"Why Can’t People Feed Themselves?": Archaeology as Alternative Archive of Food Security in Banda, Ghana

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ABSTRACT Today, food insecurity is associated with both severe climatic shifts and pervasive poverty. What is less well understood is how the problem of hunger came to take its present-day form, especially in the African continent, where the highest prevalence of undernourishment is found. In this article, I propose that archaeology can be used as an alternative archive of food security. Material remains provide a from-the-hearth-up view of changing foodways and political economy and can be used to trace the shape of processes that led to modern-day patterns of food insecurity. Combining archaeobotanical, ethnoarchaeological, and environmental data, I provide a case study that shows how food insecurity was avoided during a centuries-long drought in Banda, Ghana, and emerged only much later, in the 19th and 20th centuries, as market economies and colonial rule took hold. I suggest that archaeology is essential for making such processes of “slow violence” visible, particularly in areas that lack rich historical archives.

Africa, food security, Ghana, archaeobotany, slow violence
In her first major speech in 1972, food activist Frances Lappé argued that the world’s poor could not feed themselves due to a long history of economic disenfranchisement that began with colonial rule. Her thinking arose at a time when one of the most serious famines of the modern era threatened millions in sub-Saharan Africa, a continent that had been full of hope with the end of colonial rule only a decade earlier. Although her main arguments lacked empirical substantiation, Michael Watts’s seminal Silent Violence (2012 [originally published in 1983]) carefully documented how colonial economic policies eroded the subsistence ethic of precolonial moral economies, leading to increases in chronic hunger in northeastern Nigeria. Yet the idea that food security was higher in precolonial times and was eroded under colonial rule is not the story that gets told in popular or even most scientific venues (e.g., Godfray et al. 2010; Thurow 2013). Instead, blame for modern insecurity tends to be directed at nonhuman actors like drought, a sleight of hand that both depoliticizes and dehistoricizes food crises (Escobar 2012; 1995; Farmer 2004; Ferguson 1990; Watts 2012).

The highest prevalence of food insecurity in the world is to be found in the African continent, where one in five people are undernourished (FAO, IFAD, and WFP 2015:8). The diversity of environmental conditions throughout Africa argues against the notion that climate change alone is to blame for food insecurity. Instead, what unites many across ecological zones is persistent poverty, an outcome that Lappé attributed to shared histories of turmoil and exploitation. Evaluating these propositions is limited by the lack of substantial written archives on the continent prior to colonial rule. This constraint makes it difficult to assess levels of food security prior to colonial interventions as well as the subsequent influence of colonial policies. Africanist historians and anthropologists have long made creative use of “alternative archives” like oral histories to help fill in, and at times challenge, written histories (Comaroff and Comaroff 1992). Here, I make the case that archaeology can be used as an alternative archive of food security, because it provides our best means of accessing everyday life over the longue durée (Robin 2013). Ultimately, archaeology’s focus on process enables us to unveil the forces of slow violence responsible for modern-day insecurities.

In this article, I trace changing levels of food security in Banda, Ghana, over the last five centuries, a time frame that encompasses life prior to, during, and after European interventions into the African continent. These centuries are among the most tumultuous in Africa’s history, as people struggled to contend with rapidly changing global economies, severe drought, and the imposition of colonial rule. Using archaeobotanical, environmental, and ethnoarchaeological data, I show how Banda’s inhabitants managed to weather a severe, centuries-long drought just as Europeans arrived on the coast. A major decline in food security occurred only recently, in association with increasingly globalized economies and colonial rule. Conjuring the work of Walter Rodney (1972), Mike Davis (2001), and Watts (2012), I suggest that the primary reason for the loss of Banda’s food security potential was the replacement of African economic systems with colonial and globally oriented market economies.

WHY WE NEED TO HISTORICIZE FOOD INSECURITY

Our understanding of what causes food insecurity is fundamentally linked to the theoretical frames and archives that we use to document hunger. The bulk of research focuses exclusively on food security in recent times, limiting our gaze to proximate causes of food crises like drought, whereas a historical lens can reveal the political-economic roots of hunger (Farmer 2004; Ribot 2014). By way of illustration, I return to the famine that devastated the African Sahel in the early 1970s. Neo-Malthusian understandings of the relationship between people and resources informed reactions to the catastrophe. Several years of severe drought led to repeated poor harvests that resulted in decreased food supplies. Consequently, the international response focused on increasing global food supply to prevent future famines. By focusing on food supply, the Sahelian famine was conceptualized as an environmental rather than political problem (Maxwell 2001), a view enabled by a lack of historical understanding about the wider region. The direct causal link between drought and famine was challenged by Amartya Sen (1981), whose analysis of historical famines in India
showed that farmers usually do produce enough food to feed a given region’s population during droughts, but that these food supplies are not accessible to the poorer sectors of society who suffer disproportionately during food crises. Sen shifted attention away from the environmental as the primary causal factor toward political-economic drivers in the form of inadequate distribution. Poor people lacked the necessary entitlements—ability to access food through assets or services—that ensured rights to food supplies (Sen 1981).

Returning to West Africa, Watts’s (2012 [1983]) seminal study provided a historical examination of food security in Kano, northeastern Nigeria, an area that had suffered during the Sahel famine. His historical research documented the erosion of social mechanisms that had once enabled a degree of subsistence security under the precolonial Sokoto Caliphate. Citizens were insured access to food through their socioeconomic networks, which resembled a “moral economy” (Thompson 1971), a precapitalist form wherein community mechanisms such as sharing and redistribution ensured household reproduction for the majority. Sociopolitical structures encouraged a “subsistence ethic” that provided welfare and insurance (i.e., entitlements) against shortfalls in foodstuffs in times of need (Scott 1976:40), such as during drought. British colonial economic policies attempted to reconfigure these moral economies into market economies through the intensification of commoditized agricultural production. Instead of generalized, risk-averse producers, peasants became specialist commodity producers, individuating production and severing the reciprocal ties of earlier eras. The risk that had previously been mediated by village- and state-level mechanisms was now born by individual households. Peasant producers became beholden to global commodity markets without the benefit of transformed methods of production (Watts 2012:188–189). In Kano, household production barely met the needs of household consumption, making accumulation nearly impossible; rigid colonial taxation policies only aggravated this balance by requiring the selling of crop produce to access cash. The resulting failure to accumulate grain reserves to last until the next harvest meant people had to buy high priced grain at the height of demand, incurring a cycle of indebtedness (Watts 2012:266–267).

