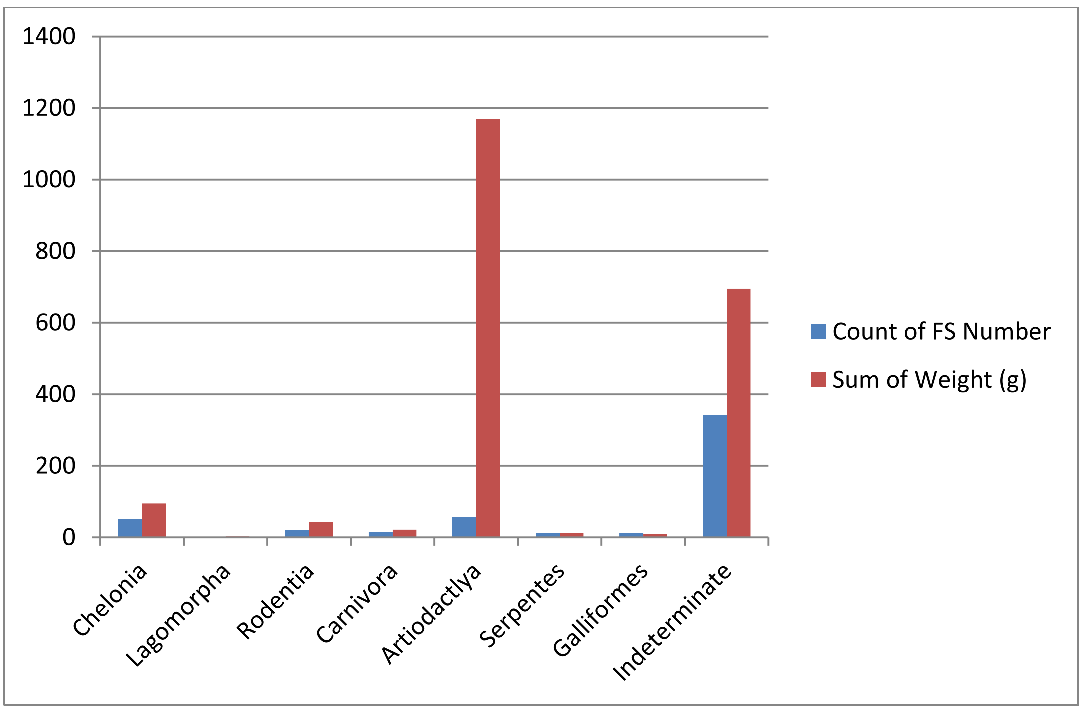

Figure 6.6 Count and Weight of Animal Bone by Order

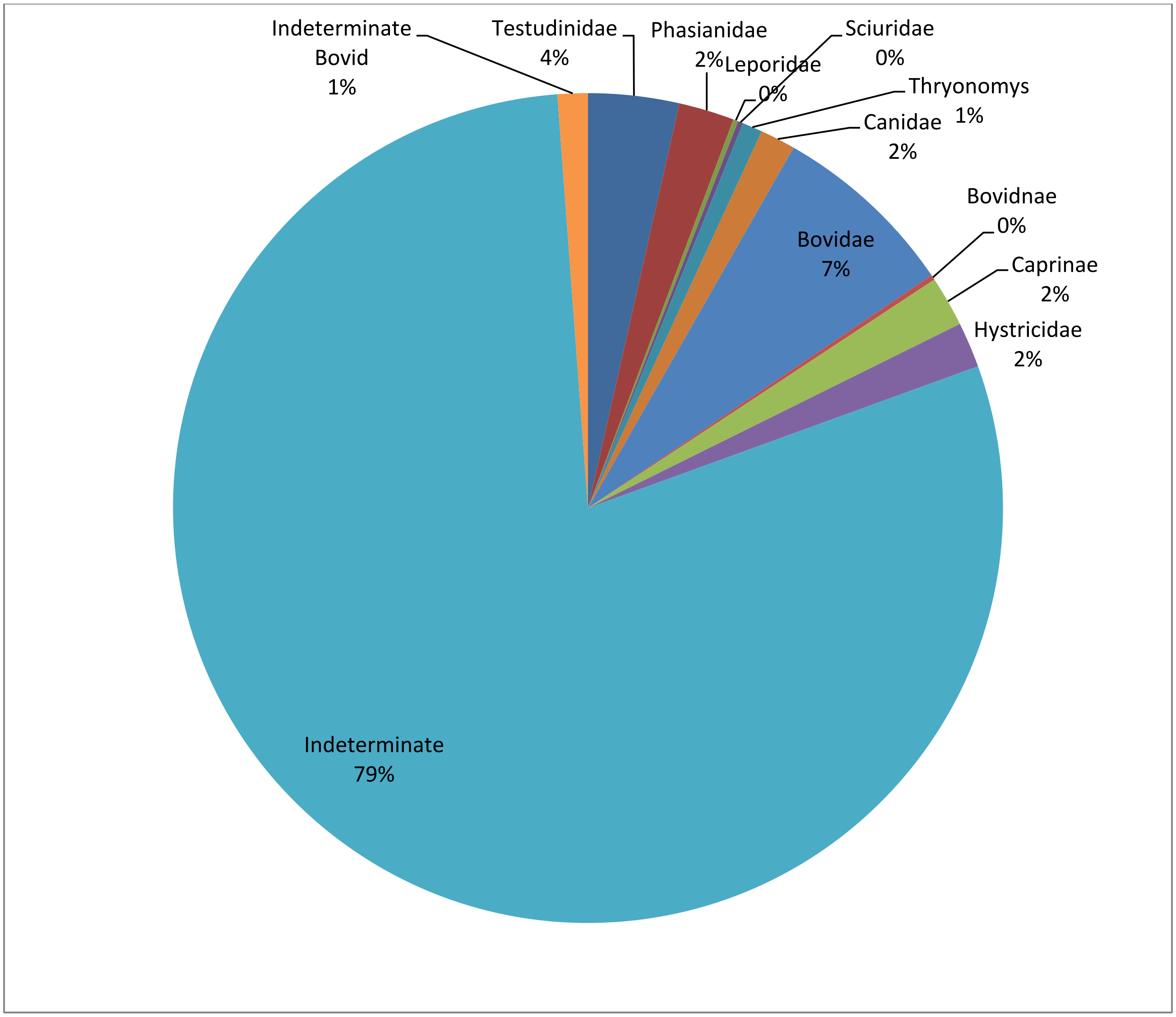

Figure 6.7 Families of Faunal Remains by Count All Mounds

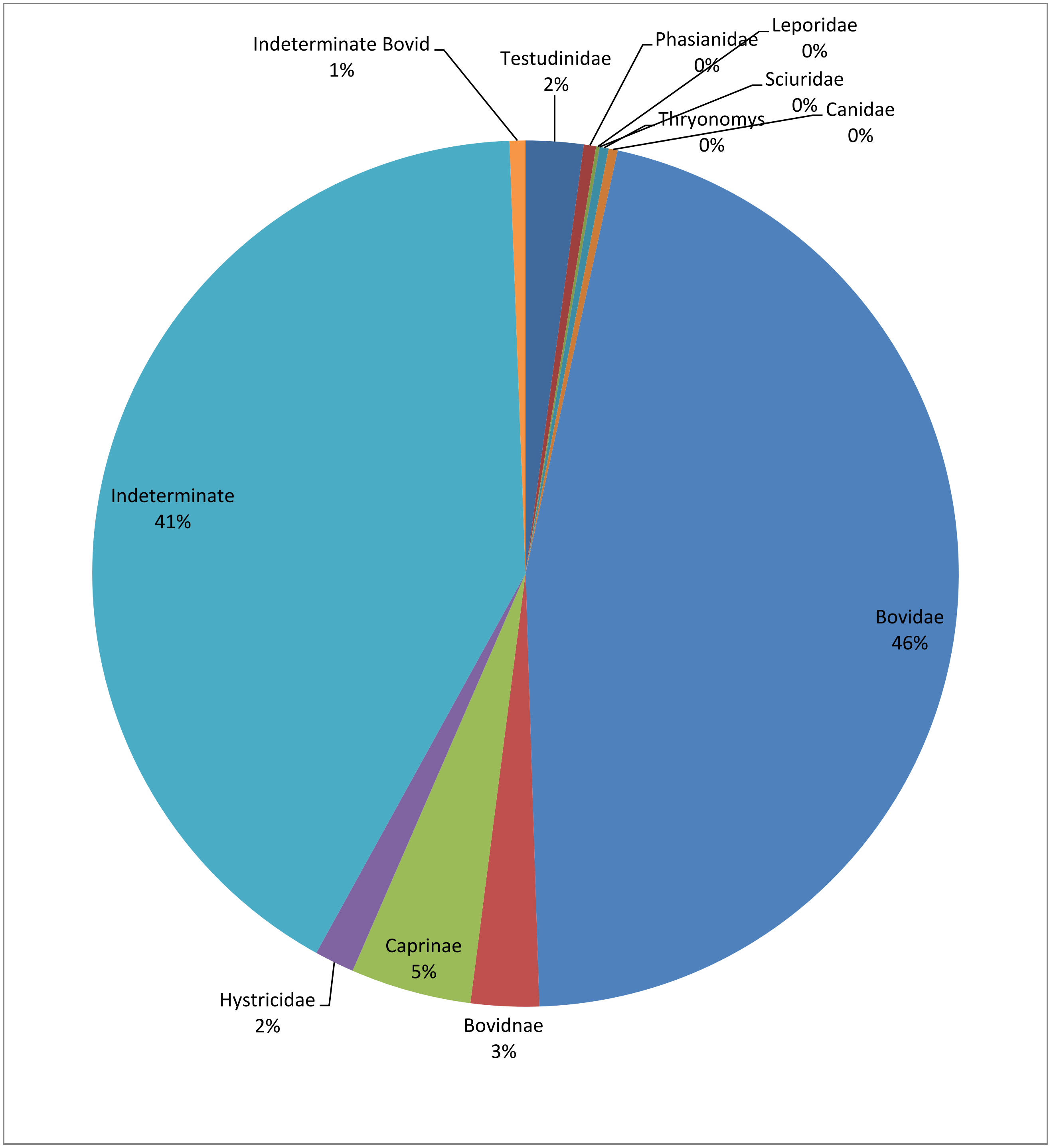

Figure 6.8 Families of Faunal Remains by Weight All Mounds

Flaked Stone

A total of 323 flaked or chipped stone artifacts were recovered accounting for 4.9% of the assemblage by count and 2.1% of the assemblage by weight. Chipped stone artifact were the third most abundant category of artifact recovered from Kranka Dada in both count and weight. Table 6.5 and Figure 6.9 show the counts and weights of flaked stone by mound. The distribution of flaked stone material by weight is more uneven than the distribution of flaked stone material by count. Appendix table 11 lists all the attributed recorded for flaked stone materials. I recorded a minimal set of attributes for lithic material including metric descriptive categories (maximal length, weight), raw material, lithic type (tool, core, and debitage), cortical presence/ absence, and completeness.

Table 6.5 Flaked Stone Count and Weight by Mound

Mound	Count	Percentage	Weight	Percentage
1	94	29.1%	233.57	14.2%
2	86	26.6%	641.31	38.9%
5	143	44.3%	774.78	47.0%
Total	**323**	**100.0%**	**1649.66**	**100.0%**

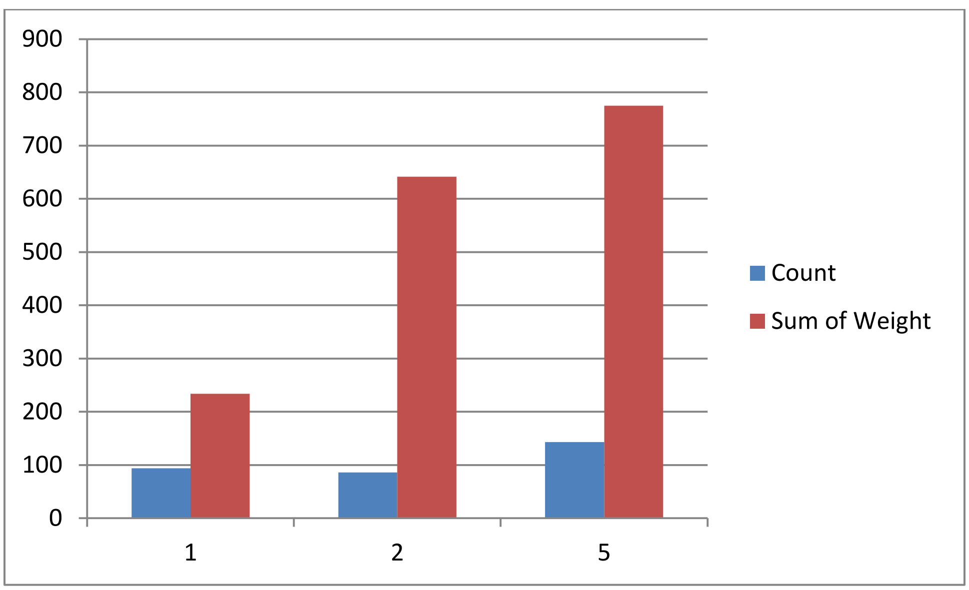

Figure 6.9 Flaked Stone Count and Weight by Mound

Lithic materials were divided into three categories: core, debitage, and tool. Cores are the raw material packages of lithic technology. They are defined as any piece of raw material from which at least one removal has been made. Accordingly, cores bear the negative flake scars from previous removals. Debitage refers to the pieces of raw material removed from a core during the process of core reduction. It includes complete flakes, flake fragments (medial and distal fragments), and angular debris. Morphologically, a complete flake must have a platform and a termination as well as clear dorsal and ventral surfaces. In contrast, a flake fragment will be missing either the remnant of the distal termination or the proximal striking platform and bulb of percussion. This analysis includes both expedient tools, those pieces with macroscopic evidence of wear, and formal tools. Formal tools are the product of greater preparation and production effort than expedient tools and tend to have definable shapes and used for multiple tasks (Andrefsky 1994; Torrence 1989). There is less planning and preparation in the production of expedient tools. Essentially, any piece with an appropriate edge can be used or retouched and used. Both formal and expedient tools are included in this analysis.

Cores, debitage, and tools were recovered from each mound although their distribution in uneven. An ANOVA with a post-hoc Games Howell comparison indicates there are significant differences in the distribution of cores and debitage types between mounds (F value.004). This pattern will be explored more in the following chapters.

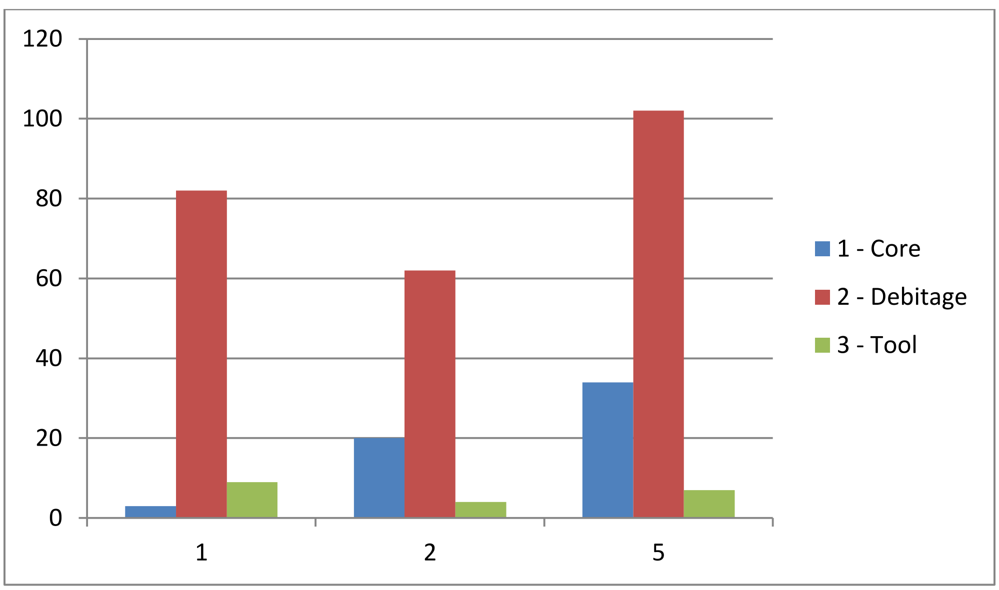

Figure 6.10 Chipped Stone Artifacts by Mound

Lithic materials were identified by raw material. Table 6.6 and Table 6.7 list the flaked stone artifacts by raw material by mound. The most abundant raw material is quartz accounting for 91.3% of the assemblage by count and 68.4% of the assemblage by weight. It is not currently possible to determine the origin of toolstone in central Ghana as the requisite geologic surveys have not focused on sourcing the raw materials listed below. The local geology of the Bono Manso region has quartz veins/ inclusions and outcropping throughout sandstone deposits. I have encountered many small quartz outcroppings through survey, although I did not systematically document them. I believe that the quartz artifacts recovered from Kranka Dada excavations are likely the products of locally available and acquired raw materials. The geologic sources of granite, quartzite, chert, and other raw materials are unknown. Without additional information, it is not possible to examine patterns in local versus exotic raw material acquisition strategies.

Table 6.6 Raw Material Frequencies by Mound

Mound	Quartz		Granite		Quartzite		Chert		Other		Total	
1	80	24.8%	1	0.3%	1	0.3%	11	3.4%	1	0.3%	94	29.1%
2	79	24.5%	1	0.3%	2	0.6%	1	0.3%	3	0.9%	86	26.6%
5	136	42.1%	1	0.3%	0	0.0%	0	0.0%	6	1.9%	143	44.3%
Total	295	91.3%	3	0.9%	3	0.9%	12	3.7%	10	3.1%	323	100.0%

Table 6.7 Raw Material Weights by Mound

Mound	Quartz		Granite		Quartzite		Chert		Other		Total	
1	192.51	11.7%	9.4	0.6%	6	0.4%	21.46	1.3%	4.2	0.3%	233.57	14.2%
2	373.71	22.7%	10.1	0.6%	5	0.3%	27.1	1.6%	225.4	13.7%	641.31	38.9%
5	562.4	34.1%	6.7	0.4%	0	0.0%	0	0.0%	205.68	12.5%	774.78	47.0%
Total	1128.62	68.4%	26.2	1.6%	11	0.7%	48.56	2.9%	435.28	26.4%	1649.66	100.0%

Groundstone

By weight, groundstone artifacts accounted for a significant proportion of the Kranka Dada assemblage (15.4%). A total of 195 groundstone artifacts were recovered accounting for 3% of the analyzed assemblage by count and 15% of the analyzed assemblage by weight. In terms of count and weight, groundstone was normally distributed within each of the mounds with all values falling within one standard deviation of the mean. Groundstone artifacts were documented for weight; raw material, completeness, and type of wear (convex, concave, flat, irregular, grooved, and indeterminate). Appendix table 12 has a complete list of the attributes coded for groundstone objects. Similar to the problems with raw material sourcing with flaked stone material, geologic sources of groundstone materials is unknown. Quartzite and granite were the most common raw materials identified for groundstone; however, many other raw materials were present although I was unable to reliably identify them.

Table 6.8 Groundstone Counts and Weights by Mound

Mound	Count	Percentage	Weight in Grams	Percentage
1	66	33.8%	3827.7	32.9%
2	41	21.0%	2914.9	25.1%
5	88	45.1%	4889.94	42.0%
Total	**195**	**100.0%**	**11632.54**	**100.0%**

Smoking Pipes

A total of 231 smoking pipes and smoking pipe fragments were recovered from Kranka Dada accounting for 3.6% of the total assemblage by count and 2% of the total assemblage by weight. Figure 6.11 and Table 6.9 shows the distribution of smoking pipes by mound. Smoking pipes were unevenly distributed in the mounds; the majority of pipes, 98%, were recovered from Mound 1. Smoking pipes are important indicators of time, trade, and status. Appendix table 13 provides a complete list of all attributes recorded for smoking pipes. Smoking pipes are featured in the previous archaeological research of contemporaneous sites in Ghana, and will be considered in greater detail in the following chapters.

Table 6.9 Smoking Pipe Counts and Weights by Mound

Mound	Count	Percentage	Weight	Percentage
1	226	98.0%	1392.83	98.8%
2	2	0.9%	7.9	0.6%
5	2	0.9%	8.5	0.6%
Total	**231**[22]	**100.0%**	**1409.23**	**100.0%**

[22] 1 smoking pipe fragment was recovered from the surface of Mound 10

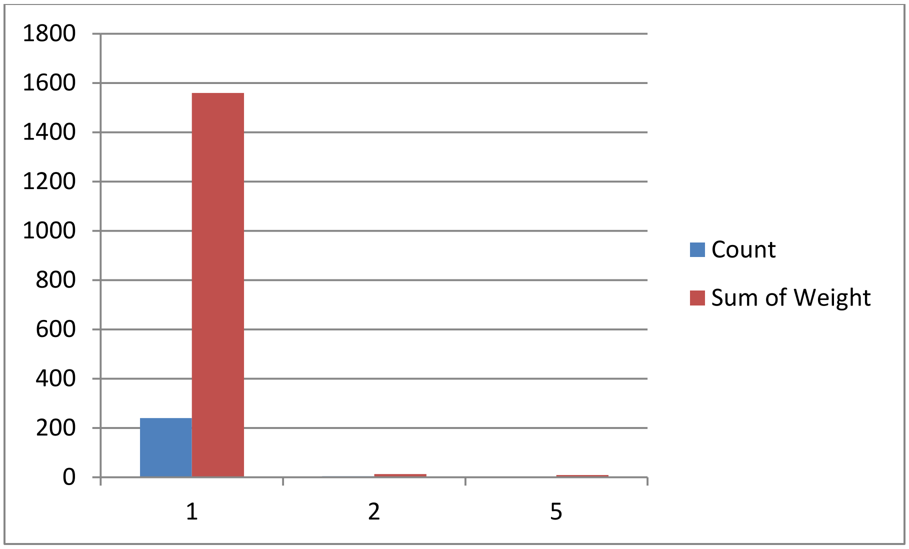

Figure 6.11 Smoking Pipe Distribution between Mounds

Metals

For a late Iron Age site, very few metals and metal byproducts were recovered from Kranka Dada. A total of 33 metal and metal byproducts artifacts were recovered accounting for .5% of the analyzed assemblage by count and .4% of the analyzed assemblage by weight. Table 6.10 and Figure 6.12 show the distribution of counts and weights of metals and metal byproducts by mounds. Their distribution by mound is uneven, with the majority of materials recovered from Mounds 1 and 2 contexts. Metal artifacts were examined for metric attributes and metal type.

Table 6.10 Metal and Metal Byproduct Counts and Weights by Mound

Mound	Count	Percentage	Weight	Percentage
1	19	57.6%	116.25	38.7%
2	12	36.4%	178.12	59.3%
5	2	6.1%	5.8	1.9%
Total	**33**	**100.0%**	**300.17**	**100.0%**

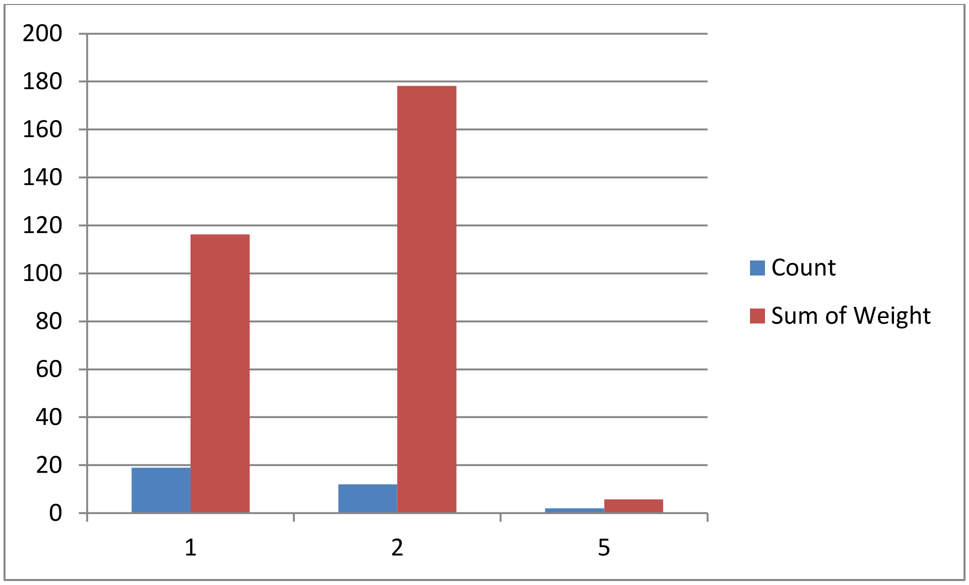

Figure 6.12 Metal and Metal Byproducts Counts and Weights by Mound

Four types of metals and metal byproducts were identified: iron, brass, copper, and slag. Table 6.11 and Table 6.12 list all metal objects by mound in terms of counts. Frequencies and weight are low due to small sample sizes. As such, performing statistical tests such as chi-square or ANOVA with multiple categories with zero values to determine whether the differences in proportions are significant is not ideal. The distribution of counts and weights of metal and metal byproduct artifacts varies by mound. Figure 6.13 illustrates this pattern, and highlights the differences in breadth of metal objects recovered from each mound.

Table 6.11 Types of Metals Recovered by Mound by Count

Mound	**Brass**		**Copper**		**Iron**		**Slag**		**Total**	
1	2	6.1%	3	9.1%	11	33.3%	3	9.1%	**19**	**57.6%**
2	0	0.0%	0	0.0%	4	12.1%	8	24.2%	**12**	**36.4%**
5	0	0.0%	0	0.0%	2	6.1%	0	0.0%	**2**	**6.1%**
Total	**2**	**6.1%**	**3**	**9.1%**	**17**	**51.5%**	**11**	**33.3%**	**33**	**100.0%**

Table 6.12 Types of Metals Recovered by Mound by Weight

Mound	Brass		Copper		Iron		slag		Total	
1	4.74	1.6%	1.8	0.6%	53.61	17.9%	56.1	18.7%	**116.25**	**38.7%**
2	0	0.0%	0	0.0%	13.62	4.5%	164.5	54.8%	**178.12**	**59.3%**
5	0	0.0%	0	0.0%	5.8	1.9%	0	0.0%	**5.8**	**1.9%**
Total	**4.74**	**1.6%**	**1.8**	**0.6%**	**73.03**	**24.3%**	**220.6**	**73.5%**	**300.17**	**100.0%**

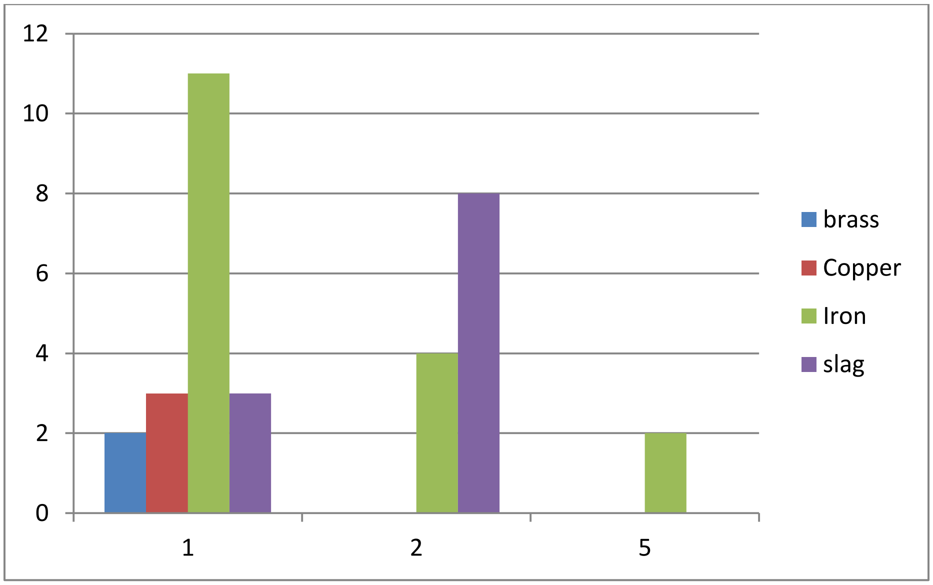

Figure 6.13 Metal Artifacts by Mound

Shell

A total of 68 whole shells and fragments were recovered from Kranka Dada accounting for 1.1% of the assemblage by count and .2% of the assemblage by weight. Shell artifacts were coded for weight, completeness, and shell types (univalve, bivalve, and indeterminate). Table 6.13 and Figure 6.14 show the distribution of shell in terms of both count and weight. Shell was predominately recovered from Mound 1 contexts.

Table 6.13 Shell Artifacts by Count and Weight by Mound

Mound	Count		Weight	
1	66	97.1%	156.8	99.3%
2	1	1.5%	0.1	0.1%
5	1	1.5%	1	0.6%
Total	**68**	**100.0%**	**157.9**	**100.0%**

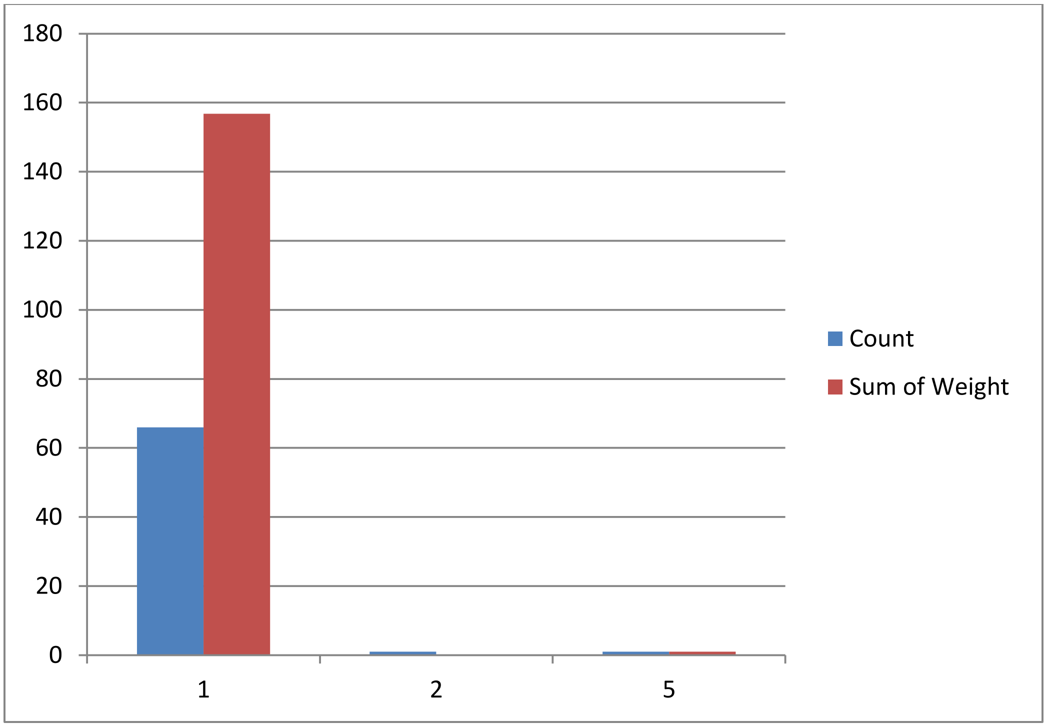

Figure 6.14 Shell Artifacts by Count and Weight by Mound

Small Finds and Late Stone Age Artifacts

Small finds (n=16) account for .5% of the analyzed assemblage by count and .7% of the analyzed assemblage by weight. Small finds include spindle whorls, possible gold weights, and beads. In this section, commonly curated Late Stone Age artifacts are included (terracotta rasps (n=8) and groundstone celts (n=11). Groundstone celts are not included with other groundstone artifacts, but considered independently. In Twi, groundstone celts are called *nyame akuma*, God's Axe; they are believed to be magical objects (Apoh and Gavua 2010; Rattray 1923; Warren 1974). Groundstone celts are often used in ritual activities, fetish practices, family shrines, and for medicinal purposes. How terracotta rasps were used is unknown. While they are typically associated with the Late Stone Age, Rattray considered that they may be tools used in ceramic production and that their use may have continued from the LSA to the 16th or 17th century CE (Watson 2010). Table 6.14 and Figure 6.15 show the distribution of small finds including terracotta rasps and groundstone celts by count and weight by mound. The distribution of small finds is uneven. Many small finds were predominately recovered from Mound 1 in terms of count and weight

Table 6.14 Small Finds by Mound by Count

Mound	Count		Weight	
1	24	61.5%	394.1	66.9%
2	6	15.4%	69.5	11.8%
5	7	17.9%	86.53	14.7%
13	1	2.6%	31.6	5.4%
14	1	2.6%	7	1.2%
Total	39	100.0%	588.73	100.0%

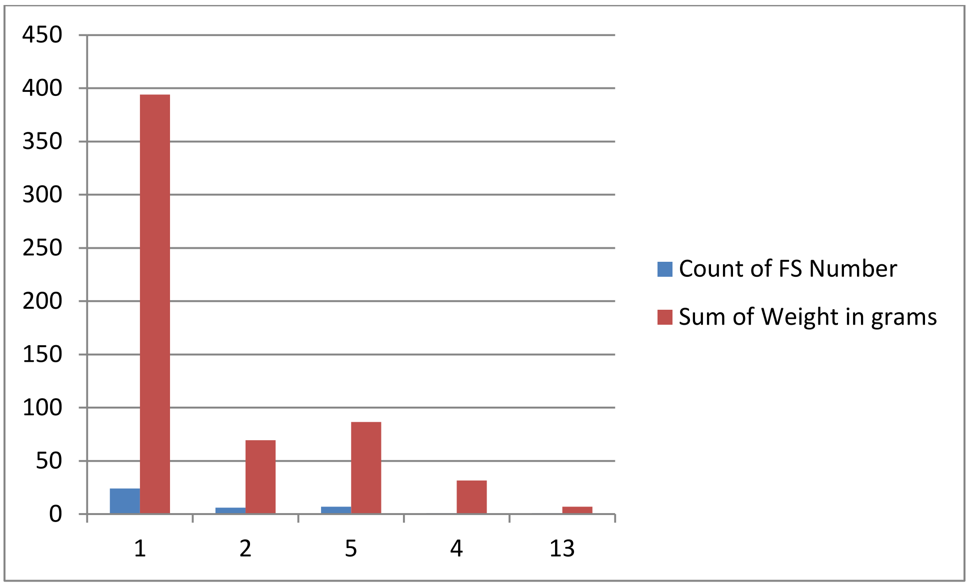

Figure 6.15 Small Finds by Count and Weight by Mound

Figure 6.16 and Figure 6.17 provide representations of the distribution of small finds in both count and weight by mound. A Chi-square test fails to find any significant relationship between the distribution of small finds, rasps, and celts between mounds (χ^2.394). Terracotta rasps were recovered from the surface of Mounds 13 and 14 after some mechanized plowing. Surface finds from Mounds 13 and 14 were excluded from the Chi-square test. However, sample sizes are small with 7 celts having expected counts less than 5.

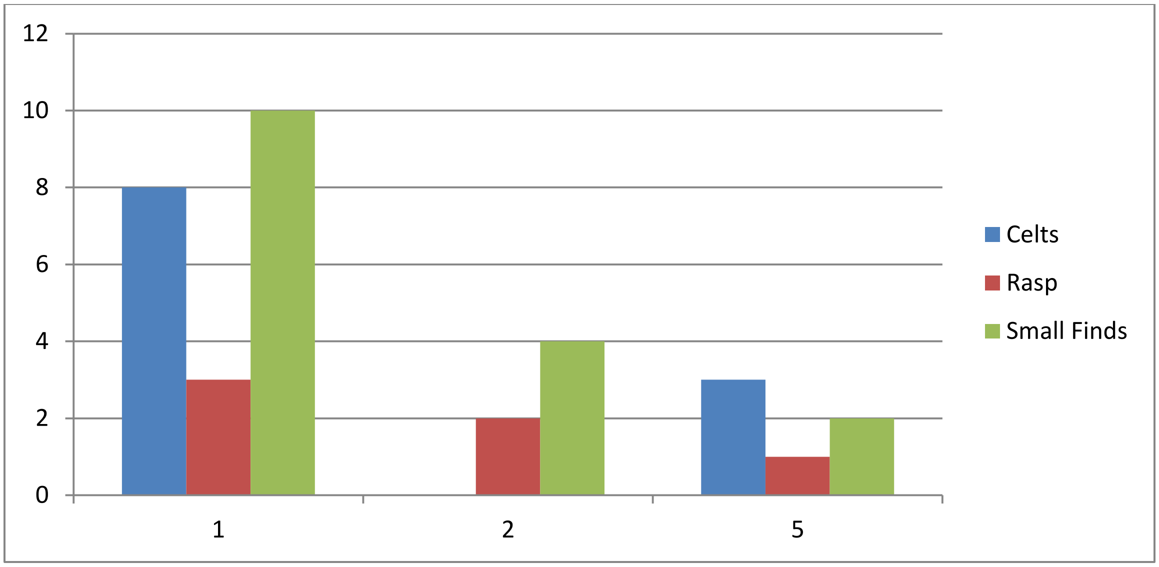

Figure 6.16 Distribution of Small Finds by Count by Mound

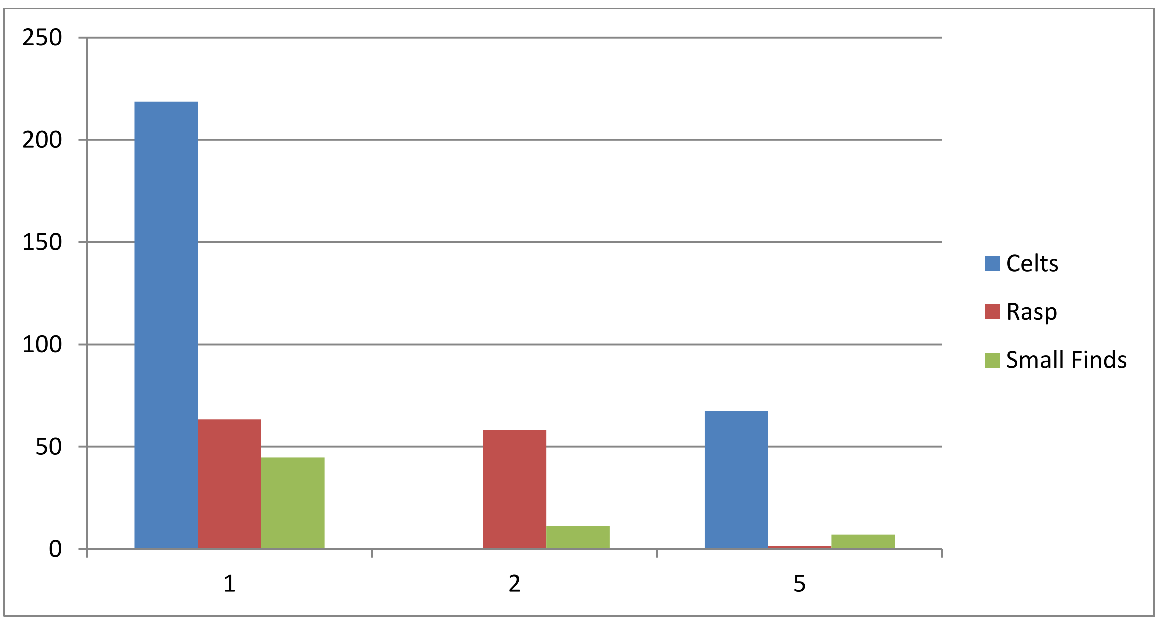

Figure 6.17 Distribution of Small Finds by Weight by Mound

Chapter 7 Mound 1

The next three chapters provide the archaeological finds from the three zones of Kranka Dada I targeted for intensive excavation. I discuss the archaeological methods I used on Mound 1 and provide detailed information about archaeological strata. I discuss how the structures within Mound 1 were built. The artifacts from Mound 1 are discussed in detail, as they relate to the anthropological categories of production, consumption, and status differentiation.

Architecture

Excavations from Mound 1 yielded the remains of numerous partial yet substantial structures. The characteristic architectural features of the structures within Mound 1 were the plastered floors, laterite foundation outlines, clay foundations, and high amounts of architectural debris recovered (i.e. daub). Daub was weighed in the field with a hand scale and then discarded into the screened backdirt. Within the 3 contiguous 2 x 2 meter units, daub concentrations are calculated between 3.1 and 20.25 kg per structure (μ 6.46, σ 6.29 kilograms). Large post-holes were documented as part of exterior walls. Between the large post-holes and high daub weight by structure indicates that Mound 1 structures were substantial. Foundations were prepared from clay. There was often a high charcoal content within the prepared clay foundations overlaid with thin layers of plaster. It seems likely that the foundations were prepared by mixing clay with some organic material and burned. However, the charcoal presence on the floor of structures could also be related to thatched roof burning and roof collapse. Because the individual constructed levels were thin with diffuse margins, uneven, and patchy, it is difficult to determine without micromorphological analysis which scenario is correct. Burning foundations to prepare for construction and roof burning are not mutually exclusive, and both actions could have occurred.

A maximum of 18 partial structures and floors were exposed (Table 7.1) (see Appendix figures for plan view maps of structures). Floors from structures exposed during the test excavations are categorized as separate floors with different numbers than structures and floors exposed in the 3 contiguous 2 x 2 meter units. Due to the acidity of tropical soils, plaster and daub rich foundation elements are often patchy and ephemeral.

In addition, deposits including house foundations made from clay were often fabricated on uneven or slightly undulating natural surfaces. Repair and re-plastering episodes were common practices; some of the plaster strata from Mound 1 were thin, between .25 and .5 cm. This combination of factors makes it difficult to sync structures from the test unit to floors from the 3 contiguous 2 x 2 m units. Stratigraphic deposits between the test unit and the 3 contiguous 2 x 2 m units are similar from the surface through 110 cm below datum (BD); however, bedrock deposits in the 3 contiguous 2 x 2 m units appear at 110 cm BD and at 180 cm BD in the test unit.

The architecture of Mound 1 has thick mud brick exterior walls with post holes and post molds located at the base of walls. Structure foundations were fabricated from mud-packed sediment. There were high frequencies and large pieces of charcoal documented within the mud-packed foundations. Thin layers of plaster were used to coat the interior mud-packed surfaces of structures. Many of the strata within Mound 1 showed thin levels of repair and replastering with the application of additional, alternating coats of plaster and clay mud. The stratigraphic levels were often thin (less than 2 mm), uneven, and patchy making it difficult to document reliably specific building sequences. However, I think the high frequencies and particle size of charcoal relates to a construction technique where earth-packed foundations were burned before the application of plaster (rather that roof burning and collapse). In some structures, laterite rocks were used to create foundation perimeters. The use of laterite as a foundation outline is still used by some inhabitants of the Bono region today. Laterite outlines help prevent undercutting and erosion of mud-brick structures during the rainy season (McIntosh 1976).

Table 7.1 Structure from Mound 1

Floor	Unit Type	Depth BD	Level	Architectural Features
1	3 contiguous 2 x 2 units	147-156 cm	11, 12	Post molds, laterite and daub foundation outlines, ash stains, and plaster
2	3 contiguous 2 x 2 units	142-143 cm	10	Post molds, bedrock anvil, laterite outlines, course daub, dark organic stains
3	3 contiguous 2 x 2 units	126-128 cm	8	Post molds, possible wall trench, articulated laterite foundation outline, grease stains, ash, and plaster, hearth feature
4	3 contiguous 2 x 2 units	123-125 cm	7	Disarticulated laterite, plastered floor, possible interior wall trenches
5	3 contiguous 2 x 2 units	107-115 cm	6	Plaster, daub rich foundation, possible interior wall trenches, hearth
6	3 contiguous 2 x 2 units	87-102 cm	2,3,4	Some evidence for repair and replastering, post molds, daub rich foundations, and articulated daub alignments
21	Test Unit	175 cm	17	Plaster, charcoal rich areas
22	Test Unit	147 cm	14	Plaster flecks, organic stains, daub rich foundations
23	Test Unit	133-137 cm	12,13	Plaster and daub patches, hearth, charcoal rich areas
24	Test Unit	123 cm	11	Plaster and charcoal rich areas
25	Test Unit	91 cm	8	Plaster, interior/ exterior wall remnant, post molds, pit
26	Test Unit	86 cm	7	Post hole, disarticulated plastered areas, daub rich foundation, hearth
27	Test Unit	71-77 cm	6 and 6A	Plaster, charcoal rich areas, daub rich foundation
28	Test Unit	67 cm	5	Plaster, charcoal rich areas
29	Test Unit	63	4	Interior wall trenches, plaster
30	Test Unit	53 cm	3	Very dark organic stains, plaster haze, and plaster
31	Test Unit	96 cm	9	Daub rich foundation, plaster
32	3 contiguous 2 x 2 units	103-106 cm	5	Daub rich foundation, plaster, pits, dark organic stains

The stratigraphy of Mound 1 was complex (Figure 7.1). There was evidence for use of architectural structures and features with intermittent refuse and sandy deposits washing into areas not in use. The floors and structures from Mound 1 were similar between the different strata. Upper level and lower level deposits in Mound 1 were created using similar construction methods and materials. Light plaster coatings on the mud-packed floors indicate repair and replastering construction events occurred regularly.

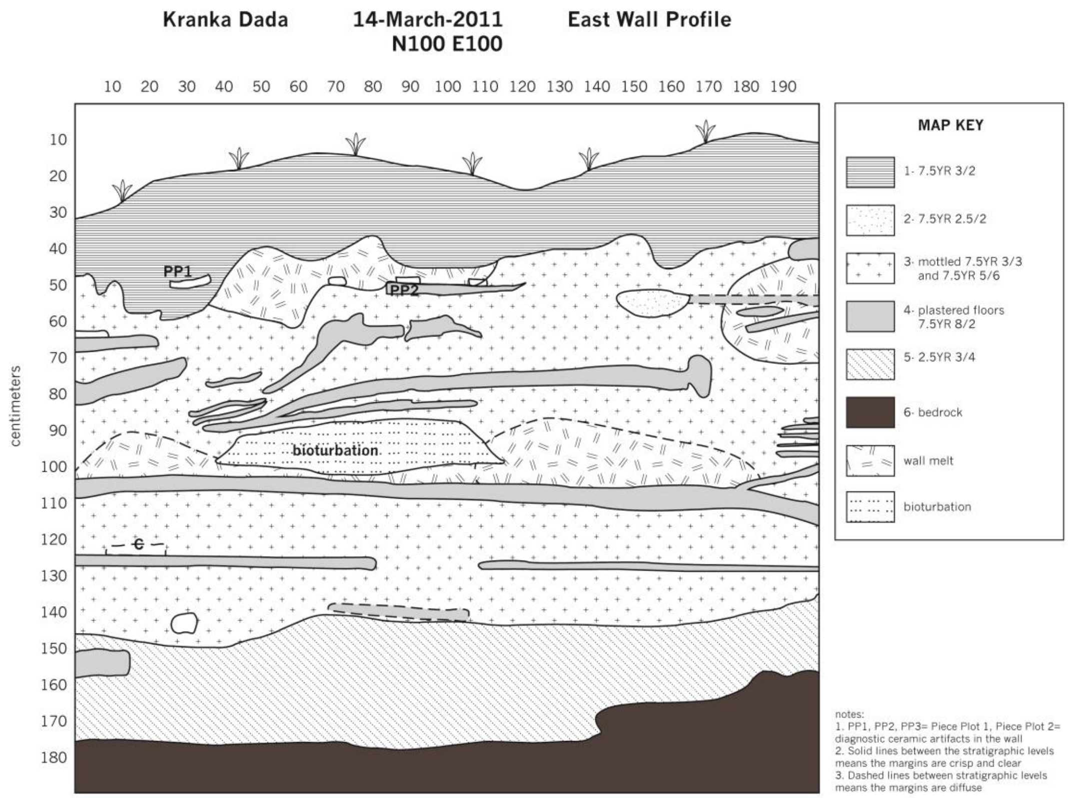

Figure 7.1 Profile Map Mound 1

Artifacts recovered were assigned to a structure or as fill deposits[23]. I was conservative in how I assigned artifacts to structures. For example, artifacts were assigned to Structure X if they were associated with the structure's features, associated with plastered areas or foundations, and/or recovered from deposits immediately stratigraphically above architectural deposits provided that no obvious washed sandy deposits, bioturbation, and other refuse remains were present.

[23] Similar criteria and evaluation methods were used in Mounds 2 and 5; therefore, will not be discussed in subsequent chapters.

Chronology

Three accelerated mass spectrometry radiocarbon dates[24] were obtained from Mound 1. Table 7.2 provides the dates and associated context for materials dated. All AMS dates fell within the Atlantic Trade era. In addition to absolute dates, relative dates were obtained by examining maize cob decorated pottery and smoking pipes. The Portuguese arrived on the Gold Coast in 1482 CE, although how and when European and New World goods arrived into central Ghana was a complex process (Alpern 1992, 2008). Maize cob decorated pottery was mainly recovered from Mound 1 deposits and mainly documented within levels 1-7 and associated with structures 3-6, 27, and 30[25]. AMS Date 1 is associated with the first structure at Kranka Dada to have maize cob decorated pottery. The charcoal sample for AMS Date 6 was taken from same 2 x 2 meter unit 34 cm stratigraphically below the level of AMS sample 1. AMS Date 6 calibrated was 407 ± 30 or 1543 CE (1513-1573 CE). This indicates that the deposits from Mound 1 were built following European contact on the coast. Repair, refurbishment, and replastering activities occurred regularly, and deposits in Mound 1 accumulated rapidly. The charcoal sample for AMS Date 5 was taken in March of 2011 at the base of the test pit. AMS Date 5 is slightly older than the other dates from Mound 1 at 363 ± 34 or 1587 (1553-1621). While the date is slightly older, it is consistent with AMS Dates 1 and 6, and corroborates the post-European contact construction of the plastered structures of Mound 1 and the rapid accumulation of deposits.

No AMS samples were submitted from the upper levels of excavation for any of the mounds. Obtaining dates of terminal occupation or abandonment of the site would be useful in documenting the site's absolute chronology. Due to the post-1600 radiocarbon dating curve in Africa, my concern was that obtaining dates from deposits I hypothesized to be from the mid-18th century had the potential to not be accurate. Second, there are multiple lines of evidence that *all* corroborates the abandonment of Kranka Dada with the 1722/ 1723 Asante conquest. Rather, I targeted AMS dates at specific levels to obtain a sense of contemporaneity of the mounds and different events and situations within the

[24] Material was dated by the University of Arizona AMS Facility under reference number AA101550-10155

[25] If fewer than 5 pieces of maize cob decorated pottery were recovered within a structure, it is not considered as the artifacts may be intrusive or related to post-depositional sediment mixing.

site (e.g., the appearance of maize cob ceramics, production beyond the needs of the household).

Table 7.2 AMS dates Mound 1

AMS Date	Material	Level	Context	Date (calibrated)
1	Charcoal	9, 129cm BD	Feature 1: Base of Structure 3; foundation burning in NW corner of 3 contiguous 2x2 m units	368±32 1568 (1550-1614)
5	Charcoal	17, 175 cm BD	Base Mound 1; Test pit; Structure 21	363 ± 34 1587 (1553 1621)
6	Charcoal	13, 163 cm BD	Ash lens, base Level 13 Base Structure 1	407 ± 30 1543 (1513 1573)

Figure 7.2 Context of AMS date 1 from Mound 1

Production and Consumption

Ceramics

Ceramics were the most abundant type of artifact recovered by count and weight. The majority of sherds are from earthenware vessels thought to be locally manufactured. Mound 1 had the largest quantity of ceramics accounting for 46.4% of the analyzed assemblage by weight and 57.9% by count (Table 7.3). The mean weight for sherds analyzed in Mound 1 is 9.6 grams, which is lighter than the mean weight of sherds recovered from other mounds. Lower weight is correlated with a smaller size. Conducting analyses on smaller sherds has some negative implications for obtaining measurements that can be used in documenting ceramic alteration and use.

Table 7.3 Analyzed Ceramic Assemblage by Cubic Meter

Mound	Sum of Weight in kg	Percentage	Sherd Count	Percentage	Sherd frequency per cubic meter	Ceramic Weight per cubic meter in kg	Mean Sherd Weight in gm
1	28.1	46.9%	2934	58.3%	168.6	1.6	9.6
2	23.9	39.9%	1439	28.6%	99.9	1.7	16.6
5	7.9	13.2%	658	13.1%	58.8	0.7	12.1
Total/ Mean	**59.9**	**100.0%**	**5031**	**100.0%**	**117.0**	**1.4**	**11.9**

Table 7.4 shows the counts and weights of sherds *analyzed* by structure, which includes decorated body sherds, rims, lids, and bases. A large proportion of the ceramic material is undecorated body sherds, which are not considered here. Some variability between structures in terms of count and weight is biased by the differences in size of excavation unit (test units vs. contiguous 2 x 2 m units). Sherds from strata categorized as fill were removed (n=909 with a weight of 28 kg), and only sherds that could be reliably associated with a structure are listed in Table 7.4. In terms of the analyzed assemblage, average sherd count and weight vary by structure (μ 156 and σ 119 for frequency and μ 12 and σ 13 for weight in kg). Variation in ceramic weight by structure is expected as the size of the excavation units varied between test pits and contiguous 2 x 2 m units. Structures 21 and 22 had the smallest areal exposures (reduced to 1x2 m at the base of the test pit). Structures 1-6 and 32 were exposed in the contiguous 2 x 2 m units and have a corresponding larger quantity of sherds. Sherds recovered from fill deposits are excluded from the table below.

Table 7.4 Ceramic Count and Weight by Structure

Structure	Count		Weight in Kilograms	

Structure 1	177	8.7%	15.3	7.4%
Structure 2	62	3.1%	5.1	2.5%
Structure 3	152	7.5%	19.0	9.2%
Structure 4	220	10.9%	20.9	10.1%
Structure 5	218	10.8%	20.9	10.1%
Structure 6	661	32.6%	55.8	26.9%
Structure 21	12	0.6%	0.8	0.4%
Structure 22	27	1.3%	4.5	2.2%
Structure 23	85	4.2%	10.0	4.8%
Structure 24	69	3.4%	6.7	3.2%
Structure 26	8	0.4%	4.9	2.4%
Structure 27	115	5.7%	10.2	4.9%
Structure 28	1	0.0%	1.0	0.5%
Structure 29	6	0.3%	6.0	2.9%
Structure 30	60	3.0%	10.1	4.9%
Structure 31	57	2.8%	6.2	3.0%
Structure 32	95	4.7%	10.2	4.9%
Total	**2025**	**100.0%**	**207.6**	**100.0%**
Mean	**119**		**12.2**	

One of the goals of this analysis is to document how ceramics were used as cooking, storage, and special use items by the households of Kranka Dada. These categories relate to the domestic and political economy as highlighted by the linking arguments in the previous chapters. Pots are tools that are best suited as containers for liquids and solids for short-term or long-term storage (Braun 1983; Hally 1986; Rice 2000; Rye 1981). Body type or profile can be helpful in determining how vessels functioned, but vessel form is not deterministic of function. Rice (Rice 2000) has documented ethnographic studies that show more variability in vessel shape for liquids than solids. Vessels for liquids often tend to be taller which aids in pouring; dry storage vessels may be shorter and squat (ibid.). Traditionally, vessels with restricted orifices and necks were associated with liquids because the shape prevented excessive evaporation, although this is not necessary the case. Restricted openings are useful for storing both liquids and solids. Cooking vessels tend to be more rounded and lack carination or angles. Serving vessels often have large openings for easy access to contents. Rice cautions that the application of strict morphological criteria for determining function cross-culturally is not appropriate (Rice 2000). At the same time, there are social and ritual norms which influence ceramic choices and uses. Miller's (Miller 1985) study of cooking vessels in India indicated that vessel shapes were not always optimal or the most efficient, but influenced by social and ritual practices. With any complex society, there are myriad social activities and occasions for eating and drinking, some public and some private with complex activities that involve food processing, preparation, presentation, and consumption. Households of varying size and status had needs for short and long-term storage of goods including grains, palm wine, palm oil, shea butter, water, and beer. As such, different types, styles, and shapes of vessels likely met the diverse needs of the Kranka Dada inhabitants.

There are insufficient data to examine the shape of whole vessels. One whole and very small vessel that held approximately .2 liters was recovered from Mound 1. Recovering many more whole vessels are informative for documenting shape, function, and interior damage, and these would have been useful in a discussion about political economic activities between and among households. In the absence of whole vessels, qualitative and quantitative analyses are conducted with sherds. In addition, my analysis is biased to decorated ceramics, rims, bases, carinated shoulders, and lids. Table 7.5 lists the sherd types analyzed from Mound 1 and indicates that the majority of sherds are decorated body sherds and rims being the second most common. In addition, many of the sherds recovered were small. For example, rims were largely disconnected from bodies making it difficult to reconstruct a vessel's profile or infer a vessel's function based on sherd morphology alone. Distinguishing between bowls and jars based on rim shape alone is not sufficient, and distinguishing between bowls and jars is useful in differentiating vessel function (cooking, mixing, water, and storage vessels) and inter-household activities. Previous research in the Bono area indicated that bowl and jars can have similarly shaped rims (everted rims bowls and jars). The best way to distinguish between bowls and jars is height to width ratio; however, the small size of sherds from Kranka Dada skewed analysis and this measurement could not be obtained for the majority of Kranka Dada ceramics. Analyses conducted within this section are not exhaustive and cannot capture all the archaeometric and engineering aspects of ceramic vessels for Kranka Dada.

Table 7.5 Sherd Types from Mound 1

Type	**Count**	**Percentage**
Body	2049	69.8%
Rim	782	26.7%
Base	6	0.2%
Neck	55	1.9%
Carination	31	1.1%
Lid	9	0.3%
Indeterminate	2	0.1%
Total	**2934**	**100.0%**

In his ethnoarchaeolgical research, Effah-Gyamfi identified 10 types of vessels with 49 vessel forms (Figure 7.3) that corresponded to specific types of use (Emmanuel Effah-Gyamfi 1974: 72; Effah-Gyamfi 1985: 106-140). However, the small size of many of the Kranka Dada sherds precluded a systematic analysis of body shape. Ten types of body profiles were identified by Effah-Gyamfi. His types were based on oral data and traditions; however, some of the types he documented had morphological similarities to each other, especially in terms of rim shape. As such, I used my Type 1 (everted rim jar) as well as metric measurements of the rim to distinguish between Effah-Gyamfi's Types 1, 2 4, 6, 8, and 9. I did not recover Effah-Gyamfi Types 5 and 10 at Kranka Dada.

The majority of sherds recovered from Mound 1 (96.6%) were too small to be associated or assigned to a specific shape. Again, recovering a sample with larger sherds would have been helpful. Thus, ceramics from Mound 1 cannot be analyzed using Effah-Gyamfi's ethnoarchaeolgical classification, nor can they be analyzed using many of the attributes examining body profile type suggested by other researchers (e.g., Rice, Hally, etc.). Not being able to examine vessel shapes makes it difficult to examine the spatial and temporal distribution of vessel types of Mound 1. Documenting the distribution of vessels by function will be examined by using different criteria.

One of the goals of this study is to document how ceramics were incorporated into daily activities of the households of Kranka Dada across time and space. To achieve this goal, I have applied some principles of functional analysis in order to document how ceramics were used as tools. The term "functional analysis" requires some explanation as it has been used in multiple ways (e.g., Schiffer's three types of use and Binford's technomic/technofunction). Technomic/technofunction captures the properties of an object that allow it to act in relation to the physical environment; socio-technic function refers to the use of object as it is used to socially integrate individuals and groups; and ideotechnic/ideofunction is a materialized symbol for large groups (Binford 1962). The following analysis mainly examines the object's function as technomic/technofunction, but socio-technic function will be addressed as well.

