Intimate Spaces and Plantation Landscapes in Nineteenth-Century Mauritius: Archaeology of Indentured Laborers in the Western Indian Ocean

Julia Jong Haines
Charlottesville, Virginia

B.A., University of Chicago, 2009
M.A., University of Virginia, 2014

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Dr. Adria LaViolette (chair)
Dr. Jeffrey Hantman
Dr. Patricia Wattenmaker
Dr. Ira Bashkow
Dr. Geeta Patel

Abstract

In this dissertation I examine the archaeology of Bras d'Eau National Park, Mauritius, which contains the ruins of a 430 ha plantation estate (1786 to 1868). After abolition of slavery in the nineteenth century, hundreds of thousands of Indian and Chinese indentured labors moved across the world to replace enslaved men, women and children in plantation colonies. Using the varied methods of historical archaeology, I argue that indenture as a system of labor was a new kind of capitalist exploitation that requires us to reconsider the nature of power dynamics, social relationships, exchange networks, and cultural practices on plantations in the post-slavery eras. In partnership with Mauritius's National Parks and Conservation Services (NPCS), the Mauritius Archaeology and Cultural Heritage (MACH) and Aapravasi Ghat Trust Fund (AGTF), a UNESCO world heritage site in Mauritius, and a team of Mauritian archaeologists, I conducted 17 months of research at Bras d'Eau. I employed a broad methodological approach, examining both the landscape and the intimate spaces and artifacts of indentured laborers. I explore whether and how issues of power and identity are relevant to archaeological studies of the interactions between African, South and East Asian, and European populations who were exploited and/or in positions of authority in the Indian Ocean. More specifically, I expand on existing plantation literature by incorporating conceptions of disease and wellness in the analysis of the landscape and artifacts found in domestic contexts. Situated within the anthropology and archaeology of plantations, households, spatial practices and migration and diaspora studies, my study of the landscape and intimate living spaces on this vast sugar plantation is a window on how the material culture left by diaspora communities reflects the global movement of objects, people, and ideas in the nineteenth century, and how this Mauritian archaeology compares to others in Africa and the Indian Ocean. Bras d'Eau is an archaeological site that encapsulates a labor

regime in an understudied region of the world. This plantation archaeology is significant to those impacted by the legacies of coercive systems such as slavery and indenture, which continue to shape the experiences of descendants today.

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Chapter 1: Introduction to the Archaeology of Indenture

Plantation Household Archaeology: Insights from Nineteenth-Century Mauritius

This dissertation examines the archaeology of everyday life on a sugar plantation in Mauritius, an island nation c. 2000 km off the east coast of Africa in the southwest region of the Indian Ocean. Despite its seeming isolation, Dutch, French, and British colonial administrators and traders saw Mauritius as a key location in the Indian Ocean during periods of capitalist expansion (see Ch. 3). The island, unpopulated before 1638, became home to hundreds of thousands of enslaved and indentured laborers from Africa, India, China, and Southeast Asia throughout its history of successive European colonial rule (Carter 1995; Allen 1999; Vaughan 2005). The slave trade was abolished in 1810 and slavery itself was abolished in 1835. Beginning in the 1820s and '30s, 450,000 indentured laborers on fixed five-year contracts migrated to Mauritius and became the new agricultural labor force. Twice as many indentured laborers landed in Mauritius than in any other colony in the world. At the same time, Mauritius became a center of sugar cane production. The indenture system entangled a multitude of people—new laborers, formerly enslaved people, overseers, ship owners, estate owners, colonial officers—all of whom contributed to the creation of landscapes of power in the Indian Ocean. The vast majority of indentured men, women and children who ended up on Mauritian sugar plantations came from India, but about 5% came from either China, Africa, or Southeast Asia. South Asian migrants represented a wide swath of castes and religions. Many were seasonally mobile agriculturalists from Bihar and Bengal in the northeast, Madras in the south, and to a far lesser extent, the western regions around Mumbai (Northrup 1995). Many were already

vulnerable to exploitation when recruited into indentured contracts, especially during periods of severe drought and famine (Carter 1995).