What has resulted, according to Watts, is a kind of “silent violence,” whereby chronic hunger is a permanent and normal condition for much of the African peasantry (Watts 2012:xliii). Experienced by a majority of poor Africans during the hungry season, chronic food insecurity makes people more vulnerable to catastrophe. Acknowledging food insecurity as violence calls attention to the political nature of food access rather than focusing on environmental prime movers alone (Watts 2012). Violence in this sense is not necessarily direct violence, whereby one individual inflicts harm on another, but invokes Johan Galtung’s (1969) more diffuse concept of structural violence. He defines violence as existing when people are being influenced to achieve less, mentally or physically, than that of which they are capable. The key is whether or not a person is prevented from realizing their “potential,” which can be biologically or contextually defined (Galtung 1969:168–170; see also “capabilities” literature, e.g., Drèze and Sen 1989). Biologically, severe events like famine clearly have negative consequences on human health and may ultimately lead to death. But even the low- to moderate-level food insecurity that Watts documented results in undernutrition, which can have lifelong affects on physical health and mental development (e.g., Prado and Dewey 2014).

Watts illustrated that a historical perspective is necessary to trace the processes that created modern structural inequalities, including food insecurity. While a historical focus remained important for early work on vulnerabilities (e.g., Watts and Bohle 1993), in recent decades analyses of food security have become more presentist in their focus on household-level vulnerabilities and capabilities. Jesse Ribot (2014) has suggested that this trend results in part from the fact that outcomes, like body mass index or stunting, are more easily measured than the structural factors that permit large-scale insecurities. While studies rooted in the present day are essential for understanding the proximate causes of insecurity, they need to be ensconced within larger historical contexts to disentangle ultimate, structural causes. Expanding our temporal scope has the potential to render causes visible in ways that are unavailable to studies focusing on only a snapshot in time.

Most scholars shy away from historical investigations into food security for good reason: for many places, we simply lack an appropriate archive. Historical explorations are often restricted to locations and periods with a high density of written sources. In much of the African continent, written documents existed only after the arrival of European explorers and colonizers from the 15th century C.E. on; for some parts of the Sahel, we have (limited) documentation soon after the arrival of Arab merchants in the ninth century C.E. Unfortunately, these limitations leave out large swaths of the African continent. Africanist historical anthropologists and linguists have long argued for the inclusion of nontraditional data sources such as oral histories and archaeology in historical examinations of the continent (Comaroff and Comaroff 1992; Stahl 2001; Vansina 1990). Attention to these “alternative archives” extends our temporal and spatial reach but also has the potential to expose the power/knowledge structures that created traditional archives to begin with (Comaroff and Comaroff 1992:34). Archaeology’s archive elongates the temporal axis in particular, providing a “sideways glance” (Žižek 2008) at slow processes not visible through other means.

Archaeological data are particularly well suited to investigations of food security because of the spatial and temporal scales at which we operate. Spatially, much archaeological data consist of the material fragments created by people’s everyday lives, providing a from-the-hearth-up view of economic, political, and social life. Unlike written or oral archives, archaeology is not limited in its temporal space but,
rather, can access most time periods on earth. We can also focus on change and continuity over the long term, allowing us to trace how political-economic structures were formed, unraveled, and reconstituted over the longue durée. Finally, archaeology’s rootedness in place enables deep comparative study of a particular region over time, allowing us to make visible the “potentials” of any given area, whether measured through agricultural production, economic growth, or social equity.

BANDA’S POLITICAL ECONOMIC HISTORY

For the remainder of this article, I will examine the historical development of food insecurity in a small region in west-central Ghana known as Banda (Figure 1). Located in the interior of Ghana some 400 kilometers from the coast, Banda was considered a backwater for most of the 20th century. Until the construction of a hydroelectric dam from 2007 on, a flooding-prone, single-car-width dirt track was the only way in and out of the area. Banda was only electrified in the early to mid-2000s, and there is still no running water. While giving the appearance of being stuck in times past, Banda’s situation is instead indicative of a long history of political and economic marginalization. Under the direction of Ann Stahl, three decades of archaeological and historical research have documented how political-economic shifts have transformed Banda from a place once central to long-distance trade and export production to a modern-world periphery (Stahl 2001, 2007; Stahl and Logan 2014). Such transformations may have had significant impacts on food distribution and entitlements and, thus, on peoples’ ability to feed themselves. In this section, I consider Banda’s history in regional context to better situate a specific evaluation of changing levels of food security in the sections that follow.