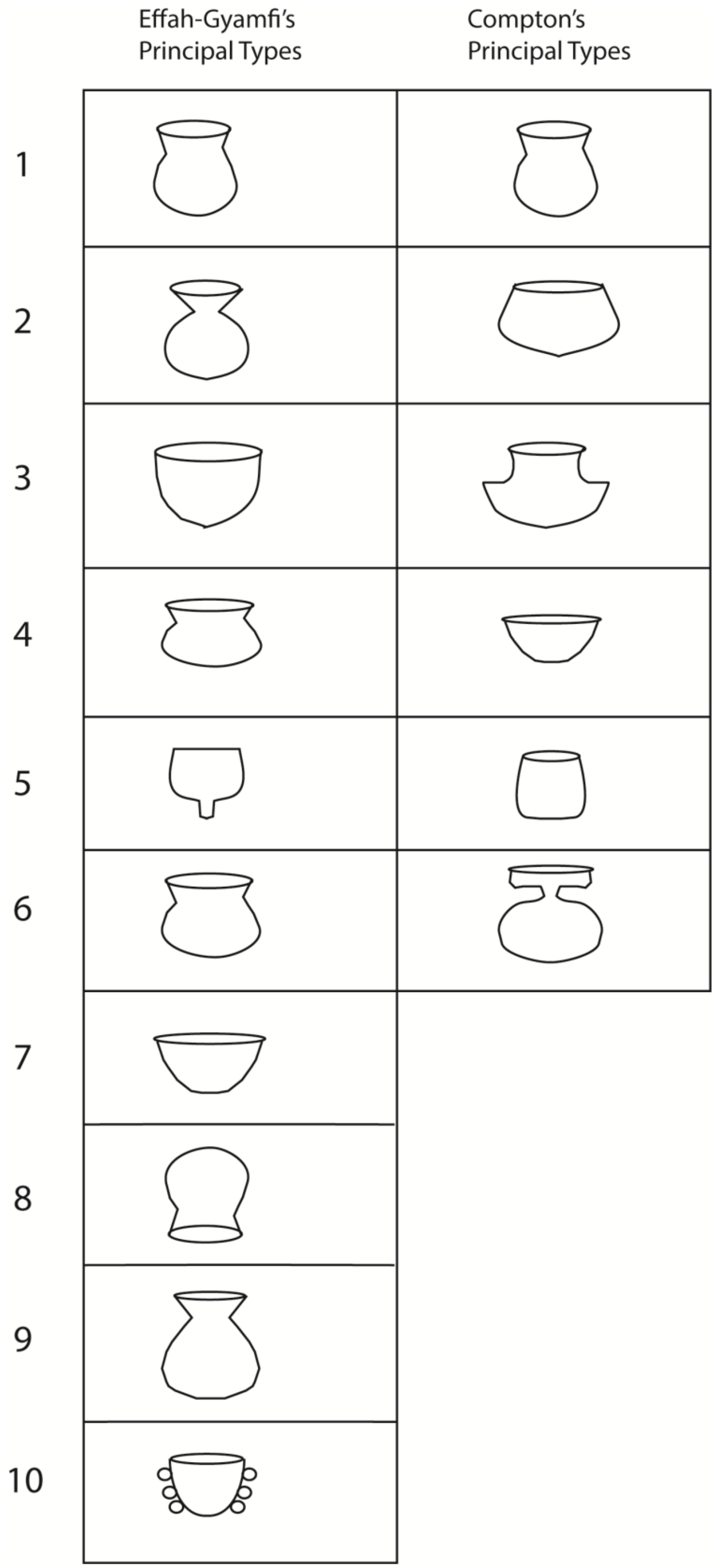

Figure 7.3 Comparison Vessel Shapes

The term “ceramic alteration” is increasingly used in place of “use” as it addresses the alteration of ceramic materials from use and non-use; some types of ceramic alteration may arise as a result of ancillary ceramic activities rather than be strictly associated with food/ drink processing, preparation, and presentation (Banducci 2012; Skibo 1992). For example, scraping and abrasions may appear on the exterior or lip of a vessel from being stored upside down after washing. This is similar to the chaîne opératoire approach as the stages of the ceramic user are documented (Lemonnier 1986). Ceramics can be used in multiple functional ways. Even large sherds from broken vessels can be re-used to hold objects and in ceramic production activities (e.g., spacers in firing, processed for temper, etc.).

Interior damage was documented on the interior surfaces of ceramics. The type of markings from interior damage correlates with how a vessel was used. Nine types of interior damage were observed macroscopically: <u>no damage present, eroded, striations, pitted, patchy abrasions, abrasions on lip only, all over abrasions, holes, burn marks, and rim only (no body present).</u> Eroded interiors may be related to post-depositional taphonomic processes and may obscure interior damage if it was present. Striations are related to stirring indicate the sherd was likely were used for cooking. Pitted interior abrasions are likely markers of the former presence of alcohol (Smith 2008). Striations on the interior of a vessel are often associated with food preparation or processing such as stirring or scraping. Patchy abrasions are similar indicators of food preparation, and can be created through scraping residues, grinding, and pounding. There is no one-to-one correlation between a single act of food production and processing such as stirring, scraping residues, and boiling, with a single type of use wear (Hally 1986). Non-abrasive processes can leave abrasion marks. Vessels used to heat liquids and prepare acidic foods can develop abrasions as the porosity of the ceramics opens and foods/ liquids acts a solvent that starts to erode the ceramic fabric leaving abrasions (Banducci 2012; Skibo and Schiffer 1987; Vukovic 2009). Therefore, the presence of patchy abrasions, striations, and pitting are used as general indicators of culinary activities. Similar to use wear analysis on some stone tools, some vessels may not show evidence of use wear before breakage, either because they were used for a short period of time or the kind of use did not leave traces of that use.

Ceramic discoloration can be the result of several different processes each influenced by the vessel's opacity, intensity of cooking heat, location of heat source, interior moisture level, etc. (Banducci 2012). Thermal alteration can be generally classified as either sooting or charring (Skibo 1992). Sooting is a byproduct of fuel combustion, and generally occurs on the exterior of vessels. Charring is the result of oxidized organic material after it has lost its moisture. Charring generally occurs on the interior of a vessel. Foodstuffs can be boiled, food remnants at the base of a vessel may dry out and carbonize, and/ or the next heating and cooking episode can leave interior charring residue. Both sooting and charring were observed and documented on the ceramics from Kranka Dada.

Table 7.6 lists the types and frequencies of vessel interior damage in Mound 1. A total of 1531 sherds did not show any signs of interior damage. Rim sherds were excluded from this portion of analysis. The majority of sherds with interior damage were burned or thermally altered. The presence of sherds with charred interior damage accounted for approximately 20% of the damage in each of the structure floors. Striations indicating food preparation or processing was the second most frequent cause of damage. Some sherds were eroded, and thus it was not possible to accurately categorize interior damage as related to past activities. Patchy and pitted interior abrasions accounted for a small proportion of the analyzed assemblage from Mound 1.

Table 7.6 Vessel Interior Damage Mound 1

Vessel Part	**No Damage**	**Eroded**	**Striations**	**Pitted**	**Patchy Abrasions**	**Abrasions on Rim only**	**Hole**	**Charred**	**Indeterminate/ Not enough of Rim**	**Total**
Body	1346	108	107	40	40		6	382	4	2033
Rim	111	3	6	1	4	1		48	608	782
Base	4								1	6
Neck	39	2			2			9	3	55
Carination	23	1						6	1	31
Lid	6								2	9
Indeterminate	2									2
Grand Total	**1531**	**114**	**113**	**41**	**46**	**1**	**6**	**445**	**619**	**2918**

Sherds were analyzed for the presence and type of decoration present. Sherds were classified as having: no decoration, informal decoration, or formal decoration. Informal decoration often consisted of an expediently created single incised band around the shoulder of the vessel. Designs were often continuous at an uneven depth. Informal decoration was classified differently from sherds with formal styles of decoration. Table 7.7 lists the counts of decorated and undecorated sherds. The most common sherd types were formally decorated body sherds and undecorated rims.

Table 7.7 Decorated and Undecorated Sherds by Count from Mound 1

	No Decoration	**Informal Decoration**	**Formal Decoration**	**Total**
Body	46	20	1983	2049
Rim	642	8	132	782
Base	5		1	6
Neck	6	1	48	55
Carination	7	1	23	31
Lid	9			9
Indeterminate	2			2
Total	**717**	**30**	**2187**	**2934**

Twenty-five different decorative motifs were observed from the entire assemblage from Kranka Dada. Table 7.8 lists the decorative motifs recovered from Mound 1. The frequencies observed indicate that many different ceramic decorative techniques were popular. All of the decorative motifs were observed in Mound 1 artifacts, although some were in low quantities. The most abundant decorative motifs from Mound were grooved/ continuous incision, twist roulette, a composite design with twist roulette and continuous incisions, and maize cob roulette. Some ceramics were too eroded to identify the style of roulette, and were coded as unidentified roulette. I believe that the majority of the unidentified roulettes were twist (as opposed to braided, folded, knotted, or carved[26]), but the articulations between roulette indentations were too eroded to be certain. The majority of maize cob decorated sherds were recovered from Mound 1 (4.3% were from

[26] See Haour, A., et al.
2010 African pottery roulettes past and present: techniques, identification and distribution. Oxford: Oxbow Books

Mound 2 and 1 maize cob sherd from Mound 5). In addition twist roulette sherds were mainly recovered from Mound 1 (92%). Decorative motifs present but not common include: triangular dentate stamp, braided roulette, folded roulette, carved roulette, composite continuous incisions with rectangle dentate, rectangle dentate stamp, arch dentate stamp, circle dentate stamp, composite triangle dentate with continuous incisions, composite continuous and discontinuous incisions with maize cob roulette, composite twist roulette with dentate stamp and continuous incisions, maize cob roulette with continuous incisions, and composite with continuous and discontinuous incisions (see appendix table for drawings).

Table 7.8 Most Common Decorative Motifs from Mound 1

Decorative Motifs	Frequency	Percentage
Grooved/ Continuous Incisions	727	33.8%
Twist Roulette	374	17.4%
Composite: Twist Roulette and Continuous Incisions	354	16.4%
Maize Cob Roulette	305	14.2%
Unidentified Roulette (too eroded)	186	8.6%
Composite: Unidentified Roulette and Continuous Incisions	100	4.6%
Discontinuous Incisions	23	1.1%
Other	83	3.9%
Total	**2152**	100.0%

In addition to decorative motifs, the surfaces of many ceramics were treated. Surface treatment was observed as: <u>none, red paint, brown paint, black paint, mica paint, polychrome, unfired slip, or gray paint.</u> Slip and paint can close the pores of the exterior surface reducing the vessel's porosity or permeability, and are thus suitable for storing liquids. Mound 1 frequencies of surface treatment are listed in Table 7.9. The majority of sherds had no surface treatment other than hand-smoothing. Red paint and brown paint accounted for the majority of surface treatments followed by black paint. Other surface treatments such as mica paint, gray paint, and polychrome paint accounted for an insignificant proportion of the Mound 1 analyzed assemblage.

Table 7.9 Ceramic Surface Treatments

Surface Treatment	Count	Percentage
None	2268	77.3%
Red Paint	222	7.6%
Brown Paint	293	10.0%
Black Paint/ Burnished	93	3.2%
Mica Paint	13	0.4%
Polychrome	3	0.1%
Unfired slip	9	0.3%
Gray Paint	32	1.1%
Total	**2934**	100.0%

Rims

From Mound 1, I recovered a total of 782 rims in 19 different styles (out of a possible 22 shapes) (Table 7.10 and Figure 7.4). The majority were everted rims from restricted opening vessels. Everted rim jars were the most common form of vessel documented from Bono Manso. Within the general everted rim type, everted straight rim with a rounded lip or straight lip were the most common. It is possible that straight and rounded rims are fragmented from other everted rim types. The mean weights of straight and rounded rims tend to be less than the mean weight of other rim types, which supports the idea that some straight and rounded rims could be fragments of larger rims. The most common types of rims are discussed in detail below in terms of their quantitative and qualitative traits.

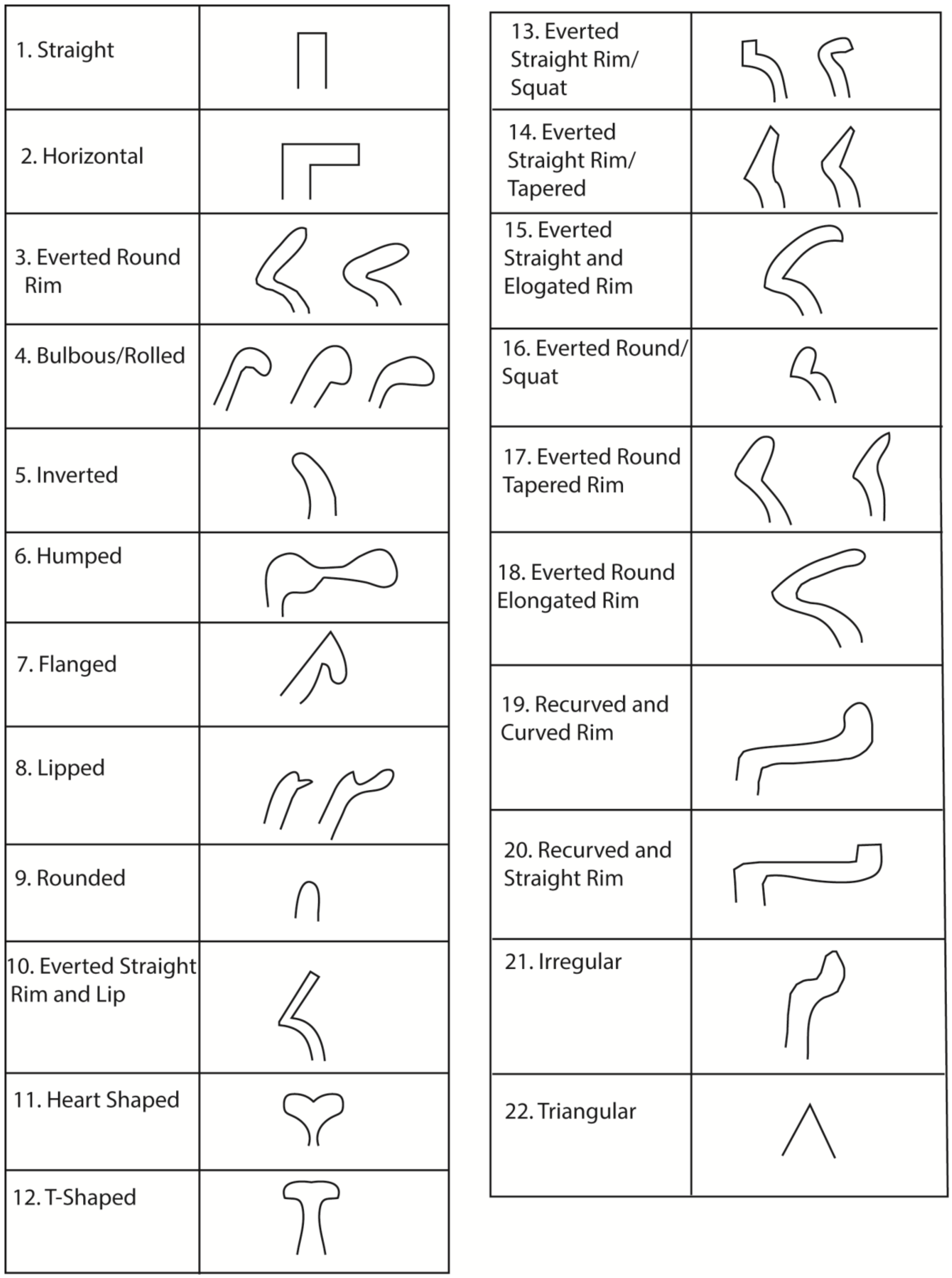

Figure 7.4 Rim Shapes

My analysis differs from Effah-Gyamfi's in several ways. Effah-Gyamfi identified 49 types of vessels, and based on his ceramic illustrations the sherds he recovered were much larger than those I recovered from Kranka Dada. As such, he was able to incorporate the profiles of body sherds when they were attached to rims. One of the defining characteristics of vessels was the angularity or curvature of the shoulder between the rim and body. My analysis takes a more quantitative approach with rim morphology (Figure 7.5). I did not systematically code inclusions other than mica within the sherds. I documented decoration and surface treatments more systematically.

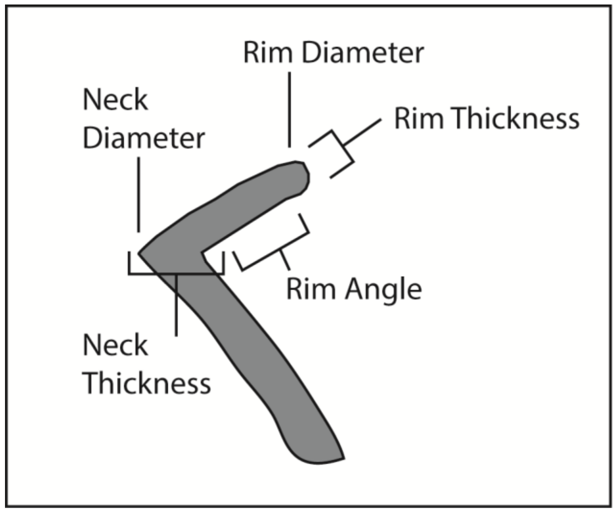

Figure 7.5 Rim Measurements

Table 7.10 Rim Shapes Mound 1

Rim Type	Count	
Straight	93	12%
Horizontal	14	2%
Everted Straight Rounded Lip	142	18%
Rounded	28	4%
Everted Straight and Straight Lip	340	43%
Everted Tapered Straight Lip	30	4%
Everted Straight and Elongated	31	4%
Everted Tapered Round Lip	32	4%
Everted Round and Elongated	23	3%
Other	49	6%
Total	782	100%

Everted Straight Rims with Straight Lips

This rim type is the most common accounting for 43% of the Mound 1 rim assemblage. Post-depositional erosion did not dramatically alter these ceramic types, and 93% of the everted straight rims with straight lip had little to no erosion. Rim diameter is normally distributed with a mean of 22 cm (σ 4.1). Unlike the spread of diameters from the rounded lips types, there are some larger outliers for the straight lipped type. Straight-lipped vessels tend to be slightly larger in diameter and thickness than round lipped everted vessels, but not by much. Vessel thickness is similar the rounded lip type at 5.5-9mm. A regression with vessel thickness and diameter shows the variables are not correlated in a majority of cases (R^2 .015), meaning that vessel thickness varies widely with rim diameters. The thickness of the lip is normally distributed 5.8 mm (σ1.3) in a similar pattern to the rounded lip vessels. Rim interior angles vary, but they are mostly from 130 to 150 degrees. This makes everted rim jars with straight lip slightly more outturned than round lipped everted rim jars. The distribution of the rim interior angle varies stratigraphically by level, and there is no clear pattern that may be useful for chronological purposes. Some of the rims were decorated by scalloping (8.5%), swag (5%), or incisions (4.4%), but the majority had no rim decoration (81.5%). Many of these sherds had no body decoration or there was not enough of a body to identify a decoration motif (83.5%). Of the sherds with body decoration, grooves/ continuous incision (10%), twist roulette (3%), or a composite design with twist roulette and continuous incisions (2.4%) are present. Micaceous content varied, and most sherds had no mica (63%), small mica inclusions (29%), and large mica inclusions (7%). In terms of surface treatment, most were hand-smoothed with no additional surface treatment (82%). Some sherds had red paint (5.2%) or brown paint (9.7%). Black paint and gray paint were also present, but in low frequencies. Unfired slip or a slip wash was applied to a small proportion the vessel rims (1.1%).

In an ethnographic context, slip can be applied daily to a hearth vessel which leads over time to a buildup of hardened layers of unfired slip applied to a vessel over time (Boachie-Ansah; personal communication 2009). Most of the rims are not large enough to show interior damage (85%); however, those with use wear damage mainly consisted of no damage (9.7%) or interior charring (3.8%). On the exteriors, 57.6% had no thermal damage and 38% had soot. Approximately 4% of the rims were burned throughout indicating that they may have broken off from the vessel and remained in the hearth. Use wear abrasions on the rims were present on 45.9% of the rims indicating that these vessels had been repeatedly stored upside down.

Everted Straight Rims with Rounded Lips

This vessel type (with restricted opening) is the second most common within Mound 1. Post-depositional erosion did not dramatically alter these ceramic types, and 95% of the everted straight rims with rounded lip had little to no erosion. Therefore, the measurements and qualitative traits for this type are not biased by post-depositional processes. Rim diameter is normally distributed with a mean of 20 cm (σ 4). Vessel thickness varies, but is mostly from 5-9 mm (σ 1.8). A regression with vessel thickness and diameter shows the variables are correlated in a majority of cases (R2 .053). The thickness of the rim/ lip is normally distributed with a mean of 6 mm (σ 1.5). The rim interior angle varies from 120 to 170 degrees, but tends to be from 120 to 140 degrees. The distribution of the rim interior angle varies somewhat by stratigraphic level, and there is no clear pattern that may be useful for chronological purposes. Some of the rims were decorated by scalloping (2.8%) or incisions (2.1%), but the majority had no rim decoration (94.3%). The majority of everted straight rimmed sherds with rounded lips had no body decoration (88%); however, those with body decorations mainly consisted of grooves/ continuous incisions (8%). Most of these rims did not have mica in the paste (75%). In terms of surface treatment, most were hand-smoothed with no additional surface treatment (73%). Some sherds had red paint (9.2%) or brown paint (13.3%). Most of the rims are not large enough to show interior damage; however, those with use wear damage are either patchy abrasions or charred interiors but the pattern is not significant. Abrasions are present on 45% of the everted rims, indicating that approximately half of the vessels with this rim type were stored upside down repeatedly. Exterior soot was present on 36% of the sherds, which may indicate that vessels of this shape were used in cooking. It is likely that vessels with everted straight rims and rounded lips were often used as cooking vessels. The form and rim shape vary slightly, but is largely uniform within the floors of Mound 1.

Everted Tapered Rim Straight Lip

Everted tapered rims with straight lips account for only 4% of the assemblage of Mound 1. Again, post-depositional erosion did not dramatically alter these ceramic types, and 93% of the everted tapered rims with straight lip ceramics had little to no erosion. Rim diameter is normally distributed with a mean of 22.7 cm (σ 6.02). Body thickness has a mean of 8.8 mm (σ2.3), while the distribution is skewed to the left most values are from 7-10mm. A regression with vessel thickness and diameter shows the variables are correlated (R^2 .527); larger diameter vessels have thicker bodies. Lip thickness varies, but can be observed in thin (3-7mm) and thick (7.1-10mm) variants. However, the sample size is small, and this may be a result of sample size bias. Many of these rims were too small to obtain interior rim angle measurements. A small quantity of measurements shows that the angle varies from 120 to 160 degrees. The sample of everted tapered rim sherds with straight lips is restricted to lower to mid-levels of Mound 1 (Structure/Floor 1, 24, and 27). With additional data, this could be a chronologically sensitive form.

Similar rims occur in small frequencies were recovered from Bono Manso in both bowl and jars corresponding to Phase I and II occupations. The majority of these rims were not decorated (83%), but some were incised (10%) and a handful was black burnished or painted red. The majority of rims were too small to observe whether or not the bodies were decorated (83.3%); the remaining sherds were decorated with grooves of continuous incisions. The paste varied from having no mica inclusions (76.6%), small mica inclusions (16.7%), and large mica inclusions (6.7%). The exterior of the majority of sherds were hand-smoothed with no other surface treatments (76.6%), brown paint (16.7%), and black paint and burnished treatments (6.7% each). Again the small size of sherds made it difficult to document interior damage in 80% of these sherds; however, striations below the rim interior were observed in 6.7%. Striations can indicate that contents were stirred repeatedly. Exterior soot was observed on 40% of the everted tapered rims with straight lips sherds indicating that they were likely used for cooking. Abrasions were observed on 36.6% of the sherds indicating that a proportion had some use wear damage from being stored upside down.

Everted Tapered Rim Round Lip

Everted tapered rims with straight lips account for only 4% of the assemblage of Mound 1. Post-depositional erosion did not dramatically alter these ceramic types, and 94% of the everted tapered rims with round lip had little to no erosion. These types of rims were restricted to Structures 4, 6, and 32. These structures were located in the middle levels of Mound 1 and superimposed on one another. Rim diameter is bimodally distributed; small diameters were from 13-14 cm and large vessels had diameters from 18-29 cm with a mean of 22 cm (σ 4). Although sample sizes are small, and it is possible that orifice diameters would be normally distributed with a larger sample size. Vessel body thickness is normally distributed with a mean of 9.7 mm (σ2.3). A regression with vessel thickness and diameter shows that the variables are not correlated in a majority of cases (R2 .026), meaning that vessel thickness varies widely with rim diameters. Vessels can be of varying thickness regardless of the size of the restricted opening. The thickness of the lip is normally distributed with a mean of 6.35 mm (σ2). Many of these rims were too small to obtain interior rim angle measurements. A small quantity of measurements shows that the angle varies from 120 to 160 degrees. The majority of rims and lips were not decorated (97%), although 3% were incised. The majority of rims were too small to observe whether or not the bodies were decorated (93.7%); the remaining sherds were decorated with grooves of continuous incisions. Micaceous content in the paste varied with no mica (71.8%) or small mica (28.2%). No large micaceous inclusions were observed. . Surface treatment varied from hand-smoothed (65.6%) to those with red paint (21.8%), brown paint (6%), and black burnished and gray paint in small frequencies (3% each). Sherds were also too small to observe interior damage and use wear patterns (87%). Of the rim sherds with sufficient body fragments, 6.3% had no interior damage and 6.3% were charred. Two thirds (66.7%) of the sherds has thermal damage and 33.3% have exterior soot, indicating their use in fire. Abrasions on the lips and rims were observed in 46.9% of occurrences. This is a vessel type that may have been used for a short time, but the manner in which it was used likely varied. Similar tapered rim vessels were observed in Bono Manso in low numbers (n=32) from Phase II deposits (Effah-Gyamfi 1985:122-123). Similar to Bono Manso vessels, surface treatments were common but decorative motifs were not usually applied (ibid.). Some vessels were likely used for cooking or boiling, while others may have been suitable for containers of dry goods.

Everted Straight and Elongated Rim

Everted straight elongated rims with straight lips account for only 4% of the assemblage of Mound 1. Post-depositional erosion did not dramatically alter these ceramic, and 94% of these ceramics had little to no erosion. Rim diameter varies, but is mostly normally distributed with a mean of 21 cm (σ 4.5). There is a small collection of large vessels with rim diameters of 32 cm. Vessel thickness has a mean of 7.7 mm (σ 1.1) and a mode of 8 mm. Vessel thickness is wide ranging, from 5-11 mm. A regression showing the relationship between rim diameter and vessel thickness is significant (R^2 .042); however, unlike previous rim to thickness relationships, the relationship with everted straight and elongated rims is negative. Vessel thickness tended to decrease as the diameter of pots increased. Lip thickness had a mean of 6.3 cm (σ 1.5), and the distribution is skewed to the right. Half of the rims were too small to obtain interior angle measurements. The interior angle measurement ranged from 110 to 160 degrees, but most occurrences were from 120 to 140 degrees. The majority of lips and rims were not decorated (80.6%); however, some were scalloped (6.5%), swag (3.2%), or incised (9.7%). Mica was absent in the paste of 58.1% of the sherds; small mica was present in 25.8% and large mica in 16.1%. Surface treatment varied from only being hand-smoothed (77.4%) to red paint (3.2%), brown paint (16.1%), and black burnished (3.2%). Due to the small size of sherds, decoration could not be observed on 77.4% of the sherds; however, grooves/ continuous incisions (6.5%), twist roulette (3.2%), unidentified roulette (3.2%), dentate stamped arches (6.5%), and a composite design with twist roulette and continuous incisions (6.5%) were observed. Sherds were too small to observe interior damage and use wear patterns (80.6%). Of the sherds with sufficient size to see more of the body, 16.1% had no interior damage and 3.2% had charred interiors. Over half (58.1%) of the sherds did not have exterior soot; 38.1% did. A small fraction was completely burned (3.2%). Half of the vessels had abrasions from use on the lips of vessels suggesting they were stored upside down.

Everted Round and Elongated Rim

Everted elongated rims with round lips account for only 3% of the assemblage of Mound 1. Post-depositional erosion did not dramatically alter these ceramic types, and 96% of these ceramics had little to no erosion. Rim diameter varies, but is normally distributed with a mean of 22 cm (σ 4.6). Vessel thickness has a mean of 8 mm (σ 1.3) and a range from 5.9-11 mm. A regression with vessel thickness and diameter shows that the variables are not correlated in a majority of cases (R^2 .179), meaning that vessel thickness varies widely with rim diameters. Lip thickness is more variable with rounded than straight lips as they range from 3.7-8.8 mm. Many of the rims were too small to obtain interior angle measurements. Of the rims that were of a sufficient size interior angles varied from 130 to 170 degrees, but mainly from 130 to 150 degrees. The majority of rims and lips were not decorated (87%), but some were scalloped (8.7%) or incised (4.3%). Micaceous content in the paste was generally absent (73.9%) although some small mica inclusions were observed (26.1%). Exterior surface were largely hand-smoothed with no additional treatment (78.2%) although some red paint (13%) and brown paint (8.7%) was documented. Most of the rims were too small to observe whether or not decoration on the body of the vessel was present (91.3%); however, twist roulette and a composite design with twist roulette with continuous incisions were present (each at 4.3%). Small size makes it difficult to observe interior damage. Approximately half of the vessels (47.3%) had signs of exterior sooting indicating they were used in some type of cooking or heating activities. Rim abrasions were not present on the majority of rims (65.2%).

Table 7.11 Summary Statistics of Main Rim Types Mound 1

Rim Type	Mean Diameter	Body Thickness	Rim/Lip Thickness	Interior Angle
Everted Straight Rims with Rounded Lips	20 cm (σ 4)	5-9 mm (σ 1.8)	6 mm (σ 1.5)	120-140
Everted Straight Rims with Straight Lips	22 cm (σ 4.1)	5.5-9mm (σ1.3)	5.8 mm (σ1.3)	130-150
Everted Tapered Rim Straight Lip	22.7 cm (σ 6)	8.8 mm (σ2.3)	Small 3-7mm Large 7.1-10mm	Too small
Everted Tapered Rim Round Lip	22 cm (σ 4)	9.7 mm (σ2.3).	6.35 mm (σ2)	120 to 160
Everted Straight and Elongated Rim	21 cm (σ4.5)	7.7mm (σ 1.1)	6.3 cm (σ 1.5)	120-140
Everted Round and Elongated	22 cm (σ4.6)	8 mm (σ1.3)	5.8mm (σ1.4)	130-150

Decorated Body Sherds

Some decorative motifs and surface treatments co-occurred. Table 7.12 lists percentages of the most common decorative motifs and their surface treatments. No surface treatment is the most common across all decorative motifs. Ceramics with eroded and unidentified roulette are not included. An ANOVA test indicates significant results (F-statistic 29.415 at a significance level $_{\alpha.05}$ of .000); however, post-hoc test show that the lack of surface treatment in each of the decorative motif categories is driving the significance. There are no significant differences between surface treatments and decorative motifs.

Table 7.12 Most Common Decorative Motifs with Surface Treatment as Percentages

Decorative Motifs	None	Red Paint	Brown Paint	Black Paint	Total
Groove/ Continuous Incisions	29.3%	3.0%	5.7%	1.7%	39.7%
Twist Roulette	16.9%	1.7%	1.7%	0.3%	20.6%
Composite: Twist Roulette and Continuous Incisions	16.0%	1.4%	1.8%	0.1%	19.3%
Maize Cob Roulette	16.6%	0.1%	0.1%	0.2%	16.9%
Dentate Stamped Rectangles	1.1%	0.4%	0.1%	0.1%	1.6%
Discontinuous Incisions	0.8%	0.1%	0.1%	0.1%	1.1%
Composite: Dentate Circles and Continuous Incisions	0.4%	0.1%	0.1%	0.3%	0.8%
Total	**81.1%**	**6.7%**	**9.6%**	**2.6%**	**100.0%**

Table 7.13 Most Common Decorative Motifs with Surface Treatment as Counts

Decorative Motifs	None	Red Paint	Brown Paint	Black Paint	Total
Groove/ Continuous Incisions	529	55	103	30	717
Twist Roulette	305	30	31	5	371
Composite: Twist Roulette and Continuous Incisions	288	25	33	2	348
Maize Cob Roulette	299	1	1	3	304
Dentate Stamped Rectangles	19	7	2	1	29
Discontinuous Incisions	15	2	2	1	20
Composite: Dentate Circles and Continuous Incisions	8	1	1	5	15
Total	**1463**	**121**	**173**	**47**	**1804**

I conducted a Chi-square test to determine whether there was a relationship between vessel interior damage and body decoration motif. Only the most common body decoration motifs were used. Interior damage (documented as either eroded or not present) was omitted from the statistical test. The Chi-square test indicated that the results were not significant (χ^2 46.715 at a significance level$_{\alpha.05}$ of .089). The most abundant types of vessels, as grouped by decoration, were used in a variety of use-wear contexts. There was not strong patterning between decorative style and how a vessel was used.

Figure 7.6 Large Mica Incised Sherd

The presence of mica within the fabric of sherds was common in the greater Bono area. Effah-Gyamfi coded mica as presence or absence and found that mica was present in approximately half of the ceramics analyzed[27] from his Bono Manso assemblage. He concluded that the presence of mica was likely associated with clay deposits and therefore not useful in creating ceramic typologies. Mica is present in many of the clay deposits throughout southern and central Ghana, and as such it is not unreasonable to assume that potters were aware of micaceous clays. At Kranka Dada, I coded the presences and absence of mica inclusions of ceramics differently than Effah-Gyamfi. Ceramics were documented as: no mica, small mica, and large mica. Size differences between small and large mica were observed macroscopically. Small mica inclusions tended to be approximately the size of a pin head; large mica inclusions varied but tended to be approximately 3-5mm. Table 7.14 lists the micaceous presence within the fabric of ceramics by decorative motif. The majority of vessels did not have mica (69%). Small micaceous inclusions were present in some of the sherds with the most common decorative techniques. Large mica was present in low frequencies in most categories except for ceramics with grooves/ continuous incisions. Grooved/ continuously incised sherds had large mica in 17% of the sherds. The lack of mica or presence of small mica in ceramic fabric may be related to the presence of mica in clay deposits; however, large

[27] Not all ceramics excavated from Bono Manso were included in his doctoral analysis

mica was probably specially selected for certain types of vessels that received grooving or continuous incisions (Table 7.14). In addition to large mica, these vessels often had a thin coating of white plaster or *hyire* that was absent in every other ceramic type of Mound 1. Similar vessels *may* have been recovered from Bono Manso, although Effah-Gyamfi's dissertation examined the rim and decoration (n=9 from Phase III form 6 and 9)(Effah-Gyamfi 1985: 134-139). The presence of large mica and the *hyire* markings may be present, but were not documented as part of his analysis. It is possible that this style of sherd is unique to the Bono Manso region. No similar ceramics have been recovered from the Banda excavations (Stahl, personal communication 2013).

Table 7.14 Mica Presence by Decorative Motifs

Decorative Motifs	**No Mica**	**Small Mica**	**Large Mica**	**Total**
Groove/ Continuous Incisions	400	206	124	730
Twist Roulette	291	81	3	375
Unidentified Roulette	136	49	1	186
Composite: Twist Roulette and Continuous Incisions	276	74	1	351
Maize Cob Roulette	233	70	1	304
Composite: Unidentified Roulette and Continuous Incision	67	33		100
Dentate Stamped Rectangles	27	5	3	35
Discontinuous Incisions	14	5	2	21
Composite: Dentate Circles and Continuous Incisions	9	2	5	16
Other/ and Non decorated rims	568	217	27	816
Total	**2021**	**742**	**171**	**2934**

Bases

Six vessel bases were recovered from Mound 1. Small sample sizes prevent anything other than a descriptive analysis. The bases were flat-bottomed and circular; they created a small pedestaled base for the vessel. Although fragmented, the bases were likely attached to round or globular vessels. Table 7.15 lists the summary metric attributes from the Mound 1 bases. Base diameter varied from 7 to 9 cm with a mean of 8 cm. Base thickness was normally distributed with a mean of 10.5 mm; it varied from 6.7

to 12.3 mm. Only 1 base had decoration, which was twist roulette. No surface treatment other than being hand-smoothed was observed. Half the bases had small mica inclusions and half had no mica inclusions. No interior damage on the bases was observed, although three bases had exterior soot, indicating their former placement in a fire.

Table 7.15 Summary Metric Description Bases Mound 1

Mean Weight	Mean Thickness	Base Diameter
36.4 gm	10.5 mm	8 cm

Lids

Nine lid and lid fragments were recovered from Mound 1. Similar to bases, small sample sizes prevent anything other than descriptive analysis (Table 7.16). Lids were conical shaped with a circular and flat handle (Figure 7.7). No surface treatment or decoration was present on the lids. Some soot from thermal damage was observed. In the Banda region, this conical shape of lid is associated with shrine pots in religious contexts (Stahl 2013). Pot lids were often incorporated into clusters or bundles of multiple types of objects (ibid.). Ritual associations and functions of Mound 1 will be disused in greater detail elsewhere.

Table 7.16 Summary Lid Description

Mean Weight	Mean Thickness
18.8 gm	11.22 mm

Figure 7.7 Lid from Mound 1

Faunal Remains

By count, animal bones were the most frequent type of artifact recovered after ceramics. More faunal remains by weight and frequency were recovered from Mound 1 contexts than any other mound (Table 7.17). Over 93% of the faunal remains by count were recovered from Mound 1 from the assemblage. This shows that there was a significant pattern of differential distribution of faunal remains between mounds. When controlled for volume, 28.3 bones were recovered per cubic meter, a significant increase over Mound 2 and 5. NISP and MNI are commonly used measures for faunal analysis. The NISP index for Mound 1 is 477 and the MNI was not calculated. Due to the fragmentary nature of faunal remains, the NISP quantity may not be a reliable indicator or number of specimens identified as indeterminate remains are not included in this number.

Table 7.17 Faunal Remains by Mound

Mound	Sum of Weight in Grams	Percentage	Count	Percentage	Cubic Meters	Bone frequency per cubic meter
1	1,775	86.75%	477	93.71%	17.4	27.4
2	128.64	6.29%	26	5.11%	14.4	1.8
5	142.51	6.97%	6	1.18%	11.2	0.5
Total/ Mean	2,046	100.00%	509	100.00%	43	11.8

When possible, the genus and species of the faunal remains were identified. . As mentioned in Chapter 5, many of the faunal remains were highly fragmented and lacked epiphyses, which complicates identification. Shown in Table 7.18, more than 81% of the fauna from Mound 1 were from an indeterminate family. Of the families that could be identified, Bovidae and Testudinidae were the most common within the Mound 1 assemblage. The family Testudinidae is composed of land-dwelling tortoises. West African Bovidae are a diverse family of hooved ruminants. Most are herbivores, with the exception of duikers which are omnivorous.

Table 7.18 Counts of Fauna by Order, Family, and Genus

Order, Family, and Genus	Count	Percentage
Chelonia	**52**	**10.9%**
Testudinidae	52	
Galliformes	**11**	**2.3%**
Phasianidae	11	
Lagomorpha	**1**	**.2%**
Leporidae	1	
Rodentia	**20**	**4.2%**
Sciuridae	1	
Thryonomys	4	
Hystricidae	9	
Hystrix sp.	*9*	
Indeterminate	6	
Carnivora	**15**	**3.1%**
Canidae	7	
Indeterminate	8	
Artiodactlya	**50**	**10.5%**
Bovidae	32	
Duiker sp.	*8*	
Reduncinae?	*1*	
Hippotragus sp.	*5*	
Indeterminate	*18*	
Bovidnae	1	
Caprinae	9	
Indeterminate	8	
Serpentes	**11**	**2.3%**
Indeterminate	11	
Indeterminate	**317**	**66.5%**
Grand Total	**477**	**100%**

The majority of animals represented cannot be assigned to a wild or domesticate class given their fragmented state. Only 19% of the faunal remains from Mound 1 could be identified with sufficient specificity to determine wild versus domesticate status. Of those, 3% of the faunal remains from Mound 1 are from domesticated species. The most dominant domesticated genus in Mound 1 were Caprinae (sheep/goat n=9), Phasianidae (probably chicken/ guinea fowl n=3), and Bovidae (cattle n=1). Of the remains that could be identified, 16% were from non-domesticated animals including land-dwelling tortoises/ turtles (n=52), Leporidae (hares n=1), Sciuridae (n=1), Thryonomys (giant rat n=4), Hystrix sp. (porcupine n=9), and Serpentes (snake n=11). Canidae remains are classified as indeterminate, although some domestic dog remains may have been present. Distinguishing between feral and domesticated dogs was not possible, and as such Canidae remains were categorized as indeterminate. Artiodactyl remains were recovered from wild and domesticated genera; Duiker sp., Hippotragus sp. (probably roan antelope), and Reduncinae (probably Kobus sp./waterbuck) were the wild artiodactyl taxa and were the second largest class of faunal remains behind land-dwelling tortoises. Snake vertebrae were recovered; however, they could not be assigned to a genus. In general, the sizes of the individual snake vertebrae were large; using the relative size of reptile bones as a proxy indicator for size of the animal suggests that large snakes were procured.

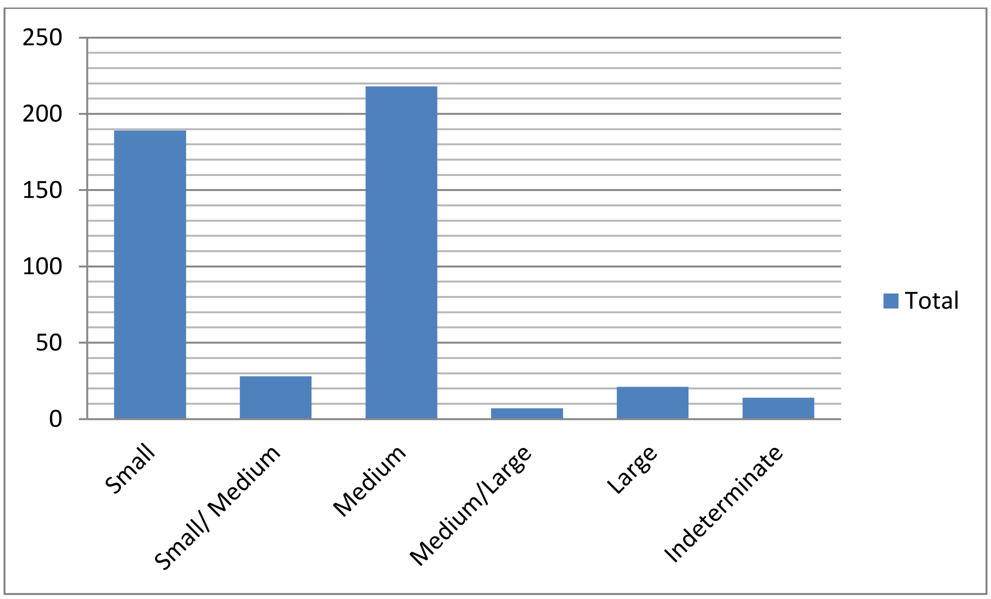

Figure 7.8 Counts and Weights of Animal Bone by Size Class

Animal bone was divided into 7 different size classes: <u>small, medium, large, extra-large, small/medium, medium/ large, and indeterminate.</u> Figure 7.8 is a graph showing count and weight of bone by different size classes. Post-depositional processes may contribute to weathering on animal bone. It is possible that bone from smaller animals was disproportionately affected. Taphonomic processes may have also affected smaller fragments of animal bone processed for marrow or butchered. This has implications for documenting subsistence patterns from Mound 1 because the sample of bone from Kranka Dada Mound 1 was so fragmentary. Fragmented bone from small animals was more likely to suffer from taphonomic weathering and be more difficult to identify.

The ratio of wild to domestic taxa was 5.6 to 1. Of the remains that could be identified, more species were classified as wild. Frequencies of domestic species were low and limited to sheep/goat and chicken/ guinea fowl. In general, these are domesticated animals that require relatively low investment in husbandry activities. Sheep/ goat animals are browsers, rather than grazers. The diets of browsing ungulates require nutrient-rich meristematic regions of grass; whereas, grazing ungulates can consume grasses and leaves in their entirety (McNaughton and Georgiadis 1986). The majority of domestic species documented from Mound 1 were browsing animals that could have consumed a wide variety of foods locally available at Kranka Dada. Chickens and helmet-crusted guineafowl are domesticated animals that require a roosting area. Guineafowl prefer to create their own nests in bushes or trees of cleared or semi-cleared areas (Ayeni 1983). Like chickens, they are omnivorous and will consume a wide variety of locally available foods like plants, worm, fruit and insects. Animal food production and consumption at Kranka Dada incorporated some domesticated species that could have been raised with relatively little investment. Care for the types of domesticated animals recovered from Kranka Dada could have been easily incorporated daily activities and occurred alongside multiple household tasks in a complementary fashion.

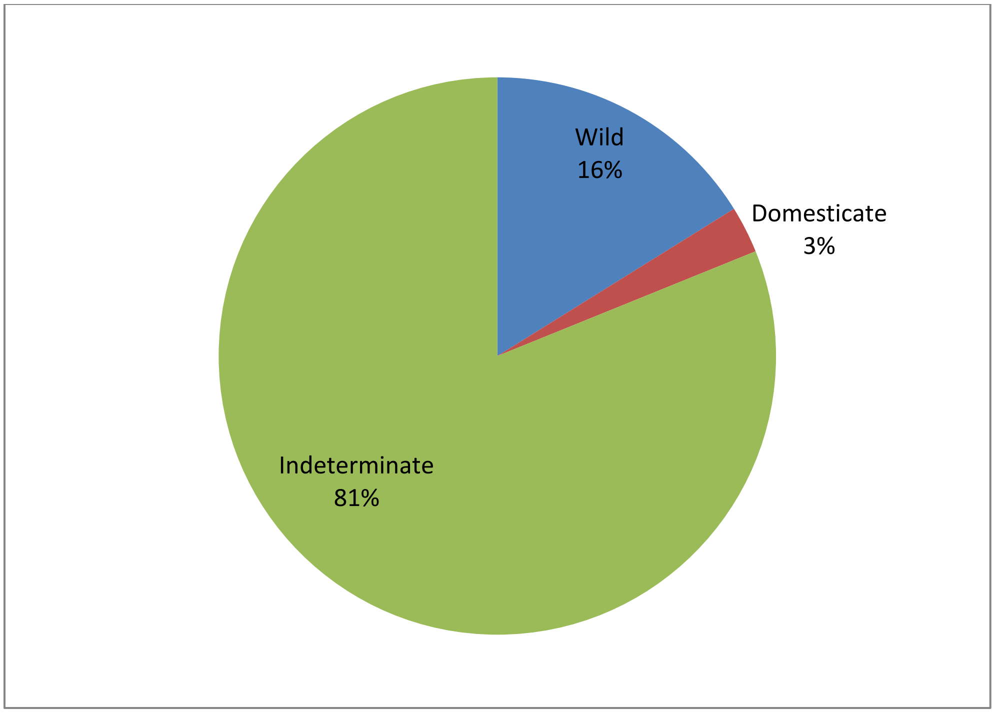

Figure 7.9 Wild Versus Domestic Designation Mound 1

Wild or non-domestic animals recovered from Mound 1 were more diverse than the domestic species. A minimum of 32 non-domestic artiodactyls were recovered including duiker, Reduncinae (possibly *Kobus sp.*/waterbuck), and Hippotragus. Each is a type of antelope from varying size classes. Figure 7.10 shows the frequencies of wild bovids by size class. Small to Medium size wild bovids were the most common within the assemblage. Duikers are forest-dwelling antelopes, and the most common type of small bovid available (Hofmann and Roth 2003). There are 21 extant species of duiker, and I did not attempt to distinguish between them. Duikers are omnivorous forest and bush dwellers that use both browsing and grazing strategies. Duikers would likely have been available in the forest/savannah transition habitats surrounding Kranka Dada. Reduncinae are large antelopes that tend to weigh 150-250 kg. *Hippotragus sp.* are large antelopes that tend to weigh approximately 225-300 kg. Reduncinae and *Hippotragus sp.* antelopes feed with mixed browsing and grazing strategies (Jousse and Lesur 2012). Both Reduncinae and *Hippotragus sp.* are antelopes that prefer savanna and woodland environments and likely would have been available in the greater Volta Basin.

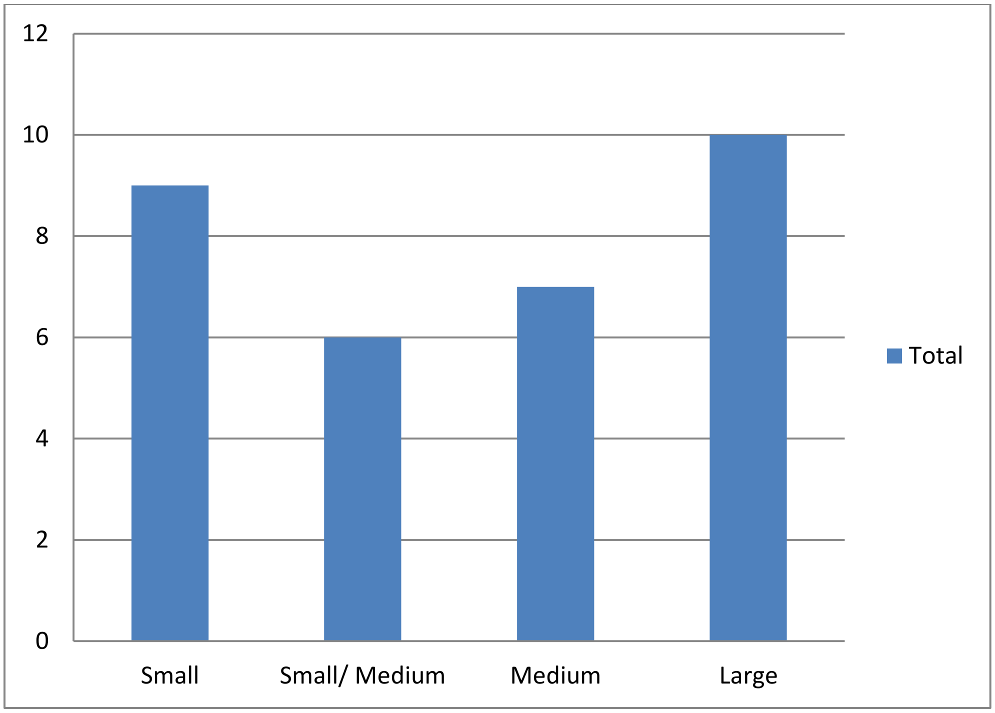

Figure 7.10 Non-Domesticated Bovid Size Classes

The next section examines hunting and animal procurement strategies. Ethnographic and oral historical data reports that some types of hunting were conducted by hunters with special skills (Emmanuel Effah-Gyamfi 1974; Rattray 1923). Procuring large and dangerous game was often an act associated with specialized or group hunting. Animal skins, quills, and horns as well as meat were likely used; ethnographic data indicate that non-edible animal parts were important for status displays as well as ritual objects. Skilled hunters are able to procure adult game, and will often overlook juvenile game in favor of adults. Kranka Dada faunal remains were evaluated to determine if they were from juvenile, adult, or indeterminate age animals. To make this determination, epiphyses were examined for separation or ossification. Faunal remains were classified as juvenile if the epiphyses were separated or had not yet ossified, and classified as adult if the epiphyses were ossified. Table 7.19 lists the juvenile, adult, and indeterminate counts of faunal remains from Mound 1.

Table 7.19 Juvenile and Adult Counts of Fauna Mound 1

Family	Juvenile	Adult	Indeterminate
Testudinidae	0	4	48
Phasianidae	1	2	9
Sciuridae	1	0	0
Thryonomys	1	0	3
Canidae	0	0	7
Bovidae*	5	3	24
Duiker sp.	*2*	*0*	*6*
Reduncinae?	*0*	*0*	*1*
Hippotragus sp.	*1*	*3*	*1*
Bovidnae	0	0	1
Caprinae	1	1	7
Hystrix	2	0	7
Indeterminate	15	9	326
Total	**26**	**19**	**432**

*Bovidae genera counts listed in total

The majority of bone was too fragmented and lacking epiphyses to determine relative age. The sample size of remains that could be categorized as juvenile or adult is too small to make meaningful inferences about hunting strategies based on family. Both juvenile and adult specimens were acquired by inhabitants of Mound 1. For the large and wild game, both juvenile and adult specimens were documented. Table 7.20 lists the counts of juvenile, adult, and indeterminate age bone by size class. When the indeterminate age remains are removed, a Chi-square test indicates no significant differences between age and size class (χ^2 6.477 at a significance level $_{\alpha.05}$ of .091). Again, sample sizes of identifiable remains are small, making it difficult to create meaningful inferences about animal selection processes and specialized hunting.

Table 7.20 Size Classes by Juvenile vs. Adult

Size Class	Juvenile	Adult	Indeterminate	Total
Small	7	11	171	189
Small/ Medium	3		25	28
Medium	12	5	201	218
Medium/ Large			7	7
Large	2	3	16	21
Indeterminate	2		12	14
Total	**26**	**19**	**432**	**477**

When taxa, size class, and age status are examined, it appears as though multiple types of animals were selected and hunted for household production and consumption. Many of the wild species including giant rat, hares, turtles/tortoises, and porcupines could have been procured through collecting, hunting, trapping, or other opportunistic means (see Stahl 1999:35). In addition, many of these animals would have been attracted to disturbed areas like agricultural cleanings in the farms surrounding Kranka Dada. Procuring some of the taxa documented from Kranka Dada including large snakes and non-domesticated bovids would have required skill. Wild bovids, except for forest duikers, may have preferred savanna environments. However, duikers can exploit a diverse range of habits and ecosystems and many duikers can be found in savanna and riverine environments (Hofmann and Roth 2003). Kranka Dada, like Bono Manso, had a strategic location at the forest/ savanna transition. With planning, inhabitants could have exploited and procured wild animals from both ecotones. Not many domesticated animals were documented suggesting that the inhabitants of Mound 1 did not spend much time or energy on developing an animal husbandry industry. Of the domestic taxa, browsing animals dominate the assemblage. Browsing animals like goat, chicken, and guineafowl would have been content to forage for food while reaming close to occupation areas. Traders from the north operating in trade caravans used pack animals including cattle and horses. Domesticated animals brought from the north, such as cattle, horse, and sheep/goat were susceptible to trypanosomiasis. When domestic animals are affected with the sleeping sickness, infected animals are often rendered sterile and cannot reproduce. The risk of failure with developing and maintaining a domesticated animal industry may not have been worth the cost. Although the results from Mound 1 are not definitive due to their fragmentary nature, it appears that Mound 1 inhabitants used a range of subsistence strategies that included some big game hunting, small game hunting, opportunistic hunting/ trapping, and raising small amounts of domestic animals.

Within the structures from the contiguous excavation units, faunal remains were unevenly distributed by count and weight (Figure 7.11). By weight, faunal remains were largely concentrated within the upper level structures (Structures 4, 5, 6, and 32). Compared to other mounds, Mound 1 had a significantly higher proportion of faunal remains. The differential distribution pattern became even more pronounced in Structure 4 (Levels 1-7). Based on relative dates from smoking pipes, Structure 4 likely dates to 1600-1640 CE, which was well into the Atlantic exchange period. Based on the excavations from Kranka Dada, differential access to faunal became more pronounced over time.

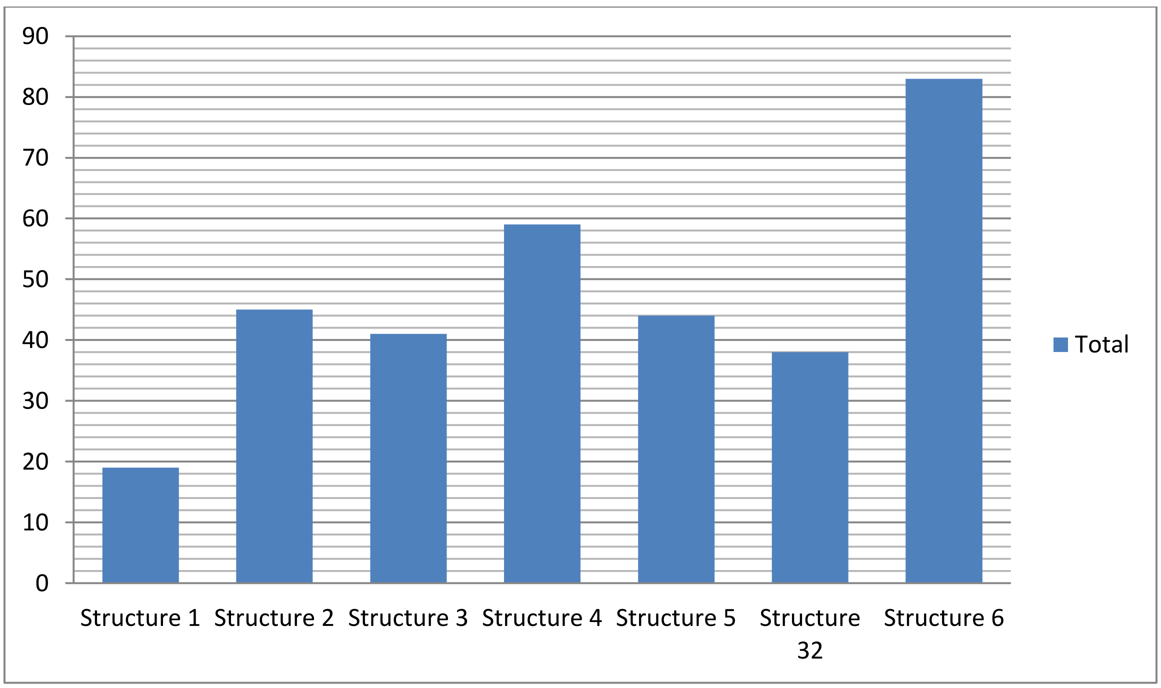

Figure 7.11 Distribution of Faunal Remains Mound 1 Structures

In addition to examining the taxa represented in Mound 1, the skeletal elements of individual bones were documented. Skeletal elements were classified as: <u>cranial elements (crania, mandible, and teeth), carpals/tarsals, ribs/thoracic vertebrae, upper limbs, lower limbs, indeterminate limbs, indeterminate vertebrae, indeterminate post-crania, scutes,</u>

scapulae, pelves, horns, tails, and horn cores. In addition to skeletal elements, bones were evaluated for post-mortem processing such as butchery, burning, and marrow processing; each was macroscopically studied. Butchery marks, such as cut marks and slices, were documented as present or absent. Marrow processing via smashing, spiral fractures without carnivore marks was also documented as present or absent. Burning was observed using two criteria--presence and location of burning; I distinguished between no burning, burned throughout, epiphyseal end burning, and patchy burning. If burning was present, the color of thermal alteration was documented: black/brown, gray, or white. Some types of burning may be more related to disposal than cooking, and the attributes coded are designed to distinguish between cooking and refuse disposal.

Table 7.21 lists the skeletal elements by count recovered from Mound 1. Indeterminate limbs were the most dominant category, accounting for 34.8% of the assemblage from Mound 1. Cranial elements were the second most common category, accounting for 20.3% of the assemblage. Carpals/tarsals, ribs/thoracic vertebrae, indeterminate vertebrae, upper limbs, lower limbs, and scutes accounted for 4.6 to 9.9% of the assemblage in similar proportions. Scapulae, pelves, and tails were documented in low frequencies. A large variety of skeletal elements were recovered from Mound 1, suggesting that whole animals were used in production and consumption activities. Figure 7.12 shows the relationship between crania to post-cranial elements by structure in Mound 1. While the quantities of cranial elements vary by structure, post-cranial materials account for a larger proportion of the faunal remains from each structure. The ratio of crania to post-crania is 1:3.8. This similarly suggests that animals were processed as complete units rather than butchered and shared between areas.

Table 7.21 Skeletal Element Counts Mound 1

Skeletal Element	Count	Percentage
Crania	97	20.3%
Carpals/ Tarsals	22	4.6%
Ribs/ Thoracic Vertebrae	31	6.5%
Upper Limbs	22	4.6%
Lower Limbs	35	7.3%
Indeterminate Limb	166	34.8%
Indeterminate Vertebrae	27	5.7%
Indeterminate Post-Crania	1	0.2%
Scapula	6	1.3%
Pelvis	7	1.5%
Scute	47	9.9%
Tail	1	0.2%
Indeterminate	15	3.1%

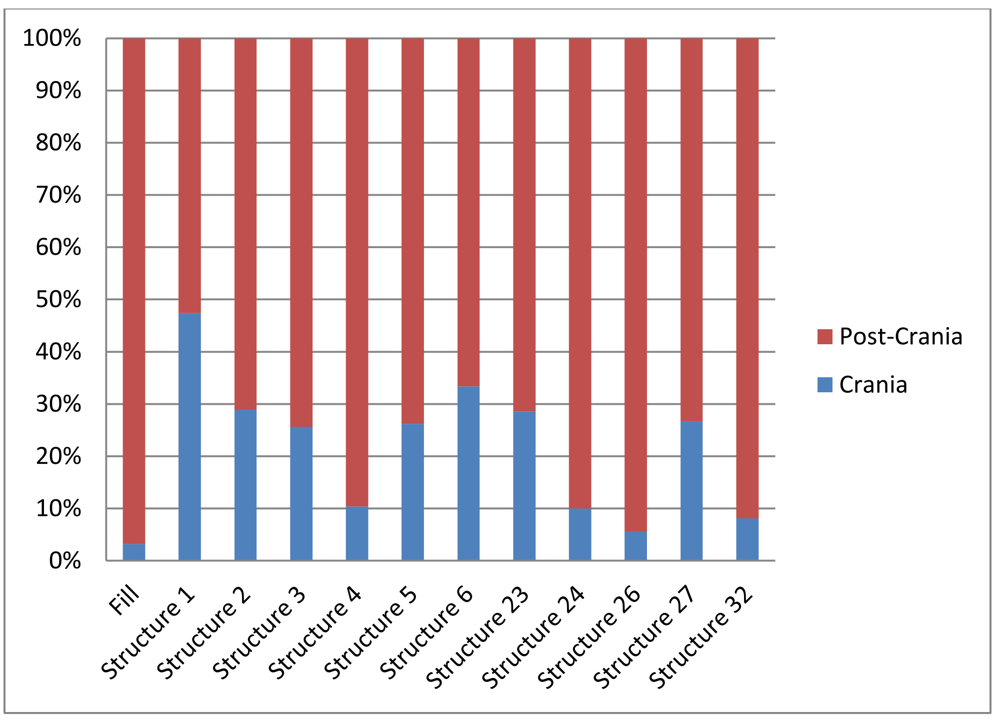

Figure 7.12 Distribution of Crania and Post-Crania by Structure

An important factor in understanding household production and consumption is documenting how animals were processed. Animals can be processed in multiple, non-mutually exclusive ways for skins, meat, and marrow. Table 7.22 lists the bone from Mound 1 that was processed for marrow, butchered, or burned. Within each category, approximately 10% of the remains showed evidence for processing. Low frequencies of animal processing were observed on the skeletal remains. Figure 7.13 shows presence of butchery marks on the skeletal elements recovered from Mound 1 as percentages. Quantities of skeletal elements varied by type, and percentages are given in order to normalize the distributions to allow for comparison across the different skeletal element categories. Butchery marks were predominately found on the scapula and limb fragments as a whole. Some butchery marks were observed on indeterminate fragments, and to the ribs/ thoracic vertebrae.