I tell the story of these indentured laborers who migrated to Mauritius in the 1800s to work on colonial sugar plantations in the wake of the abolition of slavery. Using historical archaeological methods, I conducted research in the forested Bras d'Eau National Park located on the northeast coast of Mauritius in the Flacq district. Bras d'Eau, meaning "arm of water" named after a nearby inlet, was a 1060 acre (~430 ha) privately owned plantation estate from 1786 to 1904 that functioned as a sugar plantation in the nineteenth century (Fig. 1.0). The indenture system of the nineteenth century was a system of labor with its roots in earlier European indentured servitude and African slavery, but we understand little about everyday lives of the indentured men and women who lived on plantations and how the legacy of slavery influenced these later plantation landscapes.

Comparative historical and plantation archaeology forms the foundation for this case study. Archaeologists have investigated the realities and nuances of enslavement by investigating landscapes and material culture on plantations, largely in the Atlantic world. The emphasis on Atlantic slavery has left questions addressing the intersection of power, diaspora, identity, class, and race within slavery and post-slavery labor systems largely unanswered in regions such as the Indian Ocean. In addition, comparatively little research has been conducted on Indian and Chinese indentured labors, hundreds of thousands of whom moved across the world to replace Africans after abolition in nineteenth- and twentieth-century plantation colonies, in places as widespread as Trinidad, Jamaica, and Guyana in the Caribbean/South America, and Mauritius, South Africa, and Uganda in eastern/southern Africa and the Indian Ocean (cf. Seetah 2016). In this dissertation I explore whether and how issues of power and identity are relevant to

archaeological studies of the interactions between African, South and East Asian, and European populations who were exploited and/or in positions of authority in the Indian Ocean. I expand on existing plantation literature by incorporating conceptions of disease and wellness in the analysis of the landscape and artifacts found in domestic contexts. As such, I contribute new paradigms and questions to current historical archaeologies of households, domestic economies, diaspora identities, and landscape practices. Situated within the anthropology and archaeology of migration and diaspora studies, my study of the landscape and intimate living spaces on this vast sugar plantation sheds light more broadly on how the material culture left by diaspora communities reflects the global movement of objects, people, and ideas in the nineteenth century, and how this Mauritian plantation compares to those in the better-understood colonial Atlantic region. The Bras d'Eau archaeology project is the first to target the entirety of a plantation on Mauritius archaeologically, and the first to compare multiple households of indentured laborers on a plantation anywhere in the world.

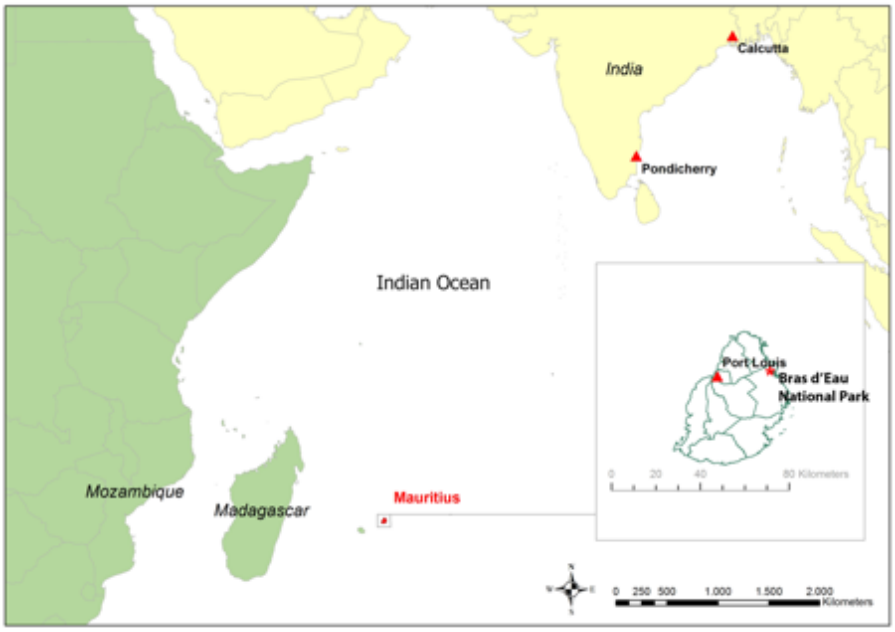

Figure 1.1 Map of the Indian Ocean with a close-up of Mauritius and showing the location of Bras d'Eau National Park.