The last six centuries are considered among the most tumultuous in African history, as major transitions in economic and political organization fundamentally transformed how people made a living and related to one another (DeCorse 1992, 2001a, 2001b, 2005; Kea 1982; Kelly 1997; MacEachern 2012; Monroe and Ogundiran 2012; Richard 2010; Stahl 2001). The 15th century marks the start of direct encounters between western Europeans and the well-organized trade networks that connected the West African interior to goods from other ecological zones. The basic dynamic of this trade system was to be found in the circumscribed distribution of desirable products in different ecological zones; gold, for example, was only to be found in the southern, forested belt, and copper sources were confined to the Sahara. Other major trade goods included ivory from wetter regions (Stahl and Stahl 2004); human captives (Lovejoy 2012); and beads from Arab and European sources.
Kuulo Kataa and Ngre Kataa, dominated the landscape in Banda, Begho or Bono Manso, several large villages, including Begho appears only rarely at all of these sites (Stahl 1994). With the exception of tobacco pipes, European trade in the 16th and 17th centuries, a rapid reorganization of settlements along the Ghanaian coast was matched by an increase in craft production, both of which took advantage of new trading opportunities (DeCorse 2001; Kea 1982). African structures of craft production and political organization appear to have persisted through this period of early European contact (DeCorse 2005). From the 17th century onward, European imports increased significantly. Ray Kea (1982) suggests that this was a time of gradual wealth accumulation and increasing social stratification. Compared to coastal regions, European influence appears less strong in Ghana’s interior in the 16th and 17th centuries. Inland sites including Begho, Bono Manso, and Kuulo Kataa in Banda continued to engage in northward-directed long-distance trade networks that were at times under the control of a succession of states along the Niger River (Insoll 2003). Begho is described in historical documents as a major stop along north–south trade networks (Wilks 1982), and archaeological remains suggest a massive settlement (Posnansky 1973, 1987). Begho appears to have been divided into quarters that may have corresponded to different ethnic populations, but Merrick Posnansky (1987) does not go so far as to claim that the town had political dominance over its hinterlands. Kwaku Effah-Gyamfi (1985) argued for state-level organization at Bono Manso, though new studies in nearby villages find little evidence for direct control (Compton 2014).

While the nature of political organization is far from clear, central Ghana was a hub of diverse populations of craft specialists, traders, and farmers and probably hosted considerable regional and extraregional markets (Posnansky 1973, 1987). The large array of specialists in the wider region included copper and iron metallurgists, potters, ivory workers, spinners and weavers of cloth, and probably gold miners. For some crafts, the scale of production was considerable; iron working was practiced on a large enough scale to suggest potential degradation of nearby forests (Goucher 1981). With the exception of tobacco pipes, European trade goods appear only rarely at all of these sites (Stahl 1994). Banda was no exception; although smaller than neighboring Begho or Bono Manso, several large villages, including Kuulo Kataa and Ngre Kataa, dominated the landscape during the Kuulo phase (cal. 1450–1650 C.E.). Evidence of large-scale iron working was found at both sites, along with the production of copper alloys and ivory goods. Pottery was exchanged over wide regional networks, and sourcing data suggest a considerable degree of craft specialization (Stahl 2001, 2007; Stahl and Stahl 2004; Stahl et al. 2008). Cumulatively, these data suggest a strong, diverse local economy oriented toward regional and northward-directed trade networks. The variety of crafts produced indicates that the composition of skills was high in the region at this time, a characteristic Jane Guyer and Samuel Belinga (1995) argue was central to precolonial African notions of wealth in people (as opposed to capitalist valuation of material accumulation). Adequate production and distribution of foodstuffs may well have been an important strategy for retaining such skilled populations and the wealth that came with them. Even more so than the previous Ngre Phase, the existence of craft specialists may indicate sufficient food to feed nonfarming citizens.

The 18th century saw the consolidation of political control by the Asante state (Arhin 1967a; Wilks 1975). Based in the forest zone to the south, the Asante achieved control over much of modern-day Ghana through a series of military campaigns, including capture of Bono Manso and possibly Begho in 1722–1723 (Wilks 2005:18), and Banda in 1773–1774 (Stahl 2001:181). The Asante sent Banda war captives to be traded as human cargo in the Atlantic slave trade (Stahl 2015b), and, notably, the export of enslaved people from Ghana reached its apogee in the 18th century (Lovejoy 2012:48). Banda was later considered an inner province of Asante, which required them to supply men to fight in Asante wars. Significant Asante influence is evident in the organization of the Banda chieftaincy (Stahl 1991, 2001). From the early 19th century on, the Asante established a virtual monopoly on northern-focused trade (Arhin 1990:528; Boaten 1970:37, 40), which would have had major consequences for places like Banda, which were heavily involved in trade in the century previous. During the Early Makala Phase (c. 1770s–1820s), this shift is reflected in a decrease in long-distance trade items like ivory in Banda, although regional markets flourished, as did production of pottery and cloth (Stahl 2001). The narrowing of the kinds of crafts produced implies that Asante control may have siphoned off some of the area’s wealth. Compared to the previous Kuulo phase, these economic indicators may well signal a decline in entitlements.

Increasing tensions between European and African powers characterized the 19th century. In Ghana, repeated conflicts between the British and the Asante along the coast culminated in the British seizure of Kumasi, the Asante capital, in 1874, though it took two more decades for formal surrender (Gocking 2005:37–47). In areas to the north, widespread violence erupted and led to considerable dislocation as different groups vied for power. This was related in part to the instability of states like Asante, which faced increasing military and economic pressure from the...
British beginning in the 1820s, diverting attention away from their northern borders (Arhin and Ki-Zerbo 1989). A major source of unrest in the north was slave raiding for the internal market, which continued despite the British abolition of the Atlantic slave trade in 1807. The internal slave trade was related to the strong domestic demand for slaves as tribute payments or as laborers, in part to fuel the increasing production of cash crops and gold mines, and as payment for firearms (Arhin 1967b:76; Arhin and KiZerbo 1989:686; Austin 1995). One of the most notorious slave raiders was Imam Samori, a native of Guinea who sought to build a territorially expansive empire in the interior of the subcontinent. He reached Banda in 1895 and stripped the area of food supplies to feed his armies. By 1898, the British had ousted Samori from the Banda area (Stahl 2001:97–98). Oral histories tell of significant upheaval in Banda at this time, with people scattering to new villages and frequently finding themselves on the move. Colonial agents report ruined Banda villages in the 1880s and 1890s (Stahl 2001:192). A dearth of archaeological remains confirms these accounts, suggesting a landscape largely abandoned (Stahl 2001:200).