Table 7.22 Marrow Processing, Butcher Marks, and Burning of Mound 1 Animal Bone

Processed for Marrow	**Count**		**Butcher Marks Present**	**Count**		**Burning Present**	**Count**	
Marrow Processing	45	9.4%	Butchered	47	9.9%	Burned	57	11.9%
No Marrow Processing	432	90.6%	Not Butchered	430	90.1%	Not Burned	420	88.1%
Grand Total	477	100.0%		477	100.0%		477	100%

Although not much of the bone bears butchery marks, many of the bones from Mound 1 were highly fragmented. The highly fragmentary nature of animal bone, especially from the upper and lower limbs, from Mound 1 suggested that animals were intensively processed for consumption and subsistence. One measure of intensity of processing is through ratios of terminal upper/ lower limb fragments to indeterminate limb fragments. Within Mound 1, there was a ratio of 2.9 indeterminate limb fragments to 1 terminal limb fragments. Compared to other skeletal element categories, limb fragments as a whole had the highest count of butchery marks. The ratio of non-butchered to butchered limb fragments was 6.4:1. Marrow processing was observed in upper, lower, and indeterminate limbs only. Seventy-one percent of the bones processed for marrow were from medium-size animals, but the majority of the assemblage was from medium-size animals. Small, small/medium, and large-size animal remains were also processed for marrow, and the proportions of each category approximate the proportions by which the size class was represented in the assemblage.

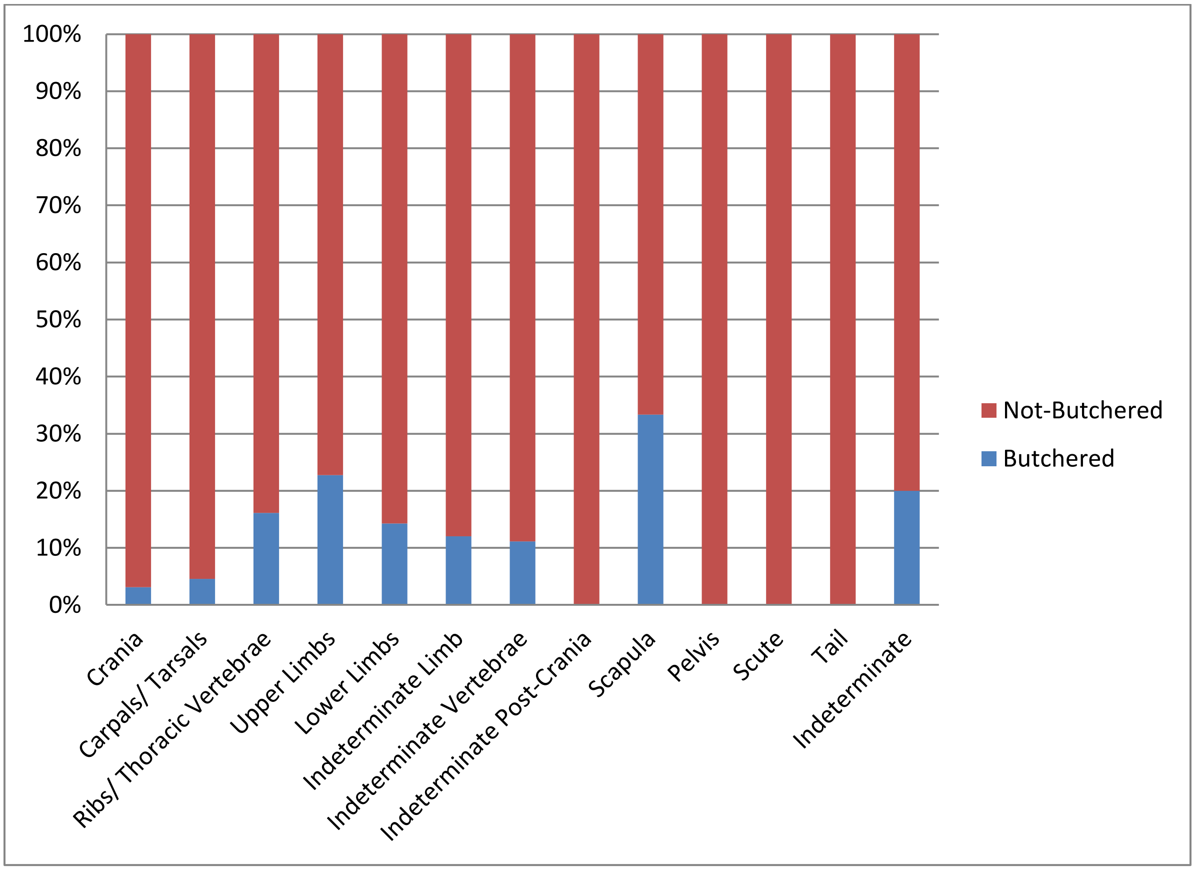

Figure 7.13 Butchery Marks on Skeletal Elements

The majority of animal bone did not have clear signs of thermal alteration. Bone that was burned throughout and white or gray in color is assumed to have been associated with disposal or intentional burning rather than culinary preparation. Disposal through fire accounts for 29% of the assemblage from Mound 1. Fully burned bone was mainly limb fragments from small and medium-sized animals. Only 5 pieces of bone have black and brown burned spots on the epiphyseal ends. This type of burning would be associated with roasting cuts of meat over a flame. Although the sample size is small, roasting as observed by the burning on epiphyseal ends was restricted to limbs. The remaining 61% of thermally altered bone was black/ brown and either burned throughout or patchy. Black/ brown burned bone was mainly limb fragments from small and medium sized animals; however, a larger range of skeletal elements were observed with black/brown burning including: scapulae, vertebrae, ribs, crania, and carpals/ tarsals. Large and medium/large sized animal size classes were represented in the black/brown burned bone categories as well.

The processing of meat without an abundance of cut marks and roasting combined with the fragmentary nature of the bones may indicate that much of the animal meat was chopped and prepared in soup or stew form. Damage from ceramics similarly indicated that food preparation activities included boiling and stirring, or actions consistent with the preparation of wet foods like soups and stews. Lids with soot marks were recovered from Mound 1, which act as an additional line of evidence for boiling activities.

When the distributions of skeletal elements were examined by structure, differences appear (Figure 7.14). I conducted a Chi-square and ANOVA test to examine if the differences in proportions of different skeletal elements by structure were significant. Both test produced significant results (χ^2 258.617 at a .000 significance level $_{\alpha.05}$) and an ANOVA with a post-hoc Games Howell comparison (F-statistic 5.174 at a .000 significance level $_{\alpha.05}$). The statistical tests were significant both with and without the fill levels added. Table 7.23 lists the significant results from the post-hoc Games-Howell test from the ANOVA. The results show that Structure 26 is the most different from the other structures in Mound 1 (Structures 1-6, and 27), and it is driving most of the difference. However, Structure 26 was part of the test excavation unit, and differences may be associated with the small exposure of the unit and level.

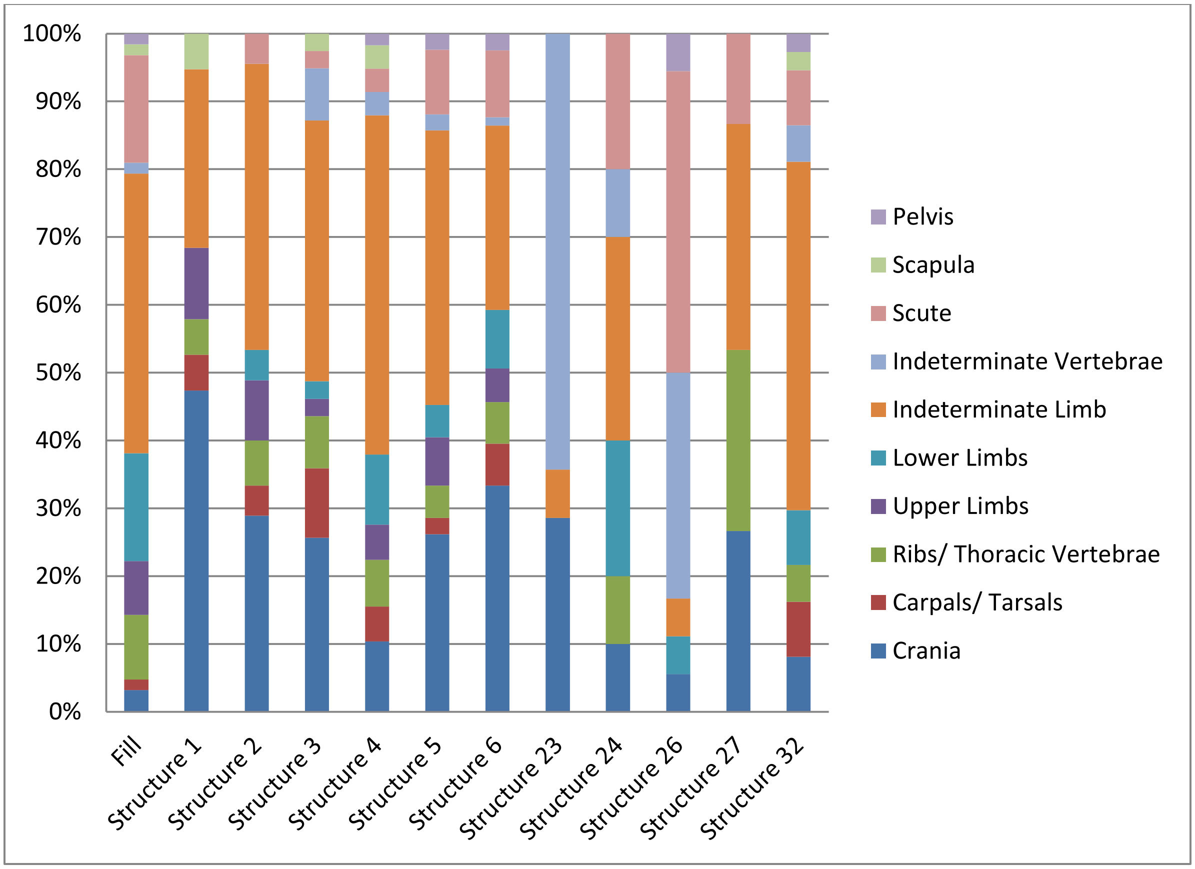

Figure 7.14 Distribution of All Skeletal Elements by Structure

Table 7.23 Significant Games-Howell Results, Measured as Different from Structure 26

Structure	Mean Difference	Std. Error	Significance
Structure 1	-4.348	.808	.000
Structure 2	-3.52	.630	.000
Structure 3	3.35	.664	.001
Structure 4	2.38	.598	.017
Structure 5	2.92	.671	.005
Structure 6	3.46	.609	.000
Structure 27	3.44	.887	.032

Smoking Pipes

The majority of smoking pipes from Kranka Dada were recovered from Mound 1. In total, 226 fragments were recovered from Mound 1, accounting for 98% of the total frequency of smoking pipes by count and weight from Kranka Dada. Smoking pipes were recovered from almost every structure/ floor in Mound 1 including the test pit. For a village level site, large quantities of smoking pipes were recovered from Kranka Dada. A total of 277 pipes and pipe fragments were recovered from controlled contexts at Bono Manso,16 from Awhene Koko, 739 from Banda, 71 from Buipe, 216 from Daboya, and 600 from Begho (Afeku 1976; Boachie-Ansah 1986; Campbell 2006; Effah-Gyamfi 1985; York 1973). Smoking pipes were recovered from every structure/ floor of Mound 1, although they were differentially distributed. The majority of smoking pipes were recovered from Structures 5 and 6.

Table 7.24 Smoking Pipes by Structure/ Floor Mound 1

Structure/ Floor	**Count**		**Weight**	
Fill	77	34.1%	468.7	33.7%
Structure 1	8	3.5%	29.3	2.1%
Structure 2	2	0.9%	1.5	0.1%
Structure 3	4	1.8%	52.5	3.8%
Structure 4	11	4.9%	44	3.2%
Structure 5	23	10.2%	284.4	20.4%
Structure 6	47	20.8%	246	17.7%
Structure 21	1	0.4%	5	0.4%
Structure 23	5	2.2%	12.9	0.9%
Structure 24	3	1.3%	49.7	3.6%
Structure 25	1	0.4%	2.5	0.2%
Structure 26	4	1.8%	18.7	1.3%
Structure 27	6	2.7%	32.8	2.4%
Structure 29	9	4.0%	27.4	2.0%
Structure 30	16	7.1%	97.13	7.0%
Structure 31	3	1.3%	4.1	0.3%
Structure 32	6	2.7%	16.2	1.2%
Total	**226**	100.0%	**1392.83**	100.0%

Smoking pipes are chronological indicators of trade and interaction.

Table 7.25 lists the types of smoking pipes recovered, their quantities, and associated dates. Ozanne's coastal Accra and Shai typology of smoking pipes serves as the foundation to which every other Ghanaian archaeology collection of smoking pipes is compared (Figure 7.15). Ozanne identified 5 types of smoking pipes with round-based pipes similar to European tobacco pipes as the earliest, later to be replaced by flat-based pipes. Archaeologists working in the Volta Basin and Brong-Ahafo region have observed that the coastal typology of smoking pipes does not map onto the interior regions (Campbell 2006; Effah-Gyamfi 1985). The earliest round-based pipes from the coast are recovered in the upper stratigraphic levels and surfaces of interior sites while the flat-based pipes are recovered from lower stratigraphic levels than round-based pipes. Ozanne (1962) argued that flat-based pipes were intrusive to the coast, and perhaps had a northern origin. Afeku (1976) documented an abundance of flat-based smoking pipes from Begho that were similar to smoking pipes from Mali and Jenne, and suggested a northern origin and trade of tobacco and smoking pipes. Archaeological research from multiple sites has indicated that there is overlap in pipes and pipe styles. Multiple pipe styles overlapped and were found in the same stratigraphic levels across sites (e.g., Daboya, Bono Manso, Begho, and Buipe), indicating very active trade and exchange of smoking pipes.

Pipes from Bono Manso were divided into two temporal categories. Phase II pipes (ca. 1550-1600 CE) were single-angle pedestaled with a flat-base and bowls were flared with thick rims. Bono Manso Phase II pipes are similar to Ozanne styles C and D, although Effah-Gyamfi's pipe styles pre-date coastal types by approximately 100 years. In a pattern similar to Begho, the earliest pipes recovered from Bono Manso are flat-based. Thus, Effah-Gyamfi (1981) proposed a northern Mande origin for the tobacco trade. Phase III pipes (ca. 1600-1650) had greater morphological diversity than Phase II types. Phase III pipes had a ring, flat, bifoliate pedestal and quatrefoil pedestal bases. Stem collars often had quatrefoils. Bowls were flared, but not frequently decorated. Many of the Phase III pipes were similar to Ozanne Type E pipes. Again, there are discordant dates between coastal and interior styles. Quatrefoil bases appeared on the coast after 1724 after Bono Manso is conquered and abandoned. Quatrefoil bases appeared in Bono Manso ca. 1600-1650. Two previously unrecorded styles of smoking pipe were recovered from Kranka Dada, which will be discussed in greater detail later.

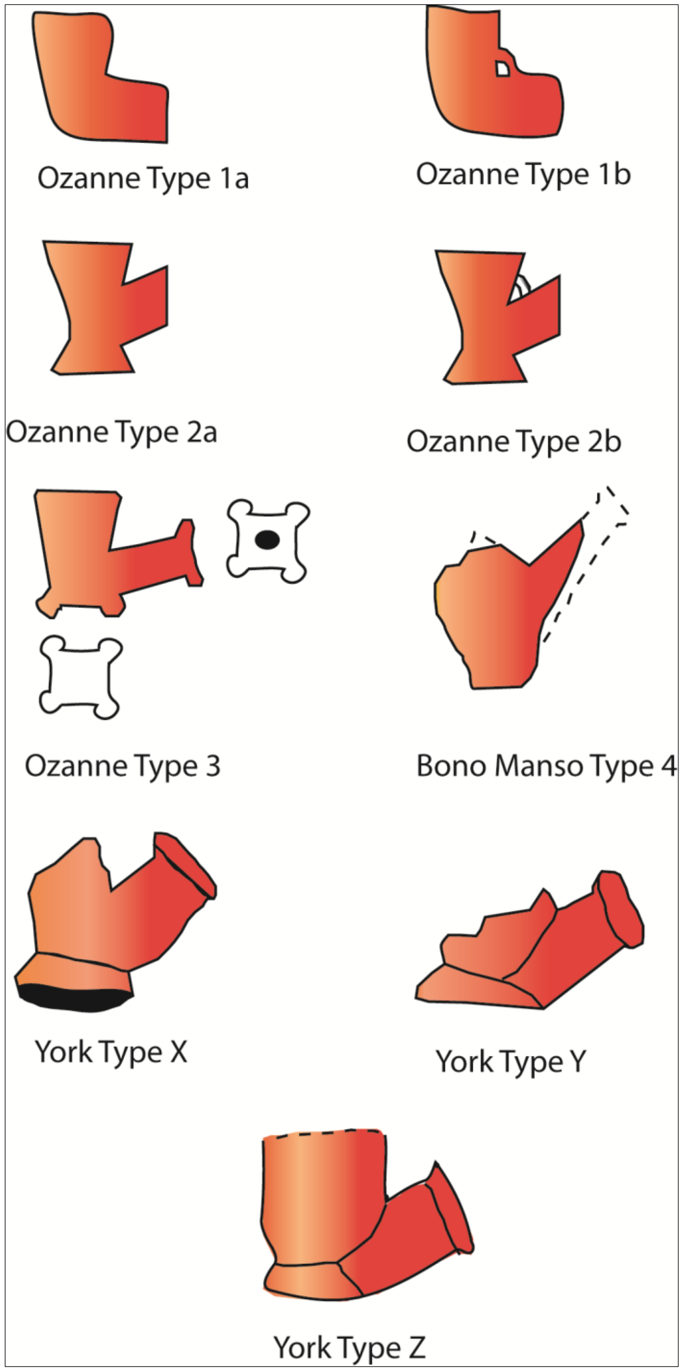

Figure 7.15 Smoking Pipe Styles (Effah-Gyamfi 1981; Ozanne 1963; York 1973).

Table 7.25 Chronological Associations for Smoking Pipes

Typology	**Dates**	**Count**	**Structure**	**BD**
Ozanne Type C	1655/60-1690	1	Structure 27	71-77 cm
Ozanne B or D (hook only)	1655-1724	1	Fill	
Ozanne Type C or D Effah-Gyamfi Phase II	1655/60-1724 1550-1600	8	Structures 1, 3, 5, 24	107-115 cm 123 cm 126-156 cm
Ozanne Type E Effah-Gyamfi Phase III	Post-1724 ca. 1600-1650	14	Structures 5,6, 29, 30	53-63 cm 87-115 cm
York Type Y	Post-1640	1	Structure 4	123-125 cm
York Type Z	Post-1640	2	Structure 3	126-128 cm
York Type Y or Z	Post-1640	3	Structure 5 and 6	87-115
New Shape (Round)		2	Structure 5	107-115 cm
New Shape (Square)		1	Structure 6	87-102 cm
Indeterminate		193	All structures except 22	
Total		**226**		

Table 7.26 lists the different sherd types from smoking pipes from Mound 1. Six types of sherd types were identified: base, bowl, stem, base/stem, base/bowl and indeterminate. In addition, I recorded quantitative and qualitative data for each smoking pipe fragment. I developed a system of coding smoking pipe attributes, in a similar manner to the ceramic data. Similar decorative motifs, surface treatments, and mica inclusions were observed. I coded metric observations of smoking pipe sherds: base height, base diameter, base stem angle, bowl and neck height, bowl thickness, bowl diameter, and stem thickness.

Table 7.26 Smoking Pipes Parts from Mound 1

Sherd Type	**Count**	**Percentage**
Base	19	8.4%
Bowl	145	64.2%
Stem	31	13.7%
Base and Stem	7	3.1%
Base and Bowl	6	2.7%
Indeterminate	18	8.0%
Total	**226**	100.0%

Pipe bases are diagnostic feature used when comparing pipes between assemblages. Eight types of bases were documented: <u>flat, round, quatrefoil, bifoliate, pedestal, foot (only), quatrefoil/bifoliate, and square.</u> Base stems were documented as <u>single angle or double angle.</u> Most of the base types from Mound 1 were pedestalled with a single angle. Single angle pedestalled based are generally the most abundant type in the contemporaneous assemblages of the greater Volta Basin sites of Bono Manso, Begho, Banda, Buipe, and Awhene Koko.

Table 7.27 Smoking Pipe Base Types with Stem Angle Type

Base Type	**Single Angle**	**Double Angle**	**Indeterminate**	**Total**
Round	2	0	0	2
Quatrefoil	3	1	0	4
Pedestal	8	2	8	18
Foot	0	0	1	1
Quatrefoil/ Bifoliate	0	0	1	1
Square	1	0	0	1
Indeterminate	0	0	2	2
Grand Total	**14**	**3**	**12**	**29**

One of my goals of documenting smoking pipes is to determine if there were similarities between smoking pipes and other ceramic objects. Similarities in surface treatments and decorative motifs across household ceramics and pipes may point to local manufacture of some pipes. Quantitative and qualitative diversity across pipe styles may indicate that pipes were traded widely within local and regional networks. Decorative motifs were observed on bases, bowls, and stems. The stem angles of all pipes from Mound 1 were from 150 to 170 degrees. Within the single angle pedestalled bases, base height was normally distributed with a mean of 8.2 mm (σ3.2). Base diameter was consistently measured from three to four cm.

Table 7.28 Pipe Base Decoration Motifs

Base Decoration Motif	**Count**
No Decoration	8
Narrow Horizontal Incisions	2
Crisscross Incisions	3
Vertical Band Incisions	3
Combination Horizontal and Vertical Incisions	12
Rectangular Dentate and Horizontal Incisions	1
Grand Total	**29**

Twenty-three decorative motifs were documented from Mound 1 pipe bowls. Table 7.29 lists the most common decorative motifs from Mound 1 (see Appendix 13). Similar to what I noted for ceramic vessels, incisions were the most common decorative technique on pipes. Unlike incisions on ceramic vessels, decorative incisions on smoking pipes were more varied. Patterns were elaborate with crisscrosses and inlaid composite designs, manipulated negative space, and there was experimentation with the level of relief and designs. Relief was documented as: low relief, high relief, or medium relief. Seventy-three percent of smoking pipes with decoration on the bowl had low relief, while 18.6% had high relief and 7.4% had medium relief.

Table 7.29 Pipe Bowl Decorative Motifs

Decorative Motifs	Count	Percentage
No Decoration	32	20.3%
Narrow Horizontal Incisions	27	17.1%
Crisscross Incisions	3	1.9%
Rectangular Dentate	4	2.5%
Vertical Band Incisions	10	6.3%
Combination Horizontal and Vertical Incisions	5	3.2%
Wide Horizontal Incisions	21	13.3%
Single Horizontal Incision	20	12.7%
Rectangular Dentate and Horizontal Incisions	8	5.1%
Other	28	17.7%
Total	**158**	100.0%

In addition to decoration, the surface treatment of smoking pipes was documented (Table 7.30). Six treatments were observed: <u>no treatment, red paint, burnished, mica paint, brown paint, and indeterminate.</u> Similar to ceramic vessels, the majority of pipes had no surface treatment (65.9%). Red paint was the most common surface treatment accounting for 21.7% of the Mound 1 pipe assemblage. Red paint occurred twice as often on smoking pipes than ceramic vessels. Brown paint was the most common surface treatment on vessels, but was not usually applied to smoking pipes. Mica paint was more common on smoking pipes than on Mound 1 vessels.

Table 7.30 Surface Treatment of Smoking Pipes

Surface Treatment	Count	Percentage
No Treatment	149	65.9%
Red Paint	49	21.7%
Burnished	2	0.9%
Mica Paint	17	7.5%
Brown Paint	2	0.9%
Indeterminate	7	3.1%
Total	**226**	**100.0%**

The morphology of bowl rims of smoking pipes was diverse. Six different styles of bowl rims were documented (Table 7.31). Flat everted rims on the bowls of smoking pipes were the most common style accounting for 56.9% of the Mound 1 assemblage; it is the most abundant type of rim found on ceramic vessels. This suggests there was some continuity in the chaîne opératoire between crafting smoking pipes and ceramic vessels as the same actions of creating a rim were used. The different bowl rim types were spread throughout the structures with no clear stratigraphic relationship or pattern. Flat everted bowl rims were recovered from the same structures as the other rim types although in lesser quantities. In addition to the shape of the bowl rim, diameter measurements were from smoking pipe bowls was obtained. Bowl diameters varied from 2 to 10 cm were normally distributed with a mean of 6 cm (σ 1.9). One outlier at 15 cm was observed.

Table 7.31 Smoking Pipe Bowl Rim Shape

Bowl Rim Shape	**Count**	**Percentage**
Rounded Everted	3	4.2%
Flat Everted	41	56.9%
Straight	11	15.3%
Inverse L-Shaped	4	5.6%
Inverted	3	4.2%
Tapered	10	13.9%
Total	**72**	100.0%

Table 7.32 lists the collar styles documented from the stems of smoking pipes. Quatrefoil and angular collars were the most abundant. In general, collars tend not to be decorated (69%), although some are incised with mixture of narrow horizontal and/or vertical bands. Quatrefoil collars are usually associated with quatrefoil bases (Ozanne Type E). Quatrefoil collars were recovered from Structures 6 and 29 and have an associated AMS1 date of 1568 (1550-1614) CE. The Ozanne coastal typology of smoking pipes associated quatrefoil styles of smoking pipes with a post-1724 date. Greater Volta Basin archaeologists including Effah-Gyamfi have argued for an earlier date of the quatrefoil styles in the non-coastal regions. Effah-Gyamfi (1985: 193) placed quatrefoil styles at Bono Manso in the early Phase III deposits with a date of ca. 1600-1650.

AMS Date 1 corroborates the earlier date for quatrefoil styles of smoking pipes, and pushes it back a bit further. As the quatrefoil style appears on the coast later in time, this may suggest that Mound 1 inhabitants of Kranka Dada were engaged with and maintained northern connections of trade and exchange at the same time as the Atlantic networks were expanding.

Table 7.32 Collar Styles of Smoking Pipes

Collar Style	Count	Percentage
No Collar	2	7.4%
Quatrefoil	6	22.2%
Angular	6	22.2%
Square	3	11.1%
Round	5	18.5%
Inverse L-Shape	1	3.7%
Umbrella	3	11.1%
Indeterminate	1	3.7%
Total	**27**	100.0%

The 34 stems and stem/bases of smoking pipes were all round. Stem length was either short (less than 2 cm) or long (greater than 3 cm) (μ 3.5 cm σ 1.02). Sample sizes of stem length are low due as only complete stems could be adequately measured. Stem width was more consistent with a mean of 2.7 cm (σ .27). Stem thickness was normally distributed with a mean of .67 cm (σ.17).

Mica content within the fabric of smoking vessels varied. Similar to the ceramics from Mound 1, some fragments had no mica, small mica, and large mica inclusions (Table 7.33). A Chi-Square test comparing mica content in smoking pipes and ceramic sherds from Mound 1 failed to produce significant results (χ2 2.061α.05 at a significance level of .357). This suggests that there are no differences in the mean frequencies of mica inclusions between pipes and ceramic vessels. Since mica particles are present within some clay deposits, their presence within ceramic objects may or may not be intentional. Similar proportion of none, small and large mica inclusions suggests that similar clay deposits were exploited for the production or manufacture of smoking pipes and ceramic vessels.

Table 7.33 Mica Inclusions in Smoking Pipes

Mica Content	Count	Percentage
No Mica	159	70.4%
Small Mica	59	26.1%
Large Mica	8	3.5%
Total	**226**	**100.0%**

Smoking pipes had patterned signs of use wear. Thermal damage was present within the 85.5% bowls of smoking pipes while 12.2% of the bowls had no signs of thermal alteration. The remaining 2.2% were totally burned inside and out. The majority of bases (74%) had abrasions on the distal portion of the base. In many cases, bases were worn out and quite thin sometimes with holes worn through the base. The proximal portion of the base, stems, and bowl were often in good shape and not eroded despite being fragmented. This suggests that the distal abrasions were acquired through use of the pipes.

Figure 7.16 Worn Base Smoking Pipe

Flaked Stone

Flaked stone account for the third largest artifact class in the analyzed assemblage by frequency. Among the mounds, Mound 1 has the lowest proportion of flaked stone by weight of the lithic assemblage, and 29.4% of the lithic assemblage by count. Table 7.34 shows that both the weight and count of lithic artifacts per cubic meter for Mound 1 is low. Lithic artifacts were more abundant than metal artifacts, and may have been more likely to be used as household tools.

Table 7.34 Lithic Artifact Distribution by Mound

Mound	Sum of Weight in Grams	Percentage	Count	Percentage	Frequency per cubic meter	Weight per cubic meter in gm
1	233.57	14.2%	94	29.4%	5.4	13.4
2	636.41	38.8%	84	26.3%	5.8	44.2
5	769.78	46.9%	142	44.4%	12.7	68.7
Total/ Mean	**1639.7**	**100.0%**	**320**	**100.0%**	**7.4**	**38.1**

Lithic artifacts were classified as a core, tool, or debitage. Table 7.35 and Table 7.36 show the frequency, mass, and proportion of lithic artifact types by mound. Lithic artifact types were distributed unevenly between mounds. A Chi-square test indicates that there were significant differences in artifact distribution by mound (χ^2 20.567 with .000 significance). Mound 1 has a low proportion of cores and debitage by weight suggesting that materials were not often reduced in Mound 1 contexts. Yet, Mound 1 had the highest proportion of tools by count. This may indicate that Mound 1 occupants obtained tools as finished products or near finished products.

Table 7.35 Lithic Artifact Types by Mound by Count

Mound	Core		Debitage		Tool		Total	
1	3	0.9%	82	25.6%	9	2.8%	**94**	**29.4%**
2	20	6.3%	60	18.8%	4	1.3%	**84**	**26.3%**
5	34	10.6%	101	31.6%	7	2.2%	**142**	**44.4%**
Total	**57**	**17.8%**	**243**	**75.9%**	**20**	**6.3%**	**320**	**100.0%**

Table 7.36 Lithic Artifact Types by Mound by Weight in grams

Mound	Core		Debitage		Tool		Total	
1	21	1.3%	188.67	11.5%	23.9	1.5%	**233.57**	**14.2%**
2	414.9	25.3%	213.41	13.0%	8.1	0.5%	**636.41**	**38.8%**
5	400.98	24.5%	233.4	14.2%	135.4	8.3%	**769.78**	**46.9%**
Total	**836.88**	**51.0%**	**635.48**	**38.8%**	**167.4**	**10.2%**	**1639.76**	**100.0%**

Table 7.37 lists the artifact types from Mound 1 by raw material. Quartz was the most frequently used raw material for the production of flaked stone objects, and could have been acquired locally. Geologic sources for cryptocrystalline silicates including chert are unknown, and as such their acquisition strategies cannot be documented. The dependence on quartz is likely associated with it being locally available. Quartz tends to be a poor quality toolstone because of its fracture planes (Andrefsky 1994). Quartz is not a suitable raw material for producing sharp tools, although quartz is suitable for producing dull but durable tools.

Table 7.37 Lithic Artifact Types by Raw Material Mound 1

Raw Material	Core Count	Core Weight	Debitage Count	Debitage Weight	Tool Count	Tool Weight	Total Count	Total Weight
Quartz	3	21.0	71	156.61	6	14.9	**80**	**192.51**
Granite	0	0	1	9.4	0	0	**1**	**9.4**
Quartzite	0	0	1	6	0	0	**1**	**6**
Chert	0	0	9	16.66	2	4.8	**11**	**21.46**
Other	0	0	0	0	1	4.2	**1**	**4.2**
Total	**3**	**21.0**	**82**	**188.67**	**9**	**23.9**	**94**	**233.57**

Each of the three cores recovered from Mound 1 were quartz; two were multidirectional cores and one was a tested cobble. On average, cores from Mound 1 were quite small, but fragmented. Cortical presence on core fragments varied. Due to the small sample size of cores, it is not ideal to overgeneralize about how efficient the process of lithic reduction was, and whether or not cores were reduced to exhaustion.

Table 7.38 Core Qualities from Mound 1

Core Type	Weight in grams	Maximum Dimension	Cortex	Complete	Provenience
Multidirectional	5.2	17.78	Present	Fragment	Structure 6
Multidirectional	2.2	17.91	Absent	Fragment	Fill (above structure 2)
Tested Cobble	13.6	31.3	Present	Complete	Fill (above structure 2)

Of the lithic artifact types, debitage was the most abundant class. Debitage was identified as complete flakes, distal fragments, proximal fragments, medial fragments, angular debris, and indeterminate. Figure 7.17 is a graph showing the proportions of types of debitage from Mound 1. Complete flakes were the most common type of debitage recovered followed by proximal fragments and angular debris. Medial and distal fragments account for a small percentage of the debitage from Mound 1.

Table 7.39 lists the mean metric qualities for weight and maximum dimension. As a whole, the debitage components from Mound 1 were small. Small complete flake size is likely related to small cores. Mean angular debris fragments tend to have the largest mass. In 77.8% of the angular debris fragments, cortical presence was not observed meaning that large fragments of shatter were removed during secondary and tertiary stages of lithic reduction.

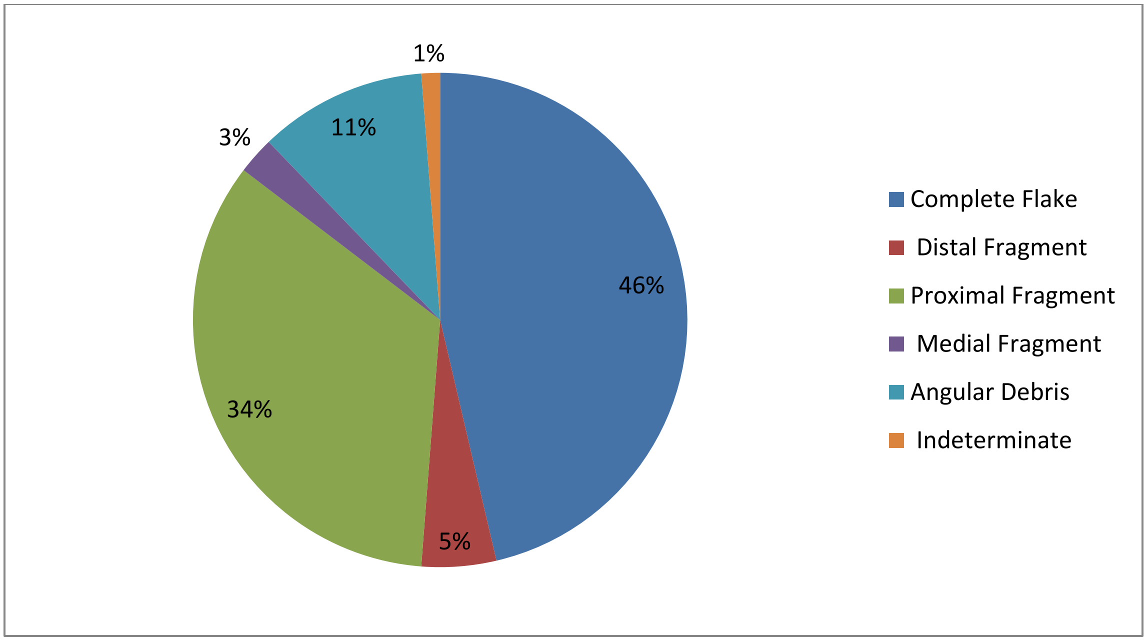

Figure 7.17 Debitage Percentages from Mound 1

Table 7.39 Mean size and weight of Debitage Types

Debitage Type	Mean Weight in gm	Average of Maximum Dimension in mm
Complete Flake	2.64	20.61
Distal Fragment	0.85	10.60
Proximal Fragment	1.93	18.28
Medial Fragment	1.85	19.47
Angular Debris	2.89	17.70

Both formal and expedient tools were recovered from Mound 1, although the majority of tools were expediently created retouched and utilized flakes. Table 7.40 lists the lithic tools recovered from Mound 1. In a similar pattern to cores and debitage, flaked stone tools tended to have small masses, which are likely related to core size. Most of the informal tools, retouched and utilized flakes, were produced from locally available raw materials. One formal biface tool was produced using unknown source chert and one unknown crystalline raw material. This indicates that inhabitants of Structure 5 intentionally selected sharp and durable raw materials from creating formal tools. Bifaces can be sharped and modified through removing flakes from the nucleus; this is an efficient means of reducing and conserving quality tool stone.

Table 7.40 Lithic Tool Types Mound 1

Tool Type	Raw Material	Weight in gm	Maximum Dimension in mm	Provenience
Biface	Other-Unknown	4.2	23.27	Structure 5
Biface	Chert	4.2	23.26	Structure 5
Utilized Flake	Chert	0.6	14.49	Fill
Utilized Flake	Quartz	2	21.46	Structure 4
Retouched Flake	Quartz	1.1	17.89	Fill
Retouched Flake	Quartz	1.7	14.26	Fill
Retouched Flake	Quartz	2	19.84	Structure 4
Retouched Flake	Quartz	6.5	31.85	Fill
Retouched Flake	Quartz	1.6	17.78	Structure 29

Debitage quantities were high compared to cores, yet principles of expediency governed the overall technological complex. How much of the stone objects were used and in what capacity is unknown. The majority of artifacts are complete flakes without signs of use. Bifaces, utilized flakes, and retouched flakes can be used in a variety of production and consumption contexts.

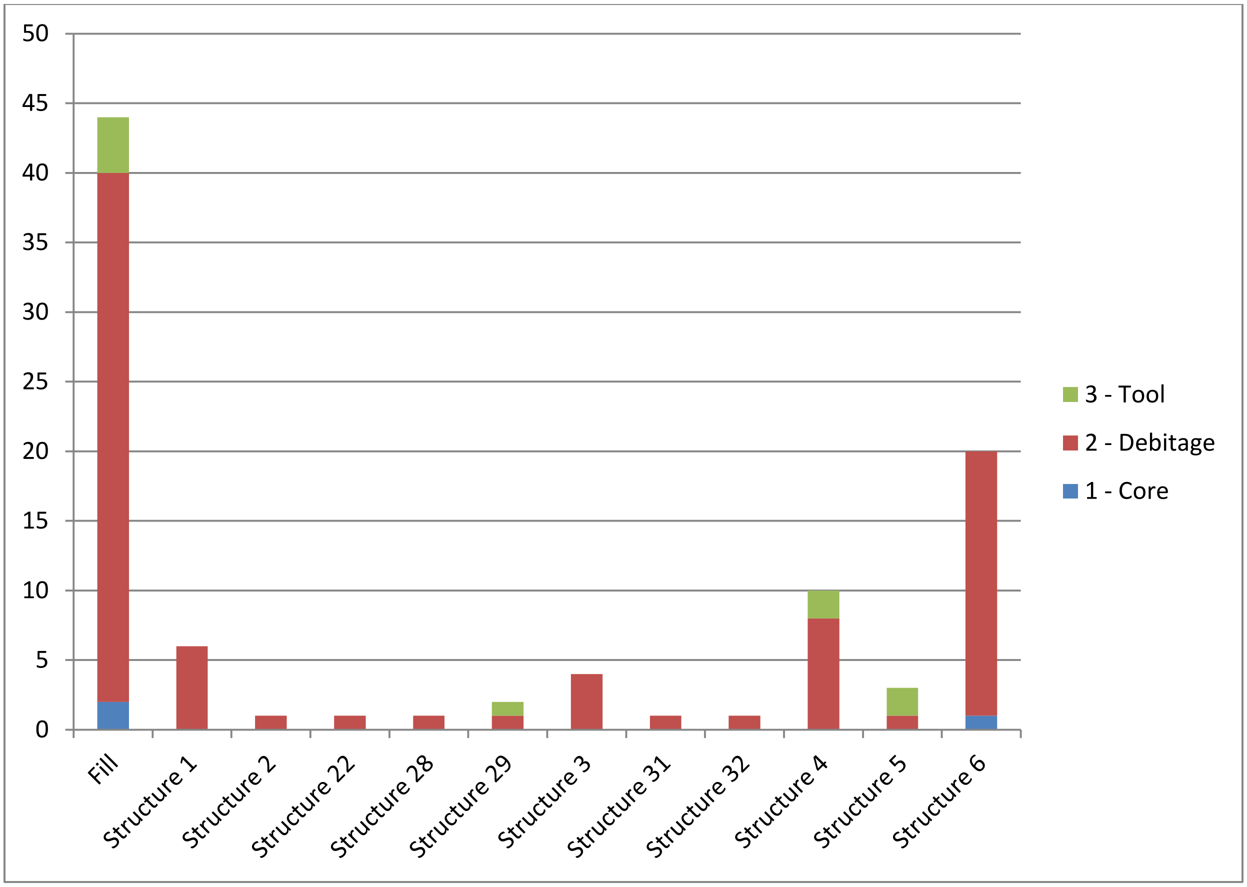

Figure 7.18 Flaked Stone Distribution by Structure

Groundstone

A total of 68 pieces of groundstone were recovered from Mound 1, weighing a total of 4.1 kilograms. Groundstone was normally distributed between the mounds, with frequencies and weights from Mound 1 falling in the middle of Mound 2 and 5 (Table 7.41). When controlled for unit volume, 3.8 pieces of groundstone were recovered from Mound 1 weighting 220 grams per cubic meter. Groundstone celts, *nyame akuma,* are not discussed in this section since they are a prized and frequently curated object often imbued with special ritual powers.

Groundstone was recorded as complete, fragments with more than half present, and fragments with less than half present. Table 7.42 shows that the majority of groundstone recovered from Mound 1 was fragmented with less than half of the tool observed.

Table 7.41 Distribution of Groundstone for all Mounds

Mound	Sum of Weight in Grams	Percentage	Count	Percentage	Frequency per cubic meter	Weight per cubic meter in gm
1	3827.7	33.8%	66	33%	3.8	220.0
2	2914.9	21.0%	41	25%	2.8	202.4
5	4889.94	45.1%	88	42%	7.9	436.6
Total/ Mean	**11632.54**	**100.0%**	**195**	**100%**	**4.5**	**270.5**

Table 7.42 Groundstone Completeness Mound 1

Completeness	Count	Sum of Weight in Grams
Complete	2	245.4
Less than Half	41	1045.5
More than Half	23	2536.8
Total	**66**	**3827.7**

The shape of the used edge of groundstone bears the marks of how an individual tool was used. Groundstone shape categories were convex, concave, flat, indeterminate, multiple, grooved, and axe (non *nyame akuma* axes). Groundstone use was observed macroscopically. Convex-shaped groundstone is associated with handheld grinding stones or *manos*. The majority of handheld grinding stones were not significantly altered; they were used as grinding stones without modification from the original shape. It is assumed that convex-shaped grinding stones are associated with food production and processing activities. Concave-shaped groundstone is the complementary tool to convex-shaped groundstone and also associated with food production and processing activities. The shape of flat groundstone can be correlated with multiple activities. Flat-shaped groundstone can be associated with abrasion, polishing, and grinding in food production, food processing, or craft manufacture. The flat abraders are difficult to access in that the majority were highly fragmented. As such, the overall shape of the flat-shaped groundstone cannot be determined. This would have aided in a reconstruction of how the flat-shaped groundstone was used (e.g., an active or passive implement or hand-held versus netherstone) (Adams 2002).Groundstone with multiple worked edges suggests that groundstone was recycled or used concomitantly for different purposes. Within Mound 1 contexts, at least 40% of the groundstone was used in food production or processing activities. Unfortunately, due to mistakes in coding, data do not exist for the shape of the worked edge in 32% of the groundstone from Mound 1. This is a significant proportion of the Mound 1 groundstone, and as such it creates difficulty to document and compare differences in household activities from Mound 1. One adze, a ground and hafted percussion tool was recovered.

Table 7.43 Groundstone Shapes Mound 1

Shape	**Count**		**Weight in Grams**	
Convex	16	24%	937.5	24%
Concave	9	14%	694.3	18%
Flat	13	20%	512.5	13%
Indeterminate	5	8%	123.9	3%
Convex and concave (2 sides)	1	2%	12.6	0%
Adze*	1	2%	11.3	0%
Unknown**	21	32%	1535.6	40%
Total	66	100%	3827.7	100%

*Not a groundstone celt or *nyame akuma*

** Mistake with coded data, shape of groundstone edge cannot be determined at this time

Figure 7.19 and Table 7.44 show the distribution of groundstone by weight by Mound 1 structures. In the majority of structures, groundstone was normally distributed with a μ of 53.3 grams with an σ 55.1. Structure 6 had a higher than expected concentration of groundstone weighing 1106.9 grams. Most of the groundstone was recovered from fill, and thus not discarded in its primary context.

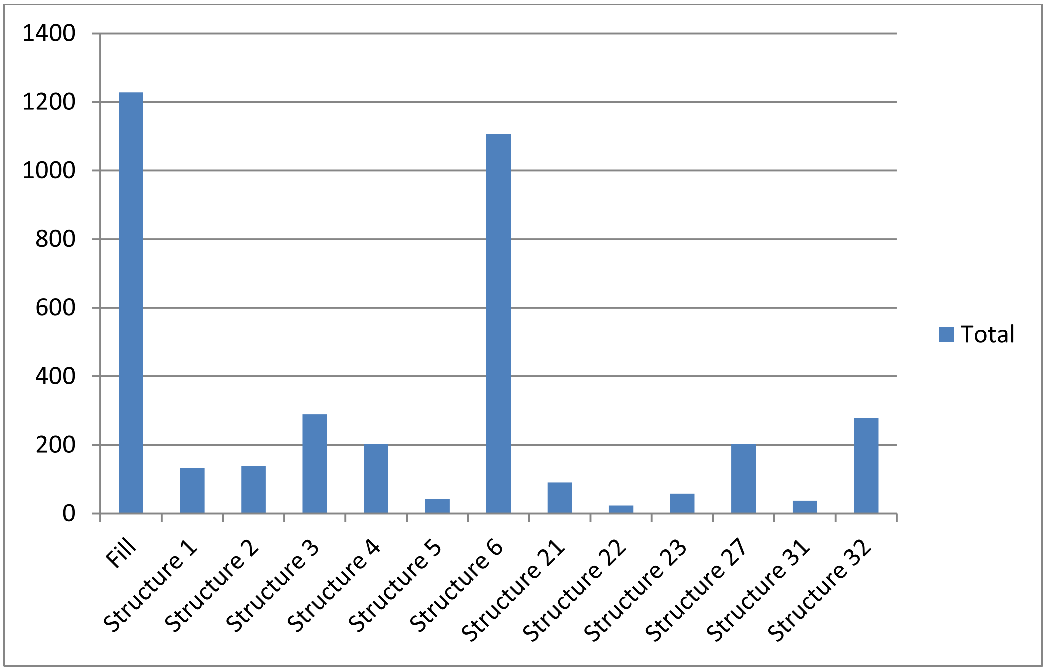

Figure 7.19 Distribution of Groundstone by Weight by Structures

Table 7.44 Groundstone Counts and Weights by Structure

Structure	Count	Sum of Weight in Grams
Fill	20	1227.8
Structure 1	5	132.5
Structure 2	4	139.1
Structure 3	2	288.8
Structure 4	2	202.3
Structure 5	1	41.6
Structure 6	18	1106.9
Structure 21	1	90.7
Structure 22	1	22.9
Structure 23	3	57.8
Structure 27	2	202
Structure 31	1	37.2
Structure 32	6	278.1
Total	**66**	**3827.7**

Phytolith and starch grain studies from groundstone could be one way to document how groundstone was used; however, these techniques were not applied for the Kranka Dada groundstone. Groundstone studies conducted elsewhere in Ghana have not been very successful in documenting the phytolith and starch remains from groundstone.

Phytolith identifications are difficult to make as the comparative samples required for analysis are still in development (Logan 2011). As such, groundstone from Kranka Dada was not subjected to this type of analysis.

Metals

A total of 19 metal objects were recovered from Mound 1, accounting for 57.6% of the analyzed assemblage by frequency and 38.7% of the analyzed assemblage by weight. Metal artifacts recovered were iron, brass, and copper. Metal byproducts in the form of slag were recovered as well. Five objects were complete, mainly rings and coins. With the exception of copper and slag objects, all artifacts were corroded. Heavy corrosion and the fragmentary nature of iron artifacts make it difficult to reliably identify objects as components of specific tools. Table 7.45 lists the type and quantity of metal objects recovered from Mound 1 and Table 7.46 lists the mean metric qualities of metal objects.

As previously mentioned, there are no native copper sources in Ghana. The copper objects were recovered from Structures 5 and 6. These levels pre-date AMS Date 1 (1568 ±32 CE). The cuprous objects were likely imported through sub-Saharan trade networks. Brass/ copper artifacts include rings, an eyed needle, and an unidentifiable strip.

Iron objects tended to be projectiles, projectile fragments, or indeterminate fragments. Figure 7.21 is a photograph of one of the projectiles. The indeterminate fragments are small, but tend to have a long axis with a circular cross section. The earliest photographs of Akan agricultural or hunting tools from the early 1920s show a range of small traps, snares, slingshots, projectiles, and agricultural tools (Rattray 1927). The iron fragments recovered from Mound 1 contexts could easily be associated with similar objects from agricultural or hunting tools. Iron tools were generally associated with structures situated stratigraphically above levels with copper artifacts. Structures with iron objects (4, 5, 6, 30, and 32) post-date AMS Date 1 (1568 ±32) and are well into deposits contemporaneous with the Atlantic Trade era. Two possible coins were recovered, but their origin cannot be identified due to heavy corrosion (Figure 7.20). Both coins were recovered from the same structure and post-date European contact.

Table 7.45 Metal Objects from Mound 1

Type	Material	Count	Provenience
Jewelry, ring[28]	Brass/ Copper	2	Fill (Level 2) Structure 5
Indeterminate Fragment	Copper	1	Structure 6
Needle with eye	Copper	1	Structure 6
Coin, small metal discs	Iron	2	Structure 32
Projectile	Iron	4	2 from Structure 4 Structure 30 Structure 32
Indeterminate Fragments	Iron	5	4 from fill (Levels 1, 3, 9) Structure 4
Smelting slag	Slag	3	Structure 4 Structure 5 Structure 6

The metal artifacts recovered from Mound 1 are small in overall mass and frequency. Metal objects recovered from Mound 1 contexts can inform about the production and consumption activities from Kranka Dada in a limited way. Approximately 60% of the objects recovered were likely associated with food production activities and 6% were associated with fabric production. Due to the small size, high levels of corrosion, and fragmentary nature of artifacts, it is not possible to determine in greater detail how metal objects were used. The presence of slag could suggest metal production; however, the total quantities of slag recovered were low. No iron smelters, tuyere fragments, or slag concentrations were observed in the immediate Kranka Dada area. If iron was being produced locally, production facilities would be expected to be in the outlying areas of the village. In other areas of the Volta Basin, slag is sometimes used as a tempering agent in ceramic production. The small quantities and individual pieces of slag may be associated with the production of other types of goods, rather than solely indicative of local iron production. Low quantities of iron objects are unusual and unexpected for a site of this period in central Ghana. Low quantities of iron could indicate that metal objects, especially iron, were conserved through reuse and recycling. As such, broken implements could be smelted and formed into new objects. Reuse and recycling could alter how metal goods entered the archaeological record.

[28] 1 brass ring is likely of modern origins and not considered here

Figure 7.20 Possible Coin

Figure 7.21 Projectile from Mound 1

Table 7.46 Mean Metric Qualities of Metal Artifacts (units in grams and millimeters)

Type	Total	Mean Weight	Mean Length	Mean Width	Mean Thickness
Iron	11	4.9	41.2	18.4	3.5
Brass	2	2.4	18.4	17.7	4.5
Copper	3	.6	15.1	8.2	1.46
Slag	3	18.7	26.9	28.1	--

Small Finds

Small finds account for a very small proportion of the analyzed assemblage by count and weight (less than 1%). The small finds objects recovered from Mound 1 include: beads/ jewelry, spindle whorls, possible gold weights, groundstone celts (nyame akuma), and a possible side-blown trumpet fragment. Mound 1 had a disproportionate amount of small finds recovered (62.5% by count) compared to Mounds 2 and 5, although the total frequency and sample size is small. The screen size used for excavation was ¼", and the large screen size could have biased the recovery of small finds. No small finds were recovered from the heavy fraction from flotation samples indicating that screen size did not bias the recovery of small finds. The heavy fraction was designed to serve as a control over the types of artifacts not captured by the screen.

Table 7.47 Small Finds Distribution

Mound	Sum of Weight in grams	Percentage	Count	Percentage	Small finds frequency per cubic meter
1	394.1	71.6%	24	64.9%	1.38
2	69.5	12.6%	6	16.2%	0.42
5	86.53	15.7%	7	18.9%	0.63
Total/ Mean	550.13	100.0%	37	100.0%	0.86

Within Mound 1, small finds were differentially distributed between structures. Almost half of the small finds from Mound 1 were recovered from Structure 6. The majority of small finds were beads or jewelry.

Table 7.48 Small Finds by Structure

Structure	Count	Objects
Surface	**2**	Groundstone Celt (Nyame Akuma) (2 total)
Fill	6	Spindle Whorl Worked/ Drilled Shell Bead Groundstone Celt (Nyame Akuma) (2 total) Terracotta Rasp (2 total)
Structure 2	1	Groundstone Celt (Nyame Akuma)
Structure 4	1	Incised Bone? Bead
Structure 5	3	Possible Olyphant/ Bone Side-Blown Trumpet Fragment Spindle Whorl Groundstone Celt (Nyame Akuma)
Structure 6	6	Spindle Whorl Basalt Bracelet (possibly Kintampo) Carnelian Bead Possible Ceramic Gold Weights (2 total) Groundstone Celt (Nyame Akuma)
Structure 22	1	Polished Bone Bead
Structure 24	1	Groundstone Celt (Nyame Akuma)
Structure 27	1	Possible Ceramic Gold Weight
Structure 31	1	Possible Ceramic Gold Weight
Total	**23**	

Beads accounted for the majority of small finds (Table 7.49). Faunal remains were recovered in low quantities from most of Kranka Dada's mounds; the majority of my fauna was recovered from Mound 1. Beads fabricated from bone were the most common type of bead. Beads crafted from bone were polished or decorated with incisions. One bead, likely carnelian, was recovered from Structure 6. Beads are important objects of personal adornment that can be used to convey personal information about the owner. It is unknown whether the bone beads were fabricated locally; I suspect they were.

Table 7.49 Beads from Mound 1

Structure	Material	Weight gm	Length mm	Width mm	Thickness mm	Complete
Structure 22	Bone	2.89	21.77	10.73	9.02	Yes
Structure 4	Bone	0.13	7.37	3.72	3.45	No
Fill	Bone	1.77	25.25	22.72	3.99	Yes
Structure 6	Carnelian	0.28	11.87	3.54	3.54	No

Mean		**1.3**	**16.6**	**10.2**	**5**	

A significant proportion of the small finds was related to the Late Stone Age periods or the Kintampo Complex, including rasps and groundstone celts. There are a large number of Kintampo Complex sites in central Ghana, the greater Volta Basin, and in the forested regions of Ghana (Casey 2000; Stahl 1994; Watson 2010). Three rasp fragments were recovered from Mound 1. The rasps were usually made on friable sandstone or terracotta (Agorsah 1973; Davies 1962; Watson 2010). The rasps were scored with shallow incisions that intersect as horizontal, vertical, and oblique lines (Figure 7.22). Watson (2010:14) has identified three types, and two of them were in Mound 1. How the terracotta rasps were used is unknown, but suggested functions include bark cloth beater, potter's tool, wood/fiber rasp, plant processing, ritual object, and musical instrument (Agorsah 1973; Davies 1970; Phillipson 2005; Stahl 1994; Watson 2010). Terracotta rasps have been recovered from multiple ecological zones in Ghana. Watson argued that due to their wide use across geographic and ecological areas, rasps were not likely associated with a specific resource although their shape and patterned design suggest a specific purpose (Watson 2010:160-161). Watson identified three different types or styles of rasps based on morphology; however, primary use of the rasps is similarly between types. A chronological typology of the different types of rasps has not yet been established. The context from which the Kranka Dada Mound 1 rasps were recovered does not help solve this debate of how rasps were used in their primary context. Like other rasps recovered from other areas of Ghana, the Kranka Dada rasps have abrasions acquired through use. Usually, use wear pattern were unevenly distributed on individual objects. One of the long axes of the rasp generally had more wear than the other side. The rasps from Mound 1 were of two types, Type 1 or 2; it is difficult to distinguish between the types due to their fragmentary nature. Terracotta rasps were fragile probably used in utilitarian tasks (Watson 2010; ibid.). It is likely that the rasps were curated, perhaps prized for their uniqueness.

Figure 7.22 Terracotta Rasp

Eight groundstone celts or *nyame akuma* were recovered from Mound 1 (Table 7.50). Similar to rasps, groundstone celts are often associated with the Late Stone Age or Kintampo Complex. One sourcing study has shown that many axes were fabricated from Birimian Supergroup greenstone located (Watson 2010). The widespread distribution of greenstone groundstone celts and terracotta rasps is argued to signal the antiquity of overlapping regional and long-distance exchange networks. Davies and Shaw independently documented special areas where groundstone celts were likely manufactured and/or repaired. “Grinding grooves” are areas with distinctive linear channels worn and abraded into rock outcroppings. During survey, I documented two “grinding grooves” in the rock outcroppings and rockshelters that overlook the Tanoboase Sacred Grove, a sacred area where the headwaters of the Tano River surface (Figure 7.23). Whether these were in simultaneous use with the occupation of Kranka Dada is unknown. The “grinding grooves” were in difficult to reach areas and there were no associated artifacts and no other signs of occupation (such as soot on the rockshelter walls/ ceiling). There were likely special areas used for a single purpose.

Figure 7.23 Modified Bedrock from Tanoboase "Grinding Grooves"

The celts were highly polished and heavily modified. In archaeological and ethnographic settings, groundstone celts are commonly curated. They are often imbued with ritual powers. Their use as fetish objects or objects with medicinal healing properties has been well documented. (Apoh and Gavua 2010; Rattray 1927; Shaw 1944; Warren 1974). How they were used in Mound 1 is unknown. Half of the Mound 1 celts were from fill or surface contexts. However, use wear can provide some insight into how these objects were incorporated into daily life at Kranka Dada. Primary and secondary use wear patterns were consistent among celts within the different structures of Mound 1. Indeterminate and medial celt fragments may have been too small to observe use wear. Of the celts with proximal and distal ends, there was damage, indicating that the celts were used as an axe or as a heavy duty chopping tool. Four axes had secondary use wear, which produced areas 1.5 cm in diameter on one side of the axe that removed much of the polish patina through abrasion (Figure 7.24). This type of use is consistent with modern and ethnohistoric use of groundstone axes as tools used to prepare ritual medicine; the spiritual realm encompass a wide variety of activities including medical and healing practices Rattray (1927); (Warren 1974). In addition to groundstone axes from the

Kintampo Complex, a ground bracelet fragment was recovered likely from the same LSA era.

Table 7.50 Groundstone Celts from Mound 1

Structure	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete	Color
Surface	57.7	69.5	34.9	17.8	Complete	Tan/Green
Surface	2.8	24.9	13.1	7.3	Indeterminate	Red
Fill (Level 3)	6.84	29.85	27.4	7.4	Indeterminate	Red
Fill (Level 10)	6.6	29.8	26.9	9.2	Medial	Red
Structure 2	51.1	59.2	36.4	14.6	Complete	Tan
Structure 5	23.2	41.9	26.4	12.8	Medial	Red
Structure 6	65.5	71.88	45.37	11.96	Complete	Tan
Structure 31	4.9	22.8	28.5	9.3	Distal	Red
Mean	**27.3**	**43.7**	**29.9**	**11.3**		

Figure 7.24 Groundstone Celt *Nyame Akuma* with abrasions

Three possible gold weights were recovered from Mound 1 (Table 7.51). Each possible weight was crafted out of pottery and shaped into discs. Similar styles of weights have been recovered from nearby sites including another satellite village of Bono Manso, Amouwi (Emmanuel Effah-Gyamfi 1974; Garrard 1980). The weights from Kranka Dada were fragmented; therefore, their individual weight cannot be evaluated against Islamic *mitkal* and *uqiya* standards. While ceramic discs are generally accepted as gold weights, it is possible that they served another purpose such as gaming pieces. Figurative brass gold weights may be better indicators of exchange relationship and gold exchange, although none were recovered from Kranka Dada or Bono Manso.