Research Questions and Methodological Approach

In its original design, the goal of this project was to compare earlier enslaved and later indentured archaeological contexts on the Bras d'Eau sugar estate, to draw conclusions about differences in identity-forming practices of these two groups of exploited laborers. To understand the differences between the experiences of enslaved and indentured people of Mauritius, I planned to examine how both groups entered the colony and to what extent their relationship to their places of origin influenced how they situated themselves in everyday material practices. I expected to identify the slavery period deposits based on the presence of imported European creamware (1762-1820) and pearlware (1775-1830), and the indentured labor period through the presence of whiteware ceramics (1820-2000). After mapping the remaining archaeological ruins and features on the estate and conducting surface collections of artifacts in three targeted zones, it became clear that none of the archaeological remains we found could be confidently associated with the slavery period (ending in 1838). My original research questions that centered around comparing identity practices of enslaved and indentured laborers thus were reformulated to focus more specifically on the experiences of indentured laborers, and variation in their household material practices.

As an exploratory project, surface collections and excavations established a baseline understanding of what men, women, and children did in their everyday life on the plantation. I ask the following questions: What were indentured laborers' daily-life practices, and what do they reflect in terms of choices in housemates, communal practices, and modes of self-expression? Is there clear variation in the patterning of the materials of everyday life between different households? Do practices become more homogenous or heterogeneous over time? How was gender, sexuality, age, and ethnic or religious identity expressed within the disproportionately

adult male context? How did men and women deal with the heavy burden of cultivating sugar cane and working in the mill, and the spread of island epidemics? What strategies of control and confinement were exercised over laborers in everyday life? Lastly, what does this case study contribute to comparative plantation archaeology, and the anthropology of diaspora and labor?

Originally, I hypothesized that Indian indentured laborers, sharing in cultural understandings of status and difference, would have made an effort to maintain existing social distinctions and pooling of resources within households or household clusters, bounded either by caste, religion, or regional specificity. Thus, archaeological assemblages of households would indicate increasing differentiation during the indentured period in housing styles, access to goods, and consumption patterns. Through digital maps I created of the plantation's archaeological landscape features and excavations at Bras d'Eau, I examined: 1) patterns in architecture and spatial arrangements in houses; evidence of foodways through cooking tools, ceramics, and botanical remains; everyday identity practices through personal and religious artifacts; participation in and creation of domestic and international economies through imported and locally made objects; and 2) evidence for increasing or decreasing differentiation between households over time.

Although diachronic (over time) comparison is not a central component of this project—because I do not compare the materiality of the slave contexts with those of the indenture contexts at Bras d'Eau—the rich archaeology of comparative plantations coming predominantly from Atlantic European colonies remains the foundational context of this dissertation. Given the size and spatial complexity of the Bras d'Eau archaeological site, I employed a broad methodological approach. Through spatial analysis and artifact analysis, I consider how the domestic spaces at Bras d'Eau are representative of long-standing Indian Ocean cultural networks. I am able to

suggest that immigrant men, women, and children maintained some familiar cultural practices after migrating, and engaged new cultural consumption practices that intertwined with conceptions of health, wellness, disease, and landscape.

Historical Archaeology in the Indian Ocean

Historical archaeology has several definitions, emphasizing methodology or the context or time period studied. Those definitions that focus on methodology define it as archaeology practiced in conjunction with written records, thus encompassing ancient Mayan, Roman, Indian, and Egyptian archaeology, and archaeology of colonial encounters of the last 500 years. For example, the "historical period" in South Asia begins in the middle of the first millennium BCE (Smith 2016), the medieval period or (middle period) extending up to the 1600s (Morrison 2016).

Alternatively, James Deetz (1977: 5) asserted that historical archaeology is "the archaeology of the spread of European culture throughout the world since the fifteenth century and its impact on indigenous peoples." Deetz's definition has been critiqued for being Euro-centric and prioritizing the archaeology of European colonial encounters as opposed to that of all populations in the era of European imperial expansions. Archaeology is indeed well positioned to show how material goods moved around the world through the systems of capitalism and colonialism. The spread of European things is not equivalent to the spread of European culture as practice, however. Mark Leone (1988: 237-242) argued that Deetz (1977) and Glassie (1975) failed to consider the importance of the rise and spread of capitalism and the Georgian conceptual order that promoted individualism. However, Paul Mullins (2012: 3) points out that "capitalist penetration into New World colonies, Africa, and the breadth of Europe itself was inevitably variable across time and space," and suggests that we are really seeking a global historical

archaeology. Charles Orser (1996: 82; 2009) defined it as the archaeology of the emergence of 'modernity', drawing directly on the chronology of Western history: medieval, post-medieval, pre-modern, modern. Rather than parsing out the details of such definitions, others have taken an all-encompassing perspective, seeing historical archaeology as integrating varied methodological practices in the study of colonialism, capitalism, globalization, and modernity in the last 500 years.