Migration is often a last-resort coping strategy, as it means finding themselves on the move. Colonial agents report ruined Banda villages in the 1880s and 1890s (Stahl 2001:192). A dearth of archaeological remains confirms these accounts, suggesting a landscape largely abandoned (Stahl 2001:200). Migration is often a last-resort coping strategy, as it means finding themselves on the move. Colonial agents report ruined Banda villages in the 1880s and 1890s (Stahl 2001:192). A dearth of archaeological remains confirms these accounts, suggesting a landscape largely abandoned (Stahl 2001:200).

The British extended formal rule to the Gold Coast Colony in 1897 and quickly set out to develop the economic resources of their acquisition. They expanded trade in commodities like gold and promoted the production of profitable export crops to fuel the machines and tastes of Europe. Cocoa, which can be produced only in the forested southern half of the country, became the dominant export crop in the early 20th century, and by 1919 the Gold Coast had become the world’s largest producer (Gocking 2005:47; Grier 1981:32). The push for cocoa production led many farmers to reduce or abandon the cultivation of food crops in southern Ghana, such that they came to rely on imported European foods in the early 20th century. This had major implications when cocoa prices declined, leaving smallholder farmers open to considerable risk (Grier 1981:32–34), as Watts has noted for Nigeria. In northern Ghana, where neither cocoa nor oil palm grows, the British could not find cash crops worth the cost of transportation south. For example, a visit by the director of Agriculture to the Northern Territories in 1912 recorded local production of cotton and determined that the price growers obtained locally could not be matched if cotton was to be exported to London, due to undeveloped transportation networks within the colony itself (Tudhope 1912). The lack of low-bulk, high-value goods in the north effectively prevented export of high-bulk goods because effective means of transport were lacking (Plange 1979; Sutton 1989).

Access to cash became a major problem for villagers as colonial officers sought to monetize their colony under a uniform currency instead of local cowrie shells. One way in which this was accomplished was the requirement that taxes, fees, and fines be paid in British currency. While the adoption of such currencies, as well as their accumulations, was slow and uneven across the territory, monetization had major affects on socioeconomic organization and agricultural production (Guyer 2004; Stahl 2001:99–101). In addition to labor migration, rural people gained access to cash through the sale of local products such as pottery (Stahl and Cruz 1998) but most especially through the sale of “surplus” agricultural goods including cash crops, a dynamic that continues today.

These colonial-period economic shifts had the dual effect of eroding self-sufficiency of subsistence farmers and making it necessary to earn wages through migrant labor to support their families in the north. The rise of this migrant labor force also helped facilitate penetration of the Northern Territories with goods from the metropole. The import of British manufactured goods led to the collapse of many native industries, such as iron, ceramic, and cloth production (Grier 1981:24, 37–38). These policies resulted in an unequal economic topography, with the north as undeveloped and south as developed divide persisting to the present day. Decades of dislocation and new colonial economic policies clearly had an effect on Banda. By the Late Makala phase (c. 1890s–1920s), people had resettled in their villages, but there was a new normal. Houses were built using less durable materials (Stahl 2001:209); pottery displayed simpler décor and greater homogeneity (Cruz 2003); iron, copper, and ivory items were no longer produced locally (Stahl 2007); and trade networks contracted considerably (Stahl 2001; Stahl et al. 2008). These material indicators hint at the loss of local industry and an overall decline in quality of life. By the 1930s, Banda had literally fallen off the map, with no major roads leading in or out of the area.

**TRACING FOOD SECURITY IN BANDA, GHANA, 1450–2009 C.E.**

How did these political-economic shifts affect foodways in Banda? In this section, I explain my approach to tracing food security in the archaeological record and examine how food security levels changed in Banda over the last five centuries. Archaeologists have only recently devoted serious attention to tracking food security, with a focus on comparing vulnerabilities between regions (Nelson et al. 2015); instead, my approach relies on thick description of the local in order to assess the effects of political-economic shifts.

Food security exists “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (WHO 1996). Using three key components of this definition—food availability, access, and preference—we can track changing levels of food security over time using a wide variety of archaeological data (Table 1; see Logan in press a). Food availability is defined as the quantity of food produced and therefore available to populations. Archaeologists have long been interested in the relationship between agricultural production and population, but this relationship alone is not sufficient to assess food security, as

<table>
<thead>
<tr>
<th>Archaeological phase</th>
<th>Availability</th>
<th>Access</th>
<th>Choice/preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuulo cal. 1450–1650 C.E.</td>
<td>Major drying</td>
<td>Likely trend</td>
<td>Craft specialists; surplus; regional and long-distance trade</td>
</tr>
<tr>
<td>Early Makala c. 1773–1820s C.E.</td>
<td>Wet</td>
<td>No</td>
<td>Fewer crafts; regional trade</td>
</tr>
<tr>
<td>Late Makala c. 1890s–1920s C.E.</td>
<td>Wet</td>
<td>No</td>
<td>Subsistence; local crafting; limited imports</td>
</tr>
<tr>
<td>Modern 2009</td>
<td>Minor drying</td>
<td>Yes</td>
<td>Subsistence and cash-crop market economy; significant imports</td>
</tr>
</tbody>
</table>

* Food availability declines

Sen’s important work shows. For Banda, I rely on ethnoarchaeological observations that drought has led to significant food availability declines (FAD), suggesting that a similar FAD may have occurred during past droughts. I am aided by high-resolution precipitation proxy records from Lake Bosumtwi, some 200 kilometers from the study region, which enable us to pinpoint major increases or decreases in precipitation (Figure 3). Food access refers to distribution of foodstuffs across social groups. Archaeologists can track differences in access to food between household units, sites, and over time. Below, I compare food remains from different households when possible to coax out possible variation in access. In this study, shifts in access to preferred foods over time are one of our strongest indicators of changing food security. Food preference traces culturally acceptable and valued foods. On the one hand, in instances of high food security, we might see consumption of luxury foods, a traditional focus of archaeology (e.g., Van der Veen 2003). On the other hand, we can track food stress through the presence of lower-ranked or hard-to-acquire foods, including wild or “bush” species, as well as foods that carry a social stigma of poverty (Dei 1988; Dirks 1980; Morell-Hart 2012). In Banda, I track changes in consumption of preferred versus low-ranked staples, new luxury crops, and unique wild foods. My approach provides a relative understanding of food security in a given area over time, enabling us to track declines in food security as well as periods of high food security. Changing relative levels of food security in Banda are schematically illustrated in Figure 2. A local focus allows us to see at what points in the past an area achieved its highest food security “potential” and under what political-economic conditions such potential was realized or diminished.