Table 7.51 Possible Gold Weights from Mound 1

Floor	Material	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete
Structure 6	Ceramic	2.28	20.98	17.29	5.85	No
Structure 6	Ceramic	3.89	22.39	20.25	9.25	No
Structure 27	Ceramic	1.88	21.37	11.39	6.78	No
Mean		**2.68**	**21.58**	**16.31**	**7.29**	

Three spindle whorls were recovered from Mound 1 (Table 7.52). Spindle whorls are used in textile production. The spindle whorls were made from clay and fired. None of the spindle whorls were decorated, although two had smudging. A single copper eyed needle was recovered in Structure 6, as well as a spindle whorl indicating some level of textile modification or production.

Table 7.52 Spindle Whorls from Mound 1

Floor	Material	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete
Structure 5	Ceramic	18.12	33.17	28.2	20.6	No
Structure 6	Ceramic	2.96	14.92	13.48	13.39	No
Fill	Ceramic	6.45	27.38	14.28	20.55	No
Mean		**9.2**	**25.2**	**18.7**	**18.2**	

Shell

Shell accounted for a small amount of the analyzed assemblage. Shell was mainly recovered from Mound 1 with 97.1% of all shell by frequency and 99.3% of shell by weight. Shell was analyzed by documenting its weight, completeness, whether or not it was worked, and for bivalve, univalve, or indeterminate status. Much of the shell was fragmentary and small, only 155.4 grams of shell were documented. The shell was brittle; therefore, it was difficult to recover in the field and much of it disintegrated into the surrounding matrix during excavation. Shell was observed in the flotation samples taken from Mound 1. Table 7.53 lists the shell types and counts documented in Mound 1. Most of the shell was univalve or indeterminate due to its small size. Although bivalve shell was documented, it was not common in the assemblage. The shell was likely acquired locally. Snails (*Achatina sp.*) are common in central Ghana, and were regularly consumed. It is likely that the majority of the shells were the products of locally harvested and opportunistically acquired mollusks. In the 1920s, Cardinall documented that snails were one of the richest sources of food in the Ghanaian forest (McCaskie 1995:27-29). Snail gathering was a "large-scale organization"; snail resources were important for subsistence, barter economies, and as retail merchandise in partially monetized rural economies (ibid.). Early 20th century observations of snail gathering indicate that it was a seasonal activity. During the first six weeks of the rainy season, entire village populations of men, women, and children would gather snails (ibid.). Shell was present in all but one of the Mound 1structures/ floors (except for Floor 28) (Figure 7.25), indicating that the shell acquired and used as part of daily life for Mound 1 inhabitants.

Table 7.53 Shell Types from Mound 1

Shell Type	**Complete**	**Fragment**	**Total**
Bivalve	0	4	4
Univalve	14	16	30
Indeterminate	0	31	31
Total	**14**	**51**	**65**

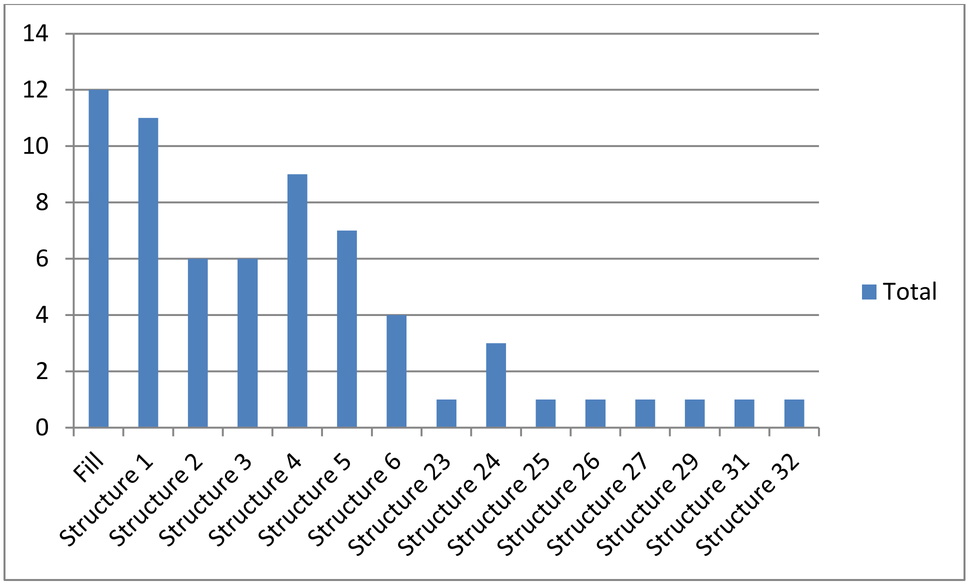

Figure 7.25 Shell in Mound 1 Structures

It is not likely that shell was modified for beads or items of personal adornment after its consumption. Only one of the shell pieces was worked with a hole drilled through it (discussed in the small finds section). In general, shell was not a material selected for beads in a patterned way. Only three shell beads were recovered from Bono Manso (compared to 28 beads of other materials). No tools that could have been used in the production of shell beads were recovered in association with shell.

Wealth/ Status Differentiation

Ceramics

Inferring status differentiation and wealth relationships is based on several lines of inquiry. As highlighted in Chapter 5, documenting the different types of vessels (serving, storage, etc.) and how they were used is one way of distinguishing between the types and ranges of activities present from household to household is of particular interest here.

At Kranka Dada, there was remarkable similarity in having one dominant type of vessel. Rather than having multiple types of vessels for discrete tasks, the assemblage from Kranka Dada indicates that everted rim jars of varying sizes were used in the majority of Mound 1 tasks. One style of vessel dominated the Mound 1 assemblage and was used for all or almost all tasks. One style of vessel dominated the Mound 1 assemblage. There were no clear quantitative or quantitative distinctions in the quantitative morphological elements between storage vessels and cooking vessels, making it difficult to examine differential access to storage, serving, and special use vessels. Systematically documenting the types of activities associated with ceramic vessels did not yield results that indicated that different types of vessels were used for different types of activities. The majority of ceramics did not show any signs of use; however, of the ceramics that exhibited signs of use charring and striations were the most common alterations. The distribution of use wear was fairly consistent within the structures.

Serving vessels and bowls were not recovered in high frequencies. This could be that our small sherds preclude identifying them, as well as open vessels forms having similar rims to closed vessel forms. It is sometimes difficult to distinguish between jars and bowls with everted rims and necks. Effah-Gyamfi referenced “bowl-like” vessels and squat bowls or truncated jars with everted rims (1985). Determining vessel form based on the rim only is somewhat problematic. It is also possible that gourds were used as serving and drinking vessels, and those food consumption activities did not require ceramic serving vessels apart from cooking vessels. Perishable serving vessels would not be preserved. As such, documenting the range and proportion of different activities solely by patterns of ceramic use is somewhat problematic for Kranka Dada.

Documenting the presence of imported ceramics based on macroscopic qualitative attributes is difficult. This is complicated by similarities in the ceramic assemblages from many contemporaneous and neighboring sites. The best quantitative examination of ceramics of this time period comes from the Banda Research Project (Stahl 1999; Stahl and Cruz 1998; Stahl, et al. 2008). Ceramics from Kranka Dada are remarkably similar to the Ngre and Kuulo phase ceramics from Banda in terms of morphology, decorative motifs, and “zoned” surface treatments and decorative motifs. There may be some technological similarities as well including a “drag and draw” vessel formation process with rims being added to leather hard vessels (Stahl 2012). Rim profiles from Bono Manso show similarities to Kranka Dada ceramics from Phases I, II, and III. Ceramics from Begho and Awhene Koko are similar to Kranka Dada ceramics. Ceramics from Begho were primarily documented and classified by morphology, profile, rim and lip forms with overall descriptions of decorative motifs and surface treatments (Crossland 1989). The vast majority of ceramics recovered from Kranka Dada would not be out of place in any of the previously mentioned assemblages. Mound 1 ceramics were similar to ceramics from other nearby archaeological sites, indicating that there was some adoption and common use of stylistic preferences.

Perhaps the best method for examining status relationships as expressed by frequencies of ceramics imports and access to supralocal networks is via mineralogical and neutron activation analysis. They would allow for a reconstruction of which types of vessels were produced and exchanged through local and supralocal networks. Higher-status households would be expected to utilize imported goods at higher rates than lower-status households. Households with abundant supralocal ceramics could indicate that they had greater access to different types of networks. Unfortunately, this type of analysis is beyond the scope of this study. I am conducting refiring experiments to document differences in firing temperatures as well as clays, inclusion types, and density. The goals are to document similarities and differences in the chaîne opératoire of ceramic production. However, the results are forthcoming. Without additional analyses, the inferences about status and wealth as expressed by the ceramic assemblage are incomplete.

Only a small number of sherds can definitely be classified as imports. Sherds with micaceous surface treatments were recovered that were similar to the Ngre Phase “recurved rim” jars documented in the Banda Research Project (Stahl 2007, 2012). Decorative motifs varied, but were generally dentate stamped (e.g., rectangular dentate was the most common followed by arched dentate and triangular dentate). INAA from Banda ceramics indicates that the clay sources of similar sherds were primarily documented in the Banda L and K compositional groups (Stahl 2013 personal communication). A total of 32 sherds of this nature were recovered from Kranka Dada, 15 (46.9%) of which were in Mound 1 structures. Use wear and interior damage patterns on imported sherds are similar to other types of sherds; however, burning is slightly more common compared to the rest of the assemblage (47%). Some sherds had no damage (33%), some only had rim only (13%), and others were eroded (7%).

A total of 93 black burnished sherds were recovered from Mound 1, accounting for 3.2% of the Mound 1 analyzed ceramic assemblage by count and 2.7% by weight. Black burnished sherds were recovered in every Mound 1 structure. Burnishing ceramics to attain a high polish is labor intensive. Similar black burnished ceramics have been documented at Begho, Bono Manso, and Asantemanso. Posnansky (Posnansky 1977) documents that the distinctive black polished wares date to post-1600. Crossland categorized black burnished sherds as Begho Wares (Crossland 1989). Black burnished pottery was recovered from Asantemanso (Shinnie 2005). Black burnished pottery was likely an imported good, although it probably was made by multiple sources and/or sites.

Sherds with maize cob decoration were recovered from Mound 1. Since maize is a product of the New World, maize cob ceramic decoration acts as a marker of exchange relationships. The earliest consistently recovered maize cob sherds were recovered from Structure/ Floor 3 with a radiocarbon calibrated date of 1568 CE (1550-1614)[29]. Maize was first documented on the Gold Coast in 1555 CE (Alpern 2008). It quickly spread to sites in the interior (Logan 2011), and its cobs were commonly used for decorating ceramic vessels at Bono Manso (Effah-Gyamfi 1985). It is likely that once maize was introduced, it was grown locally. The botanical remains from Kranka Dada were collected, but have not yet been analyzed and thus are not included in this dissertation. The presence of maize cob roulette ceramics does not necessarily mean that maize production was incorporated into the agricultural activities of Kranka Dada. Maize cob ceramics could have been acquired via trade for supralocal sources.

It is possible that if status and wealth differences existed between the occupants of different mounds, ceramics were not the most appropriate media that expressed or embodied social differences. The bulk of ceramic were everted rim jars with a mean diameter from 20 to 22 cm. Decorative motifs varied, but the shape of most of the

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[29] Maize cob decorated sherds were recovered in lower levels in low numbers in single digits. I thought these sherds were intrusive. Floor 3 had a sufficiently high number of maize cob decorated sherds and could not be considered intrusive.

ceramics was similar. Similarities in body and rim shape may be similar due to external market factors. Historic data does not suggest that ceramic production was a full time or specialized occupation; however, some oral historical data documents that some villages specialized in ceramic production[30]. It is possible that ceramic producers over a wide geographic area fabricated similar types of vessels for exchange. It is possible that ceramic consumers had a restricted range of choices when acquiring vessels and the one-shape-fits-all approach to ceramic use was an efficient choice.

Faunal Remains

Examining status and wealth through faunal remains alone can be problematic. Quantities of faunal remains recovered from households may vary due to length of occupation and size of household. Due to these issues, measures of wealth and status will be quantified based on utility indices as well as richness and evenness of the faunal assemblage of Mound 1. One striking fact is that the majority of faunal remains from Kranka Dada were recovered from Mound 1 (93.9%). The significant differences in quantities between mounds suggest extreme differential access to faunal resources between mounds or perhaps differences in mound function. The presence of animal remains may not be strictly associated with food production and consumption. Many animals were likely prized for their skins. Animal skins were often associated with elite and religious activities as paraphernalia and grew as trade with the north developed and increased (Silverman and Owusu-Ansah 1989). In Akan religious settings, animal sacrifice plays an important role in appeasing and communicating with the gods (Mbiti 1990; Warren 1974). In the Banda region, animal sacrifice has been documented as part of multiple types of ritual practices (Stahl 2008). The types of animals consumed may relate to religious status. In the present, Muslim diets in terms of meat differed from Akan diets and are more restrictive. Diet differences between the Kramo and other quarters at Begho have been used as support for different and distinct neighborhoods (Posnansky 1979b). This section explores wealth and status differences within the faunal assemblage.

[30] Informants I spoke with during my field seasons indicated that some villages had specialized ceramic production

Utility indices are a commonly used measure of how energy and calorie rich some cuts of meat were (Binford 1978; Faith and Gordon 2007). For this study I established utility indices by using an ordinal scale. Animal bone was ranked based on its skeletal element (Table 7.54). Utility indices are a measure for interpreting the economic importance of individual pieces of meat. However, the variability in size class of the animal must be controlled when examining utility indices. Figure 7.26 is a graph showing the percentages of utility indices by animal size class, and Figure 7.27 shows the same information by count. The graph shows that the majority of faunal from Mound 1 were of low to medium utility from medium sized animals (approximately goat sized). Some large animal remains were present and the utility was spread across the majority of types. An ANOVA test produced significant results when examining utility index by animal size class (F-statistic 13.217 at a significance level $_{\alpha.05}$ of .000). A post-hoc Games-Howell comparison indicates that the utility of small sized animals is the most different from the medium and large size categories. A Chi-square tests produced similar results (χ^2 113.905 at a significance level $_{\alpha.05}$ of .000).

Table 7.54 Utility Indices Ordinal Scale

Skeletal Element	Utility Index
Thoracic vertebrae, ribs, and sternum	High
Cervical vertebrae, pelvis, femur, upper limbs, scapula, and crania (all parts)	Medium
Carpals, tarsals, and lower limb bones	Low
Indeterminate Vertebrae	High/Medium
Indeterminate Limb	Medium/ Low
Indeterminate	Indeterminate

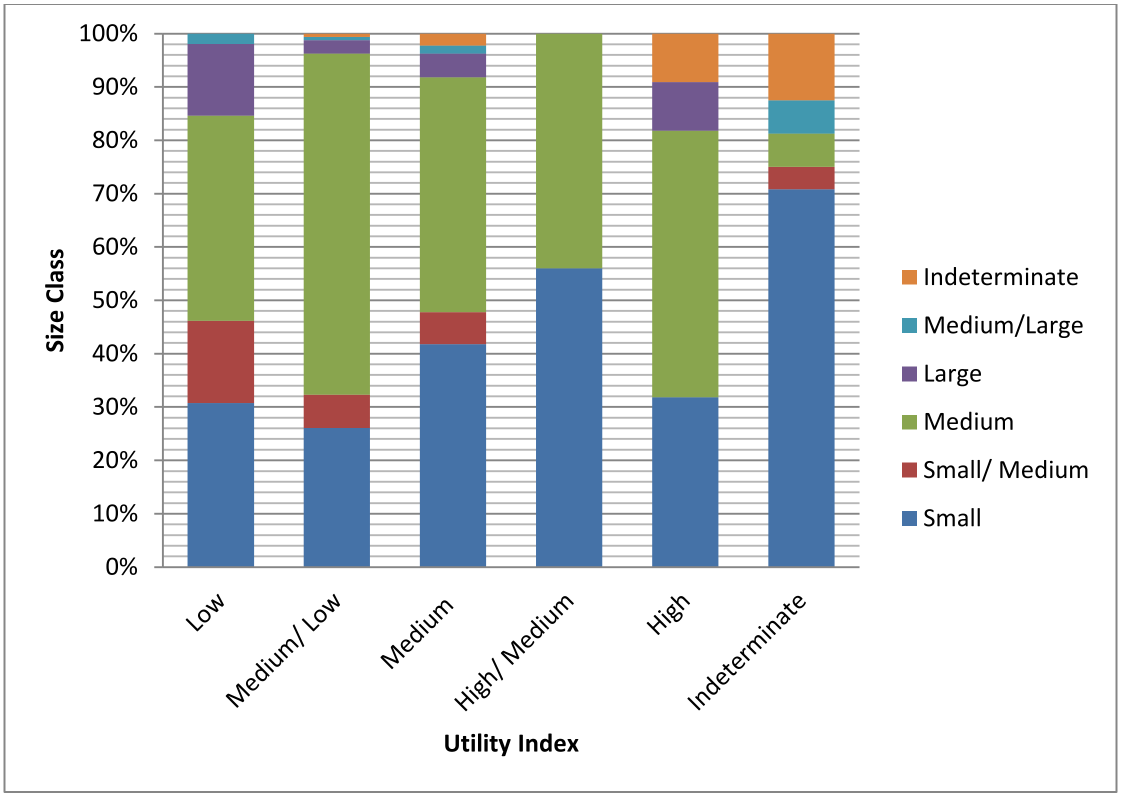


Figure 7.26 Utility Indices as Percentages by Animal Size Class

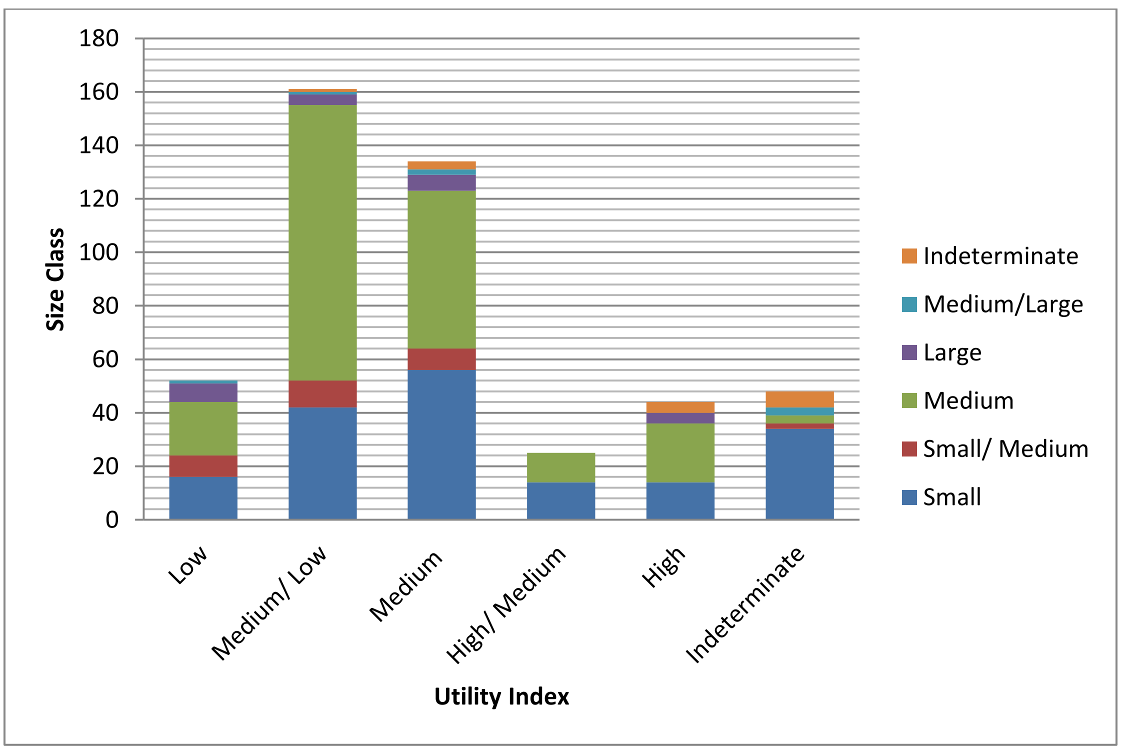


Figure 7.27 Utility Indices as Counts by Animal Size Class

Because of the fragmentary nature of the remains, it is not possible to quantify the relative importance of different animal taxa for Mound 1 inhabitants. In order to examine how sample size was affecting diversity, I calculated richness and evenness statistical measurements. Larger samples are expected to be more diverse; therefore obtaining a measure of richness and evenness of the sample will help determine if diversity is being driven by sample size. Richness is a measure of the frequency of taxa documented. Remains that could not be identified to family were excluded from this analysis, due to the fragmentary nature of the assemblage; this is 59.7% of the documented remains. The richness of the Mound 1 sample is 2.89. I calculated evenness using a Shannon-Weiner Diversity Index which measures how evenly samples are spread across taxa. The Shannon Diversity Index (H) statistic is calculated at .354. The Diversity index is calculated by dividing H/ richness, providing a value of .123. The closer the value is to 1 the more even the sample. The Mound 1 sample does not show evenness, suggesting that certain taxa are more abundant than others. The abundance of Testudinidae may account for the lack of evenness in the sample. This may indicate that turtles/ tortoises were procured at the expense of other types of animals. Furthermore, Testudinidae remains were only recovered from Mound 1, and from every structure in Mound 1 (Figure 7.28). Ethnographically, tortoises feature into the Akan world in several ways. Rattray (Rattray 1923: 47-48) observed the exogamous patrilineal division often totem animals that include the tortoise. Figurative representations of tortoises have appeared on brass cast gold weights (Rattray 1923). Tortoises are featured in traditional Akan folklore; in the “Tortoise and the Lizard” the king restores balance to society by making the required sacrifices and appeasing the spirits (Opoku-Agyemang 1999:136). In Raymond Silverman’s research, he has observed tortoises and turtles in Tano shrines near Kumase (Raymond Silverman, personal communication 2013).

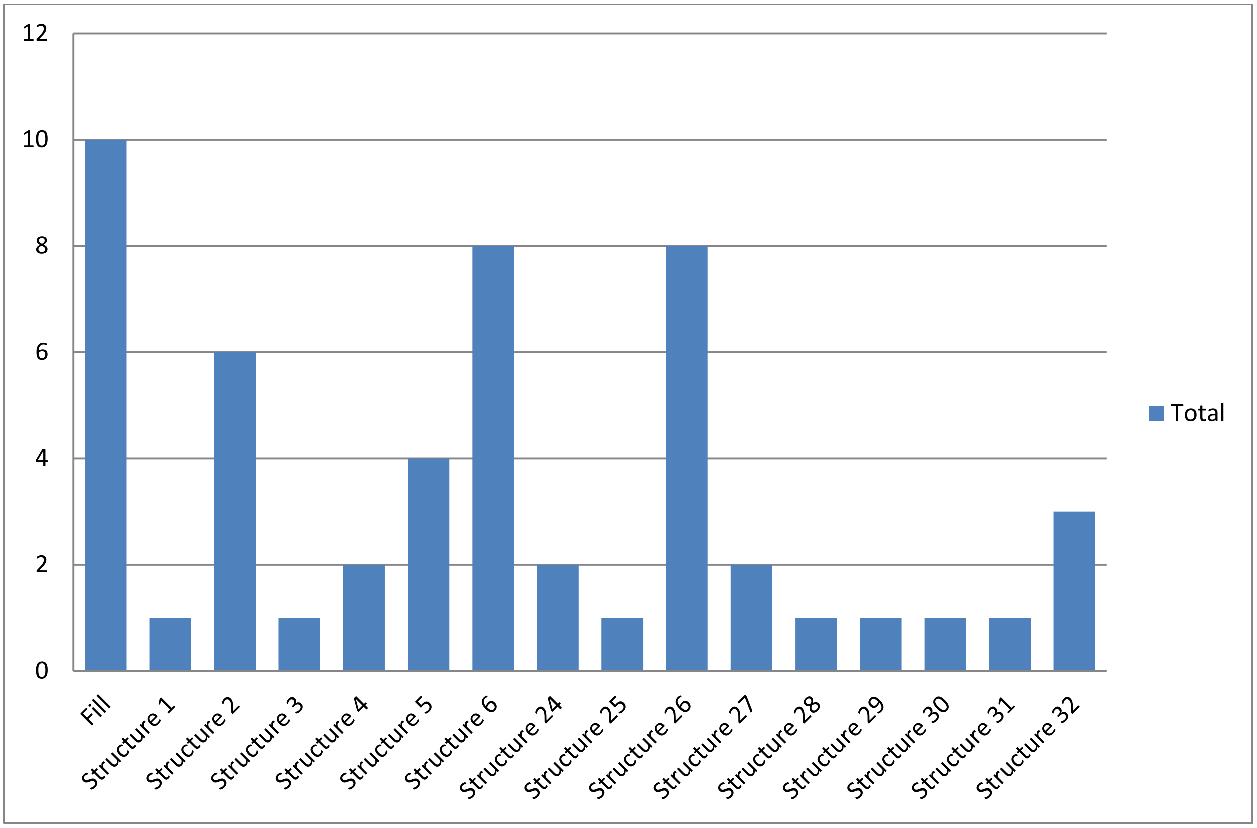


Figure 7.28 Testudinidae Remains Mound 1 Structures

Within Mound 1, there was a wide array of small to large sized animals with animal parts across all utility indices. This suggests that animals were likely acquired as complete specimens. The variety of identifiable faunal remains indicated that a diverse range of genera was consumed and processed. Animal acquisition strategies likely involved some specialized hunting, opportunistic hunting, with some low-intensity use of domesticated animal husbandry. Heavily fractured remains and high incidents of burning and charring (mirrored by the ceramic assemblage) may indicate that wet foods were often prepared and consumed. It is also possible that some animal resources were used for more than one purpose. Culinary uses of animal resources can co-exist with non-culinary uses of animal resources. Skins, quills, and horns can be transformed into other types of material culture.

Smoking Pipes

Smoking pipes were the most abundant object recovered that directly related to the Atlantic exchange. As previously mentioned, much of the previous research on tobacco was focused on chronology and reconstructing early trade routes (e.g., a northern or southern origin for tobacco). Smoking pipes are important not only as chronological markers of Atlantic exchange but as symbolic objects and status symbols that highlight access to novel products. Decoration, morphology, and surface treatment were highly variable (Figure 7.29). The variability in smoking pipes across different dimensions (decoration, morphology, and surface treatment) indicates that producers were creative and playful in manipulating media; consumers were astute in selecting pipes that represented their identity. Two new pipe base styles were documented at Kranka Dada, further suggesting the active manipulation of media by artisans.

Figure 7.29 Variability in Smoking Pipes

Differences in pastes, surface treatments, and pipe morphology may indicate that Mound 1 consumers exploited multiple types of trading networks to procure different type of pipes. Double angle pipes were rare in the Mound 1 assemblage as well as the Bono Manso assemblage. Effah-Gyamfi (1987:87) suggested that these pipes were most likely imports of northern origin. Hooks connecting the stems and bases of pipes are rare in the interior of Ghana; one was recovered from Mound 1. Although smoking pipes from the neighboring site of Awhene Koko were rare, there are some similarities in the decorative motifs of pipes from both sites. The absence of Ozanne Types A and B, the earliest styles on the coast, in central Ghana and the concordance of Kranka Dada pipe styles with other Volta Basin sites suggests that pipes were manufactured and circulated across large geographic areas; tobacco may have been initially acquired via coastal networks but pipes were acquired and traded within more immediate and northern networks.

A significant majority of smoking pipes was recovered from Mound 1 (98%). In addition, smoking pipes were recovered from every structure in Mound 1 suggesting that the pattern of differential access to smoking pipes persisted over time. The combination of differential access, stylistic variability, and use of regional and supralocal networks may suggests that smoking was an activity that embodied status and wealth relationships. In addition, the quantity of pipes from Kranka Dada is surprising. Kranka Dada is a relatively small site compared to other areas along trade networks such as Bono Manso, Begho, and Awhene Koko/ Wenchi, and yet similar quantities of smoking pipes were recovered from excavations, and yet the overall quantity of pipes is quite high compared to other areas. Pipe frequencies from sites further inland were low (e.g., Buipe, Daboya, etc.). Pipe frequencies from Banda were high; however, Banda sites have been the subject of Stahl's long-term Banda Research Project, and have thus received more excavation by volume than many central Ghana sites. For a small site, Kranka Dada had unexpectedly high levels of access to tobacco pipes.

Lithic Artifacts

Expedient lithic artifacts and groundstone are not expected to correlate with household wealth or status. The flaked stone lithic material including cores, debitage, and tools were created through expedient technological systems from locally available and poor quality toolstone materials. Flaked stone objects are similarly not associated with household wealth or status. The majority of lithic artifacts were components of an expedient technological system that focused on obtaining locally available raw materials and reducing them in an informal fashion. Although some formal tools were documented, the majority of tools were informal and expediently created. Quartz is a difficult material to examine for use wear due to its cleavage planes, but it is likely that lithic artifacts were used for domestic household activities including food production, processing, and craft production activities. Much of the groundstone was likely associated with food production and processing activities. Mound 1 had the second most groundstone recovered by weight per cubic meter, suggesting that food production and processing played an important role in daily life in each of the structures of Mound 1.

Metals

Metal objects recovered from Mound 1 were from multiple types of raw material including copper, brass, and iron. Metals were recovered from Mound 1 contexts in differential quantities compared to the other mounds. Over time, Mound 1 inhabitants consistently had some differential access to a wider breadth and diversity of metal objects. Copper and brass objects had supralocal origins, and were most likely imported through sub-Saharan exchange. Not only did the inhabitants of Mound 1 have differential access to metal objects, but a portion of the objects are associated with displays of wealth and status. Copper most frequently was recovered in the forms of jewelry or items of personal adornment. Two corroded iron discs were recovered that may be coin currency; however, their origin is unknown (Figure 7.20). European currency made from iron is rare from the late medieval to renaissance periods.

Although Mound 1 had a greater proportion of metal object by frequency and diversity than other mounds, the majority of items recovered were associated with production and consumption. Items associated with household activities, such as production and consumption, may not be indicative of status or wealth differences (Smith 1987). Copper and brass objects may be better indicators of wealth and status, although these were recovered in low quantities.

Small Finds

The majority of small finds were recovered from Mound 1 at twice the quantity per unit volume in contrast to Mounds 2 and 5. Small finds from Mound 1 were diverse indicating access to new technologies as well as items expressing status and wealth. Fauna was differentially distributed among the three excavated mounds, and the majority of beads recovered from Mound 1 were fabricated from animal bone. Wearing items of personal adornment is a symbolic act, and displaying bone beads was perhaps a signal of differential access to resources.

Spindle whorls were among the small finds recovered from Mound 1. Loom technology was introduced into central Ghana during the Mande trade diaspora; the technology was quickly adopted. Thin strips of fabric were woven and sewn together; this was likely the precursor to Kente cloth, a high-status sumptuary textile. Europeans observed that the Akan would import Italian and Chinese silks (Alpern 1995; Feinberg 1989). These fabrics were often disarticulated, threads re-spun, and rewoven into patterns more suited to royal tastes and preferences (Darkwah 1999; Sheales 2012). Textiles and fabrics were some of the most abundant European imports into the Gold Coast. Alpern (1995) has assembled a list of all the textile types and their global sources imported into West Africa. There was much medieval wealth wrapped up in textiles and the textile trade, and textiles play an important role in displaying connections to supralocal and global exchange networks as well conveying personal information about the wearer. However, it is unknown if and in what capacity the textile trade reached Kranka Dada. Spindle whorls and eyed needles could have been used to produce fabrics from locally available materials not associated with sub-Saharan and Atlantic exchange networks. Complicating the interpretation of textile production and status was the local productions of bark cloth (*kyekye*), which would not have required spindle whorls. Thus, there was an entirely different class of textile produced and consumed that leaves no archaeological trace. The production of bark cloth has been well documented and it an activity of some antiquity; however, preservation biases in the archaeological record prevent recovery of both types of textiles. DeMarres observed that bark cloth textiles produced from the Gold Coast were high quality and durable (de Marees 1987 (1602)).

Three ceramic discs and possible gold weights were recovered from Mound 1 (Figure 7.30). Similar ceramic discs were recovered from contemporaneously occupied sites in the Bono Manso region and interpreted as gold weights (Effah-Gyamfi 1985; Garrard 1980). Gold weights are indicators of direct exchange relationships with foreign merchants. How gold resources (including labor and territory) were acquired and manipulated are not clear. In addition, access to gold resources may have changed over time due to changing territories and relationships with adjacent groups. Garrard's map (1980:xxi) of the distribution of gold resources in Ghana does not include Bono Manso, Kranka Dada, Techiman or the upper Tano River. However, other sources attribute Bono Manso's rise in elite power, likely to the successful extraction of alluvial gold along the upper Tano and Tain Rivers (or Banda region) (Dumett 1979:40; Smith 2008:73). The original source claiming that Banda was under Bono Manso's control, for a brief time, is Nana Akumfi Ameyaw, the former paramount chief of the Bono in 1970 (Warren and Brempong 1971). Determining the specific source(s) of gold exploited and/ or traded by Kranka Dada inhabitants is beyond the scope of this study. Small quantities of possible gold weights were recovered in Mound 1 of Kranka Dada, and they bear some resemblance to the ceramic gold weights from other sites. Frequencies of gold weights from Kranka Dada as well as adjacent sites are low compared to other types of small finds. On one hand, gold weights were personal objects that were unlikely to be shared. Gold weight standards were important when engaging in exchange relations. Punishment for abusing or manipulating gold weight measurements was severe, sometimes a capital offense. The low frequency of gold weights from Mound 1 suggests that although gold was likely exchanged and used as currency, its distribution may have been restricted. At the same time Stahl (1999) has critiqued the correlation of ceramic discs with gold weights. It is possible that the ceramic discs from Kranka Dada served other purposes.

Figure 7.30 Ceramic Disc-Possible Gold Weight

The final small find object recovered from Mound 1 is a fragment from a probable oliphant or side-blown trumpet (Figure 7.31). The object was cached on the plastered floor of Structure 5. The object was made from polished bone and incised. The craftsmanship is exquisite. The object measures 13.7cm in length x 3.96mm in width with a thickness of 1.1 cm. Side-blown trumpets are rare in the archaeological record; however, they are usually crafted from elephant ivory. Use of such a bone suggests that a sub-par material was used, i.e. ivory was perhaps too costly to acquire. A similar object was recovered from the Brong quarter of Begho and used as evidence of a royal court. A terracotta sculpture was found in association with the Begho trumpet which depicted an individual playing the instrument (Posnansky 1977). In ethnographic contexts, the side-blown trumpets are associated with royalty and royal regalia (Blier 1998; Bowdich 1819). They are a badge of office that appears only in royal contexts. However, the side-blown mouthpiece is the diagnostic feature for oliphants which is not present on the fragment recovered. Without the mouthpiece, the object cannot be definitely categorized as an oliphant.

Figure 7.31 Probable Side-Blown Trumpet Fragment

The ways in which some of the curated Late Stone Age objects, bracelet, groundstone celts, and terracotta rasps were incorporated into daily life may indicate status differences. The presence of groundstone celts was more common in the upper levels and structures of Mound 1, during times when intra-mound differences were the most pronounced in terms of architecture, abundance of ritual materials, and use of non-local goods such as tobacco and maize. Perhaps the use of groundstone celts within what is most likely a shrine context, helped to legitimize authority by expressing ties to the ancestors and deities.

Shell

In ethnographic settings, shell is present in shrines Shell was differentially distributed in the mounds of Kranka Dada with the majority of pieces recovered from Mound 1. Some shrines in Kranka use shell as a medium. If a person has a grievance against another, the grievance is whispered into the shell and it is sealed by the priest/ priestess. This act is designed to promote group and community harmony by ameliorating social tensions. Whether or not this was how shell was used in Kranka Dada is unknown; however, the differential presence of shell within Mound 1 is a documented fact that requires explanation.

Figure 7.32 Modern Kranka Shrine with Shell

Ritual Associations

McCaskie (1981:145) warns anthropologists about over-generalizing African religious practices, and often finds the literature "*too generalized, too typological, too functional, and altogether too glib in its hurried search for comparability and essence*". As an alternative Stahl advocates an approach to examining religious activity by examining genealogies of practice through a comparative analysis of depositional practices and material remains through time and space, but cautions against uncritically applying modern ethnographic interpretations in spite of the wealth of data (Stahl 2001, 2013). One of the difficulties in documenting ritual activity is that in African contexts, there is a considerable amount of overlap the religious and domestic realm (Fortes and Evans-Pritchard 1940; Goody 1961; Insoll 2011; Rattray 1923). Many production and consumption activities part of daily life, from are imbued with ritual significance (Apoh and Gavua 2010; Insoll 2006; Ogundiran 2002; Schmidt and Mapunda 1997; Stahl 2008, 2013). In many instances, quotidian domestic objects are transformed and re-contextualized into ritual objects. In the Banda region, Stahl argues that sorting "shrine pots" from "everyday pots" is not a straightforward process (Stahl 2008: 182). In addition, many of the materials used in religious activities are perishable and would not leave archaeological traces. The use of animal sacrifice, animal blood, eggs, libations, etc. have been documented and is a practice of some antiquity in shrines in the greater Bono and Akan regions (Rattray 1923; Silverman 1987, 2005; Warren 1974; 1976).

The deposits from Mound 1 may be associated with religious activities. However, this is an argument I make with caution pending additional data. There are multiple lines of evidence to indicate the deposits of Mound 1 with religious activity. Modern shrines in the Akan area are repositories of many types of objects left to accumulate in what Silverman calls an "aesthetic of accumulation" (McCaskie 1995; Silverman 2005). Artifacts recovered from Mound 1 indicate differential distribution of material goods compared to the other mounds. Simply equating differential distribution with differential access may obscure some of the social relationships that allowed for the accumulation of material in Mound 1. The thin accumulations of plaster or *hyire* are consistent with modern and ethnographic religious activities. In Mound 1, replastering events on occurred frequently and some of the plaster strata were quite thin. The majority of faunal and shell remains were recovered from Mound 1; it is possible that animals were used for multiple purposes including consumption, ritual activity, and status differentiation. The majority of smoking pipes and smoking pipe fragments were recovered from Mound 1. This distribution pattern could be related to collective activities such as the "Kranka Dada smoking lounge" or could be related to the contemporaneity of the mounds. The differential distribution of small finds including beads and groundstone celts may point to religious activity as well. The use of beads in West African religious activity in archaeological contexts (Ogundiran 2002; Stahl 2008). Perhaps the most significant object that points to a non-domestic use of Mound 1 is the probable side-blown trumpet. It is a special and rare object used to differentiate status in both political and religious institutions. Traditionally made from ivory, the object recovered was crafted from bone. It is possible that bone was viewed as a sub-standard material or counterfeit object, perhaps used to denote the second tier or subsidiary status of Kranka Dada to Bono Manso; while at the same time expressing shared ideological institutions via shared prestigious objects.

Chapter 8 Mound 2

In this chapter detailed information about archaeological deposits is given about Mound 2 deposits. This chapter is organized similarly to Chapter 7. I discuss how the structures and features were constructed and the artifacts, as they relate to the anthropological categories of production, consumption, and status differentiation.

Architecture

Architectural features of Mound 2 were different from Mound 1. No plastered floors or substantial mud-brick walls were found. The majority of features documented were partial houses with associated courtyard activity areas. Some partial structures were documented through the alignments and consistent depth of post molds coupled with the presence of daub and horizontally-oriented artifacts. Mound 2 post molds were much smaller than Mound 1; most were approximately 5-7 cm in diameter. Post mold frequency was much higher in Mound 2 structures than Mound 1, and alignments were more easily documented. Overall the structures in Mound 2 appeared to be less substantial wattle-and-daub structures supported by multiple interior posts, seen archaeologically as post alignments in partial rectilinear shapes. No laterite foundations alignments were documented like in Mound 1. One similarity between Mound 1 and 2 structures is that foundations seemed to be prepared in similar ways. Clay foundations appeared to have been packed and burned, although no plaster was applied in Mound 2. However, it is possible that the presence of charcoal be related to roof burning and collapse episodes. I found a total of five partial structures and floors Mound 2 (Table 8.1).

Table 8.1 Structures/Floors from Mound 2

Structure/ Floors	Depth BD	Level	Architectural Features
7	129-139 cm	14-15	Double chambered pit
8	115-119 cm	12-13	Post mold alignments, a hearth, and charcoal rich areas
9	93-107 cm	9-12	Courtyard, multiple hearths, post molds, charcoal rich deposits, grease stains, pit
10	82-91 cm	5-8	Courtyard, ceramic production area, hearth with disarticulated laterite rocks, flat lying/ oriented artifacts
11	70-72 cm	4	Courtyard; non-continuous daub concentrations, dark organic stains
12	53-67 cm	2-3	Courtyard; intact vessels, stack of pot lids and groundstone, charcoal rich deposits, grease stains, flat lying/ oriented artifacts

Chronology

One accelerated mass spectrometry radiocarbon dates[31] was obtained from Mound 2. Table 8.2 provides the date and associated context for materials dated. Another AMS Date was attempted form the base of Mound 2; however, only a bovid tooth was suitable for dating from the feature at the base of N 1754 E 1650. The tooth lacked collagen, and could not be dated using AMS methods. However, relative dates from Mound 2 can be obtained from European ceramics from Structure/ Floor 12. Structure/Floor 12 was the uppermost deposits of Mound 2, and suggests some contemporaneity with Mound 1 deposits in at Mound 2 Structures/Floor 11 and 12. Ceramic artifacts recovered lower levels of Mound 2 are similar to ceramic artifacts recovered from Mound 5 (AMS Date 4). Lower level deposits of Mound 2 may be associated with the calibrated date of 1355 ± 32 CE. Mound 2 had a long occupational history spanning an approximate length of approximately 400 years. Mound 2 deposits accumulated at a slower rate than Mound 1. There were no sterile levels, although artifact density decreased *after* Structure/ Floor 8. Some deposits located stratigraphically above the partial structures, floors, and courtyard areas were filled with debris indicating that there may have been some episodes when areas in Mound 2 were not occupied or used as refuse areas.

[31] Material was dated by the University of Arizona AMS Facility under reference number AA101550-10155

Table 8.2 AMS Dates Mound 2

AMS Date	Material	Level	Context	Date (calibrated)
2	Charcoal	7	Base of Ceramic Production Feature; Outside Structure 10	485 ± 32 1465 (1433-1497)

Figure 8.1 Location of AMS Date 2

Production and Consumption

Ceramics

As was the case with Mound 1, ceramics were the most abundant artifacts from Mound 2. When controlled for volume, Mound 2 had a slightly greater frequency of ceramics analyzed by weight (1.7 kg per cubic meter). By count, Mound 1 had a lesser frequency of sherds by volume (101.2 per cubic meter). Mean sherd weight in Mound 2 was the highest out of each area excavated at 16.6 grams. Table 8.3 lists the counts of sherds recovered from Mound 2 that I analyzed.

Table 8.3 Sherds from Mound 2

Type	Count	Percentage
Body	657	45.7%
Rim	695	48.3%
Base	5	0.3%
Neck	28	1.9%
Carination	49	3.4%
Lid	1	0.1%
Indeterminate	4	0.3%
Total	**1439**	**100%**

Table 8.4 shows the counts and weights of analyzed sherds by structure. Some variability between structures (in terms of count and weight) exists as ceramics were differentially among structures. The later structures (Structures 10-12) had a larger quantity of sherds than earlier structures (Structures 7-9). Structure 10 had the highest quantity of sherds in both count and weight.

Table 8.4 Ceramic Count and Weight by Structure

Structure/ Floor	Count		Weight in kg	
Fill	166	11.54%	17.8	7.45%
Structure 7/ Fill	19	1.32%	1.7	0.71%
Structure 7	48	3.34%	11.6	4.87%
Structure 8	79	5.49%	8.3	3.49%
Structure 9	111	7.71%	17.1	7.16%
Structure 10	552	38.36%	100.3	41.99%
Structure 11	270	18.76%	44.3	18.54%
Structure 12	194	13.48%	37.8	15.80%
Total	**1439**	**100.00%**	238.9	**100.00%**
Mean	**180**		**29.9**	

Table 8.5 lists the types of damage observed on the interiors of sherds from Mound 2. The majority of sherds showed no macroscopic signs of use and interior damage, and most of the rims were too fragmented to observe interior body surfaces. Burning was the main activity that led to interior surface damage. Striations and patchy abrasions created through stirring, scrapping, and grinding are present in Mound 2 sherds in much lower frequency than in Mound 1. If sherds with indeterminate use wear (i.e.

small rims) are removed, then 20.8% of sherds were altered and charred through cooking activities. Other abrasions that indicate food preparation activities were observed, but in lower frequencies than Mound 1. Boiling food in vessels appears to have been a common way of preparing food.

Table 8.5 Vessel Interior Damage from Mound 2

Vessel Part	No Damage	Eroded	Striations	Pitted	Patchy Abrasions	Hole	Charred	Indeterminate/ Not enough of Rim	Total
Body	462	44	16	7	6	1	119	1	657
Rim	86	3	8	1	2	2	37	556	695
Base	5								5
Neck	14	2					10	1	28
Carination	31	2					16		49
Lid							1		1
Indeterminate	3						1		3
Total	**601**	**51**	**24**	**8**	**8**	**3**	**184**	**558**	**1439**

Table 8.6 lists the frequencies of sherds with no decoration, informal decoration, and formal decoration from Mound 2. Formal and no decoration account for approximately equal proportions of the Mound 2 assemblage. Informally decorated sherds account for 10% of the Mound 2 analyzed assemblage, a significantly higher proportion than in Mound 1 (1%). There is more variability in expedient/ informal and formal decorative techniques in Mound 2 than in Mound 1.

Table 8.7 lists the most common decorative motifs from Mound 2 sherds. Grooving/ continuous incisions are the most common body decoration motif in Mound 2, although the proportion is double from Mound 1. The second most common motifs are dentate stamped rectangles and a composite design with dentate stamped rectangles and continuous incisions. Twist roulette, twist roulette with continuous incisions, and maize cob roulette were among the most abundant in Mound 1. They are present in Mound 2, although in much lower quantities than Mound 1. This also indicates some overlap in the contemporaneous use of Mound 1 and 2.

Table 8.6 Decorated and Undecorated Sherds by Count Mound 2

Body Part	No Decoration	Informal Decoration	Formal Decoration	Total
Body	16	115	526	657
Rim	590	25	80	695
Base	3		2	5
Neck	5	4	19	28
Carination	3		46	49
Lid	1			1
Indeterminate	3		1	4
Total	**621**	**144**	**674**	**1439**

Table 8.8 lists the surface treatments from Mound 2 sherds. Similar to Mound 1, the majority of sherds were hand-smoothed with no other surface treatment applied. Red paint and brown paint were the most common surface treatments, although there frequencies in Mound 2 that was slightly lower than in Mound 1. Black painted and burnished sherds occurred in Mound 2 in roughly similar proportions to Mound 1. Mound 2 has a higher percentage of mica paint as well as unfired slip applied to vessels. Between the decorative motifs and surface treatments in Mound 2, there are differences in the assemblages between the 2 areas.

Table 8.7 Decorative Motifs Mound 2

Decorative Motifs	Count	Percentage
Groove/ Continuous Incisions	514	65.3%
Twist Roulette	24	3.0%
Unidentified Roulette	12	1.5%
Composite: Twist Roulette and Continuous Incisions	11	1.4%
Maize Cob Roulette	14	1.8%
Dentate Stamped Rectangles	30	3.8%
Discontinuous Incisions	17	2.2%
Composite: Dentate Circles and Continuous Incisions	14	1.8%
Composite: Dentate Triangles and Continuous Incisions	32	4.1%
Composite: Discontinuous and Continuous Incisions	16	2.0%
Carination Decoration Only- scalloped coils and grooves	18	2.3%
Other	85	10.8%
Total	**787**	**100.0%**

Table 8.8 Surface Treatments Mound 2

Surface Treatment	Count	Percentage
No Treatment/ Hand-Smoothed Only	1171	81.4%
Red Paint	70	4.9%
Brown Paint	95	6.6%
Black Paint/ Burnished	30	2.1%
Mica Paint	47	3.3%
Polychrome	4	0.3%
Unfired Slip	18	1.3%
Grey Paint	4	0.3%
Total	**1439**	**100.0%**

Rims

A total of 693 rims were recovered from Mound 2 in 18 different styles. Table 8.9 lists the most abundant rim shapes from Mound 2. Very similar to Mound 1, everted straight rim with a rounded lip or straight lip were the most common. In terms of the general ceramic profile, Mound 2 had a greater range of vessel shapes based on rim types. Inverted, T-shaped, and bulbous rolled rims were either not present or present in low quantities in Mound 1, but more common in Mound 2. However, the majority of rim types documented in Mound 2 are from everted rim (likely globular) vessels. It is possible that straight rims are fragmented pieces of other everted rim types.

Table 8.9 Rim Shapes Mound 2

Rim Types	Count	Percentages
Straight	44	6.3%
Horizontal	16	2.3%
Everted Straight Rim Round Lip	117	16.9%
Bulbous/ Rolled	11	1.6%
Inverted	21	3.0%
Everted Straight Rim Straight Lip	361	52.1%
T-shaped	33	4.8%
Everted Tapered and Straight Lip	24	3.5%
Everted Squat Round Lip	10	1.4%
Everted Elongated and Round Lip	14	2.0%
Other	42	6.1%
Total	**693**	**100%**

Everted Straight Rim with Straight Lip

Similar to Mound 1, this was the most abundant type of rim recovered accounting for 52.1% of the rims from Mound 2. These rims were round in every structure of Mound 2. Everted straight rim vessels with straight lips have restricted openings. Post-depositional erosion did not dramatically alter these ceramic types, and 92.2% of the sherds had little to no erosion. Rim diameters were normally distributed with a mean of 20 cm (σ 3.5) with most vessels falling from 17-25 cm in diameter. Mean vessel body thickness was 6.6 mm (σ1.6). A regression between rim diameter and vessel thickness is not significant (R^2 .017); however, there is no association between diameter and thickness. Body thickness varies widely and is independent of rim diameter. Thickness of the lip/ rim is skewed to the right with a mean of 4.8 mm (σ1.2), although the range encompasses 3-10 mm. The interior rim angle varies from 100-170 degrees, although most interior rim angles fall within 110-140 degrees. Rims of nearly each interior degree are found within each structure. As such, there is no stratigraphic relationship or distribution pattern within interior rim angles. The majority of rims were not decorated (88.9%), although scalloping (5.2%), swag (1.1%), incisions (3.6%), and some painting (1/1%) were present in low frequencies. Most of the sherds had no mica present within the paste (82%), although small mica was present (17.4%). Hand-smoothed exterior surface treatment was the most common (91.4%), followed by red paint (1.9%), brown paint (1.9%), mica paint (1.6%), and unfired slip (2.2%). The majority of rims were not large enough to observe whether or not use wear was present on the interior body surface on 80.1% of the rims. Of the rims that were sufficiently large no damage was observed (13.6%) followed by charring (5.3%) and striations and patchy abrasions (.8%). Exterior soot was present on 36.8% of the sherds and no evidence of burning was observed on 61.9% of the sherds. Body decoration could not be observed on 88.4% due to small size; however, the majority of sherds that had visible decorative elements were mainly grooves/ continuous incisions (10.5%). The remaining portion of sherds was burned completely throughout. Rim abrasions were present on 65.6% of the sherds indicating they had been stored upside down.

Everted Straight Rims with Rounded Lips

This restricted opening with neck type is the second most common within Mound 2. Post-depositional erosion did not dramatically alter these ceramics, and 87.2% of the everted straight rims with rounded lip ceramics had little to no erosion. Therefore, the metrics and qualitative traits for this type are not biased by post-depositional processes. The thickness of the rim varies; the distribution is skewed to the right with a mean of 5.7 mm (σ 1.8). The interior rim angles are mostly from 140-150 degrees, but can vary from 110-160 degrees. In terms of metric similarities, everted straight rim vessels with rounded lips are very similar for Mound 1 and 2. The majority of rims and lips were not decorated (90.6%), but some scalloping (1.7%), swag (.8%), incising (4.2%), and painting were present (2.6%). Most of the sherds had no mica in the paste (76.9%), although small mica was present (22.2%). Hand-smoothed exterior surface treatment was the most common (73.5%), followed by brown paint (18.8%), and red paint (5.1%). The majority of rims were not large enough to observe if use wear was present on the interior surface on 88.9% of the rims. Of the rims that were sufficiently large, no damage was observed (3.4%) or evidence of charring (6.8%). Body decoration could not be observed on 87.2% due to small size; however, the majority of sherds that had visible decoration were mainly grooves/ continuous incisions (11.1%). On the vessel exteriors I observed soot on 43.6% of the sherds, indicating their use within a fire probably used for cooking, and 4.2% were totally burned. Fifty-two percent of sherds had no exterior thermal damage. Abrasions were present on the lips and rims of vessels on approximately half of the sherds (53%). Quantitative and qualitative attributes between Mounds 1 and 2 of the everted straight rims with rounded lip ceramics are similar in terms of metrics, inclusions, surface treatment, and use.

T-Shaped Rims

T-Shaped rims account for 4% of the Mound 2 analyzed assemblage. T-Shaped rims mostly have swag designs and deep relief impression along the rim; the remaining profile of the vessel is similar to everted rim (likely globular bottom) vessels. T-Shaped rims were recovered from every structure in Mound 2, although the majority of rims were from Structures 10 and 11. Post-depositional erosion did not dramatically alter T-Shaped rims. Mean rim diameter of T-Shaped rimmed vessels was 21 cm (σ 3.4), with the majority of diameters tightly clustered from 20-25 cm. Body thickness had a mean of 7 mm (σ 1.3) with a distribution that was skewed to the right. A regression between rim diameter and body thickness shows a negative correlation (R^2 .079). As T-Shaped rim vessels become larger, the body walls were thinner. The lip/ rim thickness varies, but has a mean of 8.3 mm (σ 2). Within the paste no micaceous presence was observed in 69.7% and small mica was observed in 33.3% of T-Shaped rims. The majority of sherds were hand-smoothed only with no additional surface treatment (84.8%), but some had brown paint (6.1%), unfired slip (6.1%), or black/ burnished (3%). Most of the sherds were too small to observe interior use damage (84.8%), although some sherds had charred interiors (9.1%). Exterior sooting was observed on only 33.3% of the rims, and not on a majority of sherds. Only a single T-Shaped rims sherd had body decoration (grooves/ continuous incisions), but small rims bias this observation. Abrasions on the rims and lips were observed on 69.7% of the sherds.

Everted Tapered with Straight Lips

Everted tapered and straight lipped rims account for 3.5% of the Mound 2 assemblage. They are a type of everted rim vessel with a restricted opening. This type of rim was recovered in every structure of Mound 2, but mainly from Structures 7 and 9. Vessel diameter is normally distributed with a mean of 20 cm (σ 4). Body thickness is normally distributed with a mean of 8 mm (σ 1.6). A regression between rim diameter and thickness shows no relationship (R2 .048) between the variables; vessel thickness is similar regardless of the size of the vessel opening. The thickness of the lip/rim has a distribution skewed to the right with a mean of 8 mm (σ 1.6). The rim interior angle varies from 110 to 150 degrees. Everted tapered and straight lipped rims were not generally decorated (79%), but sometimes scalloped (12.5%), incised (4%) or black burnished (4%). Mica inclusions were mostly absent in the paste of rims (83.3%), but present as small and large inclusions in some (8.3% each). Surface treatments were generally restricted to hand-smoothed finish (87.5%), brown paint (8.3%), or unfired slip (4.2%). No body decoration motifs were observed. Interior use wear was indeterminate on 79.2% of sherds due to their small size. These sherds did not have exterior soot (79.2%), although damage was present on 20.8%. Abrasions were present on 66.7% of the lips and rims, likely from being stored upside down.

Inverted

Inverted rim vessels account for a small proportion (3%) of the Mound 2 assemblage; however, they are included here as they have a different morphological profile. Post-depositional erosion did not dramatically alter these sherds. Inverted rims create restricted openings in both jars and bowls. In most cases, inverted rims are associated with a carinated body profile. Rim diameter was normally distributed with a mean of 17 cm (σ 4.4). Body thickness was normally distributed with a mean of 7 mm (σ 2). There is a positive association between body thickness and rim diameter, but the relationship is not significant (R2 .177). Body thickness can vary greatly among vessels with the same diameter. Lip/ rim thickness varies but is normally distributed with a mean of 4.9 mm (σ 1.7). Rims are generally without decoration (90.4%), although some incising was present. Some paste had no mica (57%) and some had small mica (43%). The majority of sherds had no surface treatment other than hand-smoothing (81%), but red paint (4.7%), brown paint (9.5%), and polychrome paint (4.7%) was also observed. Decoration was not present on 61.9% of sherds. Grooves/ continuous incisions (19%), dentate stamped circles (4.7%), and a scalloped coil with incisions on the carination only (14.3%) were observed. The sherds were too small to determine presence or absence of interior use wear and/or damage in 57% of the sample. No damage was observed on 23% of sherds; striations (4.7%), pitting (4.7%), and burning (9.5%) were documented. Exterior soot was absent on 61.9% of the sherds. Ten percent of the sherds were burned throughout. The remaining 28% has some exterior soot, indicating their use in a fire. Lip/ rim abrasions were present on 61.9% of the inverted rim sherds.

Table 8.10 Summary Statistics of Main Rim Types from Mound 2

Rim Type	Mean Diameter	Body Thickness	Rim/Lip Thickness	Interior Angle (Everted Rims)
Everted Straight Rims with Straight Lips	20 cm (σ 3.5)	6.6 mm (σ1.6)	4.8 mm (σ1.2)	110-140
Everted Straight Rims with Rounded Lips	21 cm (σ 4.8)	7 mm (σ 2)	5.7 mm (σ 1.8)	140-150
T-Shaped	21 cm (σ 3.4)	7 mm (σ 1.3)	8.3 mm (σ 2)	110-130
Everted Tapered and Straight Lip	20 cm (σ 4)	8 mm (σ 1.6)	5 mm (σ 1.8)	110-150
Inverted	17 cm (σ 4.4)	7 mm (σ 2)	4.9 mm (σ 1.7)	n/a

Decorated Body Sherds

Some decorative motifs and surface treatments co-occurred. Table 8.11 lists only the most common decorative motifs and their surface treatments as percentages, and Table 8.12 as counts. No surface treatment was the most common across all decorative motifs. Ceramics with eroded and unidentified roulette are not included. An ANOVA test indicates significant results (F-statistic 2.916 at a significance level $_{\alpha.05}$.005); however, the significance is biased by the lack of surface treatment within the various decorative motifs.

Table 8.11 Most Common Decorative Motifs with Surface Treatment as Percentages

Decorative Motifs	No Treatment/ Hand-Smoothed Only	Red Paint	Brown Paint	Black Paint/ Burnished	Mica Paint	Total
Groove/ Continuous Incisions	60.8%	3.1%	6.3%	2.0%	2.6%	74.9%
Twist Roulette	3.5%	0.0%	0.0%	0.0%	0.0%	3.5%
Composite: Twist Roulette and Continuous Incisions	1.5%	0.0%	0.0%	0.0%	0.0%	1.5%
Maize Cob Roulette	2.0%	0.0%	0.0%	0.0%	0.0%	2.0%
Dentate Stamped Rectangles	3.4%	0.4%	0.3%	0.0%	0.3%	4.4%
Discontinuous Incisions	2.3%	0.0%	0.0%	0.0%	0.1%	2.5%
Composite: Dentate Circles and Continuous Incisions	1.8%	0.0%	0.1%	0.0%	0.1%	2.0%
Composite: Dentate Triangles and Continuous Incisions	3.5%	0.3%	0.4%	0.3%	0.1%	4.7%
Composite: Discontinuous and Continuous Incisions	1.8%	0.0%	0.1%	0.1%	0.0%	2.0%
Carination Decoration Only- scalloped coils and grooves	2.0%	0.1%	0.0%	0.3%	0.0%	2.5%
Total	**82.6%**	**3.9%**	**7.3%**	**2.8%**	**3.4%**	**100.0%**

Table 8.12 Most Common Decorative Motifs with Surface Treatment as Counts

Decorative Motifs	No Treatment/ Hand-Smoothed Only	Red Paint	Brown Paint	Black Paint/ Burnished	Mica Paint	Tota l
Groove/ Continuous Incisions	416	21	43	14	18	512
Twist Roulette	24					24
Composite: Twist Roulette and Continuous Incisions	10					10
Maize Cob Roulette	14					14
Dentate Stamped Rectangles	23	3	2		2	30
Discontinuous Incisions	16				1	17
Composite: Dentate Circles and Continuous Incisions	12		1		1	14
Composite: Dentate Triangles and Continuous Incisions	24	2	3	2	1	32
Composite: Discontinuous and Continuous Incisions	12		1	1		14
Carination Decoration Only- scalloped coils and grooves	14	1		2		17
Total	**565**	**27**	**50**	**19**	**23**	**684**

Similar to Mound 1, Table 8.13 lists the presence of mica within the paste of sherds by the most common decorative motifs. Large mica inclusions within ceramics of Mound 2 were rare and largely restricted to grooved and continuously incised sherds. Similar to Mound 1, sherds with large micaceous inclusions and grooved incisions often had thin layers of plaster applied. These were restricted to the late structures of Mound 2 (Structures 10-12). The plaster coating of this specific vessel type may indicate some shared ritual activity between Mounds 1 and 2, although the traces from Mound 2 are ephemeral and restricted to a small quantity of sherds. Mica presence within the remaining sherds is similar to Mound 1 in the proportions of sherd without mica to small mica.