In contrast to these Americanist definitions, Connah (2007) suggests the concept of historical archaeology and the definition of 'historic' and 'prehistoric' do not apply in Africa. Archaeologists' increasing use of oral traditions and ethnographies as legitimate sources of information (Schmidt 2006) champions the view of oral traditions as valid historical texts, and removes the unnecessary divisions between 'prehistoric' and 'historic' archaeology and 'literate' and 'nonliterate' people (Schmidt and Mrozowski 2013: 1-8). Seetah and Allen (2018) similarly suggest that the definition of historical archaeology established by those working in the Atlantic world, such as Orser (1996), which 1) forefront the periodization of European expansion as *the* defining feature of the modern world, and 2) acknowledge the methodological practices of text-aided historical archaeology, are misaligned in the Indian Ocean. As other eastern Africanist archaeologists have done before them (e.g. LaViolette 2008: 42), Hauser and Wilson (2016: 9) also point to long-standing trade networks within South Asia and across the Indian Ocean more broadly, as a key factor in distinguishing European colonial expansions, because colonists tapped into existing systems and social structures.

One of the strengths of historical archaeology has been to show the diversity in the colonized experience and the complexity of relationships within colonial contexts. Stoler (1989: 135) argues that archaeologists have a tendency to see colonialism as homogenous, "a *structure*

imposed on local *practice,*" and that an overemphasis on large world systems tends to neglect the day-to-day experiences of subaltern men, women, and children. Eurocentric perspectives portray indigenous people as passive actors in the overwhelming onslaught of 'Europeanness' they were forced to encounter during the periods of European expansion and colonization. In referring to the archaeology of Parting Ways, a small African American community in Massachusetts, Deetz himself asserts that "it would be the height of ethnocentric arrogance to assume that people recently a part of a very different culture would, upon coming to America, immediately adopt an Anglo-American set of values, of ways of doing things, and of organizing their existence" (1977: 148).

As archaeologists seek to understand the agency of indigenous or colonized people and the nuance in the ways European expansion played out at local, intimate levels, our perspective shifts from colonizers to the colonized. For researchers from the global north working in non-western contexts (or the past), the familiarity of objects of western origin can blind us to ways such materials were fitted within local socio-cultural frameworks (e.g. Condry 2006). Furthermore, it is critical to acknowledge the significant impact non-European consumable commodities had on Euro-western cultures, such as coffee, tobacco, opium, sugar, spices, chocolate, indigo, porcelain, and textiles. It is also critical to recognize that Asian, African, and Middle Eastern merchants and traders were prolific, successful global entrepreneurs in their own right, prior to the European colonialism that instigated the spread of global capitalism. For example, Finley (2010: 6) suggests the global dispersal of huge volumes of Chinese porcelain by the eighteenth century CE may represent the "emergence of the first genuinely global culture."

In this project, I integrate archival sources and archaeological data; I study the colonial-era encounters on Mauritius; and I consider the ways nineteenth- and twentieth-century colonial

projects dispersed people, animals, plants, objects, diseases, and ideas around the globe. I try not to let European capitalist expansions eclipse the Indian Ocean context, however, as I examine the everyday experiences of the women, men, and children on the plantation and system of indentured labor. Guided by interdisciplinary methodological practices, I draw together spatial and environmental data, material culture, local oral histories and memories, and colonial archival records in my study of Bras d'Eau, Mauritius.

Comparative Plantation Archaeology

Plantations as an object of study, have been examined by historians and archaeologists in detail in the Atlantic world. According to Sidney Mintz (1986) and Philip Curtin (1998) the plantation complex originated in Mediterranean North Africa and southern Europe through sugar production in the medieval period. From the twelfth through fourteenth centuries, sugarcane diffused around the Mediterranean with the spread of Islam and Crusader activities (Curtin 1998: 3-9). In the early modern period, Portugal began to grow sugar on islands off the coast of northwestern Africa. As Spanish and Portuguese colonists settled in the Caribbean and American continents in the fifteenth century, they continued to expand the scale of sugar production on islands for export back to Europe (Mintz 1986: 29-34; Curtin 1998: 17-27). Starting in the seventeenth century French and British plantations far surpassed any other sugar producers on the global market (Mintz 1986: 36).