My data are derived from four months of ethnographic interviews in 2009 (Logan and Cruz 2014) and follow-up visits in 2011 and 2014, as well as from analyses of archaeological plant remains, which trace the major shifts in crops over the last millennium. I begin with a brief description of food and farming today to situate present-day responses to environmental and economic shifts. I then work back in time to understand how responses to these shifts have changed and to pinpoint when Banda achieved its food security potential. Shifts in food availability, access, and preference are summarized in chronological order in Table 1.

Today, the vast majority of families in Banda farm, but most do not produce enough agricultural goods to adequately
feed their families and acquire cash for household reproduction (e.g., building houses, school fees, etc.). Farmers employ several strategies to increase their cash income from farms and other sources. For example, farm income is supplemented by wage labor from family members in urban centers, a dynamic that began in the colonial period (1890s–1957). Additional income is obtained through the production and sale of cash crops like peanuts, calabashes, and cashew trees. Well-off farmers can afford to purchase fertilizers and pesticides to increase yield and to hire migrant labor to do the hard work of raising mounds and weeding. The vast majority of farmers try to make ends meet by producing a large enough quantity of subsistence crops (yams, cassava, maize, and sorghum) to eat and sell along with low-risk, fast-return cash crops like calabashes and peanuts. Plentiful harvests are thus critical to the maintenance of both food security and household finances.

Although farmers have developed numerous strategies for coping with bad harvests, they remain especially vulnerable to shifts in rainfall. In 2009, all interviewed farmers expressed concern over the changing seasonal distribution of rainfall and its overall diminution. The climatic shift noted by Banda farmers is part of a 40-year trend of diminishing rainfall known as the Sahel drought (Figure 3; Shanahan et al. 2009), the same development that spurred the Sahel famine (above). Farmers complained that shifting rainfall patterns have significantly reduced yields, particularly of the more profitable subsistence crops like yams and maize. Consequently, food practices have shifted toward the consumption of greater quantities of less preferred but more reliable crops like cassava instead of favored foods like yams, which demand more resources. Major economic differences between large-scale farmers, subsistence-level farmers, and migratory workers have created an uneven topography of food access. In brief, as food availability has declined, people have employed a common coping strategy: replacing preferred foods with those that are easier and cheaper to produce.

Based on these dynamics, we might expect decreases or shifts in rainfall patterns to have posed significant challenges to food production in the past. Specifically, we would expect to see a food availability decline (FAD) and consumption of less preferred or higher-yielding crops (Logan in press a). Figure 3 shows a high-resolution precipitation reconstruction for Bosumtwi over the last millennium, based on $\delta^{18}O$, an oxygen isotope from authigenic lake carbonate that reflects lake levels and serves as a proxy for rainfall quantity (Shanahan et al. 2009). While $\delta^{18}O$ levels do not allow for the reconstruction of actual precipitation amounts (e.g., in millimeters per year), they do provide

![Figure 2](image1.png)

**FIGURE 2.** Relative levels of food security over time in Banda, C.E. 1450–2009.

![Figure 3](image2.png)

**FIGURE 3.** Changing precipitation at Lake Bosumtwi, Ghana, over the last millennium according to oxygen 18 isotope records (redrawn from Shanahan et al. 2009:379).

a relative measure of rainfall that can help us understand the severity of droughts in the past as compared to today. What is particularly striking is a multi-century drought observed during the archaeological Kuulo phase from about cal. C.E. 1450–1650, which is exponentially more severe and prolonged than the Sahel drought of recent decades. It is highly probable that this drought had major consequences for food and farming during the Kuulo phase, something I set out to test by looking at shifts in the plant foods used before, during, and after that period. The Kuulo phase also coincides with the arrival of Europeans on Ghana’s coastline.

Here I present the results from an archaeobotanical analysis of grain crops, because they are among the most reliably recovered plant remains and can tell us much about shifting food availability, access, and preference. Data on plant use are primarily derived from charred seed remains, the most common way in which plant remains are preserved in the archaeological record. Flotation samples of 5–10 liters were taken from all contexts, totaling over 1,600 samples; I analyzed 327 of these samples. Multiple sites were sampled per phase, and several of the larger sites often contained material from several occupation phases. Material from ten sites was analyzed, with a focus on four type sites that have seen extensive excavation (Banda 13, Ngre Kataa, Kuulo Kataa, and Makala Kataa; see Stahl 2001, 2007; Stahl and Logan 2014; see Logan 2012 for full contextual details). In what follows, I focus on the results of ubiquity analysis, which reports the percentage of contexts in which a plant taxon was present, providing a rough measure of how commonly it was used. Figure 4 also includes relative frequency—how the quantities of different grains compared to one another—to estimate the quantity in which each grain was used.

The main grain crops used over the last millennium in Banda were pearl millet (*Pennisetum glaucum*) and sorghum (*Sorghum bicolor*) (Figure 4). While both are indigenous African grains, pearl millet has a particularly long history in West Africa (D’Andrea and Casey 2002; Manning et al. 2011) and is ubiquitous wherever archaeological sites are
sampled for plant remains. Such ubiquity is surprising in more humid regions like Banda, because pearl millet is sensitive to too much rainfall, suggesting that it was not necessarily the most optimal or highest-yielding choice. Sorghum, however, occurs consistently but at much lower ubiquities, with higher ubiquities observed during wetter phases (Figure 4). During wet periods, farmers likely capitalized on sorghum’s ability to withstand waterlogging, even if pearl millet remained the dominant grain crop.