Table 8.13 Mica Presence by Decorative Motifs

Decorative Motifs	No Mica	Small Mica	Large Mica	Total
Groove/ Continuous Incisions	395	110	9	514
Twist Roulette	21	3		24
Composite: Twist Roulette and Continuous Incisions	9	2		11
Maize Cob Roulette	12	1	1	14
Dentate Stamped Rectangles	18	9	3	30
Discontinuous Incisions	10	7		17
Composite: Dentate Circles and Continuous Incisions	13	1		14
Composite: Dentate Triangles and Continuous Incisions	23	9		32
Composite: Discontinuous and Continuous Incisions	12	4		16
Carination Decoration Only- scalloped coils and grooves	16	2		18
Total	**529**	**148**	**13**	**690**

Table 8.14 lists the types of vessel interior damage by the most common decorative motifs from Mound 2. Regardless of decorative motif, most decorated body sherds have no signs of use wear. Similar to Mound 1, interior burn marks were the most abundant type of interior damage to vessels. Using Smith's (2008) markers, evidence for alcohol storage is inferred from pitted interior abrasions is scant. Food processing activities such as pot scraping, stirring, etc. as inferred from striations and patchy abrasions were documented in low frequencies. There was no clear association between specific decorative motif and specific production and consumption activities.

Table 8.14 Interior Damage by Decorative Motifs

Decorative Motifs	No Damage	Eroded	Striations	Pitted	Patchy Abrasions	Burned	Total
Groove/ Continuous Incisions	333	28	13	7	6	82	469
Twist Roulette	13	4		1		6	24
Composite: Twist Roulette and Continuous Incisions	6	1				3	10
Maize Cob Roulette	9					5	14
Dentate Stamped Rectangles	22	4				3	29
Discontinuous Incisions	12	1				4	17
Composite: Dentate Circles and Continuous Incisions	6	4				4	14
Composite: Dentate Triangles and Continuous Incisions	20	4				8	32
Composite: Discontinuous and Continuous Incisions	9					4	13
Carination Decoration Only- scalloped coils and grooves	7					6	13
Total	**437**	**46**	**13**	**8**	**6**	**125**	**635**

Bases

Five bases were recovered from Mound 2. Such a limited number precludes anything other than a descriptive analysis. Four bases were flat-bottomed and circular; they created a small pedestaled base for the vessel. Two bases had a single circular hole intentionally placed at the bottom of the globular base. This is a practice associated with hearth vessels (Crossland 1989). Hearth vessels are globular in shape with a single hole at the base; they are intended to be placed upside down over the embers in a hearth to diffuse the heat. Although the bases were fragments, the bases were likely attached to round or globular shaped vessels. Table 8.15 lists the summary metric attributes from the Mound 1 bases. Base diameter varied from 5 to 10 cm with a mean of 8 cm. Base thickness was normally distributed with a mean of 8.9 mm; it varied from 7 to 11.8 mm. No decoration was observed on the bases. No surface treatment other than being hand-smoothed was observed. One base had small mica inclusions and four had no micaceous inclusions. No interior damage on the bases was observed, although 2 bases had exterior sooting indicating their former presence in a fire.

Table 8.15 Summary Metric Description Bases Mound 2

Mean Weight	Mean Thickness	Base Diameter
42.1 gm	8.9 mm	8 cm

Lid

One pot lid was recovered from Mound 2 as part of a feature that spanned two levels (Figure 8.2 and Figure 8.3). One upside down fragmented vessel was recovered from N 1750 E1648 Level 2. The feature continued into the following level. Directly beneath and inside the upside down pot from Level 2, was a piece of quartz debitage. In Level 3, the ceramic lid was exposed near two adjacent a bundle of groundstone and two fragmented ceramic bowls. Similar to the lids from Mound 1, the ceramic lid and quartz debitage in Mound 2 is similar to some of the objects in shrine clusters and bundles in the Banda region from the Kuulo Phases (Stahl 2008, 2013). As previously mentioned, the Kuulo Phase dates to cal 1400-1650 CE, which is consistent with AMS Date 2 from Mound 2. In the Banda region, the style of lid (see below) is associated with shrines and ritual activities (ibid.). This is the only type of stacked feature from Kranka Dada. While the similarities in aesthetics of display and accumulation are striking, the domestic nature of the objects makes it difficult to definitely classify the bundle as a shrine. Given the importance of ritual and the ubiquity of household shrines in the region, I think the feature is probably a shrine. However, more data from Bono sites are required.

Figure 8.2 N1752 E1648 Level 2 Feature 1

Figure 8.3 N 1752 E1648 Level 3 Feature 1

Ceramic Production/Firing Feature

A ceramics midden was excavated in the upper level deposits from Structures/Floors 10 to 12, which likely indicated ceramic production beyond the needs of the household. The ceramic feature was partially captured in the southern portion of Level 7 of N1752 E1648. A 1 x 2 m excavation unit was added in order to excavate and document feature. This feature was associated with Structures 10 and 11 and mainly found in Levels 4 through7. Weights of the ceramics are provided by level (Table 8.16). Much of the surrounding matrix was burned indicating that the area had been thermally altered in a targeted way. Broken and somewhat articulated ceramics were excavated *in situ*. Ceramics were mainly horizontally oriented with articulation of broken vessel sherds. Multiple refits were documented across levels. The placement of the ceramics in the midden likely represented sub-standard vessels or vessels that broke during firing. Rims were recovered in higher frequencies in lower levels, suggesting that many vessels had been inverted. A minimum of 59 vessels (in fragments) were recovered. Of the 59 vessels, a minimum of 36 were decorated. Some large sherds were recovered that did not refit with any sherds and evidence of interior use and alteration (i.e., patchy abrasions and striations) was observed. It is possible that large sherds from previously broken vessels were used as spacers between pots. Some misfired sherds were observed.

While some ceramics were decorated and finished by skilled artisans, some vessels were recovered that were likely made by inexperienced hands. Some of the ceramics recovered were lumpy and uneven (Figure 8.4). The thickness of the vessels' rim was uneven, yet the bodies generally had consistent thicknesses. In addition, informal decoration was sometimes added to the crude vessels via serpentine incisions below the neck. The majority of the lumpy rim vessels were from everted rim jars, and the interior angle measurements were consistently 110 to 120 degrees. The ceramic feature from N1751 E1648 was an amalgamation of different ceramic styles in terms of decoration and skill level. It is possible that the presence of lumpy vessels indicate that artisans of different skill levels fired pots in the same thermal feature. Young household members and unskilled potters may have assisted more skilled artisans at different stages of the ceramic chaîne opératoire by attaching the rim and adding some informal decoration to a leather-hard vessel. Because the interior of the vessels were finished so expertly, this suggests that either some aspects of fabricating vessels was easier to master or apprentice potters assisted in ceramic production in targeted or specific ways. Many of the sub-standard ceramics were recovered in the contemporaneous domestic contexts and structures of Mound 2. Apprentice-made goods were incorporated into daily household activities and used alongside ceramics made of superior craftsmanship. The breadth in quality of household ceramics suggests that households of Mound 2 had a diverse and vibrant composition, where all members contributed to domestic activities and household success in whatever capacity they could.

The base of the ceramic production/firing feature has an associated radiometric date, AMS Date 2 calibrated at 485 ± 32 or 1465 (1433-1497) CE. Most likely the feature pre-dates Portuguese contact on the Gold Coast, and indicates an increase in household production from earlier levels. There is evidence for production beyond the needs of the household prior to the opening of Atlantic markets on the coast, suggesting that residents of Kranka Dada were integrated into supralocal networks.

Table 8.16 Ceramic Weights from Production Feature

Level	**Count**	**Weight in Kilograms**
1	32	0.15
2	67	1.09
3	13	0.41
4	83	1.66
5	42	1.00
6	63	2.43
7	63	1.21
Total	**363**	**7.95**

Figure 8.4 Lumpy Rim Vessels

Faunal Remains

Many fewer faunal remains were recovered from Mound 2, totaling 5.11% of the faunal assemblage by count and 6.3% by weight. When controlled for volume, 1.8 bones per cubic meter were recovered, which is significantly less than the density of 27.4 bones per cubic meter in Mound 1. Similar to Mound 1, much of the assemblage was highly fragmented, making it difficult to identify remains beyond phylum or class. Small sample sizes and fragments of bone make analysis difficult. However, many of the same descriptive statistical analyses from the Mound 1 fauna are performed here for purposes of consistency in analysis. All of the remains from Mound 2 were from mammals. Only 4 bones were identifiable to family and/ or genus (Table 8.17). The NISP for Mound 2 is 25, but MNI is not available due to fragmentation. Of the remains that could be identified, *Caprinae sp.* is the most common taxa accounting for 11.5% of the Mound 2 assemblage. However, the total sample recovered from Mound 2 is small and much of it from indeterminate taxa, making inferences about its composition not very meaningful.

Table 8.17 Faunal Remains by Family Mound 2

Family	**Count**	
Bovidae	1	3.8%
Caprinae	3	11.5%
Indeterminate	21	84.6%
Total	**25**	100.0%

The majority of bone recovered was from animals of a medium size (approximately 50 kg), although animals of most size classes were represented (Figure 8.5). The lack of bone from small animals is interesting. Small bone was recovered from Mound 1; this suggests that preservation bias is not affecting small bones. Many of the small animals represented in Mound 1 are taxa that would have been fairly easily to procure through opportunistic hunting or trapping. In addition, many of the small animals would have been attracted to the cleared land of agricultural plots and could have been encountered with some regularity. Faunal remains from large animals were recovered in slightly higher frequencies in Mound 2, but without more specific identification to family or genus it is not possible to know how large animals would have been acquired (e.g., through animal husbandry or hunting).

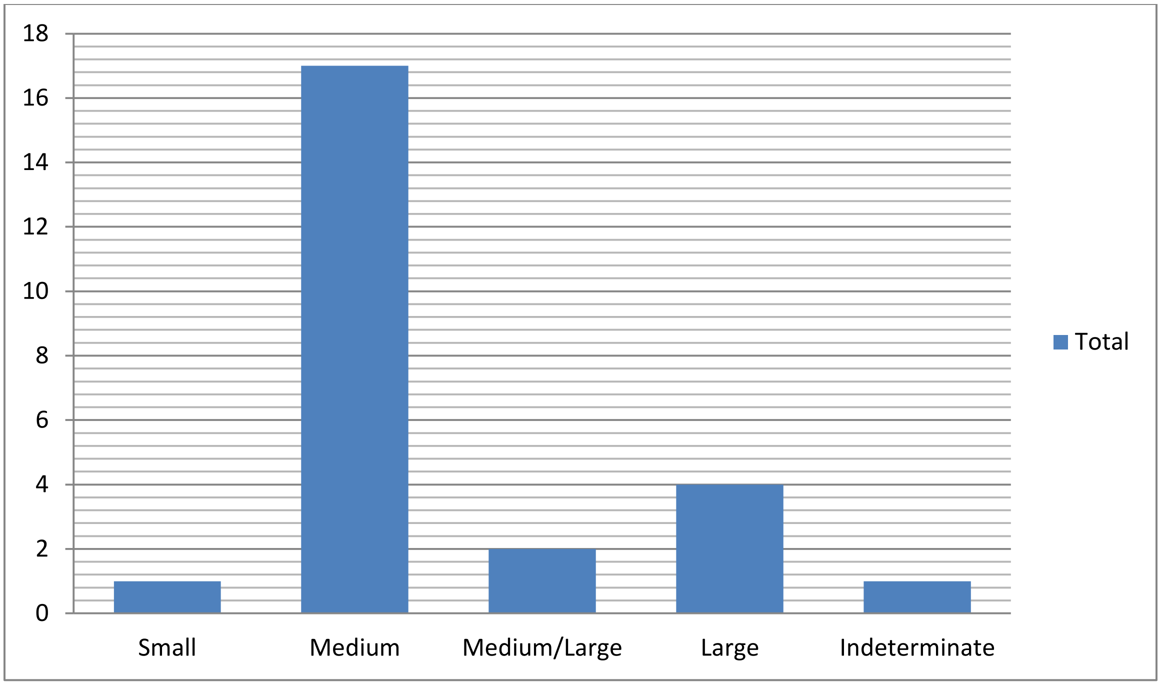


Figure 8.5 Counts and Weights of Animal Bone by Size Class

Table 8.18 lists the fauna from Mound 2 in terms of wild versus domestic status. The ratio of wild to domestic is 1:3, but this number is not meaningful given the indeterminate status of much of the fauna. All of the domesticated remains are from the Caprinae subfamily of Bovidae. They are likely from *Capra sp*. or *Ovis sp*. sheep/ goat. Rather than examine quantities, the presence of domesticated taxa within Mound 2 is the important pattern; it indicates access to domesticated animals. Juveniles of adult age could not be determined from any of the Mound 2 fauna. As such, no measure is available for assessing the frequency and skill level of hunters.

Table 8.18 Wild vs. Domesticated Fauna

Status	**Count**	
Wild	1	3.8%
Domestic	3	11.5%
Indeterminate	22	84.6%
Total	**26**	**100.0%**

Table 8.19 lists the frequencies of the different skeletal elements from Mound 2. The most common elements recovered were from the crania at 64% followed by indeterminate limbs at 20%. Carpals/ tarsals, indeterminate post-crania, and

unidentifiable bones were also recovered. The scarcity of faunal remains from Mound 2 is surprising. In addition, animal parts such as vertebrae, ribs, scapula, and pelves were not recovered, which may suggest that animal products were acquired piecemeal rather than as complete animals.

Table 8.19 Skeletal Elements from Mound 2

Skeletal Element	**Count**	
Crania	16	64%
Carpals/Tarsals	2	8%
Indeterminate Limb	5	20%
Indeterminate Post-Crania	1	4%
Indeterminate	1	4%
Total	**25**	**100%**

Figure 8.6 shows the distribution of skeletal elements by structure. Faunal remains were bimodally distributed in Mound 2. Structures 7, 10, and 11 had the most faunal remains while Structures 8, 9, and 12 had fewer than 2 bones. Faunal remains were recovered from every Mound 2 structure, although in low frequencies. Indeterminate limbs were recovered from a majority of structures, and carpals/tarsals were recovered from a single structure.

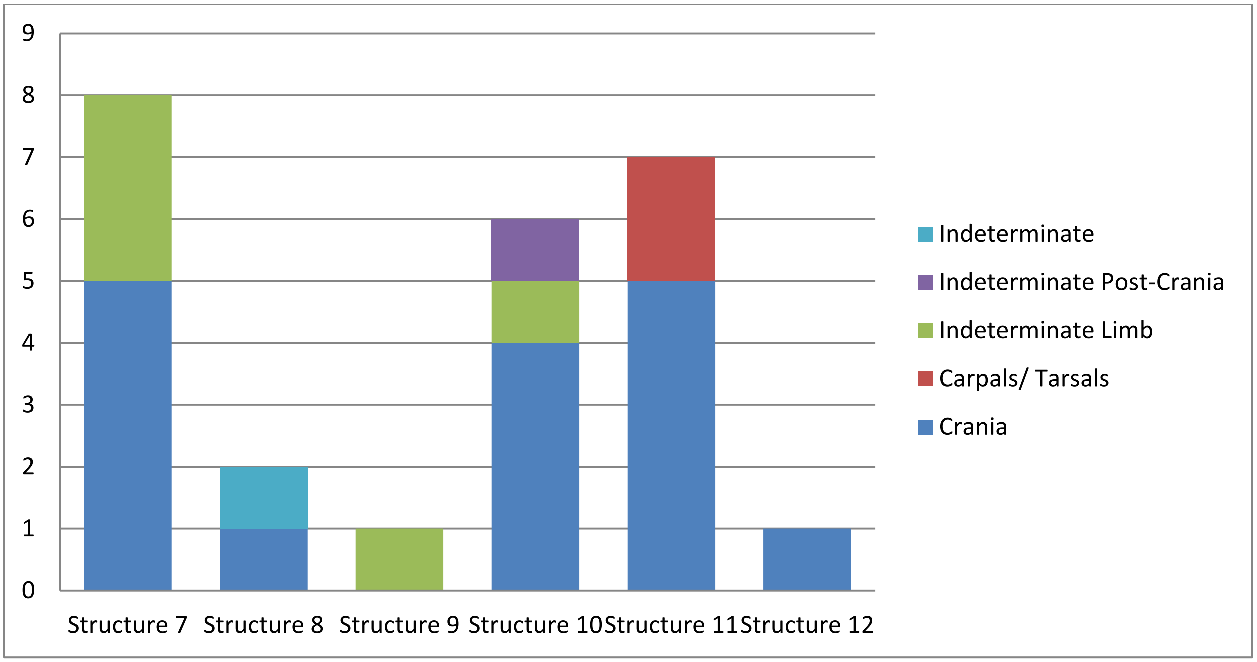


Figure 8.6 Skeletal Elements by Structure

Table 8.20 lists the bone from Mound 2 that was processed for marrow, butchered, or burned. The patterns are different for Mound 1, mainly due to the lack of marrow processing. However, this is due to the high frequencies of cranial material rather than limb bones. A higher frequency of bone (28%) was burned in Mound 2. Not much evidence for butchering exists, except for one cranial fragment with four small cut marks parallel to each other. All of the burned bone was burned throughout as opposed to patchy or epiphyseal end burning. The color was either black/brown or white. The location and color of the thermal alteration suggests that the bone may have been burned for disposal.

Table 8.20 Marrow Processing, Butchering Marks, and Burning Animal Bone from Mound 2

Processed for Marrow	**Count**		**Butchered**	**Count**		**Burned**	**Count**	
Marrow Processing	0	0%	Butchered	1	4%	Burned	7	28%
No Marrow Processing	25	100%	Not Butchered	24	96%	Not Burned	18	72%
Total	**25**	**100%**		**25**	**100%**		**25**	**100%**

Smoking Pipes

Smoking pipes were differentially distributed in the mounds of Kranka Dada. Only 2 fragments of smoking pipe were recovered from Mound 2 (Table 8.21). Unlike the smoking pipe fragments recovered from Mound 1, the bowl fragment recovered from Structure 12 in Mound 2 was not finely crafted. It was lumpy, uneven, and irregular. Due to the nature of the *in situ* fragment, it is not possible to assign a relative date based on the Ozanne typology or any pipe typology from Ghana.

Table 8.21 Smoking Pipes Mound 2

Typology	Sherd Type	Dates	Count	Structure	BD
Ozanne Type E Quatrefoil Effah-Gyamfi Phase III	Stem	Post-1724 ca. 1600-1650	1	Nil	Surface
Indeterminate	Bowl	Post-1600	1	Structure 12	53-67 cm

The lumpy and irregular smoking pipe from Structure 12 was decorated with rectangular dentate, which was one of the most common decorative motifs observed in Mound 2. It is likely that smoking occurred less frequently in Mound 2 areas than Mound 1, and that the material culture required to smoke were made locally from inexperienced hands. No mica inclusions were observed. The interior of the bowl was burned indicating its former use.

Flaked Stone

Of the flaked stone artifacts recovered, 26.6% were recovered from Mound 2 by count and 38.9% by weight. In terms of frequency per cubic meter, 5.8 flaked stone objects were recovered from Mound 2 which is similar to the 5.4 flaked stone frequencies per cubic meter in Mound 1. However the weight per cubic meter is significantly greater in Mound 2 (44.2 grams compared to 13.4 grams in Mound 1). Flaked stone objects were more abundant in Mound 2 than metal objects, and thus were more likely to be used as a household tool.

Table 8.22 Flaked Stone Counts and Weight from Mound 2

Mound	Core		Debitage		Tool		Total proportion of lithic assemblage	
2 (count)	20	6.3%	62	18.8%	4	1.3%	**86**	**26.6%**
2 (weight)	414.9	25.3%	218.31	13.0%	8.1	0.5%	**641.36**	**38.9%**

Table 8.22 lists the counts and weights of cores, debitage, and tools from Mound 2 as a proportion of the total lithic assemblage. Mound 2 had a significantly higher frequency of cores than Mound 1. Core to debitage ratios from Mound 2 were 1:3, compared to 1:27 for Mound 1. The frequency of tools from Mound 2 was low, with only 4 recovered. Raw materials and proportions were similar to Mound 1 with quartz being the most common raw materials. Quartz could have been acquired locally, but raw materials such as chert were likely non-local. Non-local materials occurred in much lower proportions within the Mound 2 lithic assemblage.

Table 8.23 Lithic Artifact Types by Raw Material from Mound 2

Raw Material	Core Count	Core Weight	Debitage Count	Debitage Weight	Tool Count	Tool Weight	Total Count	Total Weight
Quartz	18	249.6	55	111.11	4	8.1	**77**	**368.81**
Granite	0	0	1	10.1	0	0	**1**	**10.1**
Quartzite	0	0	2	5	0	0	**2**	**5**
Chert	1	27.1	0	0	0	0	**1**	**27.1**
Other/ Unknown	1	138.2	2	87.2	0	0	**3**	**225.4**
Total	**20**	**414.9**	**60**	**213.41**	**4**	**8.1**	**84**	**636.41**

Table 8.24 lists the cores from Mound 2 and their specific attributes. The cores were mainly multidirectional and made from quartz, indicating expedient reduction. Both complete cores and fragments of cores were recovered. Complete multidirectional core weight was normally distributed but skewed to the right with some outliers (μ 20.7 grams with σ18.9). Several complete cores were recovered with cortex and a high weight (greater than 16 grams). The presence of cortex indicates that raw materials were brought to the structures of Mound 2 as complete packages; some were not used to exhaustion and perhaps retained for future use. Tested cobbles tended to have cortex, which corroborates the idea that raw materials were transported to Mound 2 as complete

packages. Some were likely abandoned due to imperfections or substandard quality in the raw materials.

Table 8.24 Types of Cores and Core Attributes from Mound 2

Core Type	Raw Material	Weight in grams	Maximum Dimension	Cortex	Complete	Provenience
Multidirectional	Quartz	16.7	27.38	Present	Complete	Structure 12
Multidirectional	Quartz	4.6	26.35	Present	Fragment	Structure 11
Multidirectional	Quartz	2	14.51	Present	Fragment	Structure 11
Multidirectional	Quartz	3.5	22.48	Absent	Fragment	Structure 12
Multidirectional	Quartz	12.6	30.78	Absent	Complete	Structure 11
Multidirectional	Quartz	48.4	35.32	Absent	Complete	Structure 10
Multidirectional	Quartz	3.8	20.08	Absent	Complete	Structure 10
Multidirectional	Quartz	10.1	32.86	Present	Complete	Structure 9
Multidirectional	Quartz	16.1	31.63	Present	Complete	Structure 9
Multidirectional	Quartz	59.1	37.79	Present	Complete	Structure 12
Multidirectional	Quartz	5.6	23.4	Present	Fragment	Structure 12
Multidirectional	Quartz	8.5	25.64	Absent	Complete	Structure 9
Multidirectional	Quartz	18.9	34.44	Present	Fragment	Structure 7
Multidirectional	Quartz	4.2	19.95	Present	Complete	Structure 7/ Fill
Multidirectional	Chert	27.1	52.44	Absent	Complete	Structure 11
Multidirectional*	Unknown	138.2	56.46	Present	Fragment	Structure 12
Tested Cobble	Quartz	3.7	22.21	Present	Complete	Structure 12
Tested Cobble	Quartz	5.3	27.6	Absent	Complete	Structure 10
Tested Cobble	Quartz	21.1	40	Present	Fragment	Structure 12
Tested Cobble	Quartz	5.4	17.79	Present	Complete	Structure 7/ Fill

Cores, by count and weight, were distributed unevenly within the structures of Mound 2. Structures 7 and 8 had a low proportion of cores; in contrast, Structures/ Floors 9-12 had a larger proportion of cores. Structure 12 had the highest proportion of cores by weight among the Mound 12 structures. Figure 8.7 shows the counts and weights of cores within the Mound 2 structures. The number of core between partial structures and floors was similar, but core weight dramatically increased during the occupation of Structure 9 and later. Structure 9 dates to ca. 1400 CE, before the Atlantic exchange era began and solidly within the periods of the Mande trade diaspora and connections with northern sub-Saharan routes were rapidly expanding in this region. The increase in core weight could be related to several social phenomena such as an increase in household size, multiple households utilizing the same structures, or production beyond the needs of the household.

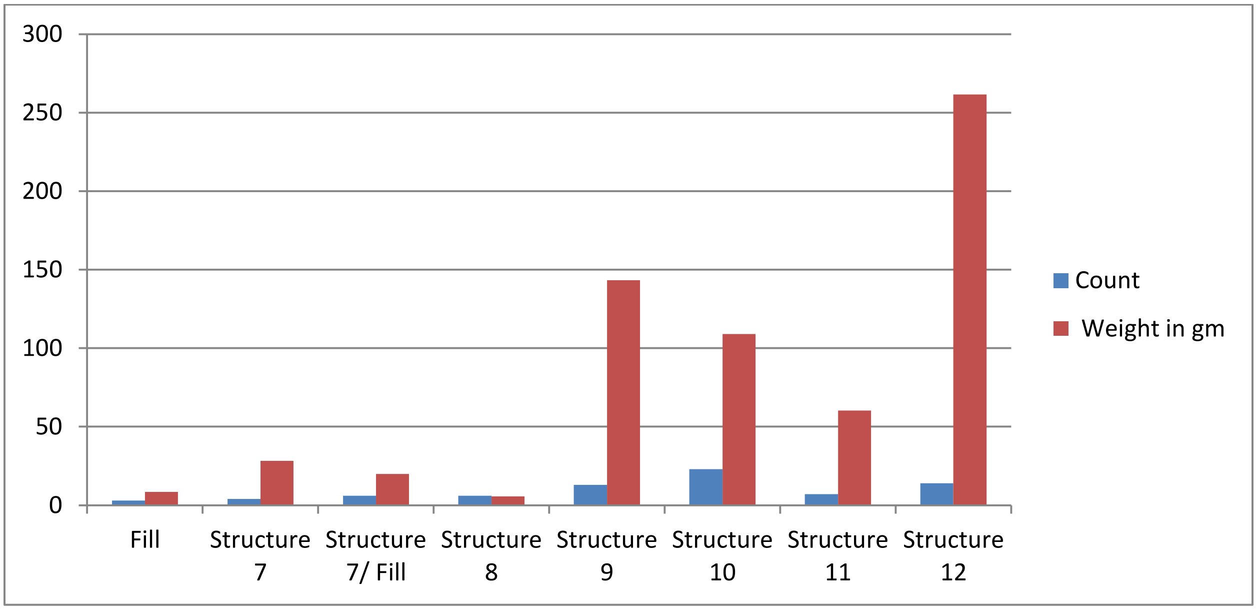


Figure 8.7 Count and Weights of Cores in Mound 2 by Structure

Of the lithic artifact types, debitage was the most abundant category. Debitage was identified as complete flakes, distal fragments, proximal fragments, medial fragments, angular debris, and indeterminate. Figure 8.8 is a graph showing the proportions of debitage types from Mound 2. Complete flakes were the most common type of debitage recovered followed by angular debris and proximal fragments. Medial and distal fragments account for a small percentage of the debitage from Mound 2. The distribution in debitage categories from Mound 2 as percentages is similar to Mound 1.

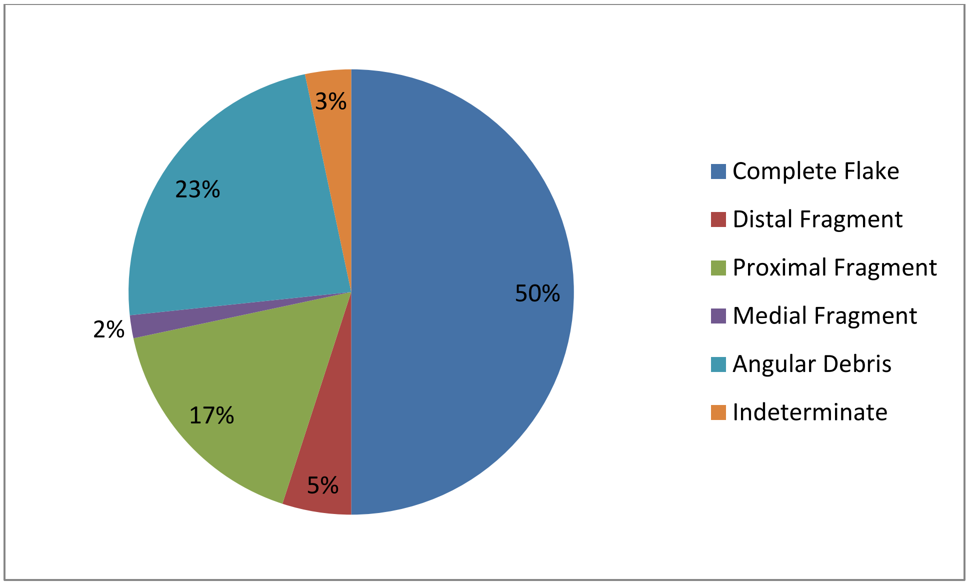


Figure 8.8 Distribution of Debitage Types Mound 2

Table 8.25 lists the mean metric qualities for weight and maximum dimension for the debitage types. As a whole, the debitage components from Mound 2 were small in mass. Complete flakes, proximal fragments, and angular debris have the largest mass on average. The average maximum dimension of debitage by type is similar to debitage from Mound 1. Complete flakes from both mounds were, on average, the same size, suggesting that the reduction process produced similarly sized flakes regardless of core size. However, this may be related to the orientation of the cleavage planes in quartz.

Table 8.25 Debitage Types and Metric Qualities

Debitage Type	Mean Weight in gm	Average of Maximum Dimension in mm
Complete Flake	2.3	20.0
Distal Fragment	0.3	9.2
Proximal Fragment	2.2	18.7
Medial Fragment	0.2	11.6
Angular Debris	2.3	16.8

Tools were recovered from Mound 1 in low frequencies (Table 8.26). The majority were informal tools including retouched and utilized flakes. One formal tool was recovered, a drill. The drill was produced from a quartz flake and unifacially retouched to create the projectile termination. With a small sample of tools from Mound 2, it is difficult to make generalizations about tool use in Mound 2.

Table 8.26 Tool Types from Mound 2

Tool Type	Raw Material	Weight in gm	Maximum Dimension in mm	Provenience
Drill	Quartz	.4	14.81	Structure 7
Retouched Flake	Quartz	1.6	21.65	Structure 11
Retouched Flake	Quartz	4.5	26.84	Structure 10
Utilized Flake	Quartz	1.6	17.61	Structure 7/ Fill

Similar to Mound 1, the lithic material recovered from Mound 2 indicates that the Kranka Dada Mound 2 inhabitants favored an expedient technological system. The common artifact type was complete flakes produced from multidirectional cores. Materials were transported to Kranka Dada structures as raw materials and reduced as needed to create flakes. Raw material was not used efficiently, and poor quality stone was most often acquired. The majority of artifacts do not show signs of use; quartz, however, may not show clear signs of short-term use or short-term reuse. While the chaîne opératoire of lithic reduction and tool production was similar between the mounds, the distribution of lithic types between Mound 2 structures was uneven. Figure 8.9 is a graph showing the lithic types recovered from the structures/ floors of Mound 2. Structure 10 has the highest proportion of flaked stone material and Structure 8 has the lowest.

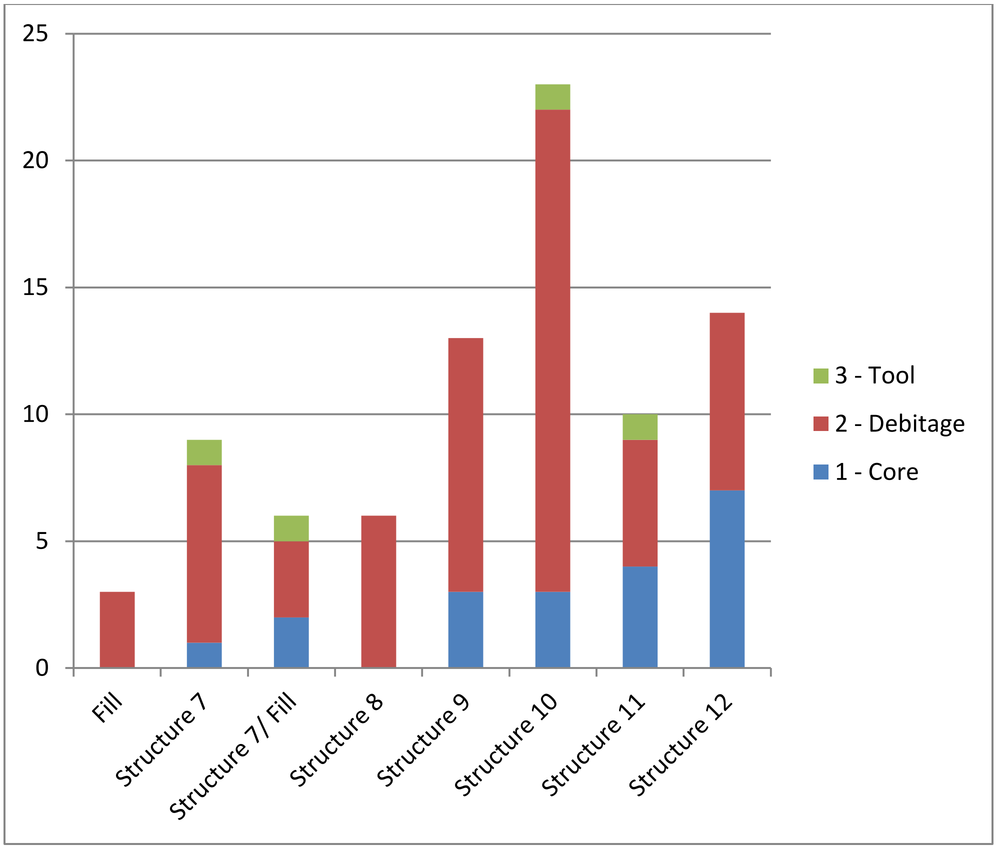


Figure 8.9 Summary of Lithic Types from Mound 2

Groundstone

A total of 41 pieces of groundstone were recovered from Mound 2 weighing 2914.9 grams (Table 8.27). When controlled for volume, Mound 2 had 202.4 grams of groundstone per cubic meter. Similar to Mound 1, the majority of groundstone recovered was fragmented with less than half of the tool observed.

Table 8.27 Groundstone Completeness Mound 2

Completeness	Count	Sum of Weight in Grams
Completeness	4	66.8
Less than Half	21	1239.2
More than Half	16	1608.9
Total	**41**	**2914.9**

Based on the edge of the ground surface, groundstone was used in a wider variety of contexts in Mound 2 than Mound 1 (Figure 8.10 and Table 8.28). The majority of tools were likely used in food production and processing activities, indicated by the high amount of convex and concave-shaped groundstone in both count and weight. However, concave shaped groundstone may be used in a variety of daily activities, and perhaps should not be strictly correlated with food production. Flat-shaped groundstone can be associated with multiple types of use abrasion, polishing, and grinding in food production, food processing, or craft manufacture. The flat abraders are difficult to assess in that the majority were highly fragmented. As such, the overall shape of the flat-shaped groundstone cannot be determined. This would have aided in a reconstruction of how the flat-shaped groundstone was used. One hexagonal-shaped groundstone was usual and may have been associated with some type of unknown paraphernalia of an indeterminate use. The abraded pebbles were likely associated with ceramic production, and may have been burnishing stones. As further support for this interpretation, two of the three abraded pebbles were recovered in near the ceramic production/firing feature. Similar to the database errors from Mound 1, the shape of three groundstone objects is unknown and cannot be assigned to a particular use class. One groundstone object with multiple worked edges suggests that groundstone was recycled or used for multiple purposes.

Table 8.28 Groundstone Shapes Mound 2

Shape	**Count**		**Sum of Weight in Grams**	
Convex	19	46.3%	1656.9	56.8%
Concave	9	22.0%	651.8	22.4%
Flat	5	12.2%	224.3	7.7%
Convex and concave (2 sides)	1	2.4%	77.4	2.7%
Hexagonal	1	2.4%	121.9	4.2%
Abraded Pebble/ Burnishing Stone?	3	7.3%	17.7	0.6%
Unknown*	3	7.3%	164.9	5.7%
Grand Total	**41**	100.0%	**2914.9**	100.0%

* Mistake with coded data, shape of groundstone edge cannot be determined

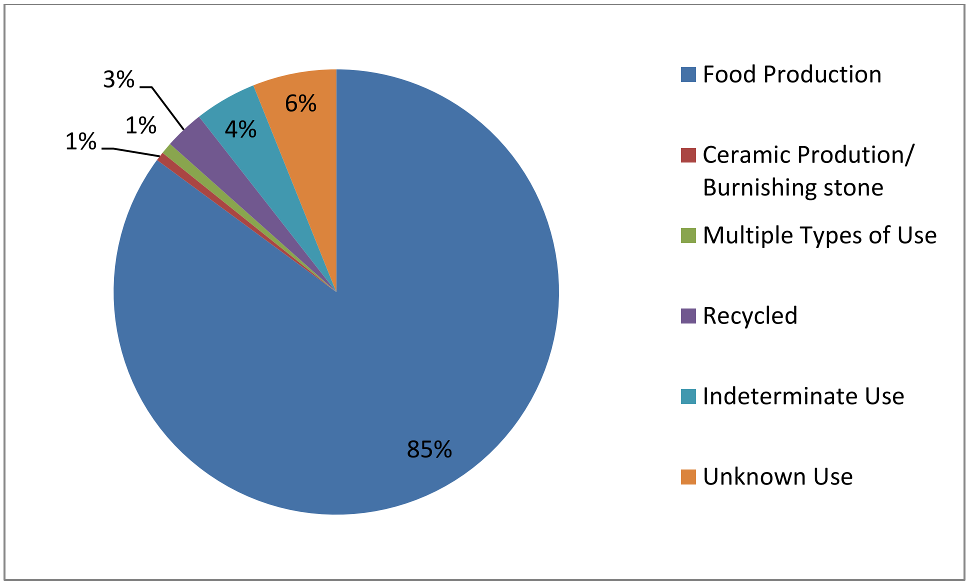


Figure 8.10 Types of Activities Associated with Mound 2 Groundstone

Table 8.29 and Figure 8.11 show the distribution of groundstone within the structures of Mound 2. On average, the structures of Mound 2 had a higher quantity of groundstone by weight than the structures of Mound 1 (μ 63 and σ 47.6). The majority of groundstone was recovered from primary contexts including Structures 9 and 12, unlike Mound 1 where groundstone was mainly recovered from fill or secondary contexts.

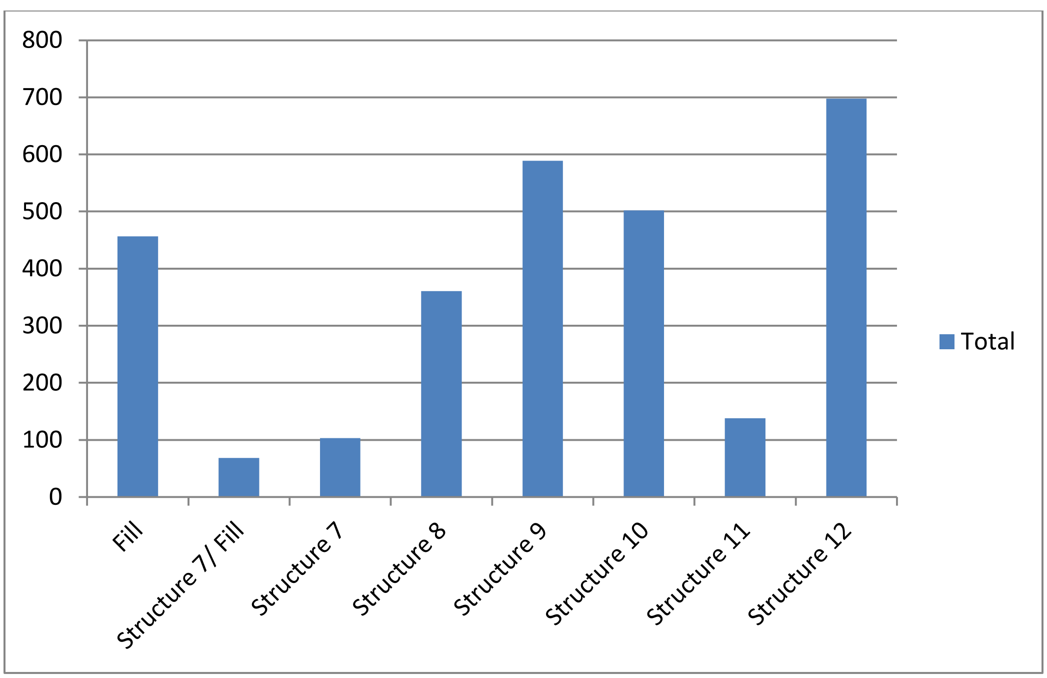


Figure 8.11 Distribution of Groundstone by Weight by Structure

Table 8.29 Distribution of Groundstone by Structure

Structure	Count	Sum of Weight in Grams
Fill	2	456.3
Structure 7/ Fill	1	68.5
Structure 7	5	103.1
Structure 8	4	360.6
Structure 9	9	588.7
Structure 10	7	502
Structure 11	3	137.8
Structure 12	10	697.9
Grand Total	**41**	**2914.9**

Metals

A total of 12 metal objects were recovered from Mound 2 accounting for 36.4% of the metal assemblage by frequency and 59.3% of the metal assemblage by weight. By weight, Mound 2 had the largest quantity of metals and metal by-products. Table 8.30 lists the types and quantities of metal objects. The 3 iron objects were highly corroded and fragmented, making it difficult to reliably identify the objects as specific types of tools or items of personal adornment.

The majority of metal objects are associated with Structure/Floor 10. AMS Date 2 from Structure 10 at the base of the ceramic production feature produced an absolute date of 1465 CE (1433-1497). Materials recovered from Structures 7 and 8 pre-dated European contact on the coast and materials from Structure 12 post-dates the opening of Atlantic markets.

Table 8.30 Metal Objects from Mound 2

Type	Material	Count	Weight in gm	Provenience
Circular fragment Jewelry—Bracelet?	Iron	1	8.37	Structure 12
Projectile	Iron	1	2.6	Structure 10
Indeterminate Fragment	Iron	1	.7	Structure 10
Smelting slag	Slag	6	128.8	1 from Structure 7 4 from Structure 8 1 from Structure 10
Smithing slag	Slag	1	4.9	Structure 9

The smelting and smithing slag indicates some level of iron production; however, no corroborating evidence (like tuyeres) was found. Smelting slag has been observed as a ceramic tempering agent; therefore the presence of slag may indicate local trade or exchange for raw materials rather than nearby iron production. There are widespread ethnographic observations in West Africa of potting wives and smelting/smithing husbands. It is possible that iron was smelted in locations outside the village, and slag was brought back by members of the same household or community for use in other domestic activities. Regardless of how the slag was deposited in Mound 2, the majority of metal objects recovered were associated with iron, food, and possibly ceramic production. Similar to Mound 1, overall quantities of metal objects recovered were low, especially of a site with an occupational span into the Late Iron Age. Low quantities of iron could indicate that metal objects, especially iron were conserved through reuse and recycling.

Small Finds

Only six small finds were recovered from Mound 2, accounting for 16.2% of the excavated small finds by count and 12.6% by weight (Table 8.31). Mound 2 had the lowest volume of small finds with .42 per cubic meter. Small finds were recovered from three structures/floors (8, 10, and 12). The types of small finds recovered differ slightly from Mound 1. No *nyame akuma*, bone beads, carved bone implements, or gold weights were recovered from Mound 2; however, a single sherd from a European salt-glazed ceramic vessel was recovered. All small finds were documented *in situ* or recovered from the screens; no small finds were recovered from the heavy fraction of flotation samples.

Table 8.31 Small Finds Mound 2

Structure	Count	Objects
Structure 8	1	Metal Ring/ Bead
Structure 10	3	Spindle Whorl Terracotta Rasp (2 total)
Structure 11	1	Ceramic Figurine
Structure 12	2	Salt-Glazed European Ceramic Folded Brass Rim

Two terracotta rasp fragments were recovered from Structure 10 (Table 8.32). Rasp 1 was much eroded, and as such use patterns could not be detected. Unlike the rasps from Mound 1, rasp 2 from Structure 10 was Watson's Type 3 (see Watson 2010: 153). This was the only Type 3 Rasp recovered (Figure 8.12).

Table 8.32 Rasps From Mound 2

Structure	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete
Structure 10 (1)	24.9	42.98	44.58	15.8	No
Structure 10 (2)	33.34	73.5	35.8	15.9	No
Mean	**29.12**	**58.24**	**40.19**	**15.85**	

Figure 8.12 Type 3 Rasp Structure 10

Three ceramic small finds were recovered from Mound 10 (Table 8.33). One spindle whorl fragment was recovered from Structure 10. A single fragment of a ceramic figurine was recovered from Structure 11. The object was produced from fired clay with small micaceous inclusions. Due to fragmentation, it is not possible to say much but it may be an appendage of an individual. No use wear is present on the figurine, and as such it cannot be determined how the object was used (as a toy or ritual object). One salt-glazed gray stoneware European sherd was recovered from Structure 12 (Figure 8.13). This sherd is likely a fragment of Rareen Stoneware, which is sometimes classified as

Westerwald Stoneware (Barber 1907). The vessels were made in Germany from the late 1500s through the 18th century. Small quantities of European ceramics, similar to the find at Kranka Dada, were recovered from Bono Manso and Begho. Two small sherds of German salt-glazed stoneware were recovered from Bono Manso and one from Tanoboase; they were identified as Westerwald Stoneware and likely dated to the early 18th century (Anquandah 1965:119; Effah-Gyamfi 1978: 358). Similar 16th-18th century German stoneware finds were recovered from Begho (Anquandah 1964: 75).

Table 8.33 Ceramic Small Finds Mound 2

Structure	Object	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete
Structure 10	Spindle Whorl	5	26.1	17.36	12.2	No
Structure 11	Ceramic Figurine	10.48	52.12	27.2	13.18	No
Structure 12	European Sherd	4.32	26.89	28.7	4.92	No

Figure 8.13 European Sherd

One folded and decorated brass rim was recovered from Structure 12 (Table 8.34 and Figure 8.14). The sherd was rather small, and it is not possible to calculate the diameter of the vessel from the rim. The brass rim is highly corroded and small, and it is not possible to examine the decoration on the rim beyond documenting small incisions without a discernible pattern. Copper sources are not native to Ghana but copper is an often-used ingredient in brass alloy production. Brass production was not a widespread activity in Ghana. Copper, and perhaps brass, smelting, smithing, and production may have occurred at Bono Manso and Begho (based on excavated crucibles). Brass and copper objects were highly valued and most likely imported through sub-Saharan and later European networks. For this reason, the brass rim is listed under small finds.

Table 8.34 Brass Rim Sherd Measurements

Structure	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete
Structure 12	1.54	25.7	7.59	3.33	No

Figure 8.14 Brass Rim

Shell

Only 1 shell fragment of a univalve was recovered from Mound 2 in Structure 10. Due to its small quantity, it will not be discussed in greater detail. No shell was recovered from the flotation or heavy fraction samples of Mound 2. The heavy fraction was sorted to provide some controls on artifacts lost through the screens.

Wealth and Status Differentiation

Ceramics

Problems with documenting wealth and status relationship from the ceramic assemblage from Mound 1 are similar to Mound 2. Everted rim jars dominated the Mound 2 assemblage and were used in a multitude of tasks from cooking to storage. The majority of vessels were without signs of alteration or use. Serving dishes and bowls were not observed in high frequencies from Mound 2. This could be a reflection of small sherds and open vessels forms having similar rims to closed vessel forms. It is sometimes difficult to distinguish between jars and bowls with everted rims and necks. It is also likely that organic materials like gourds were used as serving and drinking vessels.

Sherds definitively classified as imports using the same criteria as Mound 1 were recovered from Mound 2, but in low frequencies. Only 6 sherds (18.8%) with micaceous surface treatments were recovered that were similar to the "recurved rim" jars of the Banda region. It is possible that other vessels were imported, but the quantities cannot be determined macroscopically. Black burnished sherds were recovered in low frequencies in Mound 2 (n=29) accounting for 2.1% of the Mound 2 assemblage by frequency. Black burnished ceramics were mainly recovered from the upper structures (n=21) (Structures 10, 11, and 12), although low frequencies of black burnished sherds were recovered from Structures 7 and 9 (n=2). Radiometric dates from Mound 2 indicate that black burnished sherds pre-date 1600, which contradicts Posnansky's post-1600 claim. Black burnished ceramics recovered from Asantemanso pre-date 1600 (Shinnie 2005), and in Bono Manso Phase I deposits (Effah-Gyamfi 1985).

Maize cob roulette sherds were not recovered in high quantities from Mound 2 (n=14 compared to the 304 sherds from Mound 1). In spite of their low frequencies, their presence indicates some type of participation in exchange networks. Vastly different quantities of maize cob roulette sherds were recovered in Mound 2 than Mound 1, which supports the idea that early access to maize may have been somewhat restricted. Again, the presence of maize cob roulette ceramics does not necessarily mean that maize production was part of the agricultural activities of Kranka Dada. Maize cob ceramics could have been acquired via trade for supralocal sources.

In many ways, the ceramics from Mound 2 are similar to Mound 1 in that the majority of vessels were everted straight rim jars with straight lips followed by everted straight rim jars with rounded lips. However, not all of the deposits from Mound 2 were contemporaneous with Mound 1. Within contemporaneous stratigraphic deposits (Structures 11 and 12), the most common decorative technique was grooving with continuous incisions similar to Mound 1. Twist and maize cob roulette were among the most common in Mound 1, but largely absent in Mound 2.

The feature that was probably associated with ceramic production provides some information about household status, autonomy, and political economic linkages. Household- focused production increased, most likely prior to the opening of Atlantic markets. Opportunities for trade and increased interaction occurred in a systematic and prolonged manner with the expansion of sub-Saharan markets and trade diasporas. The ceramic production feature/ firing area may indicate that some households were able to ramp up household production of specific types of goods at the same time that regional and supralocal markets expanded into the area.

Faunal Remains

Using access to faunal remains as an indicator of wealth or status, Mound 2 inhabitants had less access to meat/animal resources than Mound 1, suggesting an lower status. In addition to presence/ absence, an examination at the utility of different animal parts can indicate status through access. Figure 8.15 shows the utility indices associated with skeletal elements controlled for the size class of animal. The majority of remains were associated with medium level utility index from medium size class animals. Low utility parts are mostly missing as well as many small sized animals. The sample size from Mound 2 is too small to conduct richness and evenness measures, and without more detailed taxa identification, a Shannon Diversity Index measure would be meaningless.

The paucity of faunal materials recovered from Mound 2 in conjunction with the ceramic production features suggests that inhabitants of Mound 2 did not heavily invest in animal husbandry. The narrow range of fauna and low frequency recovered may indicate that animal parts were being acquired as individual items on an infrequent basis.

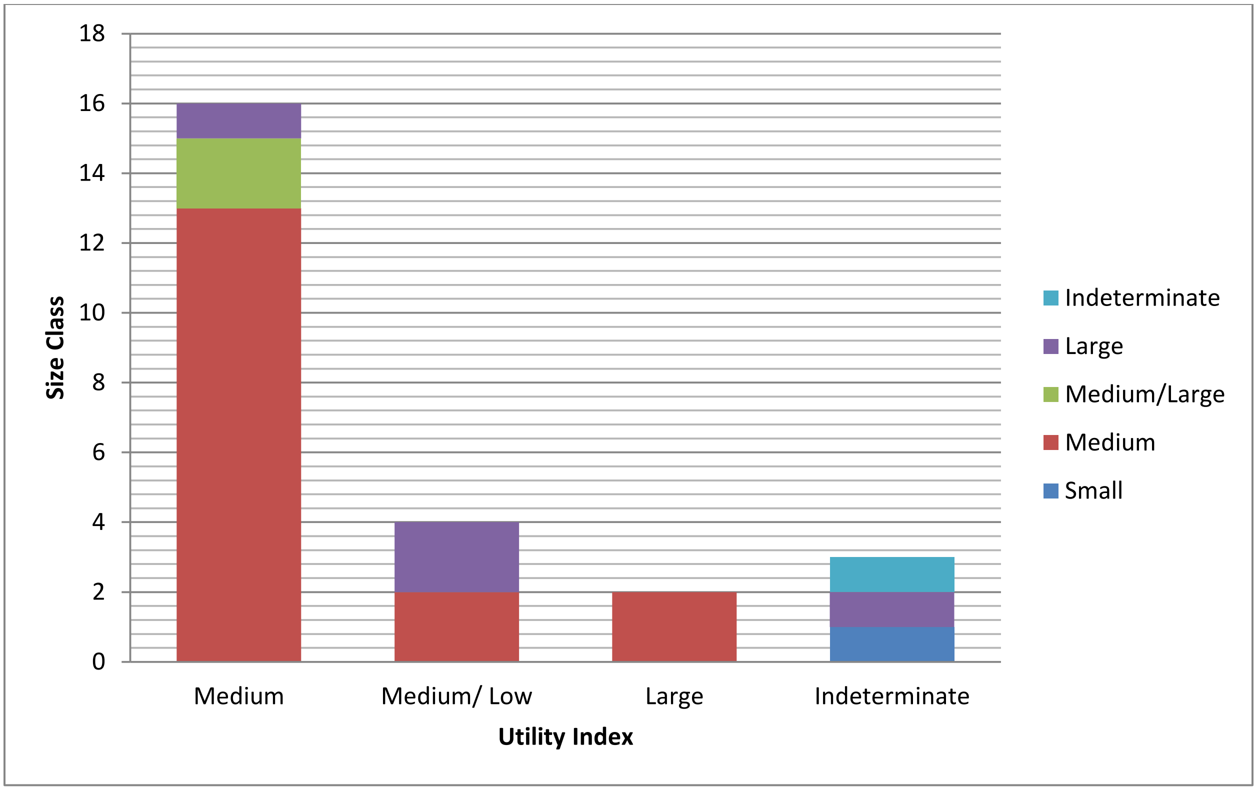


Figure 8.15 Utility Indices as Counts by Animal Size Class

Smoking Pipes

Only two smoking pipe fragments were recovered from Mound 2. Low frequencies of pipes prohibit much discussion on the wealth or status relationships signified by smoking pipes. Some access to smoking pipes existed, but not in the same quantities Mound 1. Smoking pipes were not expected in deposits that predated the Atlantic exchange era. The presence of smoking pipe fragments on the surface and Structure 12, may be better indicators of Atlantic era or post-1600 or 1650 occupation rather than interpreted as markers of wealth or status. In Structure 12 the smoking pipe fragment was recovered in addition to the German salt-glazed ceramic sherd suggesting a date for the structure as early as 1600/1650 to the early 18th century.

Lithics

Much of the groundstone was likely associated with food production and processing activities. The flaked stone lithic material includes cores, debitage, and tools that were created through expedient technological systems from locally available and poor quality stone materials. The reduction and production process between Mound 1 and

2 was similar. Materials were reduced on-site and very few tools were recovered. There was a significantly higher frequency of flaked stone artifacts recovered by volume in Mound 2 (44.2) compared to Mound 1 (13.4). Lithic artifacts including groundstone are not expected to correlate with household wealth or status, and an increase in lithic materials may in fact be negatively correlated with wealth and status.

The weight of groundstone by structure increases over time, but in a different pattern from the flaked stone. The majority of the groundstone was used in food production activities, and there was very little groundstone recovered from Structure 11 compared to the other later Structures (9, 10, and 12). Compared to the increases in flaked stone materials, the increase in all lithic types may indicate increases in inter-mound household specialization of different tasks. Wealth and status was likely earned and acquired through production beyond the needs of the household in Mound 2.

Metals

Metals and metal by-products recovered from Mound 2 were not as diverse as Mound 1; only slag and iron objects were recovered. The total quantity and weight of finished metal objects was lower than Mound 1, indicating that there was differential access to metals throughout the occupation of Kranka Dada. Mound 2 inhabitants had less access to metals than Mound 1. Because the majority of metal objects are associated with production and general household activities, they may not be good indicators of wealth or status. The possible bracelet (Figure 8.16) is the only metal artifact associated with status as it was used as an item of personal adornment.

Figure 8.16 Possible bracelet fragment

Small Finds

Few small finds were recovered from Mound 2. The breadth and quantity of objects recovered from Mound 2 differs from Mound 1 in that no groundstone celts or beads were recovered. Of the items recovered, some indicate access to new technology such as the spindle whorl. The fragment of the ceramic figurine indicates that symbolic representation as art were present. As the figurine object is an isolated occurrence and was recovered from a courtyard structure, it is difficult to interpret how it was used other than noting its presence in a domestic context. How it relates to wealth or status is unknown.

The German salt-glazed stoneware was recovered from Structure 12, the same structure with the brass rim sherd. European ceramics were much more abundant on the Gold Coast, although they have been recovered in low frequencies from interior sites (n=2 from Bono Manso). The salt-glazed pottery was likely acquired as an import and novelty. The blue colors that are part of Rareen and Westerwald stoneware would have been difficult colors to produce locally. The acquisition of the European vessel may have reflected the personal tastes of exotic goods acquired by disposable income. The brass is a more difficult material to interpret. The special powers of the Arabic-inscribed vessels have been previously discussed; however, the source of the brass is unknown, but could have been traded through either northern or coastal networks. Brass was used for a wide range of activities from magical objects that embody deities, *kuduo* vessels or gold-dust containers, figurative gold weights, and imported utilitarian objects. The small size of the brass object prohibits over-generalization about the significance of the artifact beyond its presence.

Conclusion

Mound 2 had a long occupational history. The earliest features and level predate the occupational sequence of Mound 1. Without more radiocarbon dates and a tighter chronological sequence, it is unknown if there were breaks in Mound 2 occupation. The partial structures, architectural feature, and floors of Mound 2 were probably domestic areas. The presence of two hearths in the same courtyards in Mound 2 may indicate that multiple households were occupying and using the same spaces, but maintaining different cooking areas. Patterns of debris accumulation around the hearths in the same courtyard were different. Both hearths were built up and used over time; however, one hearth area was meticulously cleaned and one was not.

Lower levels dating to the period of early sub-Saharan exchange or Bono Manso Phase I do not have much evidence for trade goods. In fact, the areas associated with early sub-Saharan exchange lack the high artifact densities. Faunal remains were largely absent from Mound 2, and not recovered in nearly the same frequencies as Mound 1. Faunal remains were largely absent from Bono Manso Phase I excavations, although Effah-Gyamfi did not document unidentifiable remains. It is possible that preservation bias accounts for this, and that the lack of faunal remains is due to acidic soils. It is also possible that animal products did not account for a large part of some diets during the early sub-Saharan exchange. Unlike Mound 1, domestic species were more common in Mound 2; however, Mound 2 sample sizes are very small. Skeletal elements recovered from Mound 2 were mainly crania and indeterminate limbs, which may indicate that animals were acquired as individual pieces or cuts of meat rather than whole animals.

A significantly higher amount of flaked stone artifacts were recovered from Mound 2 over Mound 1. Although the proportions were different, many elements of the technological system were the same. The main raw material used was quartz, and it was reduced in an expedient manner. The high proportion of cores from Mound 2 indicates that materials were reduced on site. Stone tools were an important part of daily life and technology. Stone technology was used alongside metal technology. Metals were largely absent from Mound 2. As previously mentioned, it is possible that metals were valuable objects that could be recycled—melted and cast into new objects. Thus, they would not enter the archaeological record in the same manner as discarded stone tools. If any evidence at Kranka Dada exists for metal production, it is within the early deposits. Smelting and smithing slag was recovered from partial structures/floors 7 through 10. No tuyeres were found, which would provide additional evidence for production. At the same time, slag was a material commonly used as a temper in ceramic production. Three iron objects and one brass rim were recovered from the upper levels that correspond to the Atlantic trade era, and metal imports into West Africa dramatically increased.

Some imports indicate participation in Atlantic exchange networks and access to New World crops including the fragment of Rareen stoneware, maize cob roulette pottery, and smoking pipe fragments. My interpretation is that the occupants of Mound 2 had little ability or interest in participating in the early sub-Saharan exchange networks. These changes occurred on the eve or at the very beginning of the Atlantic markets opening at 1465 (1433-1497) CE. There is evidence for production beyond the needs of the household with the ceramic production/ firing area. The ceramics recovered from the feature indicate that multiple people were involved in ceramic production. Some members of the production team were probably junior apprentices that were still learning how to make proper vessels. As production increased, so did access to trade goods most likely coming from the Atlantic Gold Coast.

Chapter 9 Mound 5

This chapter discusses the results of my excavation from Mound 5. Detailed information about archaeological strata is given including profile and plan view maps of the structures documented from Mound 5. I discuss how the structures within Mound 5 were constructed. Next, the artifacts recovered from Mound 5 are discussed in detail as they relate to categories of production, consumption, and status differentiation.

Architecture

Mound 5 was much smaller in volume than Mounds 1 and 2, thus a greater percentage of Mound 5 was excavated. I documented a total of 8 partial structures, floors, and features in Mound 5 (Table 9.1). There were 3 distinct episodes of construction within Mound 5. The lowest stratigraphic levels had small wattle-and-daub structures with circular-esque post alignments. The daub was more yellow and sandier than the daub in other mounds and upper levels of Mound 5. It is possible that some of the mid-level structures were circular storage facilities (possible granaries), drying racks, or another type of small architectural structure. The approximate spatial extent of the post-mold alignments was less than 2 m in diameter perhaps too small for a habitation structure. These structures were devoid of artifacts, making it difficult to evaluate how they were used. Mid-level deposits were small partial structures flanking a central courtyard/ activity area with a high quantity of trampled horizontally-oriented ceramics and groundstone.

The third construction episode, which consisted of two large pits, was dug into the mound. Aerated clay was located at the bottom of the pits. The pits varied in depth slightly, but were approximately 86-92 cm below datum. It is unknown if these were barrow pits used to procure clay or if they were uses as pits over a period of time. Within the pit deposits, there were thin lenses of clay and sand mixed with organic debris deposits that probably washed in during the rainy seasons. It may be that the deposits within the two pits indicated a refurbishment or application of the clay lining. Debris and refuse filled in the open pits, although artifact densities were not high. It is possible that the pits filled with debris slowly after the site was abandoned.

Table 9.1 Partial Structures/Floors from Mound 5

Structure	Units	Depth BD	Level	Architectural Features
13	N 1027 E1108 N 1029 E1108	100-109 cm	6-8	Post mold alignments, pit feature, yellowish daub concentrations
14	N 1025 E1110 N 1027 E1110	99-101 cm	6-8	Post mold alignments, groundstone celt buried in the middle of posts
15	N 1025 E1110 N 1027 E1110	79-91 cm	4-6	Post mold alignments, pools of mixed melted daub, clay, and eroding laterite pebbles
16	N 1029 E1108	94 cm	5	Post mold alignments, horn core used as post
17	N 1027 E1108 N 1029 E1108	71-84 cm	3-5	Structure and courtyard., post mold alignments, daub and clay concentrations, possible wall trenches, dark organic stains, horizontally-oriented artifacts
18	N 1025 E1110 N 1027 E1110	71-74 cm	3-4	Post mold alignments, Pools of melted daub and mixed clay, possible interior wall trenches (very thin and ephemeral)
19	N 1025 E1110 N 1027 E1110	58-70 cm	2-3	Pools of melted daub and mixed clay, post mold alignments, disarticulated laterite alignments, horizontally-oriented artifacts within a courtyard
20	N 1029 E1108	65 cm	2	Top of two pit features with a possible clay lining

Chronology

Two accelerated mass spectrometry radiocarbon dates were obtained from Mound 5 (Table 9.2). AMS Date 3 was obtained from the base of Level 3 Feature 1. The feature was an artifact cluster of horizontally oriented ceramic sherds and groundstone placed on a floor (Figure 9.1). AMS Date 3 was selected as it represented the third construction episode from Mound 5. Structure 17 and Structure 18 were likely contemporaneous. Relative dates can be obtained from Structures 19 and 20 (stratigraphically above Structures 17 and 18) based on the presence of smoking pipes fragments, twist roulette sherds, and maize cob roulette sherd. AMS Date 4 was obtained from the base of Structure 14, one of the probable granary structures (Figure 9.2). Mound 5 was likely entirely contemporaneous with Mound 2 while only the upper levels of Mound 5 were contemporaneous with Mound 1.

Table 9.2 AMS Dates Mound 5

AMS Date	Material	Level	Context	Date (calibrated)
3	Charcoal	3	Base Feature 1, Structure 17	421 ±38 1529 (1491-1567)
4	Charcoal	7	Base of Structure 14	595 ±32 1355 (1323-1387)

Figure 9.1 Context of AMS Date 3

Figure 9.2 Post-Mold Alignments from Structure 14; Context AMS Date 4 (artifacts removed)

Production and Consumption

Ceramics

Mound 5 had a much lower volume of ceramics by count and weight than Mounds 1 and 2. Sherds were the most abundant artifact recovered from Mound 5, and they accounted for 13.4% of the analyzed sherd assemblage. When controlled for volume, 61.6 analyzed sherds were recovered per cubic meter (compared to 169.6 and 101.2 from Mounds 1 and 2 respectively), and .79 kg of analyzed sherds were recovered per cubic meter (compared to 1.6 and 1.7 from Mounds 1 and 2).

Table 9.3 lists the counts and weights of ceramics analyzed by structure. Sherds were differentially distributed among the Mound 5 structures with Structures 17-20 having the bulk of the ceramics. This pattern is similar to the differential distribution of ceramics from Mound 2. As an alternative, the lack of ceramics from Structures 13-16 may be related to function; these were likely storage features rather than residences or houses.

Table 9.3 Ceramic Count and Weight by Structure

Structure/ Floor	Count		Weight in kg	
Fill	267	40.6%	29	36.53%
Structure 13	5	0.8%	0.43	0.54%
Structure 14	2	0.3%	0.09	0.11%
Structure 15	24	3.6%	2.6	3.33%
Structure 16	2	0.3%	0.2	0.25%
Structure 17	66	10.0%	8.1	10.27%
Structure 18	46	7.0%	6.2	7.82%
Structure 19	187	28.4%	23.6	29.74%
Structure 20	59	9.0%	9.05	11.41%
Total	**658**	**100.0%**	28.98	**100.00%**
Mean	**73.1**		**8.8**	

Table 9.4 lists the types of sherds recovered from Mound 5 that compose the analyzed assemblage. The majority of ceramics was rims and decorated body sherds. Lids and bases were not recovered. Mean sherd weight from Mound 5 was 12.1 grams; this value falls in between mean sherd weight in Mounds 1 and 2. The small size of sherds from Mound 5 makes it difficult to do an analysis of production and consumption activities, which was one of the main goals of this study.

Table 9.4 Sherd Types Mound 5

Type	Count	Percentage
Body	282	40.9%
Rim	362	52.5%
Base	0	0.0%
Neck	24	3.5%
Carination	20	2.9%
Lid	0	0.0%
Indeterminate	2	0.3%
Total	**690**	**100.0%**

Table 9.5 lists the types of interior damage by vessel part. The majority of sherds were too small to demonstrate use wear. No interior damage was observed on 29.5% of the sherds from Mound 5. Similar to the sherds in other mounds, interior burning was the most common form of damage to vessel interiors. Pitting, diagnostic of alcohol storage,

was observed in low frequencies. Cooking and food preparation damage documented through striations and patchy abrasions were observed in low frequencies. The use and alteration pattern of the Mound 5 ceramics indicated that 33.5% of vessels had exterior soot indicating their use in fire and in activities associated with cooking. Interior charring, most likely associated with boiling and food preparation were present in 25% of sherds.

Table 9.5 Vessel Interior Damage on Sherds from Mound 5

Row Labels	No Damage	Eroded	Striations	Pitted	Patchy Abrasions	Hole	Burned	Indeterminate/ Not enough of Rim	Total
Body	151	30	14	3	2	3	60	6	269
Rim	16	2	3	1	1	7	20	298	348
Neck	15					1	3	2	21
Carination	10	1		1		1	5		18
Indeterminate	2								2
Total	**194**	**33**	**17**	**5**	**3**	**12**	**88**	**306**	**658**

Table 9.6 lists the counts of decorated and undecorated sherds. The most common sherd types analyzed are formally decorated body sherds and undecorated rims. Informally decorated ceramics were recovered in Mound 5; they account for approximately 6% of the analyzed assemblage (compared to 1% from Mound 1 and 10% from Mound 2).

Table 9.6 Decorated and Undecorated Sherds from Mound 5

Body Part	No Decoration	Informal Decoration	Formal Decoration	Total
Body	4	31	234	269
Rim	306	6	36	348
Neck	1	2	18	21
Carination	1		17	18
Indeterminate			2	2
Total	**312**	**39**	**307**	**658**

In Mound 5, I found a total of 20 decorative motifs. Table 9.7 lists the most common decorative motifs as well as the most common motifs. Grooving/ continuous incisions was the most common, and occurred with a frequency similar to Mound 2. Dentate stamping was common, usually in the form of rectangles, arches, or triangles. Twist roulette, unidentified roulette (likely eroded twist), and maize cob roulette were among the most common decorative forms found in Mound 1; they were recovered from Mound 5 in low frequencies. Twist roulette and maize cob roulette sherds were exclusively recovered from the upper levels of Mound 5, indicating some contemporaneous occupation with the upper levels of Mound 2 and all of Mound 1.

Table 9.7 Decorative Motifs Mound 5

Decorative Motifs	**Count**	**Percentage**
Groove/ Continuous Incisions	214	61.7%
Twist Roulette	9	2.6%
Unidentified Roulette	8	2.3%
Maize Cob Roulette	1	0.3%
Composite: Unidentified Roulette and Continuous Incision	4	1.2%
Dentate Stamped Rectangles	16	4.6%
Arch Dentate	11	3.2%
Circle Dentate	11	3.2%
Composite: Dentate Triangles and Continuous Incisions	18	5.2%
Composite: Arch Dentate and Continuous Incisions	12	3.5%
Other	43	12.4%
Total	**347**	100.0%

Table 9.8 lists the surface treatments from Mound 5 sherds. Similar to Mounds 1 and 2, the majority of sherds from Mound 5 were hand-smoothed only with no other surface treatment applied. Red paint and brown paint were the most common surface treatments, and occurred in similar frequencies to Mound 2. Mica paint accounts for 2.9% of the surface treatments in Mound 5, which are found in Mound 2 in similar frequencies. Mica paint is largely absent from Mound 1. Black burnished sherds were largely absent from Mound 5, although they were recovered from Mounds 1 and 2 in higher proportions. A Chi-Square test comparing the most common surface treatments (yellow and combination red/mica paint excluded) to the most common decorative treatments failed to produce significant results (χ^2 26.190 at a significance level$_{\alpha.05}$ of .095). Surface treatments vary with decorative motifs.

Table 9.8 Surface Treatments Mound 5

Surface Treatment	**Count**	
No Treatment/ Hand-Smoothed Only	558	85.6%
Red Paint	41	6.3%
Brown Paint	29	4.4%
Yellow Paint	1	0.2%
Black Paint/ Burnished	2	0.3%
Mica Paint	19	2.9%
Red and Mica Paint	2	0.3%
Total	**652**	100.0%

Rims

A total of 348 rims were recovered from Mound 5 in 19 different styles (Table 9.9). Of the 19 different styles, six were the most abundant: straight, round, everted straight rim with a rounded lip, everted straight rim with a straight lip, T-shaped, and triangular. Everted rims with straight lips were the most common type in each mound. The triangular shaped rim was mainly found in Mound 5, although a small number was recovered from Mound 2. It is possible that straight and rounded rims are fragmented pieces of other everted rim types, and thus not discussed in detail below.

Table 9.9 Rim Shapes Mound 5

Rim Types	**Count**	**Percentage**
Straight	26	7.4%
Horizontal	7	2.0%
Everted Straight Rim Round Lip	62	17.8%
Rounded	14	4.0%
Everted Straight Rim Straight Lip	160	45.8%
T-shaped	17	4.9%
Everted Tapered and Straight Lip	9	2.6%
Triangular	15	4.3%
Other	38	11.2%
Total	348	100.0%

Everted Straight Rims with Straight Lips

This rim type is the most common accounting for 45.8% of the Mound 5 rim assemblage. This type of rim was recovered from every structure in Mound 5 except for

Structure 14, which had the smallest sample of sherds. Similar to the same rim types from Mounds 1 and 2, rim diameter is normally distributed with a mean of 20 cm (σ 3.8). Body thickness varies from 4-14 mm in a normal distribution with a mean of 7 mm (σ 1.9). Lip/ rim thickness has a mean of 5.67 mm (σ 2.4), but the distribution is skewed to the right. The interior angle of the everted rim varies from 90 to 160 degrees with the majority of rims falling from 130 to 110 degrees. The majority of rims were not decorated (83.8%), but scalloping (1.9%), swag (11.9%), and incising (2.5%) were present. Most rims had no mica inclusions (93%), but some small mica inclusions were observed (7%). Ninety-four percent of rims had only hand-smoothed finished, although red paint (2.5%) and brown paint (1.3%) was observed. Most rims were too small to observe body decoration or interior use wear damage. No determination of body decoration could be made of 94% of the rims. Of the sherds with visible decoration, grooved/ continuous incisions (5.6%) were the main motif present. Interior use wear could not be documented on 88.7% of the rims due to their small size. No damage (2.5%), holes (4.3%), and burn marks (3.8%) was visible on the remaining rims. Exterior soot was present on 33.8% and absent on 65.6%. Abrasions were present on 65% of the everted straight rims with straight lip sherds.

Everted Straight Rims with Rounded Lips

Similar to Mound 1 and 2, everted straight rim vessels with rounded lips were the second most common type of rim sherd from Mound 5. Rim diameter was normally distributed with a mean of 21 cm (σ 4.6). There are a few outliers, i.e. large vessels of this type that are greater than 35 cm. Body thickness is variable with most values falling from 5-15mm with a mean of 8 mm (σ2.2). Unlike the previous regression which showed no association between rim diameter and vessel thickness, the regression examining everted straight rims with rounded lips shows a positive association between diameter and thickness (R^2 .264). Lip/rim thickness has a stepped and right tailed distribution with a mean of 6 mm (σ2.4). Most rims were not decorated (93.5%) although some were scalloped (3.2%) or red/ brown paint applied to the rim only (3.2%). Most rims had no mica inclusions (88.7%), but some had small mica inclusions (11.3%). No large mica inclusions were observed. Seventy-seven percent of rims had only hand-smoothed finished, although red paint (14.6%) and brown paint (9.6%) were observed. Most rims were too fragmented to document the presence or type of body decoration (98.4%), but a composite design with dentate stamped circles and continuous incisions were observed (1.6%). Interior damage created through use could not be recorded on 91.9% of rims. No damage was observed on 6.4% and interior charring was observed on 1.6%. No soot was observed on the majority of sherds (87%), but a small quantity had exterior thermal damage (12.9%). The interior angle of the everted rim varies from100 to 160 degrees with the majority of rims falling from 120 to 150 degrees. Lip/rim abrasions were observed on 46.8% of the sherds indicating that they had been stored upside down during their use.

T-Shaped

T-shaped rims account for 4.9% of the rims from Mound 5. They are unevenly distributed in Mound 5, and found in Structures 15, 17, 19, and 20, associated with the second and third construction episodes. -shaped rim diameter varies from 18-25 cm, but has a mean of 21 cm (σ 2.2). Body thickness varies from 4-8.5 mm with a mean of 6mm (σ1.3). Similar to the T-shaped rims in Mound 2, a regression between rim diameter and body thickness shows a slight negative correlation (R2 6.739E -4). As T-shaped rim vessels become larger, the body walls were thinner. The lip/ rim thickness varies is a small, medium, and large fashion but has a mean of 8.3 mm (σ 2). Small T-shaped rims were 5-6 mm, medium were 7-9 mm, and large were 10 mm and above. T-shaped rims were either not decorated (11.8%) or had swags with deep relief (88.2%). Most rims had no mica inclusions (88.2%), but small micaceous inclusions were observed on 11.8% of the rims. No large mica inclusions were observed. Most T-shaped rims had no surface treatment other than being hand-smoothed (94.1%); unfired slip was also used (5.9%). Most rims were too fragmented to document the presence or type of body decoration motifs (94.1%), but a grooved/ continuously incised design was observed (5.9%). Interior damage created through use could not be recorded on 94.1% of rims, and no damage was observed on the remaining 5.9%. Exterior soot was present on 58.8% of sherds, indicating their presence in a fire. Lip/ rim abrasions were present on 70.5%, not present on 17.6%, and too eroded to tell on 11.7% of rims.

Triangular

Triangular rims account for 4.3% of the rims from Mound 5. They were unevenly distributed between structures, found only in Structures 15, 17, and 19. Rim diameters varied from 15 to 28 cm, with a mean of 19 cm (σ 3.8). Body thickness was normally distributed with a mean of 7.4 mm (σ1.8). There is a slight positive correlation between rim diameter and body thickness (R2 .083). Lip/ rim thickness varies from 2-6 mm with a mean of 4.8 mm (σ1.7). No triangular rims had any form of decoration. Most rims had no mica inclusions (93.3%); small mica inclusions were observed on 6.7% of the triangular rims. No large mica inclusions were observed. Most triangular rims had no surface treatment other than being hand-smoothed (93.3%), but some had red paint (6.7%). Most rims were too fragmented to see use wear or interior damage (73.3%). Charred interior marks were present on 20%, while 6.7% showed no damage (6.7%). Fifty-three percent of the triangular rims had no evidence of thermal alteration such as exterior soot and 40% were thermally altered with the remaining 6.7% burned completely. Rim abrasions were present on 60% of triangular rims.

Table 9.10 Summary Metrics on Rim Types From Mound 5

Rim Type	Mean Diameter	Body Thickness	Rim/Lip Thickness	Interior Angle (Everted Rims)
Everted Straight Rims with Straight Lips	20 cm (σ 3.8)	7 mm (σ 1.9)	5.7 mm (σ 2.4)	110-130
Everted Straight Rims with Rounded Lips	21 cm (σ 4.6)	8 mm (σ2.2)	6 mm (σ2.4)	120-150
T-Shaped	21 cm (σ 2.2)	6mm (σ1.3)	8 mm (σ1.4)	120-150
Triangular	19 cm (σ 3.8)	7.4 mm (σ1.8)	4.8 mm (σ1.7)	

Decorated Body Sherds

Some decorative motifs and surface treatments co-occur. Table 9.11 lists only the most common decorative motifs and their surface treatments as percentages, and Table 9.12 as counts. Hand-smoothed/ no surface treatments were common across all decorative motifs. A Chi-square test failed to produce significant results (χ^2 23.876 at a significance level$_{\alpha.05}$ .067); however, these results are not significant. This pattern is similar to Mound 1 and Mound 2 regardless of chronological association.

Table 9.11 Most Common Decorative Motifs with Surface Treatment as Percentages

Decorative Motifs	**Hand-Smoothed Only**	**Red Paint**	**Brown Paint**	**Mica Paint**	**Total**
Groove/ Continuous Incisions	64.7%	2.9%	5.0%	3.2%	75.9%
Dentate Stamped Rectangles	4.0%	1.1%	0.0%	0.4%	5.4%
Dentate Stamped Arches	2.5%	0.4%	0.4%	0.7%	4.0%
Dentate Stamped Circles	3.6%	0.0%	0.0%	0.4%	4.0%
Composite: Dentate Triangles and Continuous Incisions	6.5%	0.0%	0.0%	0.0%	6.5%
Composite: Arch Dentate and Continuous Incisions	3.6%	0.0%	0.7%	0.0%	4.3%
Total	**84.9%**	**4.3%**	**6.1%**	**4.7%**	**100.0%**

Table 9.12 Most Common Decorative Motifs with Surface Treatment as Counts

Decorative Motifs	**Hand-Smoothed Only**	**Red Paint**	**Brown Paint**	**Mica Paint**	**Total**
Groove/ Continuous Incisions	180	8	14	9	211
Dentate Stamped Rectangles	11	3		1	15
Dentate Stamped Arches	7	1	1	2	11
Dentate Stamped Circles	10			1	11
Composite: Dentate Triangles and Continuous Incisions	18				18
Composite: Arch Dentate and Continuous Incisions	10		2		12
Total	**236**	**12**	**17**	**13**	**278**

Table 9.13 the mica presence within the paste of sherds with the most common decorative motifs. Large mica inclusions within ceramics of Mound 2 are rare and largely restricted to grooved and continuously incised sherds. Mica presence with dentate stamped rectangles was from non-local sherds from perhaps the Banda area or in the greater Volta Basin. Mound 5 sherds are without a mica presence in 89% of the cases, similar to the 85% from Mound 2 (but Mound 1 was much lower at 69%).

Table 9.13 Mica Presence by Decorative Motifs

Decorative Motifs	No Mica	Small Mica	Large Mica	Total
Groove/ Continuous Incisions	195	16	3	214
Dentate Stamped Rectangles	10	4	2	16
Dentate Stamped Arches	11			11
Dentate Stamped Circles	11			11
Composite: Dentate Triangles and Continuous Incisions	17	1		18
Composite: Arch Dentate and Continuous Incisions	7	3	2	12
Total	**251**	**24**	**7**	**282**

Bases and Lids

I found neither bases nor l from Mound 5.

Faunal Remains

A much smaller quantity of faunal remains was recovered from Mound 2 totaling 1.2% of the faunal assemblage from the site by count and 6.9% by weight. When controlled for volume, .5 bones per cubic meter were recovered which is significantly less than the density of 27.4 bones per cubic meter in Mound 1. Similar to Mound 1, much of the faunal assemblage was highly fragmented making it difficult to identify remains beyond phylum or class. Small sample sizes and fragmentary remains make analysis difficult. All of the remains from Mound 5 were from mammals. Only 2 bones were identifiable to family, and the rest were from indeterminate families. The NISP for Mound 5 is 6. Of the remains that could be identified, Bovidae is the most common taxa, accounting for 33.3% of the Mound 5 assemblage (Table 9.14). However, the total sample recovered from Mound 5 is small and much of it was from indeterminate taxa, making inferences about its composition not very meaningful.

Table 9.14 Faunal Remains by Family Mound 5

Family	Count	
Bovidae	2	33.3%
Indeterminate	4	66.6%
Total	**6**	**100%**

The bones recovered were evenly distributed between small, medium, and large animal size classes (2 bones from each class). The earliest deposits in Mound 5 date to 1355 ±32 (AMS Date 4). The lack of small bones may be due to the taphonomic factors and weathering biasing preservation. Figure 9.3 shows the distribution of bone by animal size class in terms of counts and weights.

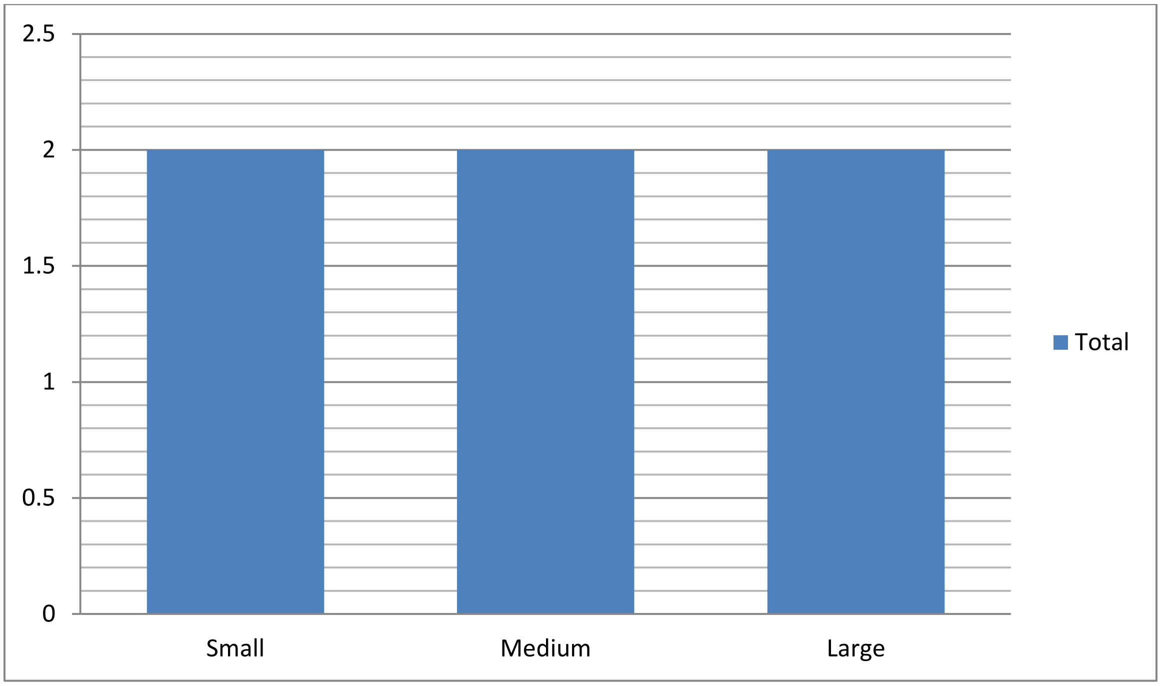


Figure 9.3 Distribution of Counts and Weights of Faunal Remains from Mound 5 by Size Class

Due to fragmentation, domesticated or wild status cannot be determined for the majority of remains. Table 9.15 lists the wild or domesticated status of animals recovered. Small sample sizes similarly affect my ability to make meaningful generalizations about the utilization of animals and use of animal husbandry as viable economic activities as part of daily lives and the domestic economy of Mound 5 inhabitants.

Table 9.15 Wild vs. Domesticated Fauna

Status	**Count**	
Wild	1	16.67%
Domesticated	0	0.00%
Indeterminate	5	83.33%
Total	6	100.00%

Table 9.16 lists the skeletal elements recovered from Mound 5. Fractured indeterminate limb bones accounted for half of the Mound 5 faunal. Two horn cores were recovered, and it is likely that they are from the same animal. The main body of the horn core was embedded into Structure 17 and surrounded by postmolds (Figure 9.4). The horn core was incorporated into the structure as an architectural element.

Table 9.16 Skeletal Elements from Mound 5

Skeletal Element	Count	
Indeterminate Limb	3	50%
Horn Core	2	33.3%
Indeterminate	1	16.7%
Total	6	100%

Figure 9.4 Horn Core from Mound 5's N 1029 E1108 Level 4 Feature 1

No animal bone was recovered from half of the structures in Mound 5; Structures 13-16 had no bone. Figure 9.5 shows the skeletal elements recovered by structure in Mound 5. An ANOVA test indicates that there are no significant differences in the distribution of skeletal elements by structure (F-statistic .148 at a significance level$_{\alpha.05}$ l

.940); however, sample size is small making this statistic not the most meaningful. Post-hoc tests could not be performed due to low sample sizes.

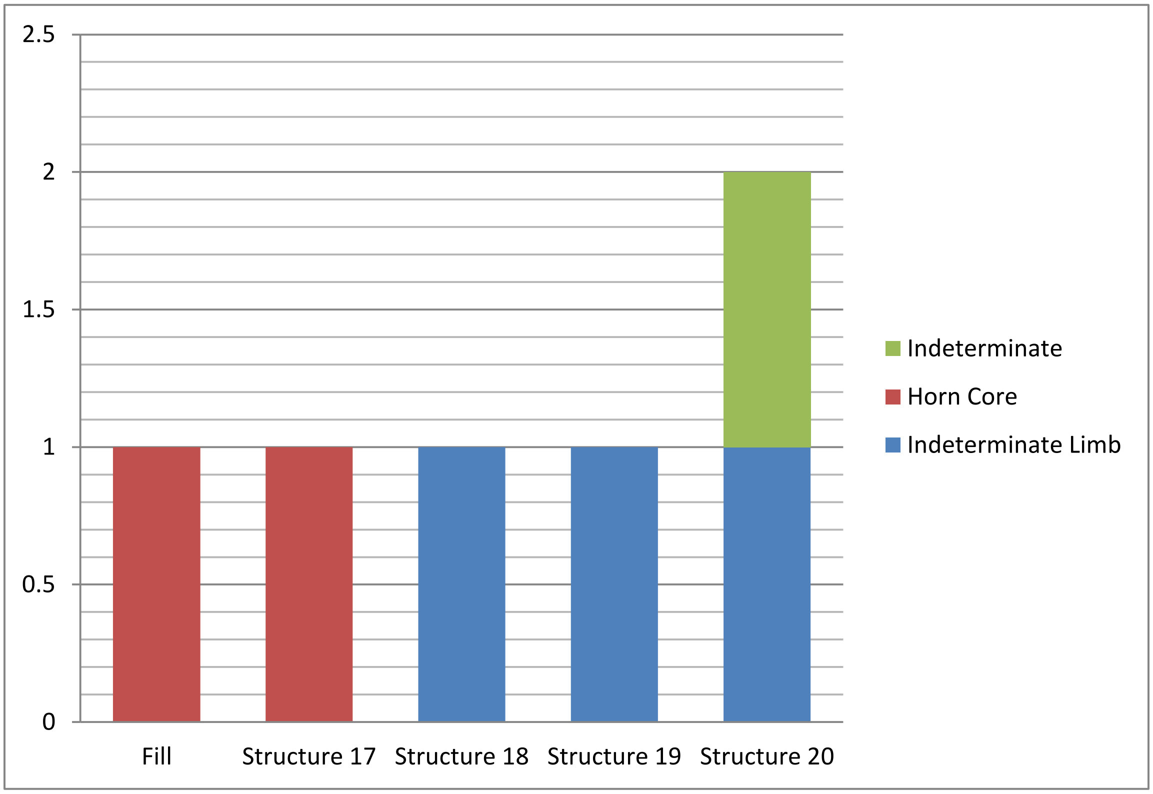


Figure 9.5 Skeletal Elements by Partial Structure/ Floor

Table 9.17 lists the bone from Mound 5 that was processed for marrow, butchered, or burned. It is difficult to generalize from a small sample. Two of the bones were likely from the same horn core and not used to extract marrow. No visible signs of butchery, burning, and/or marrow processing were observed in the faunal remains from Mound 5.

Table 9.17 Marrow Processing, Butchering, and Burning from Mound 5

Processed for Marrow	Count		Butchered	Count		Burned	Count	
Marrow Processing	0	0%	Butchered	0	0%	Burned	0	0%
No Marrow Processing	6	100%	Not Butchered	6	100%	Not Burned	6	100%
Total	6	100%		6	100%		6	100%

Smoking Pipes

Smoking pipes were differentially distributed in the mounds of Kranka Dada. Only 2 smoking pipe fragments were recovered from Mound 5 (Table 8.18). Sample sizes of smoking pipes from Mound 5 are small; however, the contexts from which materials were recovered are consistent with the upper level deposits in Mound 2 and Mound1.

Table 9.18 Smoking Pipes from Mound 5

Typology	Sherd Type	Dates	Count	Structure	BD
Unknown	Bowl	Post-1600	1	Structure 19	58-70 cm
Unknown	Bowl	Post-1600	1	Fill above Structure 20	46-55 cm

The smoking pipe fragment recovered from Structure 19 was decorated with low-relief crisscross incisions. The decoration is only around the rim. It has a 7 cm diameter with a flat everted rim style. The bowl is 4.6 mm thick. The interior of the bowl has been thermally altered and burned through use. The fragment of the smoking pipe recovered from the fill above Structure 20 was decorated with low-relief linear vertical bands. The shape of the lip was an inverted L-shape. The bowl is 7 mm thick. No burn marks or signs of thermal alteration were present on the interior of this pipe bowl fragment. No mica inclusions were present in either pipe fragment. Due to their fragmentary nature, it is not possible to assign either pipe to the Ozanne typology or any pipe typology from Ghana. It is likely that these pipes date to at least after 1600 or Bono Manso Phase III.

Flaked Stone

Mound 5 has the largest proportion of lithic material of the site, accounting for a frequency (46.9%) and weight (68.7%) of the total lithic assemblage. When controlled for frequency by unit volume, the lithic concentration is 12.7 pieces per cubic meter, which is a concentration double that of Mounds 1 and 2. When controlled for weight by unit volume, the lithic concentration is 68.7 grams per cubic meter, which is a concentration more than Mounds 1 and 2 combined. Table 9.19 reviews the counts and weights of lithic artifacts recovered from Mound 5.

Table 9.19 Lithic Artifacts from Mound 5

Mound	Core		Debitage		Tool		Total	
5 (count)	34	10.6%	102	31.6%	7	2.2%	143	44.3%
5 (weight)	400.98	24.5%	233.4	14.2%	135.4	8.3%	769.78	47.0%

By count, debitage was the most abundant lithic category, and by weight cores were the most abundant artifact. **Error! Reference source not found.** lists the counts and weights of cores, debitage, and tools from Mound 2 as a proportion of the total lithic assemblage. Mound 5 is similar to Mound 2 in terms of the proportions and ratios of core, debitage, to tools in count. Table 9.20 lists the lithic artifact types by raw material. Similar to Mounds 1 and 2, quartz was the most common raw material type in Mound 5. Low frequencies of granite and other/ unknown raw materials were recovered, but in the same small quantities as Mound 1 and 2.

Table 9.20 Lithic Artifact Types by Raw Material from Mound 5

Raw Material	Core Count	Core Weight	Debitage Count	Debitage Weight	Tool Count	Tool Weight	Total Count	Total Weight
Quartz	33	335.3	98	212.7	4	9.4	135	557.4
Granite	0		1	6.7			1	6.7
Other	1	65.68	2	14	3	126	6	205.68
Total	34	400.98	101	233.4	7	135.4	142	769.78

Mound 5 had the greatest diversity of core types, with bifacial cores, multidirectional cores, unidirectional cores, and tested cobble recovered (Figure 9.6). However bifacial and unidirectional cores were observed in low frequencies. Multidirectional cores made from quartz are the most abundant in each of the mounds excavated. Similar to Mound 2, multidirectional quartz cores were distributed by weight in a right tailed skewed pattern with some outliers (μ 12.6 grams and σ 18.4). Some of the cores were used to the point of exhaustion, while some were not. Both complete and fragmented cores had a cortical presence. This suggests that complete or nearly complete raw material packages were transported to Kranka Dada and reduced on site, a pattern corroborated by the presence of cortex of tested cobbles. Table 9.21 lists the cores and their attributes recovered from Mound 5.

Table 9.21 Types of Cores and Core Attributes Mound 5

Core Type	Raw Material	Weight in grams	Maximum Dimension	Cortex	Complete	Provenience
Biface	Unknown	65.68	65.67	Absent	Fragment	Structure 13
Multidirectional	Quartz	5	20.91	Present	Fragment	Structure 19
Multidirectional	Quartz	15.2	32.83	Present	Complete	Fill
Multidirectional	Quartz	1.3	15.2	Present	Complete	Fill
Multidirectional	Quartz	8.7	29.72	Present	Fragment	Fill
Multidirectional	Quartz	19.6	42.53	Absent	Complete	Structure 19
Multidirectional	Quartz	24.3	34.43	Present	Complete	Structure 19
Multidirectional	Quartz	3.6	15.81	Present	Complete	Structure 19
Multidirectional	Quartz	6.1	24.22	Present	Complete	Structure 19
Multidirectional	Quartz	31.3	44.83	Absent	Complete	Structure 17
Multidirectional	Quartz	3.1	17.77	Present	Fragment	Structure 14
Multidirectional	Quartz	1	16.64	Present	Fragment	Structure 14
Multidirectional	Quartz	75.3	50.33	Present	Complete	Fill
Multidirectional	Quartz	1.9	17.14	Present	Complete	Fill
Multidirectional	Quartz	2.6	19.39	Present	Complete	Fill
Multidirectional	Quartz	4.5	18.51	Absent	Fragment	Structure 16
Multidirectional	Quartz	6.1	25.62	Absent	Complete	Structure 13
Multidirectional	Quartz	4.8	21.58	Present	Fragment	Structure 13
Unidirectional	Quartz	10.7	28.09	Present	Complete	Fill
Unidirectional	Quartz	17.3	32.28	Present	Fragment	Fill
Tested Cobble	Quartz	1.8	15.73	Present	Complete	Structure 19
Core Type	**Raw Material**	**Weight in grams**	**Maximum Dimension**	**Cortex**	**Complete**	**Provenience**
Tested Cobble	Quartz	6.9	28.46	Present	Complete	Structure 15
Tested Cobble	Quartz	11.3	28.26	Present	Fragment	Structure 14
Tested Cobble	Quartz	6.2	23.58	Present	Complete	Fill
Tested Cobble	Quartz	6.4	25.65	Present	Complete	Structure 19

Tested Cobble	Quartz	8.2	27.38	Present	Complete	Structure 19
Tested Cobble	Quartz	4.1	18.86	Present	Complete	Structure 19
Tested Cobble	Quartz	3.8	17.34	Present	Complete	Structure 19
Tested Cobble	Quartz	4.2	21.24	Present	Complete	Structure 19
Tested Cobble	Quartz	3.5	22.54	Present	Complete	Structure 19
Tested Cobble	Quartz	5.2	21.4	Present	Complete	Structure 19
Tested Cobble	Quartz	23.3	33.54	Present	Complete	Structure 18
Tested Cobble	Quartz	3.9	20.68	Present	Complete	Structure 13
Tested Cobble	Quartz	4.1	21.83	Present	Complete	Structure 16

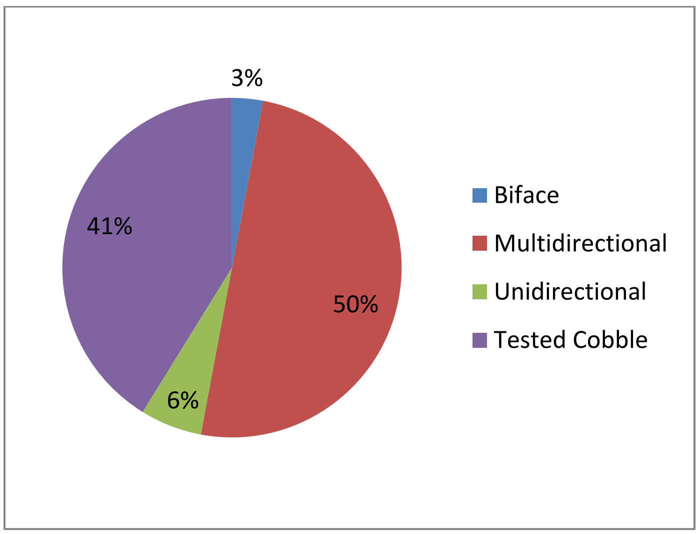


Figure 9.6 Types of Cores from Mound 5

Cores, by count and weight, were distributed unevenly within the structures/floors of Mound 5. Structures 13 and 19 had the majority of lithic cores by weight. Structures 14-18 had much lower proportions of cores by frequency and weight (Figure 9.7). Partial structure and courtyard 19 also had the majority of ceramics from Mound 5 indicating that multiple types of activities occurred here. Structure 13 one of the highest quantities of flaked stone, but had very few ceramics. This may be support that the small non-habitation structures from the base of Mound 5 were associated with specific activities rather than domestic areas.

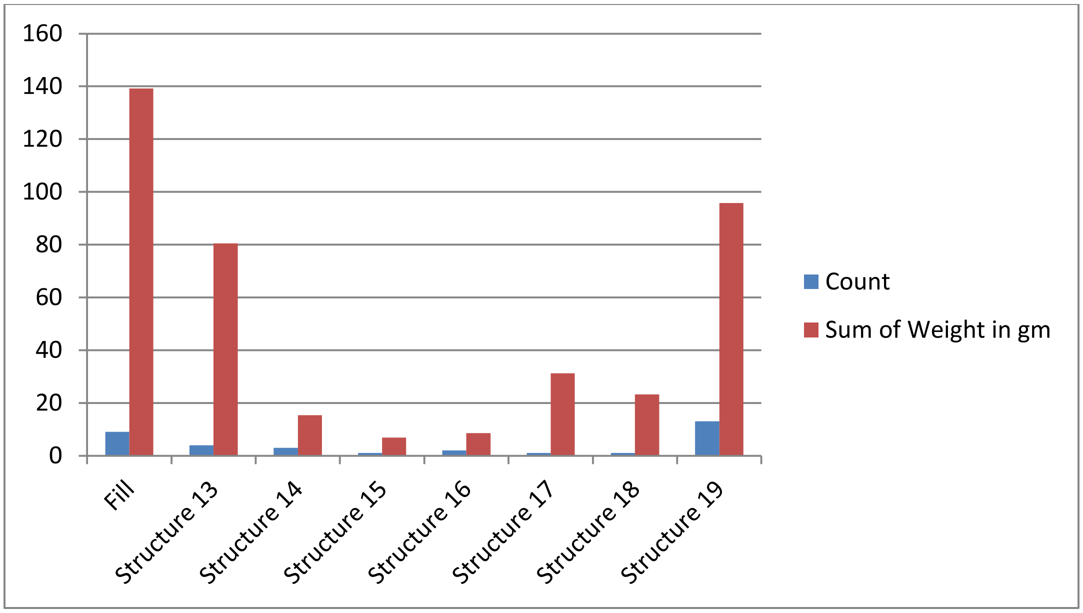


Figure 9.7 Distribution of Cores in Count and Weight Mound 5

By count, debitage was the most abundant class of lithic types. Debitage was identified as complete flakes, distal fragments, proximal fragments, medial fragments, and angular debris. Figure 9.8 is a graph showing the proportions of different types of debitage from Mound 5. Complete flakes were the most common type of debitage, followed by angular debris and proximal fragments. Flake fragments: proximal, medial, and distal fragments account for a small percentage of the debitage from Mound 5. The distribution in debitage categories from Mound 5 as percentages is similar to Mounds 1 and 2.

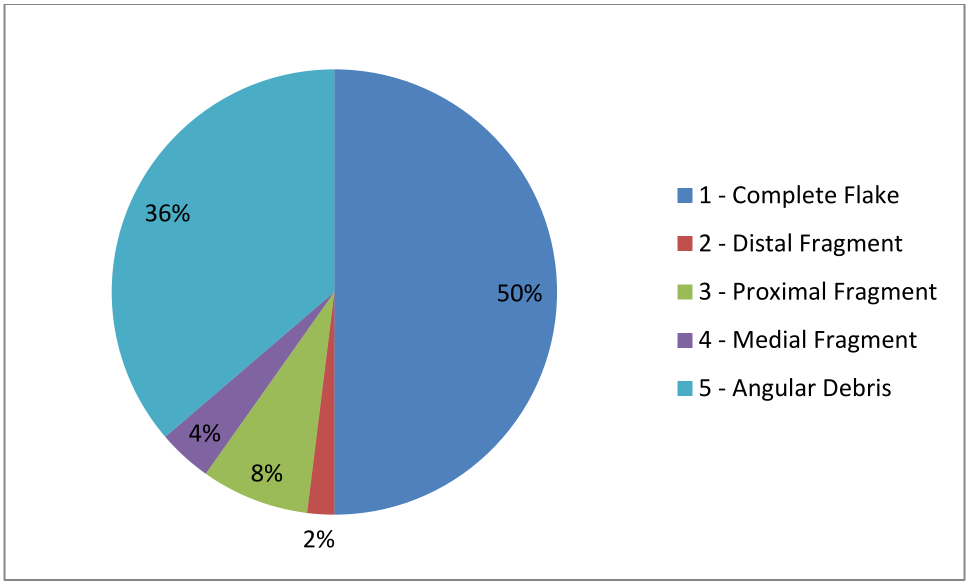


Figure 9.8 Debitage Types from Mound 5

Table 9.22 lists the mean measurements qualities for weight and maximum dimension for the debitage types. As a whole, the debitage components from Mound 5 were small. Complete flakes, proximal fragments, and angular debris have the largest mass on average. The average maximum dimension of debitage by type is similar to debitage from Mounds 1 and 2. Complete flakes from both mounds are, on average, the same size, suggesting that the reduction process produced similarly sized flakes regardless of core size. However, this may be related to the orientation of the cleavage planes in quartz. Overall, there is much continuity in lithic reduction and production practices across the mounds of Kranka Dada.

Table 9.22 Debitage Types and Metric Qualities from Mound 5

Debitage Type	Mean Weight in gm	Average of Maximum Dimension in mm
Complete Flake	2.4	18.1
Distal Fragment	0.2	11.3
Proximal Fragment	1.9	16.2
Medial Fragment	1.5	13.5
Angular Debris	2.6	16.5

Tools were recovered in low absolute frequencies from Mound 5 (Table 9.23). The difference between Mound 5 and the other mounds is that half the tools were formal.

Two bifaces were recovered from fill, and one distal portion of a projectile. The projectile was produced on a shale-like material and was unevenly chipped. The tool may have been previously hafted from its notched base; however, its unevenness and asymmetry in engineering makes it suitability as an airborne projectile unlikely. The informal tools were utilized flakes made from quartz, similar to the other mounds. Again, the sample size of tools is small making it difficult to generalize about tool use in Mound 5.

Table 9.23 Tool Types from Mound 5

Tool Type	Raw Material	Weight in gm	Maximum Dimension in mm	Provenience
Biface	Unknown	29.5	59.36	Fill
Biface	Unknown	66.8	53.62	Structure 13
Projectile	Unknown	29.7	61.5	Fill
Utilized Flake	Quartz	0.9	13.7	Structure 17
Utilized Flake	Quartz	3.7	25.27	Structure 18
Utilized Flake	Quartz	1.2	16.49	Structure 20

Debitage of formal and informal tools were recovered from Mound 5 as well as the largest diversity of core types. This suggests that both formal and expedient systems of lithic reduction and tool production were part of daily life from Mound 5. However, the majority of cores and debitage indicate that more of the reduction was organized for expedient lithic technological systems similar to the other mounds. Lithic materials were recovered from each of the Mound 5 structures, but in varying proportions. Overall, Structure/ Floor 13 had the greatest diversity and abundance of lithic artifact types.

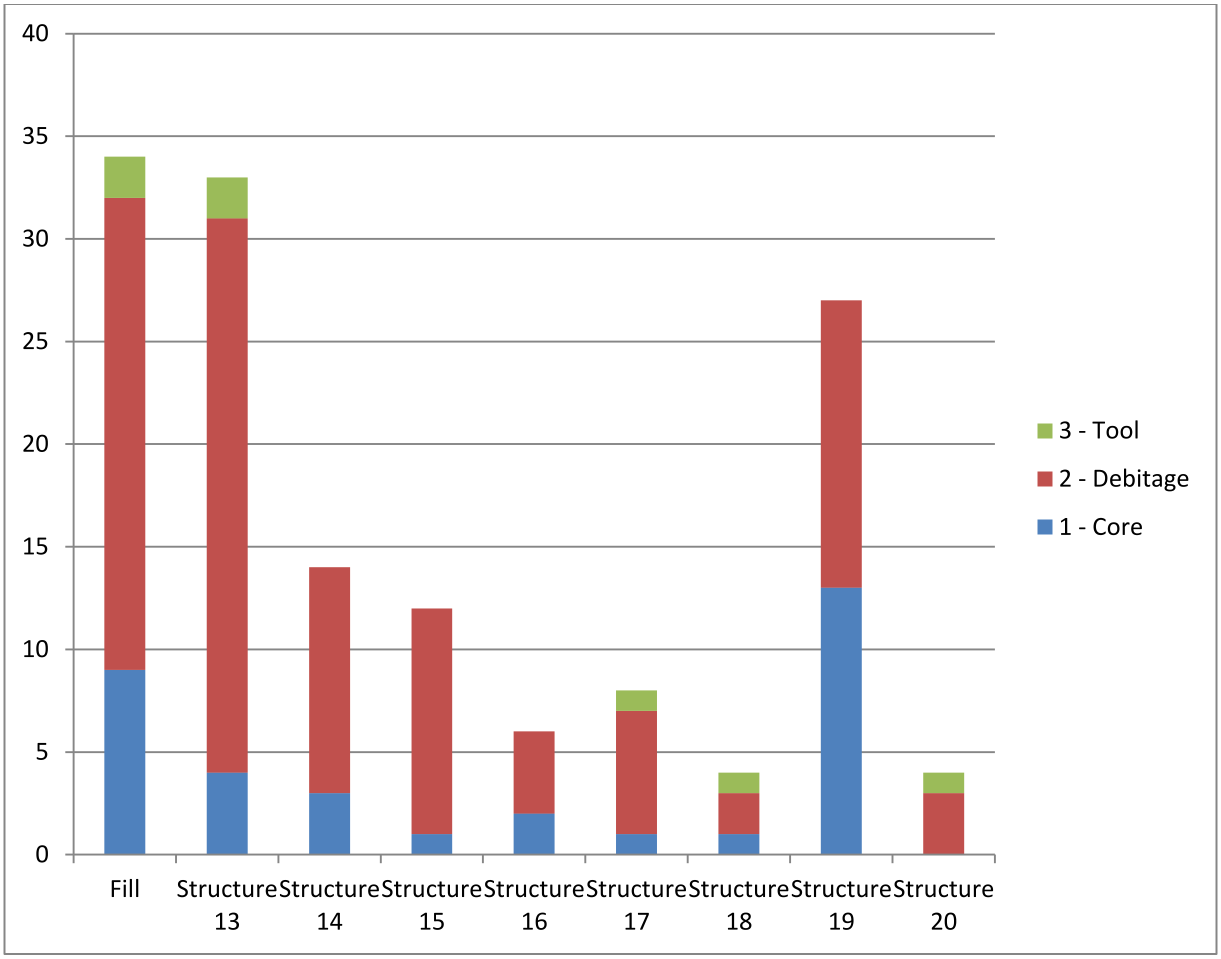


Figure 9.9 Distribution of Cores, Tools, and Debitage in Mound 5 by count

Groundstone

A total of 88 pieces of groundstone were recovered from Mound 5 weighing 4889.94 grams (Table 9.24). When controlled for volume, 436.6 grams of groundstone were recovered from Mound 5 per cubic meter, approximately double the weight per cubic meter for the other excavated mounds. Similar to Mounds 1 and 2, groundstone was primarily recovered as fragments less than half complete.

Table 9.24 Groundstone Completeness from Mound 5

Completeness	**Count**	**Sum of Weight in Grams**
Completeness	5	1852.1
Less than Half	54	1085.49
More than Half	29	1952.35
Total	**88**	**4889.94**

Groundstone found in Mound 5 were used in a variety of activities. Table 9.25 and Figure 9.10 show the types of groundstone and use from Mound 5. Similar to the other mounds, groundstone from Mound 5 were mainly associated with food production and processing activities. A larger proportion of the groundstone from Mound 5 was either recycled or used for multiple purposes at the same time. The flat abraders are difficult to access in that the majority were highly fragmented. As such, the overall shape of the flat-shaped groundstone cannot be determined. This would have aided in a reconstruction of how the flat-shaped groundstone was used. Groundstone with indeterminate shapes were more abundant in Mound 5 than previous mounds. One complete tool was star or flower shaped; it is possible that the artifact may have been used as a polisher of some kind.

Table 9.25 Groundstone Shapes Mound 5

Shape	**Count**		**Sum of Weight in Grams**	**Total**
Convex	30	34.1%	2986.1	**61.1%**
Concave	9	10.2%	392.8	**8.0%**
Flat	40	45.5%	738.25	**15.1%**
Indeterminate*	5	5.7%	388.1	**7.9%**
Flat and Concave (2 sides)	2	2.3%	179.7	**3.7%**
Convex and concave (2 sides)	1	1.1%	200	**4.1%**
U-Shaped groove	1	1.1%	4.99	**0.1%**
Total	**88**	**100.0%**	**4889.94**	**100.0%**

* included flower-shaped groundstone

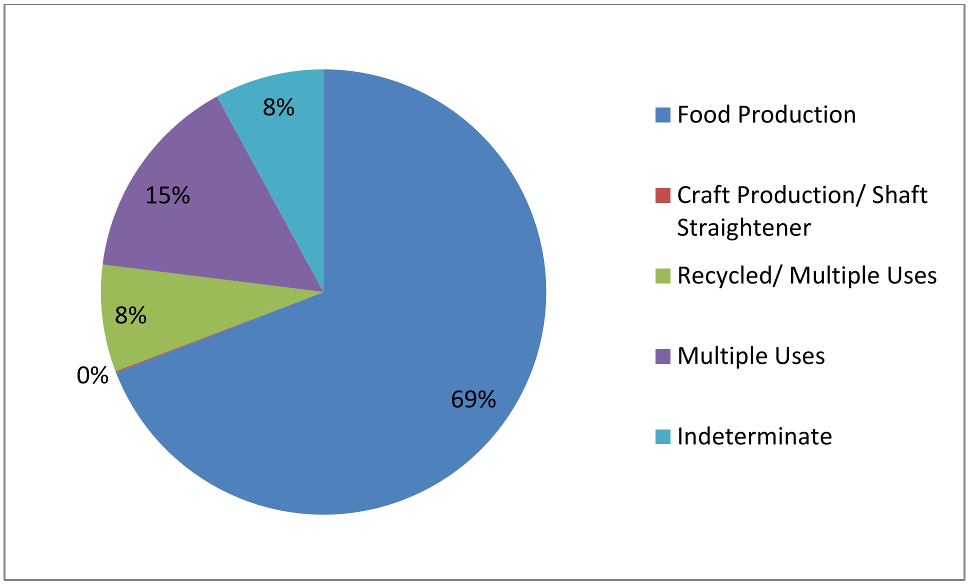


Figure 9.10 Groundstone Uses Mound 5

Figure 9.11 and Table 9.26 show the distribution of groundstone by weight for the Mound 5 structures. Groundstone was bimodally distributed, some structures had very little and others had high quantities (μ 55.6 and σ 140.2). Structures 12 and 19 had the highest concentrations of groundstone compared to Structures 13 and 18 that had less than 50 grams each.

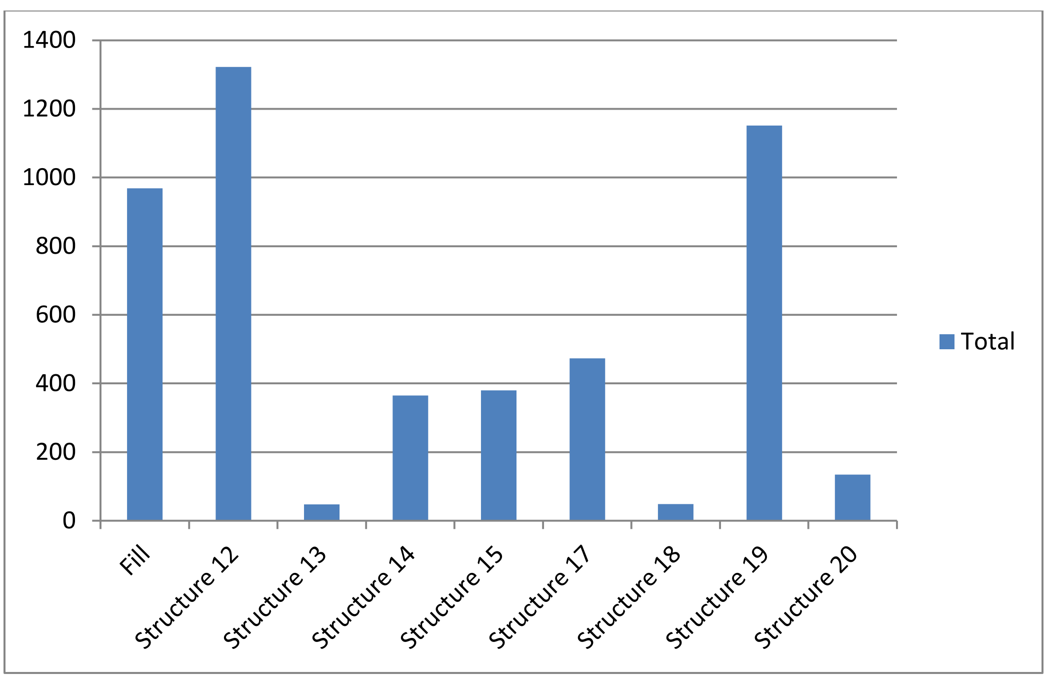


Figure 9.11 Groundstone Distribution by Structure from Mound 5

Table 9.26 Groundstone Distribution by Count and Weight by Structure in Mound 5

Structure	Count	Sum of Weight in Grams
Fill	38	968.35
Structure 12	3	1321.8
Structure 13	1	47.2
Structure 14	3	365.2
Structure 15	5	380.1
Structure 17	10	473.4
Structure 18	2	48.9
Structure 19	24	1150.99
Structure 20	2	134
Total	**88**	**4889.94**

Metals

Only 2 metal objects were recovered from Mound 5, accounting for 6.1% of the metal assemblage by frequency and 1.9% by weight. Table 9.27 lists the metal objects. Heavy corrosion and the fragmentary nature of iron artifacts make it difficult to reliably identifying specific types of tools. At least one, the possible tool, is likely to be associated with food production based on its similarity to known agricultural and hunting implements. Associated dates for metal objects come from AMS Date 3 at 1529 CE (1491-1567).

Table 9.27 Metal Objects from Mound 5

Type	Material	Count	Weight in gm	Provenience
Indeterminate Fragment—possible bracelet	Iron	1	2.9	Structure 17
Indeterminate Fragment—possible tool	Iron	1	2.9	Structure 18

Small Finds

Small finds recovered from Mound 5 accounted for 18.9% of the small find assemblage by count and 15.7% by weight (Table 9.28). Mound 5 had .63 small finds recovered per cubic meter, a quantity greater than Mound 2 but less than Mound 1. Small finds were present in less than half of the structures of Mound 5. All small finds were documented *in situ* or recovered from the screens; no small finds were recovered from the heavy fraction of flotation samples. Small finds from Mound 5 were limited in scope to groundstone celts, beads, and a single terracotta rasp.

Table 9.28 Small Finds from Mound 5

Structure	Count	Objects
Fill	2	Modified Ceramic Sherd (Bead?) Groundstone Celt (*nyame akuma*)
Structure 14	1	Groundstone Celt (*nyame akuma*)
Structure 15	1	Ceramic Bead
Structure 17	1	Groundstone Celt (*nyame akuma*)
Structure 19	1	Terracotta Rasp

I found three ceramic small finds objects were recovered from Mound 5 (Table 9.29, Figure 9.12, and Figure 9.13). One was a rectangular ceramic bead. The bead from Structure 15 was fired, but no decoration or surface treatment was observed. A neck sherd was modified and drilled, and likely turned into a bead. This bead was recovered from the fill between Structures 14 and 15, somewhat near the rectangular bead with good context. The items of personal adornment were likely produced locally for consumption. The materials and technology would have been widely available.

Figure 9.12 Bead from Structure 15

Figure 9.13 Drilled Sherd from Mound 5

Table 9.29 Measurements of Ceramic Beads/Small Finds from Mound 5

Floor	**Object**	**Material**	**Weight in grams**	**Length in mm**	**Width in mm**	**Thickness in mm**	**Complete**
Structure 15	Bead	Ceramic	1.47	16.51	12.09	5.5	Yes
Fill	Bead	Ceramic	5.6	23.8	26.4	7.98	Yes
Bead Mean			**3.5**	**20.2**	**19.2**	**6.7**	

Other than beads, the only small finds objects recovered were curated Late Stone Age objects, including groundstone celts and a terracotta rasp fragment. Three groundstone celts were recovered from Mound 5. The celt from Structure 14 was buried in the center of one of the possible granary structures. Shaw (1944) reported that at Bosumpra there were groundstone celts intentionally incorporated into swish architecture as a way of warding off evil spirits and lightening. Use wear patterns on the celt from Structure 14 were different from the celts of Mound 1. No abrasions from secondary use were observed; however, the same types of primary use were observed. There was percussion damage on the proximal end where the axe was backed. The two remaining groundstone celts were from the upper levels of Mound 2 and the later phases of occupation of Mound 5.

Primary and secondary use wear patterns from the celt in Level 1 fill were similar to celts from Mound 1. Percussion damage was present on the proximal end where the axe was backed as well as secondary use abrasions where a ground area removed the polish of the celt. The celt from Structure 17 was a medial fragment; percussion damage on the proximal and distal ends could not be observed. Abrasions similar to other groundstone celts were observed on this celt. This type of use is consistent with contemporary and ethnohistoric use of groundstone axes used to prepare ritual medicine; the spiritual realm encompasses a wide variety of activities including medical and healing practices.

Table 9.30 Groundstone Celts from Mound 5

Structure	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete	Color
Fill (Level1)	35	45.2	34	18	Proximal	Tan/Green
Structure 14	17.44	42.6	27.8	11.8	Proximal	Mottled Black and White
Structure 17	15.14	22.8	30	15.7	Medial	Tan
Mean	**22.6**	**36.9**	**30.6**	**15.2**		

One terracotta rasp fragment was recovered from Structure 19 (Table 9.31). The fragment is so small that it is not possible to discuss the object's attributes.

Table 9.31 Rasp Mound 5

Floor	Object	Weight in grams	Length in mm	Width in mm	Thickness in mm	Complete
Structure 19	Terracotta Rasp	1.4	19.7	21.2	5.4	No

Shell

Only 1 univalve shell fragment was recovered from Structure 14 of Mound 5. No shell was recovered from the flotation or heavy fraction samples of Mound 5. The heavy fraction was sorted to provide a control on artifacts that could have passed through the screens.