Of particular interest is the adoption of a third grain crop—maize—in the Banda area, because its arrival coincides with the Kuulo phase drought. It has long been hypothesized that the introduction of maize from the Americas transformed African agriculture due to its increased yield potential compared to African grains (McCann 2005; Miracle 1965). Due to the short growing cycle of maize and the two-peak rainfall cycle that characterizes the Banda region, two crops of maize can be grown per year, potentially producing double the yield of indigenous grains sorghum and pearl millet. Today, the first maize is ready during the hungry season gap, which falls in the early wet season as grains from last year’s harvest run short and before the current season’s crops are ready to harvest. Given maize’s important role today, we would expect that, in times of food stress, people would rely more heavily on maize, because it can produce more food in a shorter amount of time and it matures during a time of food scarcity (McCann 2005; Miracle 1965; Stahl 1999, 2001).

Our understanding of how and why maize spread in West Africa has been limited to historical and linguistic records, which are circumscribed to coastal areas that saw sustained contact with Europeans. These records indicate that maize was present at Elmina, on the Ghanaian coast, by 1555 (Alpern 1992:25)—right in the middle of the Kuulo phase drought. Maize cupule and kernel fragments appear in the Banda archaeological record, some 400 kilometers inland, by 1484–1660 cal. C.E. (at 95% confidence; AA 94093), within a couple generations of its first mention on the coast. This date is suggestive of a rapid spread northward or perhaps from the interior of the continent via Senegambia (La Fleur 2012:95). Despite this rapid spread, maize appears to have been used very sparingly, with only 17 fragments found. Maize finds were confined to one house (8 samples, Mound 118) and noticeably absent from the three other houses and midden samples tested (130 samples). The house that contained maize was the only one to have evidence for in situ production of ivory objects, a lucrative trade good (Stahl and Stahl 2004:95). The Mound 118 house contained little evidence for grain-processing debris, suggesting that the inhabitants may have obtained grain in an already processed state. Cumulatively, these domestic data suggest that only some families had access to maize, possibly because of their status or their connections to long-distance trade networks.

Another American crop, tobacco, was also quickly adopted in Banda and elsewhere in the region, as evidenced by the spread of smoking pipes (Stahl 1994, 1999). A small number of tobacco seeds were also found in Kuulo phase contexts (n = 7). Further, grain of paradise (Afromamum melegueta), a valuable trade spice from coastal regions highly sought after in Europe, appears in two Kuulo phase middens. These exotic plants attest to involvement in north–south trade networks and are among the earliest material indicators of Atlantic connections in inland Ghana. The pattern of maize and tobacco adoption is reminiscent of how new crops are adopted across many modern societies today—as curiosities or luxuries accessed by only a few—rather than crops embraced out of need. The increased productive capacity of maize, a fact that would not have been lost on Banda farmers, does not appear to have been the primary motivation in its adoption.

Instead, pearl millet remained the staple grain during the Kuulo phase, as it had in previous centuries (Volta and Ngre Phases, c. 1000–1450; see Figure 4). Unlike maize, pearl millet was common in Kuulo phase contexts (present in 43% of samples, compared to 6% for maize or 3% for sorghum), suggesting that its use was widespread. These data suggest that the role of indigenous African grains during the Columbian Exchange has been underplayed, in part because they are not always decipherable in historical accounts (Alpern 1992; Carney and Rosomoff 2009; La Fleur 2012:91) but also because we have lacked archaeobotanical data on the last five centuries. The adherence to pearl millet across periods and environmental zones, even in areas that are ecologically unsuited to its production, like the tropical forest (e.g., Kahlheber et al. 2009), suggests a strong cultural preference for this grain. As a drought-tolerant crop par excellence, pearl millet may also have been an advantageous choice during the drought that spanned the Kuulo phase.

I also examined wild plant taxa for signs of food insecurity, as they are commonly consumed as a coping strategy in Banda and elsewhere. Unfortunately, the taxa consumed today are also the most common weeds of disturbed areas and have multiple medicinal and fodder uses (Abbiw 1990), so it is next to impossible to determine if they were for human consumption if recovered archaeologically. There is an overall lack of patterning distinctive to the Kuulo phase in regards to wild plants, suggesting that there were not any marked deviations in wild plant use or weed ecologies (see Logan in press a).

Overall, the continued use of a preferred food (pearl millet) over a new crop like maize that could produce greater yields, along with the adoption of luxury crops and lack of other indicators of food stress, suggest that the Kuulo phase drought had little adverse impact on food security. This interpretation is bolstered by evidence suggestive of a strong regional economy during the Kuulo Phase, discussed above. Banda was actively involved in both regional and long-distance trade networks and produced a variety of crafts beyond that needed for household use (Stahl 2007; Stahl and Logan 2014). These data suggest a strong trade-oriented...
economy that may have increased the resilience of the Banda area to environmental shocks.

A return to wetter conditions in the Early Makala phase (c. 1773–1820s) engendered an increased reliance on sorghum alongside pearl millet, but, curiously, maize remained a minor component of the diet, even though climatic conditions were optimal. This is notable, given that maize is assumed to have underwritten the ascension of the Asante state (McCann 2005:40–49; Wilks 2005), which had an increasingly powerful presence in Banda from the late 18th century onward. Although maize had been present in Banda for over a century, its high-yielding qualities do not seem to have been needed during this phase, with people instead choosing to consume indigenous grains. The Early Makala phase is notable for the exceptional preservation of a kitchen area that was accidentally burned, yielding remains of two additional wild taxa, baobab and kapok, trees that are widely used today (Logan and Cruz 2014).