Wealth and Status

Ceramics

Documenting wealth and status relationships using the ceramic assemblage from Mound 5 are fraught with the same limitations as I encountered with analyzing the materials from other previous mounds. Everted rim jars dominated the Mound 5 assemblage and were used in multiple tasks from cooking to storage. Everted rim jars were present in nearly every structure of Mound 5, indicating a long and continuous pattern of use. Serving dishes and bowls were not observed in high frequencies from Mound 5. This could be a reflection of small sherds and open vessel forms having similar rims to closed vessel forms. It is difficult to distinguish between jars and bowls with everted rims and necks. It is also likely that organic materials like gourds were used as serving and drinking vessels.

The temporal and spatial continuity in ceramic shapes and designs within Mound 5 deposits may indicate that the one-pot-fits-all approach was associated with the consumer's restricted range of choices when acquiring vessels or that time and energetic budgets were spent on activities other than making many types of vessels. The one-shape-fits-all approach to ceramic use may have added some efficiency into household activities by freeing households to invest in other activities. In this context, ceramics may not have been the best media for establishing and shaping status relationships.

Mound 5 had few frequencies of imported ceramics. Imported ceramics, classified by using the same criteria as I used for the other mounds, mica "recurved rim" jars with denate decoration were recovered in low frequencies (n=11) from Mound 5, and were restricted to the upper level structures 16, 17, and 19. Associated and relative dates of the imports support the claim that several construction episodes were present in Mound 5, and that upper-level structures of Mound 5 were at least partially contemporaneous with occupation of Mounds 1 and 2. Only 2 black burnished sherds were recovered from Mound 5 (Structure 17). This suggests a temporal overlap or contemporaneity of the upper level structures of Mound 5 with those in Mounds 1 and 2.

Fauna

The inhabitants of Mound 5 had little access to animal products, although their numbers slightly increased over time. However, the earliest features of Mound 5 were functionally different than other mounds with a likely function of grain storage. Figure 9.14 shows the utility indices of faunal remains by animal size class. In addition to modest access, the types of animal products that Mound 5 inhabitants had access to were of a low to medium utility from small and medium sized animals. Horns from large animals were likely prized as important materials, and incorporated into the architecture. It is likely that the inhabitants of Mound 5 did not invest in animal husbandry. The narrow range of animal parts consumed by suggests that perhaps animal products were acquired piecemeal and very infrequently. The sample size from Mound 5 is too small to conduct richness and evenness measures, and without more detailed taxa identification, a Shannon Diversity Index measure would be meaningless.

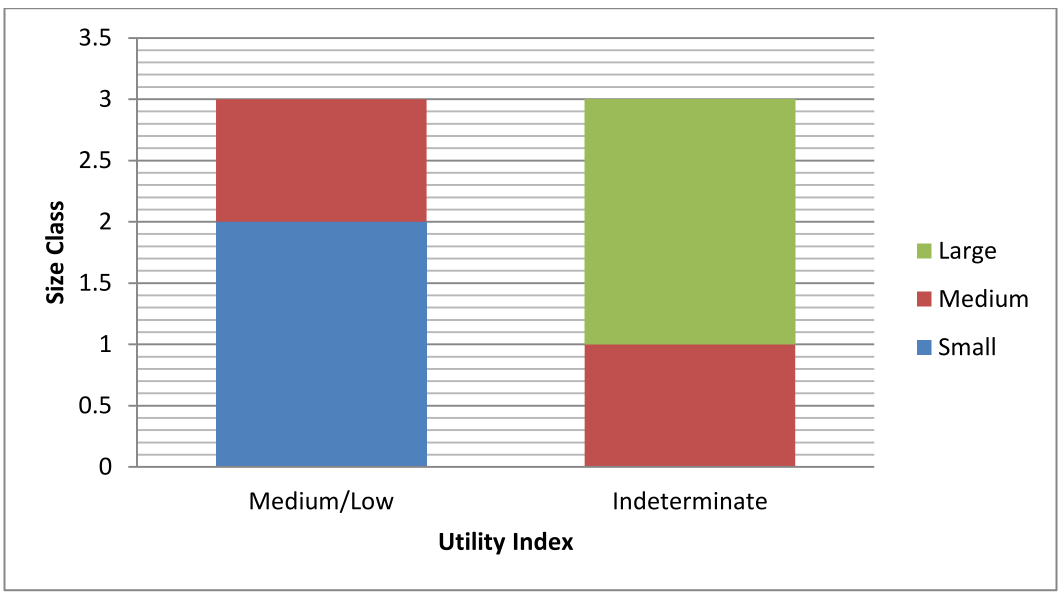


Figure 9.14 Utility Indices by Animal Size Class

Smoking Pipes

Only two smoking pipe fragments were recovered from Mound 5. Having so few pipes prohibits much discussion on the wealth or status relationships signified by smoking pipes. Smoking pipes were not expected in deposits that predated the Atlantic exchange era. The presence of smoking pipes in Structures 19 and 20 may be indicators of Atlantic era or post-1600 or 1650 occupation, not markers of wealth or status.

Lithics

Lithic artifacts including groundstone are not expected to correlate with household wealth or status. Much of the groundstone was likely utilitarian for household activities such as food production and processing. The flaked stone lithic material includes cores, debitage, and tools were created through expedient technological systems from locally available and poor quality toolstone materials. Materials were reduced on-site and very few tools were recovered. There was a higher frequency of flaked stone artifacts recovered by volume in Mound 5 was (68.7) compared to Mound 1 (13.4) and Mound 2 (44.2). Lithic artifacts including groundstone are not expected to correlate with household wealth or status, and an increase in lithic materials may be negatively correlated with wealth and status. The weight of groundstone and flaked stone lithics varies between structures, with most of the flaked lithic material being distributed early (ca. 1355 CE) in Structure 13 and late (ca. post-European contact/ Atlantic Trade era) in Structure 19. Mid-level Structures 14, 15, and 17 had much higher quantities of groundstone than flaked stone. In some structures, no lithic material was recovered. This perhaps suggests that activities were spatially and temporally divided in Mound 5. Similar to the structures from Mound 2, types may indicate increases in inter-mound household specialization of different tasks, which in Mound 5 were negatively correlated with wealth and status.

Metals

Small fragments of metal make it difficult to infer status and wealth relationships in Mound 5. Of all the mounds that I excavated, Mound 5 had the lowest diversity and quantity of metals. A greater proportion of Mound 5 was excavated, when compared to Mounds 1 and 2. The low quantity of metals from Mound 5 suggests limited access to metals rather than excavation bias. If the iron object from Mound 5 (Figure 9.15) is a bracelet fragment, this indicates limited amount of access to valuable items of personal adornment.

Figure 9.15 Possible bracelet fragment

Small Finds

Low quantities of small finds were recovered from Mound 5. The breadth of objects recovered from Mound 5 differs from Mound 2 and quantity of objects recovered differs from Mound 1. Small finds from Mound 5 were mainly beads and groundstone celts (similar to Mound 1), although in lower percentages.

Two ceramic beads were found. One was a bead fabricated from a modified and drilled sherd. Both beads post-date AMS date 4, 1355 (1323-1387) CE, but were used and discarded before the Atlantic trade era. These were items of personal adornment were intended to convey some symbolic information about the wearer; however, the beads were created from locally available materials and not embellished with decoration or surface treatment. While the beads may have conveyed information about the wearer, they are not likely to be items useful in examining wealth or status relationships.

Three groundstone celts were recovered from Mound 5. The earliest celt was intentionally buried at the base of Structure 14. The act of burying a *nyame akuma* in ethnographic settings carries ritual significance and meaning. Even though the object would have been rendered invisible through its incorporation into the architecture, it does yield some information about status and beliefs. It is unknown how similar or different the meanings of celt burial practices are to more recent settings. However, the intentional acquisition and use of LSA curated objects was an important part of daily life after the 1350s CE. Groundstone celts recovered from the upper levels of Mound 5 were used in different tasks, in ways similar to Mound 1.

All of the small finds from Mound 5 were made on locally available materials. Some may have been more difficult to acquire, such as groundstone celts and terracotta rasps. This does not mean that the inhabitants of Mound 5 did not have access to supralocal and global goods, but they were not recovered in my excavation. Small finds from Mound 5 suggests that locally and regionally acquired Late Stone Age objects were a small but perhaps meaningful part of daily life. As such, they may be markers of group status but unrelated to wealth.

Conclusions

Mound 5 had a similar occupation history to Mound 2, from the base to upper levels, while only the upper level deposits were contemporaneous with Mound 1. The earliest features and levels may date be contemporaneous with Mound 5 based on similar pottery that is quite different from the ceramics from upper levels in terms of inclusions, paste, surface treatment, and decoration. While the Mound 2 and 5 chronology were similar, the types of partial structures, floors, and features were quite different. The earliest architectural features in Mound 5 were not used for habitation. They were small circular structures, and the only visible remains were circular alignments of postmolds and the presence of daub. Although their function is not clear, it is possible that the structures were granaries, storage facilities, or perhaps ephemerally used structures. Low frequencies of ceramics were recovered from the early structures that date to cal 1355 CE (1323-1387). At the same time, high quantities of flaked and groundstone tools were recovered, especially in Structures 12 and 13. It is possible that the earliest structures were special use or activity areas. The placement of the groundstone celt within the foundation of Structure 14 likely has some ritual associations. Burying objects in the foundations of structures is a practice of considerable antiquity and widely spread throughout West Africa (McIntosh 1995).

The second phase of construction from Mound 5 shows similarity to Mound 2. Courtyard areas and partial structures were exposed as Structures/ floors 17 to 19. The presence of maize cob roulette, twist roulette, and the smoking pipe fragments indicate some contemporaneity with the Atlantic trade era and with Mounds 1 and 2 (at least in Structures/floor areas 18 and 19). Similar to Mound 2, horizontally oriented artifacts were recovered from courtyards, mainly ceramics and stone tools. The same patterns of differential distribution from the rest of the site are more pronounced in Mound 5. The lowest numbers of animal bone (n=6) were recovered from these structures, and one was a horn core that was integrated into the architecture as a post. Only two metal objects were found, iron fragments, one possible tool and bracelet. During this phase, the majority of small find objects were items of personal adornment including two ceramic beads (one modified and drilled sherd). Both beads were made from materials that would have been widely available. The majority of the objects recovered from Mound 5 were likely associated with the quotidian activities, and there did not appear to be much energy or resources expended in boosting household production (like in Mound 2) and engaging in exchanges with supralocal networks.

The third episode of construction comes from the two large barrow pits excavated into Mound 5. These pits could have been used in multiple ways, as source of clay for repairing structures. The pits had different profile shapes, the westernmost pit had vertical sides and a small overall footprint while the easternmost pit had shallow sides and a larger footprint. Refuse and organic debris filled the pits, but the artifact densities within the pits suggest that rubbish may have slowly filled in overtime rather than being converted into intentional midden areas.

Chapter 10 The Houses and People of Kranka Dada

Like other sites in the greater Volta Basin, Kranka Dada was occupied continuously for approximately 350 years, spanning the expansion of sub-Saharan trade and Atlantic trade networks into the forest/ savanna transitional zone. Conquest by the Asante probably led to the abandonment of Kranka Dada, although informants reported that a small remnant of the village stayed to care for the shrine. A small proportion of the population moved northwest, resettling less than 1 kilometer away.

Data from sites occupied before to 1200 CE are scanty for much of modern day Ghana, although Stahl's Volta Phase cal 1000-1300 CE excavations touch on this period elsewhere in Ghana (Stahl 2007; 2008). Boahen (1977) argued that populations that occupied to forest fringes before the 14th century were relatively dispersed groups of iron-using agriculturalists. Concomitant with contact from the Mande trade diaspora, settlements on the forest fringes grew into towns (Boahen 1966; Garrard 1980; Posnansky 1971, 1979a). Towns including Begho and Bono Manso were likely early centers for gold trading (ibid.). Initial dates of Kranka Dada's occupation (cal 1323-1387 CE) are consistent with the early dates for Bono Manso Phase I occupation (13th-16th century CE) and with Banda's Ngre Phase (cal 1250-1400 CE). The early radiometric dates recovered are associated with the earliest occupation of Kranka Dada, and they are consistent with early dates of the widespread presence of complex societies on the forest fringes and the presence of sub-Saharan commerce, trade diasporas, and the expansion of trade networks. When individuals and groups of the Mande trade diaspora arrived in the forest fringes, they encountered groups of people living in settled villages, dependent on agriculture, and organized in complex ways. Ethnicity is difficult subject to evaluate archaeologically; however, previous scholars have suggested that the Bron areas of Bono Manso, Begho, and Wenchi have had an ethnic identity quite spate from the forest and coastal Akan (Arhin 1979b; Posnansky 1979a; Wilks 2005). Archaeological, linguistic, and oral history indicates that there were many similarities between the Bron and the Akan, and the similarities likely became more homogenized as part of Asante State hegemony and British colonial practices.

The earliest dates from Kranka Dada are from Mound 5, and they indicate some occupation from 1323-1387 CE. The earliest features I found were small, free-standing structures, possible granaries. These small circular structures were too small for human occupation at ca. 2 m in diameter. Neither artifacts nor charcoal was recovered from the interior of these structures; however, ceramics and groundstone were found outside these structures. These clay and mud granaries would have been well suited for storing cereal crops, including sorghum and millet, which were likely cultivated at Kranka Dada. Although yams were an important staple crop of the forest/ savanna transition they can be stored and dry stacked for one to six months (Prussin 1986). Cereal crops are better suited for storage in granaries. Building materials used in granary construction differed from the other wattle-and-daub structure. Daub was a different color and texture than was used in adjacent mounds and later structures. Larger quantities of laterite pebbles were documented and mixed in with decomposing and eroding daub used to create the walls of the early Mound 5 structures. One informant from present day Kranka reported that the northern cluster of mounds was used for communal activities, while the southern cluster of mounds was residential in function. Not enough data are available to ascertain whether or not the granary structures were used to store public/communal goods or housed goods for one or more households.

Daily life at Kranka Dada during the early phase of occupation was probably similar to daily life at Bono Manso during Phase I. The majority of artifacts from early deposits were ceramics. Ceramic vessels were mainly everted rim jars, similar to vessels of Bono Manso. The majority of ceramic alteration, when present, indicated damage and thermal alteration from being exposed to fire during cooking. Perhaps one of the most striking similarities of Kranka Dada and Bono Manso is the lack of fauna in early contexts. Effah-Gyamfi excavated a total of 329 animal bones in his excavations. The majority was too fragmented to identify, and unfortunately there are no data as to the provenience of unidentifiable fauna. Effah-Gyamfi provides a table of the 9 types of animal bones identified to species and links them to the associated mound and chronological phase of occupation (Effah-Gyamfi 1985:98-99). He states that over 80% of the faunal remains were recovered from Phase II and III deposits; however, the quantities were not provided (ibid.). While absence of evidence and evidence of absence are different, there is a general pattern of low numbers of faunal remains within the early deposits of both Bono Manso and Kranka Dada suggesting fairly limited access to animal resources by individual households. In addition, low frequencies of other household objects were recovered from Phase I deposits at Bono Manso (Table 10.1 from Effah-Gyamfi 1985:88-91). In general, artifact types from early deposits between sites are similar. High frequencies of groundstone relative to other artifact frequencies were observed at Kranka Dada and Bono Manso. It is unclear if flaked stone objects apart from formal tools from Bono Manso were not recovered or not recorded, although the latter is the likely case. As such, no comparison between domestic lithic industries can be made.

Table 10.1 Non-Ceramic Finds from Bono Manso in Phase I Deposits

Item	Quantity
Iron Bracelet	2
Brass Scrap	1
Shell Beads	2
Long Cylinder Glass Beads	1
Upper Grinding Stone	30
Stone Cubes (gold weights?)	2
Rubbing Stones	3
Nyame Akuma	1

Site Taphonomy

It is important to consider the patterns of accumulation, consumption, and discard at Kranka Dada. Patterns of refuse disposal are unknown as I did not observe or locate midden mounds. Documenting patterns of refuse disposal among households is an important component of daily life production/consumption cycle. The quantity and types of objects discarded is correlated with the relative importance of types of activities that occurred. The range of objects discarded indicates the range of household activities. Valuable or inalienable objects are unlikely to be discarded with household refuse, although discard may be unintentional (Weiner 1985). Such objects are prized possessions that can be passed down through generations.

The stratigraphy from each mound excavated at Kranka Dada indicated brief interruptions in occupation, although they were not detectable through radiocarbon dating or in stylistic changes in artifacts. It is most likely that any interruptions in occupation were likely localized, for example one room or area of a compound may be temporally abandoned until repairs were made. During the interim, refuse items likely accumulated and thin lenses of sediment washed into such areas. A possible future direction is micro-stratigraphic analysis, which has the potential to document a more detailed sequence of occupational history and site use.

Comparing the contents and functions of the excavated mounds

Based on surface artifact collections, there was no *a priori* reason to assume that major differences in mound function would be encountered. Between each of the mounds, there were architectural differences and differences in artifact types and frequencies indicating that there were complex relationships between households and spatial areas over time. Some of the inter-mound differences were temporal; i.e. they were not always occupied at the same time. The Atlantic trade period (1482-1850 CE) brought new items, novel commodities, and prestige goods, such as tobacco and maize which led to changes in material culture, religious activities, subsistence activities, and diet. The Atlantic trade brought a volume of goods into West Africa that was not possible with overland caravan travel. In addition to goods, slaves were moved in and out of West Africa, specifically the Gold Coast. Slaves were routinely brought from other areas of Africa to the Gold Coast to be used in labor-intensive activities such as forest clearing, farming, and gold-mining (Elbl 1997; Perbi 2004; Wilks 1989, 1993). At the same time, there was continuity in some aspects of daily life that persisted through such a tumultuous era. While some of the inter-mound differences are due to synchronic production, consumption, and status differences.

Ceramic artifacts were the most abundant type of artifact recovered. Their ubiquitous presence and utility in all kinds of daily life activities touches on synchronic and diachronic production, consumption, and status relationships. Ceramics have the potential to yield information on activities performed by every household. The shape of vessels shows spatial and temporal continuity in the mounds. Everted rim globular jars dominated the ceramic assemblages of all mounds. Ceramics recovered from the different quarters at Begho also indicated homogeneity (Crossland and Posnansky 1978), and perhaps suggest that widespread availability in markets provided a fairly homogeneous range of ceramic vessels. However, it is also possible that individual producers selected similar chaîne opératoire sequences that produced vessels of similar shapes.

Ceramics from all of the mounds excavated had similar types of surface treatments (Table 10.2). Hand-smoothed finishes were the most common in each of the mounds and dominated the assemblage for at least 350 years. Red paint and brown paint each accounted for a significant portion of the assemblage from each mound. Posnansky (1979a:27) and Davies (1967) have argued that red-slipped ceramics are indicators of immigrants and trade relationships with the north. Red painted ceramics were not observed in the earliest structures of Mound 5, although they were present in every partial structure/floor of Mound 2. This may indicate that red paint may have chronological associations at Kranka Dada, and act as markers of early sub-Saharan supralocal connections. Red slip and paint from Bono Manso ceramics were rare in Phase I deposits. Black burnished ceramics and mica paint were probably imported to Kranka Dada. A Chi-square test indicates significant results (χ^2 132.59 at a significance level $_{\alpha.05}$ of .000) between mound and surface treatments (counts and percentages in Table 10.2). Mound 1 had a greater frequency of brown paint, red paint, and black burnished sherds than expected; in contrast, Mound 2 and 5 have fewer brown paint, red paint, and black burnished sherds than expected. Differential distribution of red-slipped ceramics in the contemporaneous deposits of Mound 2 and 5 may indicate an early pattern of differential access.

Table 10.2 Ceramic Surface Treatment All Mounds at Kranka Dada by Count

Surface Treatment	1		2		5		Total	
Hand-Smoothed	2268	77.3%	1171	81.3%	558	84.2%	**3997**	**79.4%**
Red Paint	222	7.6%	70	4.9%	41	6.2%	**333**	**6.6%**
Brown Paint	293	10.0%	95	6.6%	29	4.4%	**417**	**8.3%**
Black Burnished	93	3.2%	30	2.1%	2	0.3%	**125**	**2.5%**
Mica Paint	13	0.4%	47	3.3%	19	2.9%	**79**	**1.6%**
Unfired Slip	9	0.3%	18	1.2%	5	0.8%	**32**	**0.6%**
Grey Paint	32	1.1%	4	0.3%	1	0.2%	**37**	**0.7%**
Other	4	0.1%	4	0.3%	3	0.5%	**11**	**0.2%**
Total	**2935**	**100.0%**	**1441**	**100.0%**	**663**	**100.0%**	**5031**	**100.0%**

Seven main types of interior damage were observed. A Chi-square test indicates significant results (χ^2 98.097 at a significance level $_{\alpha.05}$ of .000) between types of interior damage and mound (counts and percentages in Table 10.3). Although a significant proportion of the ceramics from all mounds showed no signs of alterations, Chi-square counts indicated that frequencies of charred and burned ceramics were higher than expected. Mound 5 had a disproportionate frequency of ceramics with non-intentionally created holes. Some sherds had the visible remains of large organic inclusions that probably erupted during firing. Pitted interiors were probably the result of the traces of alcohol (Smith 2008). Following European contact, the distribution of alcohol containers within the mounds changed. A disproportionate amount of alcohol containers were observed in Mound 1, many more than found the contemporaneous Mound 2 and 5 deposits. Food production was inferred by the presence of striations and patchy abrasions. In comparing contemporaneous contexts, I found that Mound 1 had a higher proportion of vessels used in food production and preparation than Mound 2 and 5. Colanders were mainly recovered from mid-mound deposits in Mound 2 (Structures 9 through 11). MacLean and Insoll (MacLean and Insoll 1999) argued that the presence of colanders or *couscousières* from Gao excavations indicated wet food cooking methods such as boiling and steaming. Based on the colanders restricted spatial and temporal distribution at Kranka Dada, Mound 2 households may have experimented with new cooking techniques and equipment.

Table 10.3 Interior Damage in the Ceramics of Kranka Dada All Mounds

Interior Damage	1		2		5		Total	
No Damage	1531	66.2%	601	68.3%	194	55.1%	2326	65.6%
Eroded	114	4.9%	51	5.8%	33	9.4%	198	5.6%
Striations	113	4.9%	24	2.7%	17	4.8%	154	4.3%
Pitted	41	1.8%	8	0.9%	5	1.4%	54	1.5%
Patchy Abrasions	46	2.0%	8	0.9%	3	0.9%	57	1.6%
All Over Abrasions	16	0.7%	1	0.1%		0.0%	17	0.5%
Holes	6	0.3%	3	0.3%	12	3.4%	21	0.6%
Charred	445	19.2%	184	20.9%	88	25.0%	717	20.2%
Total	2312	100.0 %	880	100.0 %	352	100.0 %	3544	100.0%

Table 10.4 lists the frequencies of undecorated, informally, and formally decorated sherds by mound. A Chi-square test indicates significance (χ^2 492.939 at a significance level $_{\alpha.05}$ of .000) between mounds and decoration type. Mound 1 had nearly twice as many decorated sherds by count as a proportion of the analyzed assemblage from each mound than Mounds 2 and 5. Informally decorated sherds accounted for a small proportion of the Mound 1 assemblage, and higher proportions of the Mounds 2 and 5 assemblages.

Table 10.4 Undecorated and Decorated Sherds All Mounds by Count

	1		2		5		Total	
No Decoration	717	24.44%	621	43.15%	312	47.42%	**1650**	**32.80%**
Informal Decoration	30	1.02%	144	10.01%	39	5.93%	**213**	**4.23%**
Formal Decoration	2187	74.54%	674	46.84%	307	46.66%	**3168**	**62.97%**
Total	**2934**	**100.00%**	**1439**	**100.00%**	**658**	**100.00%**	**5031**	**100.00%**

Table 10.5 lists the most common decorative motifs by mound by count at Kranka Dada. A Chi-square test indicates significant results (χ^2 880.143 at a significance level $_{\alpha.05}$ of .000) between mounds and decorative motifs. In terms of decorative motifs, grooving and continuous incisions were the dominant forms for all mounds for the 350-400 year maximal time span. Decorative motifs also varied by mound. Some ceramic decorative techniques were documented mainly in Mound 1 deposits. Twist and maize cob roulette and its composite variants were predominately recovered from Mound 1 deposits. Although Effah-Gyamfi's quantitative data were not provided, he does not mention twist roulette design motifs within Phase I deposits from Bono Manso. Twist roulette and maize cob roulette may be useful as chronological indicators pending additional research. While some ceramic decorative motifs were mainly recovered from Mound 1, some decorative motifs were more commonly recovered from Mounds 2 and 5. The composite design with dentate stamped triangles and continuous incisions were mainly recovered from the upper level deposits from Mounds 2 and 5, chronologically associated with Mound 1.

Table 10.5 Most Common Decorative Motifs All Mounds at Kranka Dada

Decorative Motifs	1		2		5		Total	
Groove/ Continuous Incisions	730	38.8%	514	69.7%	214	66.3%	**1458**	**49.6%**
Triangular Dentate	11	0.6%	9	1.2	6	1.9%	**26**	**0.9%**
Twist Roulette	375	19.9%	24	3.3%	9	2.8%	**408**	**13.9%**
Composite: Continuous Incisions and Rectangle Dentate	11	0.6%	8	1.1%	9	2.8%	**28**	**1.0%**
Composite: Twist Roulette and Continuous Incisions	351	18.7%	11	1.5%	2	0.6%	**364**	**12.4%**
Colander	0	0.0%	19	2.6%	3	0.9%	**22**	**0.7%**
Maize Cob Roulette	304	16.2%	14	1.9%	1	0.3%	**319**	**10.9%**
Dentate Stamped Rectangles	35	1.9%	30	4.1%	16	5.0%	**81**	**2.8%**
Dentate Stamped Arches	10	0.5%	9	1.2%	11	3.4%	**30**	**1.0%**
Dentate Stamped Circles	10	0.5%	8	1.1%	11	3.4%	**29**	**1.0%**
Composite: Dentate Circles and Continuous Roulette	16	0.9%	14	1.9%	6	1.9%	**36**	**1.2%**
Composite: Dentate Triangles and Continuous Incisions	7	0.4%	32	4.3%	18	5.6%	**57**	**1.9%**
Maize Cob Roulette and Continuous Incisions	9	0.5%	1	0.1%	0	0.0%	**10**	**0.3%**
Continuous and Discontinuous Incisions	6	0.3%	16	2.2%	5	1.5%	**27**	**0.9%**
Decoration on carination only: continuous grooves and scalloped coils	3	0.2%	18	2.4%	0	0.0%	**21**	**0.7%**
Composite: Arch Dentate and Continuous Incisions	2	0.1%	10	1.4%	12	3.7%	**24**	**0.8%**
Total	**1880**	**100.0%**	**737**	**100.0%**	**323**	**100.0%**	**2940**	**100.0%**

Table 10.6 lists the most common rim types by mound by count. A Chi-square test indicates significant results ($\chi 2$ 158.965 at a significance level $\alpha .05$ of .000) between mound and rim shape. Everted rim jars dominated the Kranka Dada assemblage across time and space. There were several variants of the everted rim collared jars, in some

cases, the rim was elongated or squat, but the shape of the lip was either rounded or straight. Depending on the length of the rim, the lip may have been tapered. Straight and rounded rims are included in the table below; however, it is possible that these rims were fragments of other rim shapes.

At Kranka Dada and Bono Manso, there were some temporal differences in the popular rim types in non-everted jars. T-shape and triangular rims were present in Mounds 2 and 5; whereas, the majority of rims in Mound 1 were mainly everted. Elongated everted rims were mainly restricted to Mound 1 deposits. Differences in the distribution patterns were spatial, rather than temporal. T-shape and triangular rims were recovered in Mounds 2 and 5 deposits that were contemporaneous with Mound 1. Most rims of the triangular and T-shape rims were too small to observe interior damage through use; however, of the large sherds, they appear to have been used for cooking and food production and have interior charring.

Table 10.6 Rim Shapes from All Mounds at Kranka Dada by Count

Rim Shape	**1**		**2**		**5**		**Total**	
Straight	93	12.3%	44	6.5%	26	7.7%	**163**	**9.2%**
Horizontal	14	1.8%	16	2.4%	7	2.1%	**37**	**2.1%**
Everted Straight Rim Round Lip	142	18.7%	117	17.4%	62	18.4%	**321**	**18.2%**
Bulbous/ Rolled	5	0.7%	11	1.6%	6	1.8%	**22**	**1.2%**
Inverted	7	0.9%	21	3.1%	6	1.8%	**34**	**1.9%**
Rounded	28	3.7%	8	1.2%	14	4.2%	**50**	**2.8%**
Everted Straight Rim Straight Lip	340	44.9%	361	53.6%	160	47.5%	**861**	**48.7%**
T-shaped	7	0.9%	33	4.9%	17	5.0%	**57**	**3.2%**
Everted Tapered and Straight Lip	30	4.0%	24	3.6%	9	2.7%	**63**	**3.6%**
Everted Straight Lipped and Elongated	31	4.1%	6	0.9%	5	1.5%	**42**	**2.4%**
Everted Squat Round Lip	6	0.8%	10	1.5%	3	0.9%	**19**	**1.1%**
Everted Tapered and Round Lip	32	4.2%	14	2.1%	5	1.5%	**51**	**2.9%**
Everted Round Lipped and Elongated	23	3.0%	6	0.9%	2	0.6%	**31**	**1.8%**
Triangular	0	0.0%	2	0.3%	15	4.5%	**17**	**1.0%**

Total	758	100.0%	673	100.0%	337	100.0%	1768	100.0%

Mica or muscovite inclusions within ceramics were common, and were observed through qualitative measures (none, small, or large mica presence) (Table 10.7). Mica inclusions have been observed in clay deposits, and are not thought to have been intentionally added during ceramic production. Nevertheless, ceramic producers may have intentionally selected specific types of clays for their properties including the mica clays. A Chi-square test indicates significant results (χ^2 152.906 at a significance level $_{\alpha.05}$ of .000) between mound and mica inclusion size. Mound 1 has a significantly higher frequency of sherds with small and large mica inclusions. Differences in the types of mica inclusions in ceramics by mound may indicate differences in clay sources over time, differential access to specific types of clay, or both. The ceramics with large mica inclusions and wavy-line incisions were mainly found in Mound 1; many of these sherds had ephemeral washes of plaster applied (no other ceramic style from Mound 1 had traces of plaster).

Effah-Gyamfi observed that mica inclusions in Bono Manso ceramics were present in approximately half of the sherds (Effah-Gyamfi 1985), but it is not clear how systematically the data were recorded. In addition, to presence and absence, I added an ordinal size class to mica observations. The differences between Bono Manso and Kranka Dada may indicate that ceramics from Bono Manso were acquired from multiple sources and traded widely and mica inclusions may point the use of different clay sources; whereas ceramic vessels from Kranka Dada may have been produced and used locally or within networks not concordant with Bono Manso.

Table 10.7 Mica Inclusions in the Ceramics of Kranka Dada All Mounds

Mica	**1**		**2**		**5**		**Total**	
No Mica	2021	68.9%	1116	77.6%	592	90.0%	**3729**	**74.1%**
Small Mica	742	25.3%	300	20.8%	56	8.5%	**1098**	**21.8%**
Large Mica	171	5.8%	23	1.6%	10	1.5%	**204**	**4.1%**
Total	**2934**	**100.0%**	**1439**	**100.0%**	**658**	**100.0%**	**5031**	**100.0%**

There are significant differences in the ceramics of different mounds at Kranka Dada. The main vessel categories and types show functional continuity across mounds. Everted rim jar dominated the assemblages of all mounds and were used in a wide variety of domestic activities, including food preparation and short-term storage. Serving vessels were largely absent from the analyzed assemblage, but this may indicate that other types of perishable materials such as wood were used as serving vessels. It is likely that wet foods composed a significant portion of the diet. Ceramic lids with thermal damage and soot as well as groundstone were common. Intentionally fractured and unidentifiable animal bones are consistent with soup or stew production. Interior charring, striations, and abrasions on ceramic sherds indicate that foodstuffs were boiled and stirred with vessels being scraped and cleaned for future use.

The quantity of ceramic objects from Kranka Dada increased in the 1500s. The increase in ceramic materials by weight was likely correlated with an increase in population and population density. Effah-Gyamfi argues for a sharp increase in population at Bono Manso during Phase II occupations based on similar patterns of data (Effah-Gyamfi 1979:182). Effah-Gyamfi (1979, 1985) attributes population growth to the transformation in Bono Manso’s political structure. During the early to mid-1500s, Bono Manso transitioned from a loose political unit with nucleated settlements to strong, more centralized political unit (Effah-Gyamfi 1979:181).

One of the most striking patterns in the artifact assemblages is the difference in non-ceramic vessel sherd artifact types and frequencies across mounds. Mound 1 deposits had the majority of faunal remains, smoking pipes, and metal objects compared to Mounds 2 and 5. Many of the artifact differences were temporal. The lack of fauna from early levels of Mounds 2 and 5 deposits is interesting. Phase I at Bono Manso largely lacked fauna. This may indicate that faunal remains from deposits pre-dating the 15th century were more likely to perish. Many of the faunal remains from later deposits were quite small in size and from small to medium sized animals. The majority of identified animal resources at Kranka Dada were juveniles from wild populations that could have been opportunistically hunted or trapped. Acquiring meat for household use may have been an activity embedded within other activities, especially since many of the small and medium animals would have likely been attracted to agricultural clearings. Some domesticated genera were present in the faunal assemblages; however, domesticated genera did not account for a significant proportion of the faunal assemblage. Of the domesticated fauna that could be identified, sheep/ goat and chicken/ guinea fowl were the most abundant.

Shell was differentially distributed in the mounds of Kranka Dada with the majority of pieces recovered from Mound 1. Two pieces of shell were recovered from Mounds 2 and 5, and no shell was observed in the flotation samples from these mounds, suggesting that the differential distribution of shell within the mounds is a pattern rather than biased by preservation and fragmentation. Although shell is the byproduct of regularly consumed and locally available mollusks, the distribution of shell in Mound 1 may indicate status differences for occupants of Mound 1.

An examination of the smoking pipes yields three important pieces of information about local and regional integration. Absolute radiometric dates indicated that smoking pipes and tobacco were present at Kranka Dada relatively early (1568 CE ± 32). The pipes from Kranka Dada are similar to pipes from the greater Volta Basin. Many greater Volta Basin smoking pipes seem to be more similar to Malian styles as inferred from their pedestal bases (see McIntosh, et al. 2003). The coastal chronology of smoking pipes does not coincide with the chronology of pipe styles for the Bono Manos region; indeed, some of the earliest styles from the coast are the last styles found on forest/savanna sites. Some scholars have argued that tobacco was introduced from the north, from the Senegambia, to Timbuktu, and south into Akan areas. Evidence for this argument are the early dates of tobacco recovered from Timbuktu, as well as the similarity in shapes of flat-based African pipes to pipes from Louisiana, and linguistic similarity between African words for tobacco are most similar to the French *tabac* (Ozanne 1963; Phillipson 2005). Evaluating the origins of tobacco is beyond the scope of this research; however, I argue that tobacco was a widely traded commodity that was traded within both southern and northern networks. The inhabitants of the Bono Manso region likely acquired, manufactured, and traded smoking pipes with a wide array of individuals and traders. At a more local level, a large frequency of smoking pipes were recovered from Kranka

Dada, compared to sites in the larger region. Thus I had a large number of smoking pipes to examine. Pipes were not uniformly distributed at Kranka Dada; indeed, 98% of the pipes were recovered from Mound 1 deposits. The distribution of pipes at Kranka Dada was restricted to that mound. In contrast, at Bono Manso, smoking pipes were widely distributed over a much larger spatial area of the site (based on surface collections). The Kranka Dada pipe assemblage, although spatially restricted, was morphologically and stylistically diverse. Single-angle and double-angle stemmed pipes were recovered from seven different types of bases. Decorative motifs and surface treatments were diverse. Similar to ceramic vessels, incisions and dentate stamping were common. The makers of smoking pipes played with relief and the negative space of pipes. Smoking pipes were objects that conveyed personal information about the smoker. They were novel objects that acted as markers of identity, status, and participation in local and global exchange networks and perhaps, regional hierarchies.

The lithic materials from each of the mounds indicated that lithic technology were the products of an expedient technological system. Flake removals were made from multidirectional cores. This type of lithic reduction with locally available raw material suggests that Kranka Dada inhabitants were primarily concerned with creating flakes with useable edges. This process suggests time was conserved rather than maximizing the raw material and using it efficiently. Poor quality toolstone was primarily used rather than investing time and energy into acquiring non-local but better quality toolstone materials. All pieces expected within a continuous reduction sequence, cores, debitage, and tools were observed suggesting that materials were reduced on site. However, the higher proportion of tools to cores and core to debitage ratios from Mound 1 may indicate that much of the primary reduction sequence occurred elsewhere. Lithic artifact ratios indicate that lithic production was organized differently in Mound 1. Mean core weight from Mound 2 was the largest. Larger quantities of lithic materials were recovered from Mounds 2 and 5 indicating higher levels of lithic production in non-elite areas as well as part of the early occupational history of the site. In spite of the use of metal objects and tools, the lithic industry continued to operate concomitantly alongside the metal technology industry.

Table 10.8 Core, Tool, and Debitage Ratios

Mound	Core to Tool	Core to Debitage
1	1:3	1:27
2	1: .2	1:3
5	1: 1.4	1: 2.9

The flaked and groundstone assemblage indicated continuity in the lithic industries from the sub-Saharan to Atlantic trade periods. Households routinely incorporated stone tools along with metal tools. This practice has been observed in other parts of West Africa (e.g., Sierra Leone (DeCorse 2012). Raw materials were primarily acquired from local sources, most likely from quartz outcrops easily found throughout the area. Some exotic materials such as greenstone were observed, but it was associated with the *nyame akuma*. Flaked stone objects were recovered in all mounds, but there were significant differences in the spatial and temporal distribution of cores, tools, and debitage. Households were most likely in control of acquiring, reducing, and producing lithic tools and flakes for their own needs. Materials were routinely expediently reduced on site. Yet, core to debitage and tool ratios indicate that Mound 1 occupants had greater access to tools and may have acquired some tools as finished objects. More complete sequences of reduction and production were acquired from Mounds 2 and 5. Higher quantities by count and weight of flaked stone materials were recovered from deposits post-dating the Atlantic trade era.

The lack of metal objects from excavations and presence of slag/ iron working features from the immediate environs of Kranka Dada are noteworthy. Kranka Dada's occupational history extends well into the Iron Age, yet there was a conspicuous lack of iron objects in my excavations. The remains of iron production, slag and tuyere fragments, are often recovered from archaeological sites and from the areas surrounding sites during this period of occupation. Six large slag mounds ranging from .75 to 1.2 m high and each approximately 25 m wide were documented 100 m east of Bono Manso (Effah-Gyamfi 1985:79). The size of the slag mounds indicated that iron was produced in the region on a large-scale. In addition, iron slag was abundant and documented throughout the valley to the southwest of Bono Manso (toward Tanoboase) as part of my pedestrian survey. Small amounts of iron slag were recovered from the mounds of Kranka Dada as well as documented on the pedestrian survey of the area surrounding Kranka Dada, weighing a total of 225 grams. Over half of the slag (by weight) was recovered from Mound 2 deposits that pre-dated the opening of European Atlantic markets. Mound 2 slag was both smelting and smithing, indicating the full range of iron production was present, at least at a small household scale prior to 1450 CE. Metals were a valuable commodity. During Asante statehood, the Asante exacted tribute and tax on neighboring polities in the form of slaves and metals. DeBarros' research from the Bassar region of Togo indicated that the Asante need for commanded goods directly affected communities at some distance from the Asante territories (de Barros 2001). Unlike some other types of material culture, metals can be recycled and reworked to create new objects. Since metals were valuable, it is unlikely that they would enter the archaeological record in the same manner as other types of objects (like sherds). Very few iron objects were recovered from either Kranka Dada (n=17) or Bono Manso (n=14). At Bono Manso, the majority of iron implements were recovered from Phase III deposits (post-1600 CE). The same pattern holds for Kranka Dada as most iron implements were recovered from Mound 1 deposits that corresponded to Effah-Gyamfi's Phase III. Levels of iron production were high, but local distribution and consumption of iron objects was limited. Based on the distribution of iron production features, it is likely that Bono Manso played a significant role is controlling iron production and consumption process. Bono Manso may have been a specialized metallurgical producer of iron goods, based on the large slag mounds near its immediate outskirts. However, the quantity of metal objects recovered from Kranka Dada increased following the opening of Atlantic markets.

Political Economy and Regional Integration

The Portuguese arrived on the Gold Coast in 1482 CE. Prior to face-to-face exchanges, European contact had already affected the daily lives, interior trade networks, and trade relations of coastal and inland communities. The expansion of European networks through maritime trading and raiding occurred slowly along the west coast of Africa, with over 150 years of exploration, mapping, studying ocean and atmospheric currents, founding new island colonies, and creating relationships with West African polities and littoral communities. European trade both complemented and competed with trade from sub-Saharan networks. While the establishment and expansion of trade was important, it was not an all-encompassing phenomenon that determined social trajectories of those living in inland areas. Thornton argues that European trade brought new prestige goods into West Africa (Thornton 1998). In addition, major commodities traded into the Gold Coast were products of industries and technologies already present in West Africa such as cloth and metals.

One of the frustrating limitations of archaeology in the tropics is preservation. Certain types of goods are unlikely to be recovered. Because Kranka Dada was still occupied in the historic period, the numerous documents, travelers' accounts, and databases detailing the Atlantic trade provide relevant information on the kinds of goods that were vital to African economies. Gold, kola nuts, salt, cloth, and captives were among the most common and important trade goods. Gold was used to create currency standards which funded early capitalist and colonialist expansionist regimes as the Mediterranean economy interdigitated with Atlantic and Indian Ocean economies. The process of early globalization would not have been possible without the labor of the enslaved Africans and Native Americans in the Americas. Indeed, enslaved Africans were the most populous group of New World immigrants until the early 17th century. Within West Africa, the kola exchange remained vital to forest/savanna economies and expanded with the growth and expansion of Hausa kingdoms and polities throughout the western and central Sudan (Goody 1964). Salt is an essential life-sustaining nutrient that was traded widely throughout West Africa (Lovejoy 1986) (Mauny 1961). Gold and salt were reported to have been traded at equal value, although some historians find such a supposition to be an exaggeration. Nevertheless, it is an exaggeration that underscores the importance of salt trading in West African trade networks (Lovejoy 1986). Geologic salt deposits were unevenly distributed throughout the landscape, and salt was traded widely throughout sub-Saharan networks and always in high demand (Lovejoy 1986; Vansina 1962). Textiles were an important trade commodity imported into West Africa, with high quantities earmarked for consumption at Gold Coast trading facilities. Imported textiles transformed local fashions and served as important items of personal adornment. Artisans sometimes disassembled imported textiles to reweave them into fashions to suit local tastes and artistic expressions.

No data are available on the volume or value of the aforementioned commodities within the households of Kranka Dada. In addition to volume and value, it is likely that the possession and display of such goods were important to constructions and communicating individual and household status. Personal items of adornment, such as clothing were important in conveying personal messages of wealth and status (Cordwell and Schwarz 1979; Hansen 2004; Perani and Wolff 1999; Renne 1995; Wobst 1999). While poor preservation of goods like textiles, kola, and salt make their recovery nearly impossible, it is important to remember that they would have been ubiquitous components of the lives of the people of Kranka Dada.

The archaeological correlates from Chapter 5 outlined expectations for the distribution of material culture expected for the different scenarios of political economic integration. The early deposits of Kranka Dada were associated with Phase I deposits from Bono Manso. Materials recovered indicate that there were organizational and functional differences between the mounds very early in the site's occupation. The functional variability may indicate a horizontally-integrated relationship between Bono Manso and Kranka Dada. Using the quantity of ceramics as a proxy measure for population, the early phase populations at Kranka Dada were lower than later phases. The granary structures from Mound 5 indicate that the residents of Kranka Dada controlled their means of production as well as surplus. The concentrated distribution of groundstone near the granary structures indicates some specialization. There was some variability in the types of objects present within early period deposits. Small find objects such as *nyame akuma* were present in low quantities, but there were patterns of differentially distributed between Mounds 2 and 5. The pattern of differential distribution indicates that households were acquiring and consuming goods according to their preferences.

From at least the 1400s, sub-Saharan networks and trade increased the commodity flows into the Bono Manos region. Populations increased and the footprint of Kranka Dada and Bono Manso grew concomitantly. As populations grew, settlements became more concentrated, and there was a reorganization of the political economic relationship between Kranka Dada and Bono Manso. Bono Manso's regional influence and authority increased, resulting in a reconfiguration of relationships with satellite communities. On the eve of the opening of Atlantic markets, it is likely that Kranka Dada developed a semi-autonomous relationship with Bono Manso.

Production and consumption patterns varied between the mounds. Mound 2 residents increased their production beyond the needs of the household, while little evidence for the production of specific goods was observed from Mound 1. Households from different mounds appeared to have some autonomy in organizing how their daily life activities were organized. No evidence for specific taxation or commanded items was recovered, although it is in the realm of possibility that many tax or tribute items were perishable and not detectable archaeologically (such as agricultural supplies).

An examination of the structures and artifacts from Kranka Dada indicates that there were continuities in aspects of daily life from the sub-Saharan to Atlantic exchange periods. Households appeared to have remained largely responsible for tending to their own needs. At the level of the archaeological household, a variety of activities were integrated. As discussed in Chapters 7 through 9, ceramics, lithics, and subsistence remains from sub-Saharan trade period indicated that households controlled their means of production, and were responsible for providing for their own production and consumption. Some production beyond the needs of the household became part of daily life by at least the 1460s, and perhaps earlier. My data suggests that these activities were performed by an array of participants. Thus, some sub-standard goods were used in household activities alongside more superior quality goods. The ceramic production/firing area feature provided evidence for artisans of multiple skill levels likely indicating that children were important members of households and their tutelage was managed by more experienced household members (see Crown 2001; 2007; Wallaert-Petre 2001). Similarities in the qualitative and metric attributes of ceramics from the production area likely indicate that young apprentices were taught and incorporated into household activities in a piecemeal fashion. Young apprentices probably learned how to create vessels in discrete stages by mastering specific tasks throughout the chaîne opératoire (e.g., placing the rim on a leather-hard vessel, decorating the exterior vessel, etc.). In Mounds 2, higher levels of household production were correlated with increased market participation.

In addition to production and consumption activities, early period households participated in ritual activities. Late Stone Age groundstone celts were recovered from pre-Atlantic period Kranka Dada. Nyame akuma have been well documented as prized curated objects that were used in a variety of ritual activities from household shrines, warding off evil spirits, and ritual/ medicinal contexts. The context of use and secondary use of the axes changed from the sub-Saharan to Atlantic trade periods. The early period distribution of groundstone celts was restricted to the small structures of Mound 5, which I suggested functioned as granaries. Another concentration of groundstone celts was recovered from post-Atlantic trade period Mound 1 deposits. However, the distinctive secondary use wear from the celts indicate that they were used into a different type of activity (observed by the small patches of heavy abrasion) than the celts from Mound 5. The curation and use of nyame akuma remained an important household activity (likely ritual), but the way in which the objects were manipulated in households activities changed over time.

Ceramic artifacts were the most abundant artifact recovered, and provided information about a range of household activities. Different mounds showed different consumption patterns. Mound 5 was a low-status mound, ceramics were composed of mainly of local and perhaps some regional goods. Mound 2 households were of an intermediate status with a combination of local, regional, and global goods. Global imports recovered from Mound 2, such as the Rhenish stoneware, was not a symbol associated with Bono Manso political authority. The increase in household production of Mound 2 provided residents with the means to acquire regional and global goods based on their preferences. However, the badges of chiefly office and sumptuary goods were not recovered from Mound 2, perhaps indicating unequal access to certain types of commodities. Mound 1 had a disproportionate amount of regional and global goods from small finds, copper/brass, beads, smoking pipes, spindle whorls, animal bone, possible gold weights, and imported African ceramics. At the same time, evidence for household production of specific goods or commodities was not present in Mound 1. The disproportionate and differential distribution of objects from Mound 1 cannot be explained by the entrepreneurial activities of its residents.

Stylistic markers on vessels and smoking pipes display social information. Supporting evidence of Kranka Dada's semi-autonomous relationship with Bono Manso, comes from the mixed stylistic elements on ceramic vessels and pipes. Some Bono Manso styles were present as well as styles mainly present within the different mounds; however, the highest quantities of shared styles with Bono Manso were recovered from Mound 1. Maize cob roulette was mainly recovered from Mound 1 contexts, although there is a temporal aspect to consider with its distribution. The ceramics with large mica inclusions, wavy-line continuous incisions, and an ephemeral plaster coating were mainly recovered from Mound 1, and were likely special use vessels. With ceramic vessels recovered from Mounds 2 and 5, there was a combination of shared regional or Bono Manso stylistic traits as well as mound-specific decorative techniques (e.g., triangular dentate, circle dentate). Smoking pipes were another type of ceramic object. Their concentrated distribution in Mound 1 indicates their use was spatially restricted. In addition, there were vast differences in smoking pipe morphology, inclusion, surface treatment, and decorative motifs applied. This indicates that smoking pipes were traded widely within African networks.

Following the opening of Atlantic markets, there were some significant changes in the daily life at Kranka Dada. The architecture of Mound 1 was completely different from architecture from Mounds 2 and 5. The rate of accumulation of repair and refurbishment of plastered floors in Mound 1 suggests that a substantial amount of labor, and resources were used in the maintenance of plastered floors. The high volume of daub in Mound 1 (compared to Mounds 2 and 5) indicates that Mound 1 structures were more substantial than structures in adjacent excavated mounds. Two possible and competing interpretations are likely. No plastered floors from Bono Manso were documented during the excavations, but excavations were limited relative to the size of the site. Plastered floors have been documented in contemporaneous structures in the Banda region. It is possible that new styles of architecture, in addition to new styles of textiles, ceramic designs, other technologies, were influenced and spread as new peoples, goods, and ideas were traded and communicated through trade routes and networks, and the later dates of Mound 1 reveal these changes. It is also possible that the architectural differences in

Mound 1 reflected a different function of this mound. Plastered floors are common features of Tano religious shrine houses.

All lines of evidence indicate that Mound 1 was not a typical house mound. The pattern of differential distribution of artifacts and the new types of architecture with plastered floors could be interpreted as elite spaces with differential access and competitive accumulation of prestigious and novel goods. The carved bone object cached in Structure 5 was most likely an oliphant, an object traditionally interpreted as an elite-sanctioned object. In coastal communities, the frequency of elite and administrative positions greatly expanded in the 16th and 17th centuries. Elites and trusted elders were often charged with the responsibility of overseeing activities in communities peripheral to large central towns. As the quantities of global trade goods that entered Akan communities increased, many political and ritual elites engaged in displays of competitive accumulation. It is possible that the differential access to goods represents items acquired though prestige-goods networks for the purposes of competitive accumulation. If so, Kranka Dada maintained a subordinate or vertically integrated relationship to Bono Manso, at least during the Atlantic exchange period (at least as subordinates of political or ritual institutions).

Post-European contact households appeared to have retained some economic autonomy from Bono Manso. The spatial distribution of some types of goods, like smoking pipes, differed between Bono Manso and Kranka Dada. Bases on surface collections of pipes, a wider variety of Bono Manso occupants enjoyed access to tobacco and smoking pipes than Kranka Dada occupants. The spatial concentration and restricted use of certain types of goods may indicate that they were acquired through connections with Bono Manso. In this context, the possible oliphant is informative. Usually such objects were made from ivory, an important material largely within the hands of elites (McCaskie 1995). At Kranka Dada, the possible side-blown trumpet fabricated from bone is a sub-standard material. Differences in the raw materials used to fabricate such an important cultural object could indicate Kranka Dada's subordinate or vertically-integrated status (or perhaps just the individual whose was responsible for the object).

The reorganization of the Bono Manso and Kranka Dada relationship, from horizontal to semi-autonomous, affected some areas of daily life more than others. It is likely that the economic organization of Kranka Dada remained fairly autonomous. Households retained control over their means of production, scheduling, and what they chose to produce. It was possible for Kranka Dada residents to acquire a wide range of regional and global goods, although there may have been some sumptuary restrictions. For a village, Kranka Dada residents were able to participate in supralocal African and Atlantic exchanges in meaningful ways. As trade increased and intensified in the region, it is likely that religious and/or political organizations became vertically-integrated while other institutions remained under Kranka Dada's autonomous control. In Mound 1 deposits, there is evidence for a rapid reorganization of religious activities. New types of goods were acquired and manipulated as items of prestige. The use of objects such as *nyame akuma,* began to be used in new innovative ways in spatially restricted contexts. The creative manipulation and repurposing of goods occurred after the opening of Atlantic markets, but before the large expansion in European trade in the mid-1700s (see Figure 2.2 from Chapter 2). Based on the sum of vessel tonnage, the quantity of European imports remained steady until the mid-1700s. This indicates a sophisticated process of utilizing and producing power and materializing ideologies through the creative manipulation and repurposing of goods. In contrast to many other areas of the world affected by colonial expansion, religious institutions in the Bono Manso region were flexible and were structured in a way that allowed for the incorporation of new materials and exotic prestigious items.

The data used for understanding the context of deposits and patterning in the artifact assemblage from Mound 1, lend itself to multiple interpretations A second interpretation of the activities of Mound 1 is that it was a space for community integration. Differential distribution is not necessarily differential access. Ritual spaces often bring members of a community together and allow them to share common beliefs. Through religious acts and ceremonies, members of a community can become integrated. A considerable amount of labor was used in plastering and whitewashing the floors, and the structures from Mound 1 accumulated at a much faster rate than in Mound 2 or 5. Perhaps an analogous renewal process, occurred with the hearth vessels as layer upon layer of unfired slip was applied to hearth pots. Ethnohistorically, this act was performed regularly as a means of properly preparing for the day's domestic activities (Boachie-Ansah, personal communication 2009).

Ritual spaces are often maintained by the communities that use them. In other parts of the world, community members often pool labor and materials to refurbish and repair ritual spaces. Labelle Prussin wrote, "Architecture both reflects and affects society…" (Prussin 1986:20). For example, mud mosques of the Sahel and adobe churches of New Mexico are annually, physically and ritually, repaired with new coats mud and adobe applied. Because the acts are labor intensive, community members from different households and class collectively act to renew the ritual spaces, and the act of renewal helps to bind and integrate the community.

Smoking pipes and vessels that once held alcohol were concentrated in Mound 1. Accounts of European travelers indicate that smoking was an activity open to all types of people, elites and commoners, females and males (Roberts 2004). Roberts (2004) argued that smoking in Africa was intimately tied to ideology. It is possible that the concentration of tobacco and alcohol vessels reflect a space of community integration. Although feasting has perhaps been overemphasized in anthropological archaeological literature, it is possible that "tobacco feasting" occurred at Mound 1. As a distinct space Mound 1 could have been used for a variety of special occasions that require displays of communal eating and drinking (e.g., funerals, festivals, etc.). It is possible that the pattern of differential distribution of smoking pipes may be due to chronological differences in the mounds at Kranka Dada; however, I think the concentration of smoking pipes from Mound 1 is not only an artifact of excavation strategy. Very few smoking pipes from the other mounds were recovered from two seasons of surface collections; however, smoking pipes were widely distributed on the mounds of Bono Manso. The differences in the distribution of smoking pipes between Bono Manso and Kranka Dada may indicate that tobacco was used in a different way or as part of group ceremonies or ritual rather than solely for individual consumption. In addition to smoking pipes, decorated ceramics and faunal remains were largely concentrated in Mound 1. In terms of the identifiable faunal remains, many genera documented had both subsistence and ritual uses. Historically, animal skins and porcupine quills were used by chiefs and priests (Blier 1998). High quantities of shell, porcupine, and reptile remains were recovered from Mound 1. It is possible that some animal resources served dual purposes.

Religion and Ideology at Kranka Dada

The dual processes of ritual offerings and regalia accumulation within ritual spaces is a particular part the Akan aesthetic, and Tano shrine houses are known for their accumulation of goods (Silverman 2005). This is perhaps an extension of the principles of wealth accumulation prominently discussed in McCaskie's (1995) work on the pre-colonial Asante. McCaskie (1995:37-58) convincingly argued that one of the fundamental characteristics of Asante knowledge is built on the premise that accumulation of surplus and wealth provides a measure of success. Amassing wealth and surplus provided a mnemonic symbol of timeless authority and power. In the pre-colonial era from the 18th to 19th centuries, an individual participating in an administrative capacity of the state needed to first successfully access resources and create a burgeoning surplus. While there were restrictions designed to limit concentrations of wealth in private hands, the Asante created state-sanctioned incentives for individuals successful in generating wealth from market transactions. Once a sufficient amount of wealth was generated, an individual became ranked higher in potential eligibility pool for chiefly political office (Brempong 2000). Wealth generated from participation in exchange networks and agricultural surplus accumulation lead to higher political status; high political status did not necessarily lead to wealth.

There are shared objects of material culture employed by religious and political officials (Silverman 1998), which leads to inevitable rivalries between authority figures and institutions (McCaskie 1995; Silverman 1987). Both deities and chiefs possess and display specific items of regalia such as state swords, fly whisks, umbrellas, stools, drums, ivory side blown trumpets, kente cloth, gold ornament adorned diadems, and others. These prestigious objects differentiate chiefs and deities from commoners. In this setting, more is more. High amounts of wealth and goods accumulation are correlated with potency and effectiveness. Items of regalia are used in similar ways between religious and political offices; consistency of material culture use between ideological and political realms suggests that similar meaning is attached to each item. For example, the significance of visual culture such as state sword or an umbrella can be read to have the same meaning in different contexts.

One possible interpretation of the structures of Mound 1 is that they were associated with a religious context. This interpretation is based on multiple lines of evidence. First, the plastered floors from Mound 1 are similar to the *hyire* markings and ubiquitous use of plaster within modern shrine contexts. Second, a specific type of formally decorated ceramic vessels with multiple wavy and continuous incisions and large muscovite inclusions were mainly found in Mound 1. Out of all the ceramics found in Mound 1, this was the only type of vessel often had thin layers of plaster applied to the exterior. Third, the oliphant-like artifact was recovered from Mound 1. Fourth, the exclusive presence of shell in Mound 1 contexts may corroborate its religious status. Although shell was an important forest commodity and food resource, its concentration in Mound 1 deposits may indicated that shell served more than one purpose. The shell remains of food resources could have been transformed into objects and had multiple meanings. Shell is often found in shrine contexts today.

In order to continue with this ethnographic analogy, the weaknesses of the religious context interpretation must be acknowledged. Tano shrines are historically located on the outskirts of settlements, and Mound 1 is centrally located within Kranka Dada. However, Akan religious practices are diverse and recognize a wide array of deities and supernatural forces including witches, protective talismans, and messengers. *Atano* deities and shrine houses are only one type of religious institution. In addition, one of the modern priests (not *Atano* priest) claims that he was the last living person to see the brass vessel, and it is on the outskirts of Kranka Dada near one of the areas with surface water and an ephemeral drainage. It is possible that the deposits of Mound 1 are associated with a shrine context; however, due to the diversity of historic and modern shrines identifying the specific type of shrine is not possible.

Comparison to Banda Shrines

Stahl has written two articles that examine religious activities in the Banda region, which provides for excellent comparative contexts (Stahl 2008, 2013). The Mound 1 deposits differ from the Banda shrine deposits in several ways. In the Ngre and Kuulo Phase deposits, brass miniature figurines are often part of shrine contexts and may be associated with divination practices (Stahl 2013: 57). No such figures have yet been recovered from either Kranka Dada or Bono Manso. In addition, between 1400 to 1900 CE the remains of dogs and pythons were often sacrificed and associated in Banda shrines (Stahl 2008). Dog remains were often associated with Tie shrines used to ensure prosperity in farming and business (Stahl 2008: 168).

One possible dog cranium was observed in the test unit at the base of Mound 1 (Figure 10.2). Overall low frequencies of canid remains were recovered from Mound 1 and none from Mounds 2 and 5. The remains of large snakes were found in Mound 1 accounting for 2.3% of the Mound 1 faunal assemblage. There were remains were recovered from the lower levels of the test pit; at least one large snake vertebra was recovered with the possible dog crania. The rest of the large snake remains were recovered from a “ceremonial hearth” (Figure 10.1) in the structure/ floor area stratigraphically above the possible dog crania. These features date to the mid-1500s at Kranka Dada, which is well within the Kuulo Phase of Banda.

Figure 10.1 Test Pit, Ceremonial Hearth Level 13

Figure 10.2 Test Pit, Possible Dog Crania

Ritual and religious activities were not confined to specific places and designated areas, but were an important part of everyday life (McLeod 1981; Rattray 1923, 1927; Silverman 1987; Stahl 2001, 2013; Warren 1974). In the Bono and Banda regions, there are many types of shrines and religious activities. Shrines can be incorporated into houses in order to honor ancestors, often regular sacrifices of libations, foods, and animals are given (Stahl 2008; D. Warren 1976). Witchcraft and sorcery are commonly feared, and there are multiple types of medicine bundles, talismans, and offerings used to protect an individual against witchcraft and evil. Religious offerings are used to ensure prosperity in economic endeavors such as business and farming (Stahl 2008). Some places on the landscape, like the Tanoboase Sacred Grove at the headwaters of the Tano River are considered to be “living shrines” in that the entire area has religious significance and rituals and offerings are regularly performed (Rattray 1923).

The stack of vessels, pot lid, groundstone, and quartz debitage from the top of Mound 2 is similar to the shrine deposits, shrine clusters, and shrine aesthetics from the Banda region (Stahl 2013). These were everyday domestic objects that may have been transformed into supernatural objects through the process of bundling and stacking in a particular, patterned manner (ibid.). Shrine clusters in the Banda region are often located at the top of a structure, perhaps signaling that the building will no longer be used. Without additional data, the similarities between the Banda shrine clusters and the cluster of objects sealing the Mound 2 deposits should be viewed as hypothetical, and an avenue for future research.

Differential Distribution or Differential Access?

With the opening of Atlantic markets to the south of Bono Manso, the volume of trade goods entering Gold Coast and interior communities greatly increased. Communities in both regions created a plethora of new types of political offices and administrative positions were created as trade expanded, settlements multiplied, and populations grew. Documenting how deep global markets penetrated into the daily lives of those living in the agricultural hinterlands of large settlements is one of the goals of this study.

As discussed above, ethnographic and historic data indicate that political and religious elites engaged in displays of competitive accumulation of prestigious goods (McCaskie 1995; Silverman 2005). Maintaining access to goods/ resources and channeling specific items of wealth was an important strategy for materializing ideologies of power, demonstrating alliances, and participating in overlapping networks. Historic records can provide partial and biased glimpses into the social complexity surrounding trade, elite relations, and sociopolitical organization within the Bron and Akan settlements. Areas such as Begho have been well documented, as a central trade entrepôt with a complex array of socially integrated ethnic groups, religious groups, artisans, etc. To date, the archaeology has been inadequate in addressing gaps in historical knowledge, in part due to preservation biases and the nature of exchange. A limited quantity of trade goods was recovered from Begho and Bono Manso, and the physical locations of former markets are unknown. Gold, kola, salt, slaves, and textiles constituted the central foundation of sub-Saharan to Atlantic trade economies, yet their presence is difficult to detect at archaeological sites.

Illustrating the limited number of trade goods and categories from Bono Manso is Table 10.9. All non-ceramic finds from Bono Manso Phase II and III are listed below.

Copper, brass, glass, and European pottery are classified as imports. My research at Kranka Dada yielded almost the same numbers of trade goods as Bono Manso; however, some goods, including glass beads, were not recovered from Kranka Dada. Presence and absence of trade goods may not be the best way to examine how deeply markets penetrated into the daily lives of Kranka Dada's inhabitants; comparisons between Bono Manso and Kranka Dada can still provide insights nonetheless. Figure 10.3 shows the frequency of trade goods from Bono Manso and Kranka Dada by period[32]. The main difference in quantity of trade goods between the two areas is influenced by Effah-Gyamfi's recovery of a necklace with 25 glass beads from a burial. When the glass beads are omitted, the ratio of non-ceramic small finds from Bono Manso to Kranka Dada is 1:.63

[32] Frequencies of the total assemblages are given. Estimates of goods per unit volume are not available for Bono Manso, and cannot be calculated. The frequencies of goods by volume would provide a better comparison.

Table 10.9 Non-Ceramic Finds at Bono Manso from Phase II and III Deposits

Item	Bono Manso	Kranka Dada
Iron Projectiles	5	4
Iron Knives	5	0
Iron Spoons	2	0
Iron Ring	0	1
Iron Fragments	0	5
Iron Coin?	0	2
Cooper/ Brass Spoons	2	0
Copper/Brass Knives	1	0
Copper/Brass Needles	4	1
Copper/Brass Jewelry	4	2
Copper/Brass Scraps	2	1
Ivory Bangles	8	0
Ivory Bracelets	4	0
Ivory Cup	1	0
Stone Bead/Jewelry	1	1
Bone Bead	1	2
Shell Beads	1	1
Glass Beads	25	0
Rubbing Stones (knife sharpeners?)	4	0
Nyame Akuma	0	6
Gold Weights	0	2
Rhenish Stoneware Sherd	2	1
Possible Trumpet	0	1
Total	**72**	**30**

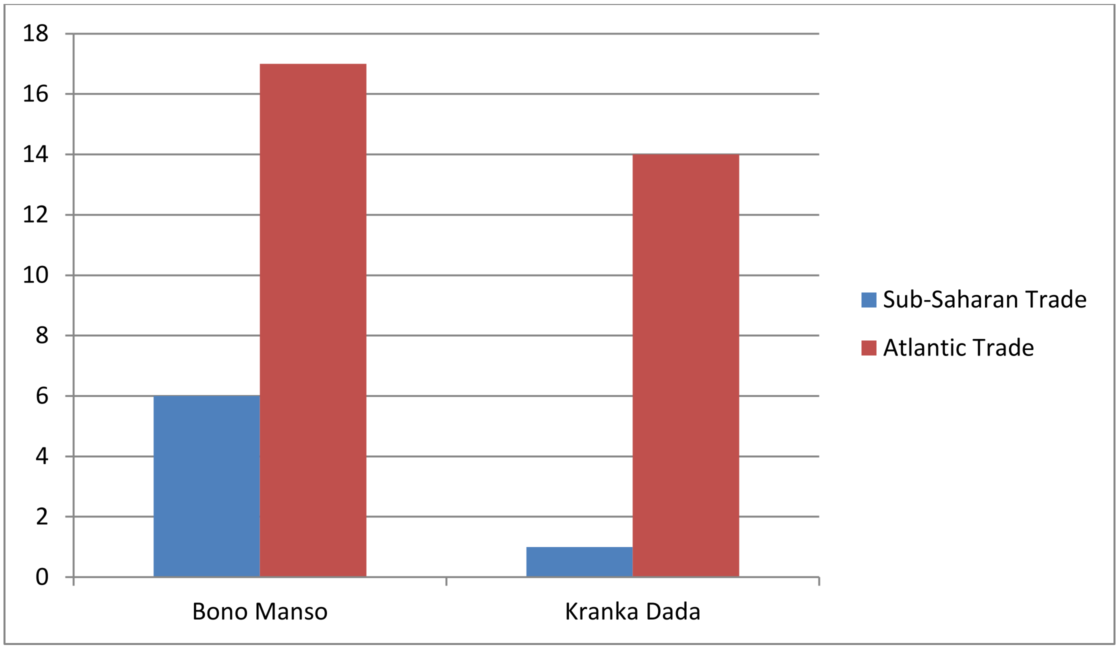


Figure 10.3 Non-Ceramic Trade Goods

Ethnohistoric to eurohistoric sources describe the movement of goods across the landscape as an expensive and labor intensive activity, especially through forested areas. Merchants operating from coastal to inland areas were highly organized, purchasing specific types of goods for interior populations (de Marees 1987 (1602); Kea 1982). Pack animals could not be used; therefore, goods and commodities were carried by human porters. Keeping forest roads clear as paths required some maintenance, because encroaching forest growth and heavy seasonal rains altered forest paths and roads. Toll areas and tariff extortions were frequently encountered by merchants travelling through forest areas. Risks were associated with caravan and human porter travel. Merchants had to be constantly vigilant about bandits and their own security (Garrard 1980).

In addition, there were multiple types of merchants: itinerant, professional, and state recognized (Arhin 1970). On the coast, complex laws regulated taxation, elite commercial responsibilities and rights, and the types of goods available for consumption (de Marees 1987 (1602); Kea 1982). Similar to today, coastal and littoral market days were predetermined and scheduled among different communities for different days, providing predictability for merchants and consumers (de Marees 1987 (1602); Hill 1966; Kea 1982). The placement of physical markets on the landscape involved several interacting factors of economic geography, some markets likely developed in areas of resource abundance, population concentrations, town growth, and/or advantageous geographic or landscape features. Major and minor markets were articulated via a complex network of different nodes and hierarchies.

Bono Manso and its satellite villages, including Kranka Dada, were geographically positioned to capture and consume market commodities from northern and southern networks. However, many of the goods important for constituting and documenting wealth and status are unlikely to be preserved in the archaeological record. Based on the presence of small finds associated with trade, the quantity of trade goods recovered Kranka Dada is similar to the quantities of trade goods from Begho and Bono Manso. However, some types of objects important for identity and status differences, such as ivory and glass beads, were not recovered in my excavations. This is not to say that they were not present at Kranka Dada, just not recovered. The presence of non-local goods suggests that small sites were capable of participating in multiple, overlapping exchange networks in meaningful ways.

Conclusions

My project makes new substantive contributions to our understanding of Akan states and to larger anthropological questions concerning alternative organizational models for early states, and household and village integration and participation into global economies. In the realm of Akan and Bron history, my research provides the first archaeological examination of satellite settlements and addresses the internal organization of the Bono state. This study provides a critical case study that can be compared with the Begho and Banda regions (Posnansky 1977, 1979a; Stahl 2001, 2007). Rather than merely shedding light on a largely unexplored area, I document how domestic economies were shaped by political, economic, and possibly ideological activities as that community was being integrated into a complex web of global and regional processes.

Understanding the ways in which Kranka Dada and Bono Manso were linked with each other is difficult as the data lend themselves to multiple interpretations. Data from both sites are limited, making it difficult to link specific activities between core and periphery. At the same time, we know little of how the political, economic, and ideological institutions of Bono Manso were structured. At the domestic level, no data from Bono Manso indicate the range of household activities, how craft production was organized, how deep the global markets penetrated into the daily lives of inhabitants, or how the institutional and organizations structure affected the daily lives of inhabitants. We do know that Bono Manso was an important settlement with a long occupational history, from the sub-Saharan trade to Atlantic exchange eras. Its position at the forest-savanna transition made it suitable as a transitional market, where trade shifted from caravans to human porters and vice versa. Brass vessels, ivory objects, recurved-rim ceramic imports, new textile technology indicate patterned connections with northern traders and their networks. European ceramics, glass beads, and maize cob roulette pottery indicates patterned connections with southern traders and their networks. Smoking pipes indicate access to European trade goods, originating most likely from both northern and southern connections. The large slag mounds from Bono Manso may indicate that is was a specialist producer of iron. Other kinds of reciprocal or symbiotic economic relationships may have existed between the city and subsidiary settlements, but are, to date, archaeologically invisible. Agricultural staples, including yams, sorghum, and millet, were likely grown in the hinterlands of Bono Manso and its satellites, with a portion of the agricultural products given to chiefs as rent payments and taxation.

Social complexity and the institutions of Bono Manso were likely dynamic and no doubt transformed over time. New systems of value and exchange encroached into daily life likely altering, disrupting, and/or solidifying social relationships. Factional competition and changing alliances between elites within Bono Manso and neighboring polities and settlements probably shaped some institutions. Organizations and structures without clear hierarchical structures are especially vulnerable to factional competition (Stone 1997). Distinguishing between different institutions based on material correlates is difficult since similar types of material and elite culture were utilized by political and ritual specialists in historical times (which may or may not be true of earlier times). In addition, many of the badges or insignia of office belonged to the position, not the individual. Structures and the associated material culture were not the personal property of chiefs and priests. Badges of office became the property of the office rather than the individual, and were not passed down as heritable property but became inalienable goods associated with office. Priests and chiefs often maintained their own residences apart from more monumental structures associated with office.

Kranka Dada is the only satellite of Bono Manso to have systematic excavations, although some limited excavations, mapping, and surface collections were documented at Amowi. As one piece of the regional puzzle, research at Kranka Dada has a limited ability to address regional interaction and integration. Equifinality is a constant problem in archaeology as multiple phenomena can create similar outcomes and patterns. The invisible quality of the region's most important trade goods, gold, kola, salt, slaves, and textiles makes it difficult to document how deeply the market penetrated into daily life and how these traded commodities affected household production, consumption, and status differentiation. Accounts of contemporaneous coastal communities (and Bowdich's 19th century accounts from Kumase) indicate that hinterland communities were responsible for providing agricultural commodities and later gold dust as commanded or taxed goods (as a shift from staple to wealth finance). Such important elements of the political economy are difficult to detect archaeologically. There are a number of complicated factors that make it difficult to reconstruct the specific institutions and their activities of Bono Manso, and the effects on Kranka Dada. At present, in the economic realm, there is no evidence for commanded or taxed goods.

At the village-level, households appeared be economically autonomous units responsible for their own well-being. Production beyond the needs of the household occurred, but appears to have been organized at a household level. It is possible that household labor was supplemented with imported captive labor and that successful households could acquire the means to boost productivity and engage further in market exchanges. Complicating matters is the direct evidence of long-distance trade goods. Only a small quantity of trade goods was recovered at Bono Manso and Kranka Dada (although similar patterns were observed from Begho). On the one hand, similar quantities of trade goods were recovered from Bono Manso and Kranka Dada (e.g., European ceramics and brass/ copper) which could indicate that a small site was able to participate in long-distance exchanges in similar ways to larger sites. On the other hand, ceramics and metals are only a limited range of the goods that were traded, although they were found in multiple households of Kranka Dada across time and space. Based on the available evidence, I suggest that Bono Manso was unable to control much of the commerce within its territory, and many of the market economies remained external to the institutions of Bono Manso.

Distinguishing between political and ritual/ideological institutions is difficult if we try to do so using similarities in material culture. However, it is likely that Kranka Dada underwent a significant transformation by the early 1500s. New types of architecture appeared, and the quantity of trade goods increased. Ritual objects, such as *nyame akuma,* which were once dispersed throughout the site became concentrated in Mound 1 deposits and were used in new ways. The possible side-blown trumpet was an elite item often used in public ceremonies and rituals. In the Eguafo polity in southern Ghana, chiefs were unable to capture and control the markets and mercantile activity within their property, but could acquire prestigious goods which were used to maintain a decentralized sociopolitical network between settlements that shared administrative and ritual duties with the paramount ruler (Spiers 2007, 2012). It is possible, and very likely in my opinion, that something similar occurred within the Bono Manso polity.

Competitive accumulation and the circulation of prestigious goods within elite networks could have helped materialize the ideologies of political and ritual power. Bono Manso may have retained its position at the top of the regional hierarchy, but smaller villages and adjacent polities could have jockeyed for power and status while attracting new settlers to their territories. In such a scenario, both vertical and horizontal institutional and organizational structures would have linked Bono Manso and its outlying areas together. Competitive accumulation may have had some effects on and fueled community integration. It may be that the as the Atlantic markets opened, residents of Kranka Dada continued to meet the staple/ agricultural demands (with a possible transition to monetary/ gold demands) of Bono Manso. Production beyond the needs of the household was a way of meeting requirements of Bono Manso and procuring items desired from itinerant merchants. The diverse array of smoking pipes indicate that the inhabitants of Kranka Dada participated in multiple types of exchange relationships from local, to regional, to continental, and Atlantic. The concentrated distribution of smoking pipes with alcohol vessels and animal bone may be evidence of a space where community members could gather together and participate in the spiritual well-being of their community.

The Bono Manso region likely had a diverse population in both ethnicity and class. Its location along a primary trade route brought a wealth of people, goods, and ideas to the region. Merchants, captives, and others traveled constantly, back and forth, along West African trade routes. At the same time, some Mande and Soninke trade diasporas merchants remained in the Bron areas, establishing permanent residences, and meeting their own subsistence needs. The history of slave capture and movement, and their incorporation into local households and institutions was complex and is poorly understood, especially in interior areas. In the Akan and Bron areas, many individuals were captured some as a result of wars with the Asante and bound for the Middle Passage; however, other captives were brought to the Akan and Bron areas from other parts of Africa. The result was an ethnically heterogeneous landscape of peoples from throughout Africa.

In addition to ethnicity, there were class and occupational divisions within society. Accounts from European travelers on the coast indicate that there was a class system; males and females from different class backgrounds could be easily distinguished by dress, jewelry, hair, weapons, and accessories (de Marees 1987 (1602)). Oral histories record that there was economic specialization with specialist craft producers residing at Bono Manso. Farmers, weavers, potters, smiths, priests, and merchants from multiple ethnic and linguistic backgrounds likely resided in the greater Bono Manso region. Further research is required to tease apart how societal relationship were structured; how people from diverse backgrounds came together, cooperated, how they differentiated themselves, and what divided and united them as they become more integrated into global markets and economies.

Market networks were not isomorphic with sociopolitical systems. Through the sub-Saharan to Atlantic trade periods, political systems ebbed and flowed with constant shifting relations shaping the geopolitical landscape. Major markets grew in places not associated with dominant political systems, and some major markets continued to thrive in areas conquered but not incorporated into Asante territories (e.g., Salaga). Markets overlapped, were integrated, and were not constrained by political boundaries. However, sociopolitical relationships affected the distribution of market commodities. Goods traveling from the coast to the north were first filtered through other groups including the Asante.

The central and southern Ghanaian landscape appears to have been largely composed of small scale polities. In contrast to regionally expansive market systems, geopolitical systems appeared to have been composed of small-scale, relatively compact, territorial units. As global trade networks expanded through the Atlantic trade era and reached their height, towns and their hinterlands were likely intimately connected through vertical and horizontal institutional linkage. Vertically integrated lineage systems likely played a large role in controlling the means of production and it is likely that some of the vertical relationships were crosscut by horizontal linkages of socioeconomic class, and perhaps ritual affiliations. Power *over* was probably diffuse and fragmented, and the ties that bound towns and hinterland communities were consensual rather than coercive. Competitive accumulation and community integration would have been important in legitimizing and materializing ideologies of power as part of consensual structural arrangements.

There was no state control prior to Asante state formation in the 18th and 19th centuries. Even after state formation, small-scale polities in the Akan area maintained some ability to tax or demand agricultural goods and later monetary goods from constituents. The process of creating agricultural surplus in slash-and-burn economies requires some management of labor, which was likely organized through lineage and corporate groups. Successful management of household labor and surplus production could be funneled into participation in supralocal networks, obtaining market commodities, and exotic goods. Political office was open to many community members that proved to have some financial and economic acumen. Diffuse systems of power and authority were fed by relative equality of opportunities and growing numbers of elites also capable of mobilizing rival capital.

Anthropological research has often had difficulty in classifying African complex polities. African societies have been considered "unstable" (Fortes and Evans-Pritchard 1940) due to the "apparent incompatibility between lineage and state norms" (Fallers 2011). Other terms such as tribal kingdom, confederacies, congruent states, and kingdoms have been widely applied in Africa (Eisenstadt, et al. 1988; Lloyd and Cutt 1971). In my opinion, the Bono, like many other Akan polities were organized into peer-polities. Peer-polities were a term first used to examine the units that emerged as part of state formation in the Aegean (Renfrew and Cherry 1986); however, there are many similarities relevant to this study. Each polity was likely autonomous and self-governing. Towns and their immediate hinterland areas were probably integrated into decentralized units. Across southern and central Ghana, there were many "centers" including Bono Manso, Begho, Kumase, Denkyira, etc. with multiple types of interaction between units. Prior to the rise of the Asante state, polities were relatively small scale and tightly packed into a contiguous geographical area.

Peer-polity formations may have facilitated the movement of goods and people by providing some safety for people and goods travelling on trade routes. Smaller territories can be monitored. In exchange for tariffs, paying merchants with their human-laden porters would have benefited from safe passage through the roads in chiefly controlled territories. Perhaps the social landscape of slavery affected effective territorial control, partial power, and decentralized organization/ institutions, making it untenable to control or monitor large areas. Threats of capture increased as the prices and profits of gold decreased. I think it is likely that one possible institutional and organizational response was to form small-scale territorial polities where the town or "core" was integrated and articulated with the rural hinterland or "periphery".

The expansionist Asante state was a center of secondary state formation. The greater Akan area was not isolated, and it had long been in contact with other complex chiefly, state, and empires societies of West Africa (Figure 10.4). As global networks expanded into West Africa, new systems of value were created that altered local production, consumption, and status relationships. Elites, commoners, households, and communities from multiple ethnic backgrounds responded and formed new complex relationships. Some aspects of daily life continued and were resistant to change, while other aspects of daily life were fractured and reshaped, slowly assimilated, or drifted to create new forms. In the Bron and Akan world, there was continuity in material culture and systems of value between settlements.

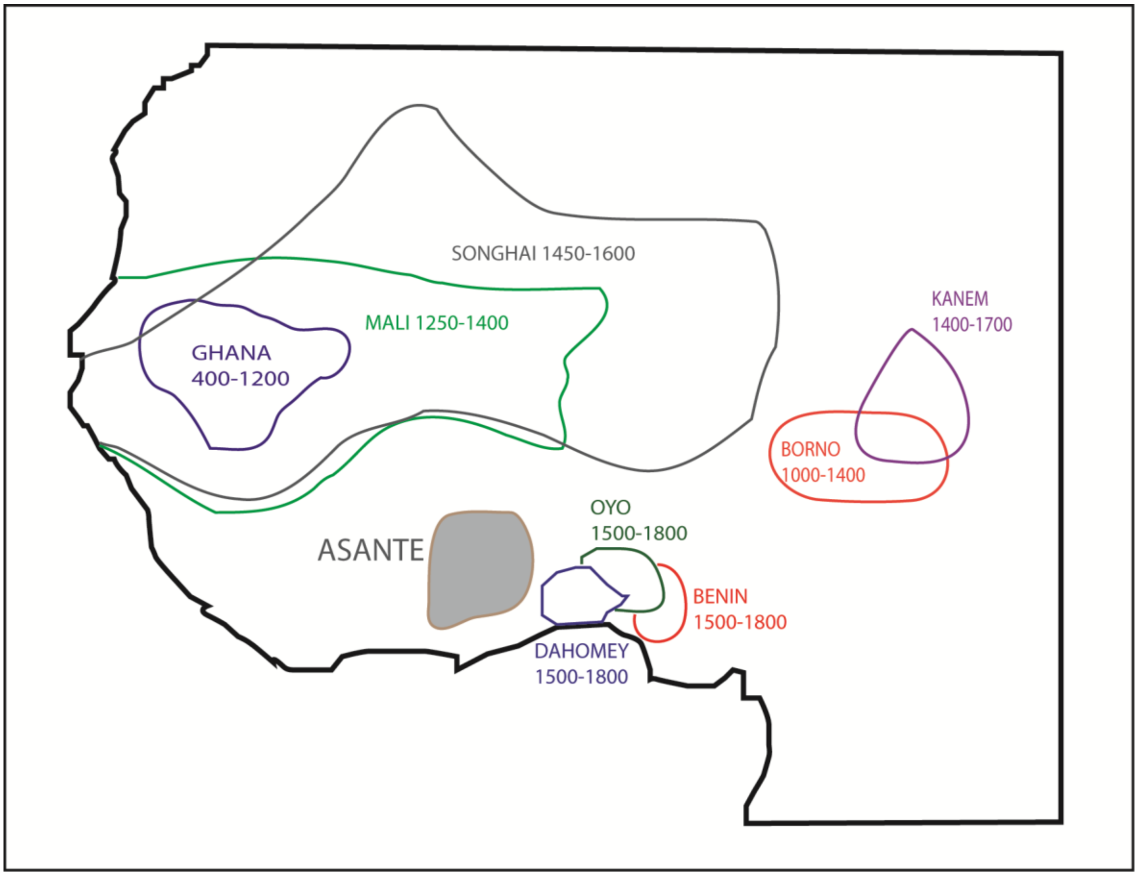


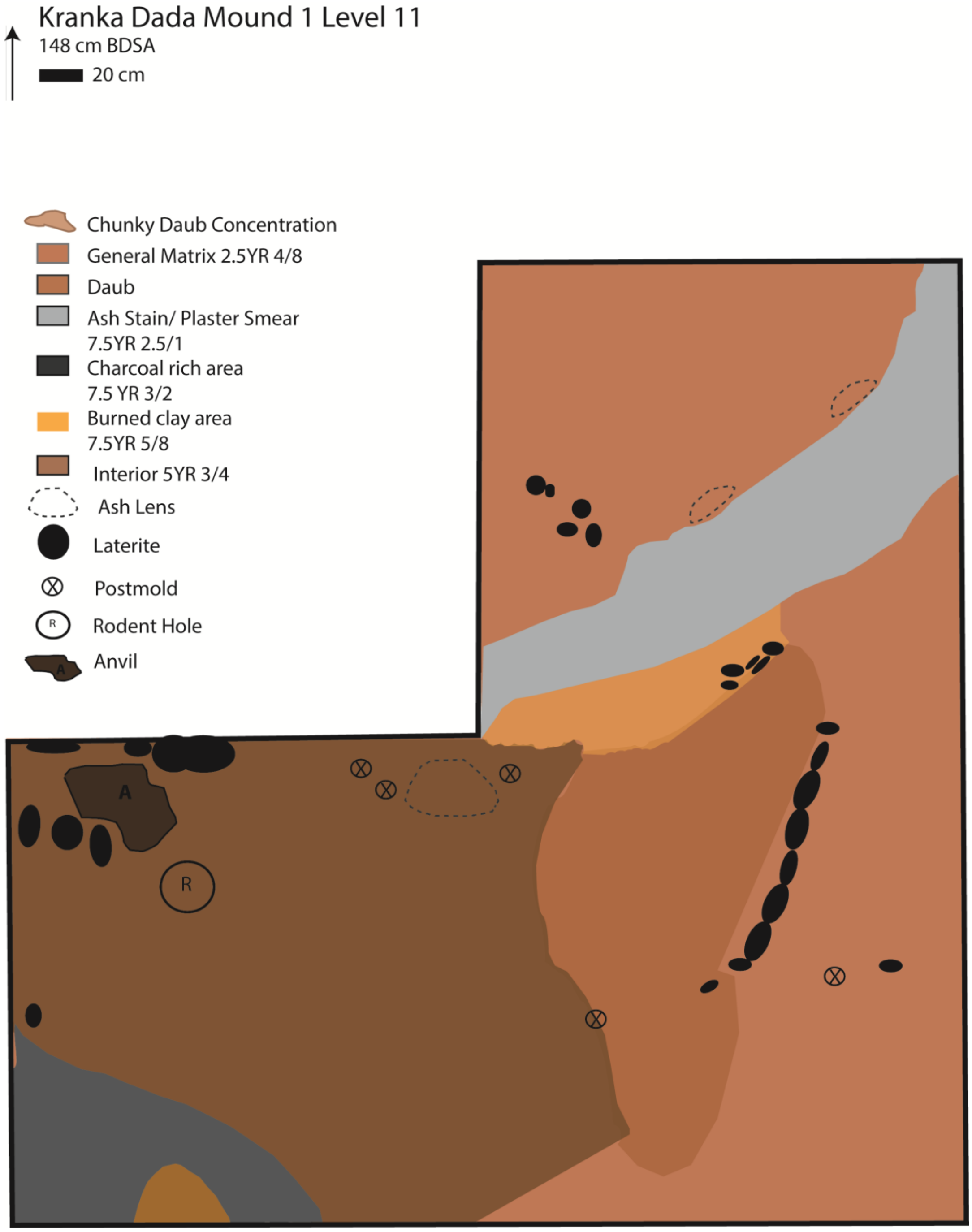
Figure 10.4 West Africa States and Empires

At Bono Manso and Kranka Dada we see similar forms of material culture, systems of value, and ritual activities changing in step with both northern and southern groups. It would be false to assume that changes to West African institutions, political economies, systems of value, and peer polity relationship were solely influenced by the global community flows entering and exiting West Africa. Rather interregional interaction, exchange, emulation, and the creative manipulation of goods shaped local households, political economies, and institutions in central Ghana in similar ways. There are similarities in forms of material culture recovered from Bono Manso, Kranka Dada, Banda, Begho, and Asantemanso, excavations, from quotidian objects to sumptuary goods. With additional data from hinterland and satellite sites, we will be better able to examine how households, political economies, and local institutions were shaped by interregional interactions among the diverse ethnic, religious, and linguistic groups that inhabited the Bron and Akan region.

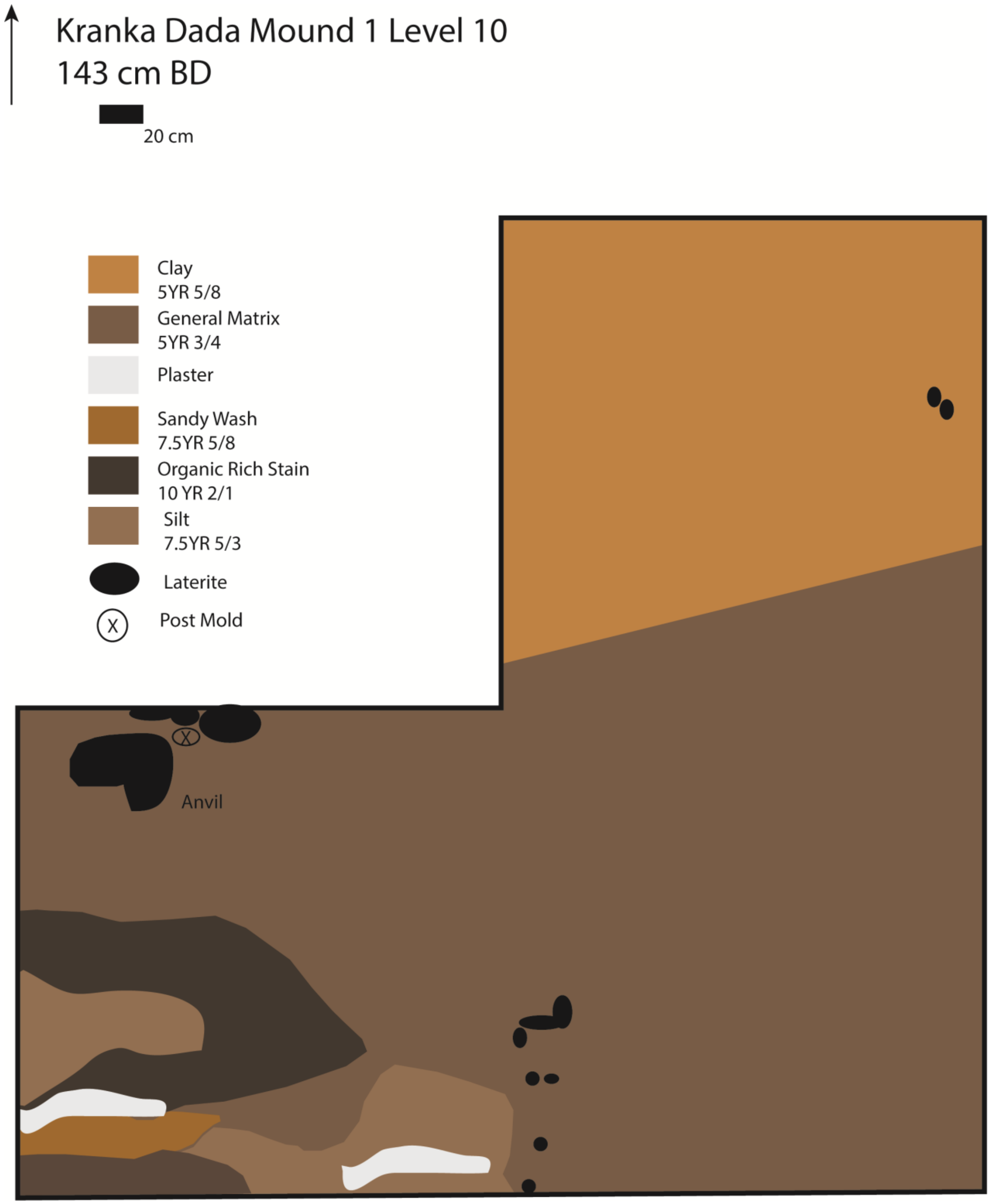
Kranka Dada is only one village; however, the archaeological excavations have showed elements of continuity and change from the sub-Saharan to Atlantic trade periods. Kranka Dada residents had access to global goods, and their access likely increased after the Atlantic markets opened. Some technological systems endured, while other systems show more complicated trajectories of continuity and change. Some religious practices are similar to religious activities in the Banda region, which was neither Bron nor Akan, and some religious activities are similar to ethnographically documented religious activities. The archaeology of Kranka Dada has shed some light on how global processes affected daily life at a village from the sub-Saharan to Atlantic exchange era, and how households participated in economic, political, and ideological institutions. However, the story is incomplete, but there are some tantalizing avenues for future research. The archaeology of Kranka Dada allowed me to begin exploring how global processes affected daily life at a village from the sub-Saharan to Atlantic exchange era, and how households participated in economic, political, and ideological institutions. The story is incomplete, but there are some tantalizing avenues for future research.

Appendices

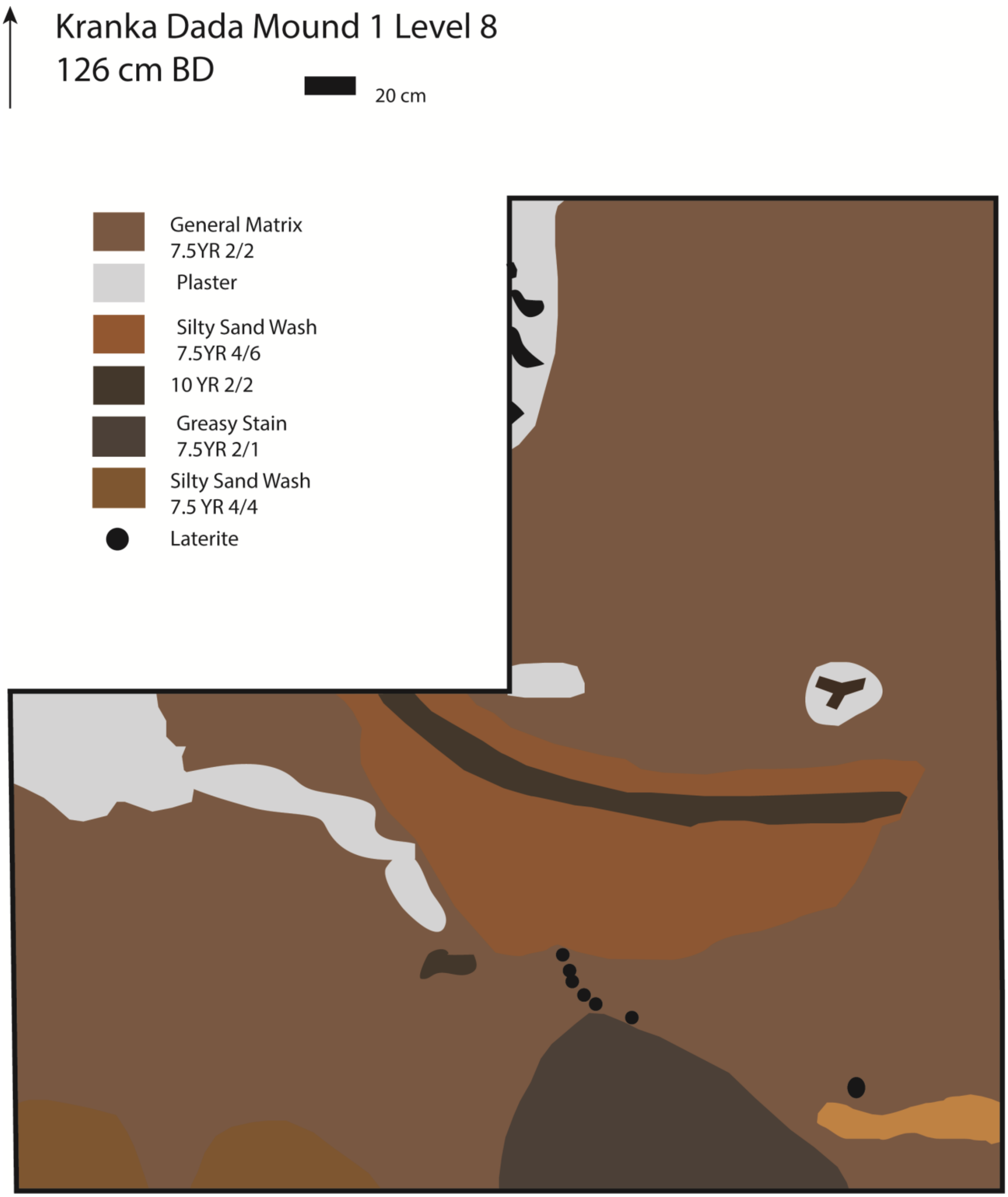
Appendix A Mound 1 Structure/Floor 1



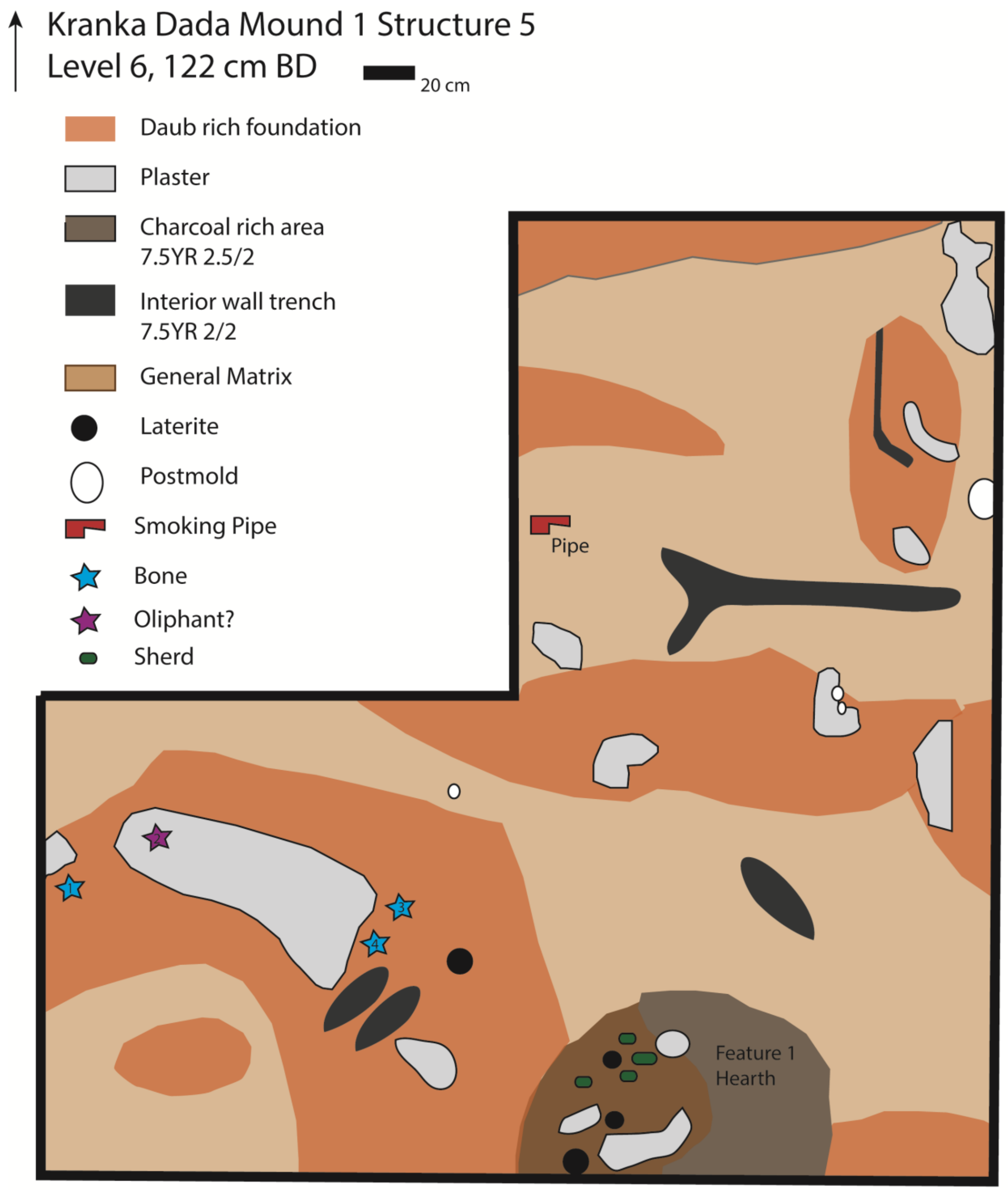
Appendix B Mound 1 Structure/Floor 2



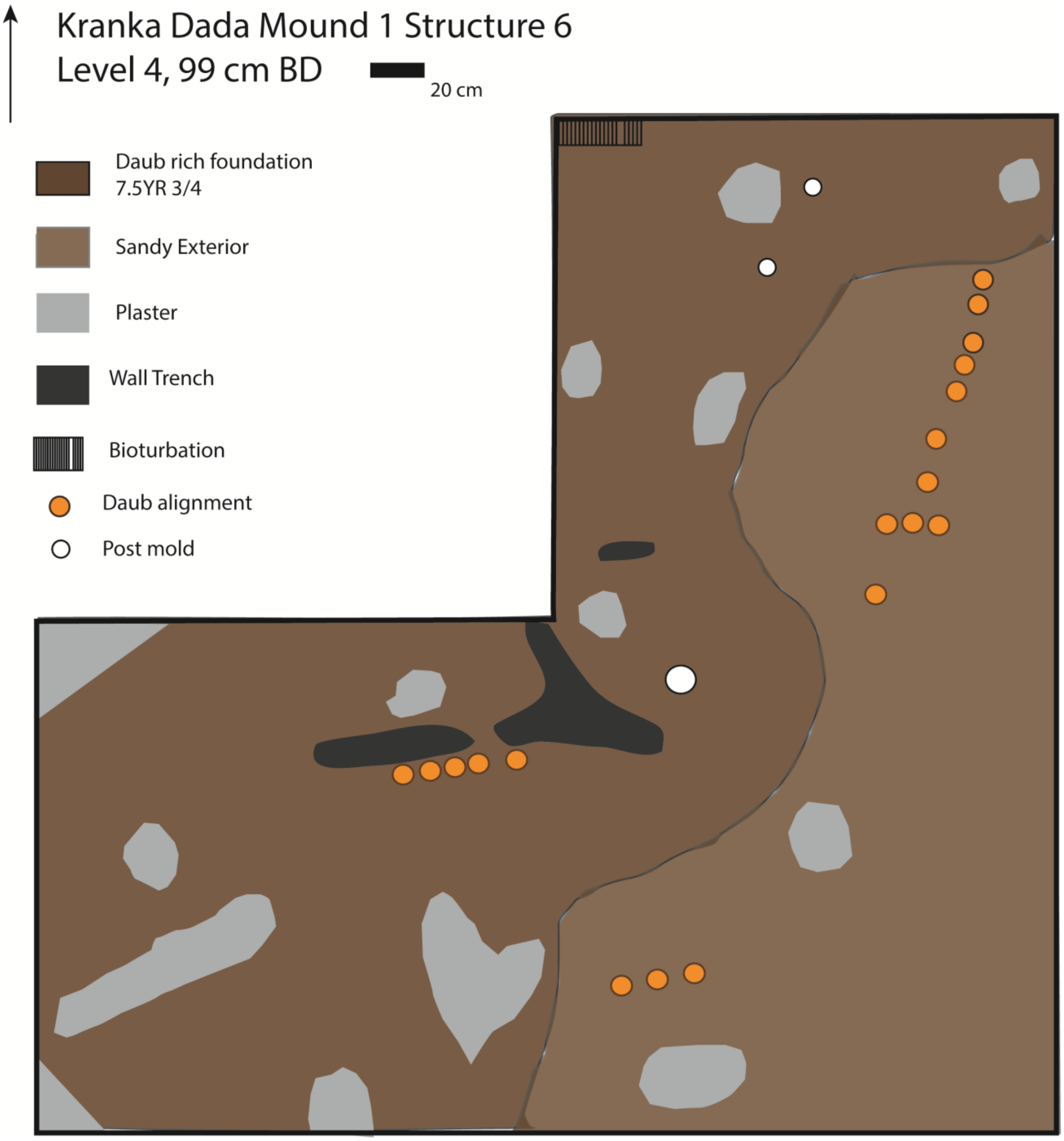
Appendix B Mound 1 Structure/Floor 3



Appendix C Mound 1 Structure/Floor 5



Appendix D Mound 1 Structure/Floor 6



Appendix E Ceramic Sherd Coding Sheet

1. FS Number		
2. Weight in grams		
3. . Sherd Thickness in millimeters		
4. Vessel Form		
1. Open/ Bowl	2. Closed/ Jar	99. Indeterminate
5. Sherd Type		
1. Body	2. Rim	3. Base
4. Neck	5. Carination	6. Lid
99. Indeterminate		
6. Decoration		
1. No Decoration	2.Informal Decoration	3. Formal Decoration
7. Body Type/ Profile		
1. Globular	2. Angled Carination	3. Globular Carination
4. General Carination	5. Shallow/ Steep sides	6. Flower Pot
7.Bowl		99. Indeterminate
9. Surface Treatment		
1. None	2. Red Paint	3. Brown Paint
4. Yellow Paint	5. Black Paint/ Burnished	6. Mica Paint
7. Polychrome	8. Unfired Slip	
10. Mica		
1. None	2. Small Mica	3. Large Mica
11. Thermal Damage		
1. No damage	2. Sooting/ Fireclouding	3. Burned throughout
12. Vessel Interior Damage		
1. No damage present	2. Eroded	3. Striations
4. Pitted	5. Patchy Abrasions	6. Abrasions on lip only
7. All over abrasions	8. Holes	9. Burned
		99. Rim only; no body present
13. Erosion Scale		
1. Not Eroded	2. Lightly Eroded	3. Somewhat Eroded
4. Highly Eroded		
14. Rim Thickness in millimeters		
15. Rim Shape		
1. Straight	2. Horizontal	3. Everted Round
4. Bulbous/ Rolled	5. Inverted	6. Humped/ Elongated
7. Flanged	8. Lipped	9. Rounded

10. Everted Straight Heart Shaped	11. Do not use	12.
16. Rim Decoration Motif 1. No Decoration 4. Incised	 2. Scalloped 5. Composite: Scalloped and Incised	 3. Swag
Rim Thickness in mm		
Rim Exterior Diameter in cm		
Neck Interior Diameter		
Everted Rims only (rim angle)		
17. Rim Abrasions 1. No Abrasions	 2. Abrasions Present	
Base Exterior Diameter in cm		

Appendix D Faunal Remains Coding Sheet

1. Phylum/ Class 1. Osteichthyes (fish) 4. Aves	 2. Amphibia 5. Mammalia	 3. Reptilia
2. Order/ Suborder 1. Anura (Frogs) 4. Galliformes (birds) 7. Rodentia 10.Artiodactlya Indeterminate	 2. Chelonia (tortoises) 5. Primates 8. Carnivora 11. Serpentes	 3. Crocodylia 6. Lagomorpha 9. Hyracoida 99.
3. Family 1. Testudinidae (tortoises) (birds) 4. Cercopithecidae (monkeys) (rodents) 7. Thryonomys (grasscutter) (mongoose/ civet) 10. Mustelidae (aardvark/ lion/leopard/hyrax) (horse) 12. Suidae (pigs/ warthog) (cattle) 15. Caprinae (sheep/goat) Indeterminate	 2. Crocodilidae 5. Leporidae (hares) 8. Canidae (dog/ jackal) 13. Bovidae (antelope/gazelle/buffalo) 16. Cephalophinae (duiker)	 3. Phasianidae 6. Sciuridae 9. Viverridae 11. Equus 14. Bovidnae 99.
4. Genus		
5. Species		
5.Domesticate? 1. Wild Indeterminate	 2. Domesticate	 99.
6. Size Class 1. Small (beaver and under) (horse/ cow) 4. Extra large (hippo)	 2. Medium (goat/ sheep) 5. Small/Medium	 3. Large 6.

Medium/Large Indeterminate		99.
7. Skeletal Element 1. Crania/ Mandible/Teeth vertebrae 4. Upper limb 7. Indeterminate Vertebrae	 2. Hooves/ Feet 5. Lower Limb 8. Indeterminate Post Crania	 3. Ribs/ Thoracic 6. Indeterminate Limb 9. Scute
8. Utility Index 1. High (thoracic vertebrae/ribs/sternum) 2. Medium (Cervical vertebrae/ pelvis/ femur/ skull all parts/scalpula) 3. Low (carpals/ tarsals/ lower limb bones) 4. High/ Medium Indeterminate	 5. Medium/Low	 99.
9. Age 1. Juvenile Indeterminate	 2. Adult	 99.
10. Butchery? (cut marks, slices, etc.) 1. Yes	 2. No	
11. Burning? 1. No burning end burning 4. Patchy burning	 2. Burned throughout 5.	 3. Epiphyseal 6. Charred
12. Thermal Color 1. No burning 4. White	 2. Black/ Brown 5. Charred	 3. Grey
12. Marrow Processing? (smashing, spiral fractures w/o bitemarks) 1. Yes	 2. No	
13. Weight in grams		

Appendix E Attributes coded for flaked stone artifacts

1. FS Number		
2. Feature		
3. Piece Plot		
4. Type 1. Core	 2. Debitage	 3. Tool
5. Weight in grams		
6. Maximum Dimension in mm		
7. Raw Material		
8. Cortex	1. Absent	2. Present

9. Tool Type 1. Projectile Point 2. Biface 3. Utilized Flake 4. Retouched Flake 5. Drill
10. Core Type 1. Biface 2. Multidirectional 3. Unidirectional 4. Tested Cobble
11. Debitage Type 1. Compete Flake 2.Distal Fragment 3. Proximal Fragment 4. Medial Fragment 5. Angular Debris
12. Complete (Yes/ No)
13. Previously Ground (Yes/No)

Appendix F Groundstone Coding Attributes

1. FS Number
2. Completeness 1. Complete 2. Less than half 3. More than half
3. Raw Material
4. Type 1. Convex 2. Concave 3. Flat 4. Indeterminate 5. Flat and Concave (2 sides ground) 6. Convex and Concave (2 sides ground) 7. Hexagonal 8. Abraded pebble 9. Axe

Appendix G Smoking Pipe Coding Sheet

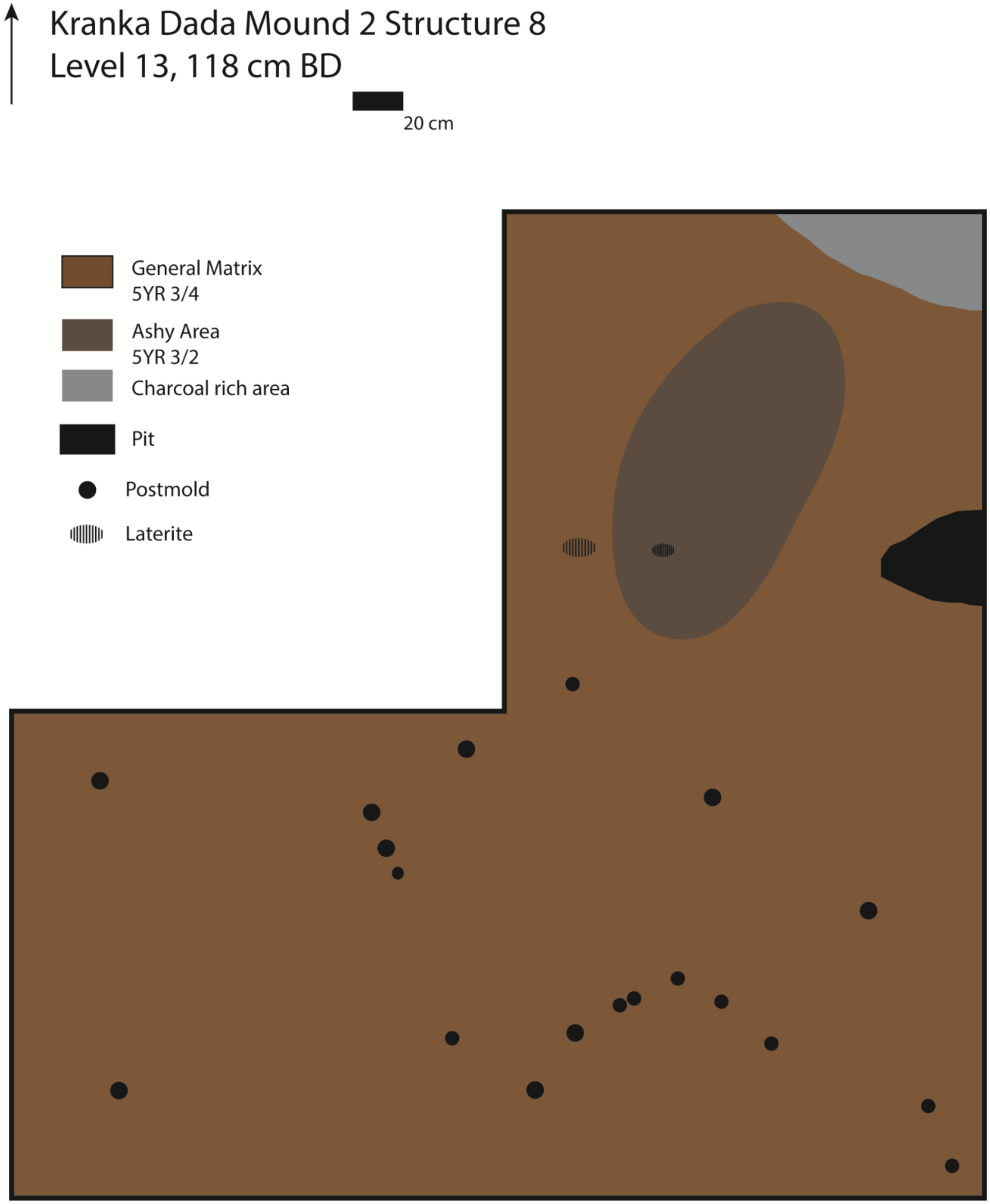
1. FS Number
2. Piece Plot Number
3. Weight in Grams
4. Sherd Type 1. Base 2. Bowl 3. Stem 4. Base/ Stem 5. Bowl/Base 99. Indeterminate
5. Complete 1. Yes 2. No
6. Surface Treatment 1. No treatment 2. Red Paint/ Slip 3. Burnished
7. Base Type 1. Flat 2. Round 3. Quatrefoil 4. Bifolate 5. Pedestal
8. Base Stem 1. Single Angle 2. Double Angle
9. Base Decoration 1. Decoration 2. Incision/ Grooving Straight 3. Incisions

Herringbone 4. Incisions Criss-Cross 5. Triangular Dentate 6. Rectangular Dentate 7. Twist Roulette 8. Knobs 9. Comb Impressed 10. Fine Punctate 11. Circle Punctate
10. Base Height in mm
11. Base Diameter
12. Base Stem Angle
13. Bowl and Neck Height (if complete in mm)
14. Bowl Thickness in mm
15. Bowl Diameter in mm
16. Thermal Damage inside bowl 1. Yes 2. No
17. Bowl Decoration 1. No Decoration 2. Incision/ Grooving Straight 3. Incisions Herringbone 4. Incisions Criss-Cross 5. Triangular Dentate 6. Rectangular Dentate 7. Twist Roulette 8. Knobs 9. Comb Impressed 10. Fine Punctate 11. Circle Punctate
18. Mica 1. No mica 2. Small Mica 3. Large Mica
19. Lip Shape 1. Rounded Everted 2. Flat Everted 3. Straight 4. Rounded 5. T-Shaped 6. Inverted
20. Relief 1. Low Relief 2. High Relief
21. **Collar Morphology** 1. No collar 2. Quatrefoil collar 3.Angular 4. Square 5. Wide
22. Stem Morphology 1. Round 2. Square
23. Stem Length
24. Stem Width
25. Stem Decoration 1. No Decoration 2. Incision/ Grooving Straight 3. Incisions Herringbone 4. Incisions Criss-Cross 5. Triangular Dentate 6. Rectangular Dentate 7. Twist Roulette 8. Knobs 9. Comb Impressed 10. Fine Punctate 11. Circle Punctate
26. Use Wear 1. Absent 2. Abraded on base

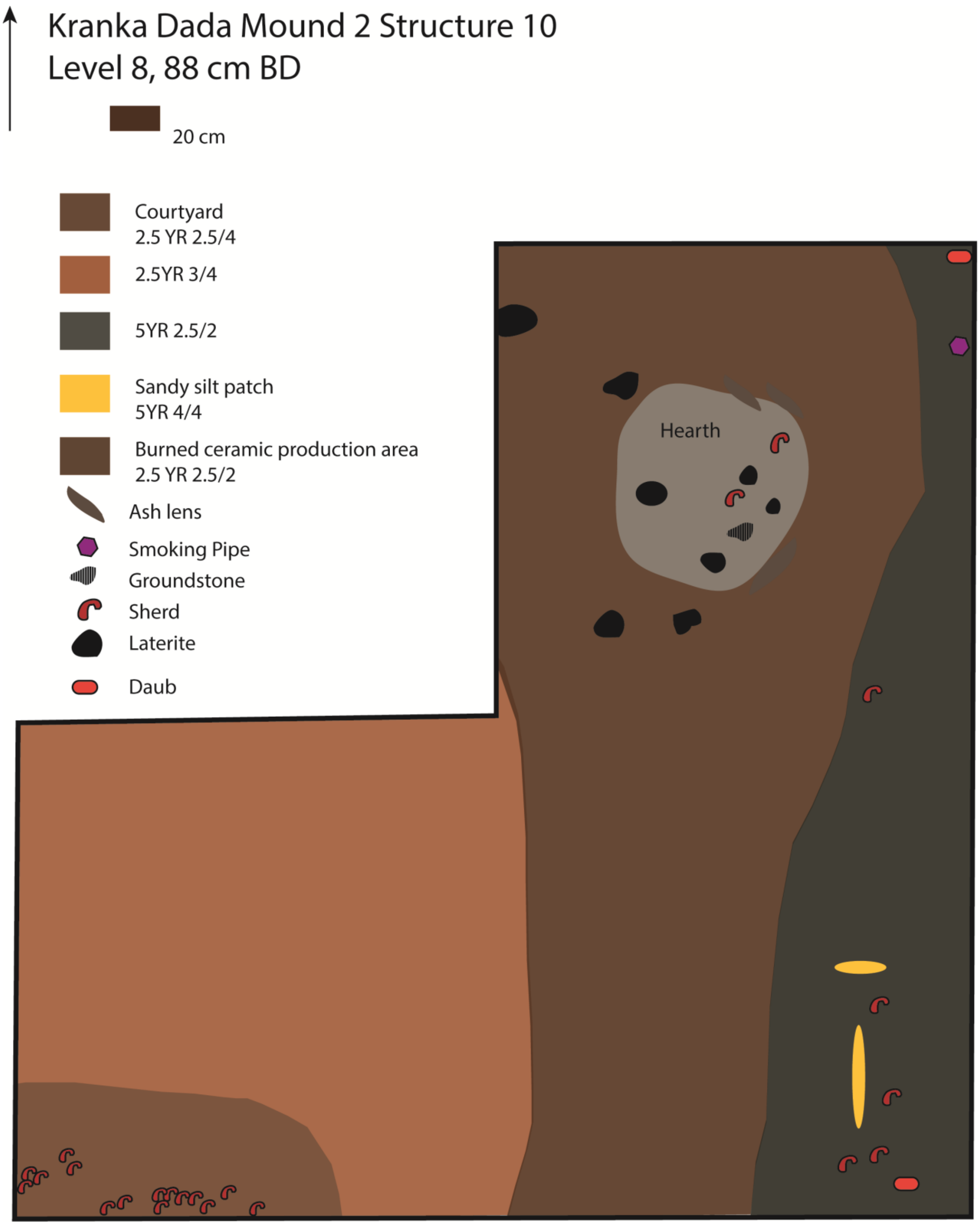
Appendix H Decorative Motifs Smoking Pipes All Mounds

Decorative Motifs	**Count**	**Percentage**
No Decoration	32	20.3%
Narrow Horizontal Incisions	27	17.1%
Criss-Cross Incisions	3	1.9%
Rectangular Dentate	4	2.5%
Twist Roulette	1	0.6%
Flower/ Fan Stamped	2	1.3%
Circle Punctate	1	0.6%
Vertical Band Incisions	10	6.3%
Combination Horizontal and Vertical Incisions	5	3.2%
Wide Horizontal Incisions	21	13.3%
Narrow Horizontal Incisions with Crescent Moon Impressions	1	0.6%
Single Horizontal Incision	20	12.7%
Incisions with Fine Inlayed Punctate	1	0.6%
Rectangular Dentate and Horizontal Incisions	8	5.1%
Vertical Band Incisions with Circle Punctate	4	2.5%
Knobs with Continuous and Discontinuous Incisions	1	0.6%
Knobs with Rectangular Dentate, Circle Punctate, and Incisions	1	0.6%
Knobs with Continuous Incisions	4	2.5%
Criss-Cross Incisions and Continuous Incisions	3	1.9%
Alternating Bands of Narrow Incisions with Single Wide Incisions	2	1.3%
Continuous and Discontinuous Incisions	1	0.6%
Lost Wax Carved Plant Impressions	2	1.3%
Arch Dentate with Discontinuous Incisions	1	0.6%
Incisions with Inlayed Criss-Cross Incisions and Circle Dentate	3	1.9%
Total	**158**	**100.0%**

Appendix I Mound 2 Structure/Floor 8



Appendix J Mound 2 Structure/Floor 10



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