There are no signals of food stress in Banda until the mid— to late 19th century, a time of considerable violence and dislocation (Stahl 1999). Oral histories frequently mention the lack of food and access to crop plants. They suggest that, to survive, people hunted animals and collected wild plants, even trying new species one person at a time to test their edibility. The only plant remains recovered were from a cave high in the Banda hills used as a refuge in times of trouble; there, maize and millet are found, along with two new wild plant taxa not seen previously.

When people resettled in Banda once again in the 1890s, daily activities, including food and farming practices, had changed. Botanical analysis detects a shift to maize, which predominated for the first time in the sequence. Maize’s ability to produce a crop quickly would have been especially advantageous in the unsettled conditions Banda villagers faced in the late 19th century. Historical records also indicate that cassava and yams were grown. Cassava is a low-labor crop that, combined with the presence of maize, suggests changes in labor availability (Logan and Cruz 2014; Stahl 1999:68). Cassava was considered “poor, coarse food” at the time in nearby Kintampo (Graham 1902) and along the coast (La Fleur 2012). Four new wild plant taxa not seen previously appear in the archaeological record, corroborating oral accounts that tell of experimentation with wild plants. An increased focus on opportunistic hunting is also found in Late Makala contexts, suggesting a diverse subsistence economy under stress (Stahl 1999:66–68). Finally, new work on coastal foodways suggests that shortage associated with violence and dislocation were not confined to Banda but plagued large portions of the Gold Coast during the 19th century, forcing people to resort to cassava (La Fleur 2012; see also Ohadike 1981; van Oppen 1999).

DISCUSSION

By digging deep into Banda’s past, archaeology reveals the “potential” of the area to maintain a high level of food security even during severe, prolonged drought and further delineates the structural conditions under which this potential diminished. During the Kuulo phase (1450–1650 cal. C.E.), archaeological data suggest that people were better equipped to cope with the harshest drought observed in the last millennium, providing a sharp contrast to recent years, when much shorter and less pronounced droughts have had significant negative consequences for livelihoods. Historicizing responses to drought and its relation to food security raises two further questions: How did people manage to cope with the Kuulo phase drought, and what happened in the intervening years that makes people today less able to weather environmental shifts?

At present, the Banda project’s resolution on the strategies people used to cope with drought is not as fine-grained as we would like, but our data are suggestive of three strategies distinctive from today’s practices. First, pearl millet, a drought-resistant crop, seems to have formed the mainstay of people’s diets for much of the last millennium and was likely a critical strategy in maintaining food security during drought. In this situation, Kuulo phase farmers may have chosen to focus on risk-reducing crops like millet rather than the newly arrived, high-yielding maize. Today, people have abandoned the cultivation of pearl millet in favor of higher-yielding crops like maize. This switch may partially account for increasing crop failure due to drought, but this is not something easily remedied by the reintroduction of pearl millet. Pearl millet is ill-suited to current market conditions because it fetches a lower price than crops like maize or yams, yields less product, and is more time consuming to process (Logan and Cruz 2014; Logan in press b).

Second, Malthusian logic might ask whether or not populations were significantly lower during the Kuulo phase and if that may account for their ability to endure such a severe drought. While precise population measurements are not possible at present (and, indeed, this is a challenge for archaeology as a whole), our data suggest that Kuulo phase populations were higher than in the 19th to 20th centuries, when the first indicators of food insecurity emerge. We know that the area was majorly depopulated in the 19th century due to increased raiding, as indicated in oral histories as well as a hiatus in the archaeological record (Stahl 2001). Colonial-period sources from the late 19th and early 20th centuries suggest population density in the area was among the lowest in the country (Cardinall 1931:157); even today, the legacies of this upheaval persist, with Banda still having a low population density compared to other parts of the country (www.tain.ghanadistricts.gov.gh/). Additionally, settlement pattern data indicate the presence of larger towns during the Kuulo phase as compared to preceding or following phases, for which small villages and dispersed homesteads are the norm (Smith 2008:525). In sum, while precise population numbers cannot be compared, available evidence suggests that populations were likely higher and more aggregated in the Kuulo phase than in the 18th through 20th centuries. Such settlement aggregation may have formed an important coping strategy,
as it was in the American Southwest (Minnis 1985), and may have been part of the successful economic position of Kuulo Kataa as a regional trade nexus.

Third, there are some major differences in how political economies were structured during the Kuulo phase as compared to subsequent phases, mainly in terms of craft specialization and production and access to regional and long-distance trade (see Table 2). The greatest diversity of craft specialists is found in the Kuulo phase, including skilled metal and ivory workers alongside potters, as well as surplus craft production above household needs. By the 19th-century Early Makala phase, evidence for copper, iron, and ivory working disappears; by the early 20th-century Late Makala phase, even regional pottery trade virtually ceases (Stahl 1999, 2001, 2007; Stahl et al. 2008). These data suggest a winnowing of skills, which may signal declining wealth according to a wealth-in-people model (Guyer and Belinga 1995). The production of fewer goods constrained the possibilities for earning marginal gains through trade and exchange (Guyer 2004). Finally, the decline in the scale of production effectively diminished Banda’s purchasing power for imported goods.

The fundamental restructuring of craft production and trade dynamics under Asante and British rule effectively undermined the very economic system that had allowed Banda to cope with the Kuulo phase drought. Such shifts in production and trade were not restricted to Banda alone but, rather, were part of larger processes of underdevelopment. These economic shifts were aggravated by centuries of the trans-Atlantic slave trade that had depopulated Africa of skilled farmers and artisans in their prime (Rodney 1972; for Banda, see Stahl 2008, 2015b). Such processes began long before formal colonial rule but snowballed as colonial policies further hobbled local economies.

Today, most farmers in Banda struggle to produce enough agricultural surplus to eat and to sell. In precapitalist economies, including those of the Kuulo phase, such harvests may well have been sufficient to get families through the year. Nowadays, farmers are forced to sell a good portion of what would have normally fed their families, necessitating either increased production or the purchase of expensive foodstuffs once their own stores are depleted. Throughout the African continent, this dynamic has resulted in a recurrent hungry season, which usually occurs just prior to the next year’s harvest, when the previous year’s harvest runs short. Today, two American crops help plug the hungry season gap because their harvest cycles are different than African crops. Cassava can be harvested year round, and maize ripens before other grains, right in the peak of the hungry season. It is telling that neither Kuulo nor Early Makala phase farmers took advantage of maize’s high-yielding capabilities, instead preferring the indigenous foods of their ancestors. The ubiquity of the hungry season gap across the African continent may well be rooted in shared historical and economic trajectories rather than innate limitations of African environments and crop repertoires. Cumulatively, these processes of slow structural violence had significant effects on entitlements and capabilities, effectively undermining the ability of many Africans to feed themselves.

### TABLE 2. Major Political-Economic Shifts in Banda, 1450s–1920s

<table>
<thead>
<tr>
<th>Archaeological phase</th>
<th>Craft specialization</th>
<th>Scale of craft production</th>
<th>Long-distance trade</th>
<th>Regional trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuulo cal.1450–1650 C.E.</td>
<td>Yes; ivory, iron, copper alloys, pottery</td>
<td>Above household level</td>
<td>Northward and later southward directed</td>
<td>Yes</td>
</tr>
<tr>
<td>Early Makala c. 1773–1820s C.E.</td>
<td>Yes; textiles and possibly pottery</td>
<td>? Mostly household</td>
<td>Controlled by Asante</td>
<td>Yes</td>
</tr>
<tr>
<td>Late Makala c. 1890s–1920s C.E.</td>
<td>Yes; textiles and pottery</td>
<td>Probably household</td>
<td>Controlled by British</td>
<td>Significantly reduced</td>
</tr>
</tbody>
</table>
TOWARD AN ARCHAEOLOGY OF SLOW VIOLENCE

In Banda, chronic food insecurity is a condition that was made rather than a condition that has always been. The diverse economic and social strategies used to survive the Kuulo phase drought were chipped away by centuries of economic and political exploitation so that now even minor environmental shifts have major impacts on economic and food security. Mike Davis (2001) argues that similar historical trajectories undergird food insecurity in much of what is now the developing world. There is nothing natural about this pattern; in its contours are the imprints of damage wrought by slow, structural violence.

Viewed over a long time scale, the loss of food security in the Banda region fits the classic definition of structural violence, which exists when people are being influenced to achieve less than their “potential” (Galtung 1969:168–169). The highest potential food security is not to be found today, as progress-centered narratives might predict, but in the past, at a time when Banda was in a much stronger economic position. Archaeology may allow us to narrow in on strategies used in the past to maintain food security, such as lost agricultural techniques that may help bolster crop yields today. Creating such “usable pasts” is a compelling goal, especially for Africanist archaeologists (Davies 2012; Lane 2011; Stump 2013), but as I have illustrated in this article, we must be mindful of the political-economic contexts in which such strategies were successful. Confronting the political-economic as well as environmental forces us to reckon with the structural violence that prevents such potentials from existing in the present day.

Instead, archaeology’s most valuable contribution may well be the ability to make visible the processes by which structural violence unfolds over time (see also González-Ruibal 2008, 2014). Borrowing from Rob Nixon, I conceptualize these processes as forms of slow violence, “a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all” (Nixon 2011:20). This concept has much in common with Watts’s (2012) notion of silent violence, but the nature of archaeology’s alternative archive demands an explicitly temporal dimension. Because the consequences of slow violence are displaced in time, they are frequently disconnected from their ultimate causes. Gradual, slow processes of change are hidden by a “turbo-capitalist” focus on the fast paced and catastrophic. When slow violence remains invisible, present-day inequalities become decoupled from their causes, with serious consequences for how we envision their solutions (Nixon 2011; Ribot 2014; Watts 2012). In this way, archaeology is more than simply a supplement to more conventional historical archives. Archaeology’s focus on process instead outlines “the force creating the condition,” which as Lappé realized decades ago must be the real target of change. We now have the ability to answer her call, even if that means exposing more sobering histories of structural violence—and who or what is to blame.

NOTES

Acknowledgments. Funding was provided by National Science Foundation grants to Ann B. Stahl (BCS 0751350, BCS 9410726, BCS 9911690) and myself (BCS 1041948), as well as a Wenner-Gren Foundation dissertation grant to the author (N013044). The Ghana Museums and Monuments Board and Banda Traditional Council granted permissions for all research reported. I owe special thanks to members of the Banda community for answering my questions and exposing me to new ones; and to Ann Stahl for access to Banda’s rich history and for assiduously collecting archaeobotanical samples long before an archaeobotanist took interest. Many colleagues have provided thoughtful commentary on the arguments presented, including James Brown, Catherine D’Andrea, Kate Franklin, Mark Hauser, Michelle Hegmon, Ian Hodder, Matthew Johnson, Fiona Marshall, Scott MacEachern, François Richard, Cynthia Robin, Melissa Rosenzweig, David Schoenbrun, Carla Sinopoli, Katherine Spießmann, Ann Stahl, Noelle Sullivan, Barb Voss, and Mary Weismantel. Chelsey Yount-Andre translated the abstract into French. Last, I thank Michael Chibnik and seven anonymous reviewers whose constructive criticisms improved the clarity of the argument. The first part of the title references Frances Lappé’s well-known 1972 speech and later article (Lappé and Collins 1978).

1. Today tuber crops like indigenous yams and cassava are important food sources in Banda. Tubers are notoriously difficult to recover archaeologically as their soft flesh easily decays. In Banda, attempts to trace tubers through phytolith and starch grain analyses were unsuccessful. Hence I rely on grain crops, which preserve more reliably, enabling a stronger comparison across time and space.

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