Similar agricultural systems seem to have existed outside the direct Euro-western colonial sphere, continuous with the spread of Islam. A synchronic comparison of agricultural enterprises in Asia, pre-colonial America and Africa might reveal other plantation-like complexes that predate or are contemporaneous with the rise of the capitalist plantation systems described by Mintz and Curtin. Sarah Croucher (2015: 62-3) points out that Omani clove plantations in Zanzibar were

immediately read as plantations analogous to those in European colonies around the globe by English observers. Prior to European colonization in India, agricultural production was typically organized around villages or small landholders, with taxes occasionally paid to the state depending on the region (Robb 1997: 8-9). Large landowners rented land to families and would profit either from direct crop supply from their renters, or revenue that farmers acquired from selling their own crops in the market, and as such cannot be described as capitalist (Mizushima 1997; Taniguchi 1997: 150-1; Kulke and Rothermund 2004: 214). Current scholarship suggests that mature plantation systems were introduced into South and Southeast Asia by European colonists first with the creation of tea plantations, and later with plantations growing sugar, rubber trees, indigo, oil palms, cacao, coconut, and other cash crops (Capistrano and Martin 1986: 17-8; Sen 2017: 58).

Plantation as Village and Spatial Practice

The nature of sugar production requires "scheduling and discipline," for as soon as the cane was cut it needed to be pressed, boiled, and crystalized before the sweet juices began to ferment and rot (Mintz 1986: 50). Curtin (1998: 11-13) defines plantations as an "economic and politic order" with unique features that revolve around the mode and means of production and relationships of power deemed necessary for such large-scale agricultural capitalist enterprises (see also Wolf and Mintz 1957: 380). Similarly, drawing on Karl Marx's definition of the capitalist mode of production in *Das Kapital* (1867), Mintz (1986) defined the sugar production on plantations as an agro-industrial enterprise, where consumption is separated from production and the laborer, typically enslaved, is separated from the means of production (tools) (see also Delle 1998, Bell 2005, and Meniketti 2016 on plantations and capitalism).

As an alternative perspective, plantations are a particular spatial practice that emerged in the historical moments leading up to and during the era of capitalism. Through an archaeological perspective, plantations are a distinctive landscape phenomenon, consisting of organizational spatial features that facilitate control over a disciplined labor force, with designated spaces for growing and processing mono-crops (i.e. not for subsistence), and for domestic life segregated by class and/or race and ethnicity, all within delineated property boundaries. Furthermore, the socio-cultural institutions that intersected under Euro-western modernity—such as property, individualism, economic class, class-based labor, and race—were integral to the construction of plantations. Meniketti (2016:14) distinguishes between "plantation" referring to the farm as an industrial and agriculturally productive enterprise, and "estate," which encompasses the land, laborers, movable property, and the social status afforded the proprietor through such accumulated wealth. Following these distinctions within this dissertation, I call Bras d'Eau a plantation when to referring to the accumulated physical features at Bras d'Eau that were directly related to the production of sugar, including laborers themselves and their dwellings, and refer to Bras d'Eau as an estate when it is important to consider the physical plantation space, the labor that went into its creation, and the small group of elites who owned or invested in it as an economic enterprise.

By focusing on the materiality of plantations, it becomes clear that the model in which men and women both live and work on estate land should not be taken for granted (for a more in-depth of history of the archaeology of slavery and plantations see Singleton 1995 and Heath 2012a: 31-51). Archaeologists working in plantation contexts have interpreted such landscapes as "nucleated plantation villages." According to Theresa Singleton (2015a:95-6), this term was originally coined by Merle Prunty (1955) to refer to the spatial clustering of the owner's house, slave houses, work-related buildings and other structures on agricultural estates. Prunty observed

that these clusters formed the core of plantation life in the American South; however, this pattern is also evident across North and South America and the Caribbean islands (Singleton 2010:168). Dell Upton (1984:63) metaphorically described plantations in colonial Virginia as villages unto themselves that historically "usurped" the development of independent towns. The proprietor's house functioned like the town hall and hierarchical center of the larger landscape (Upton 1984: 63). Because the economic success of a plantation benefited the planter solely, plantations were designed by the planter to facilitate organized agricultural output, and efficiency in production was associated greater profit. Social divisions between white planters, enslavers, and Black slaves and servants were also reflected in the plantation. As part of the greater region of multiple plantations, Upton (1984:66) describes "articulated processual" White and Black landscapes. The white landscape consisted of articulated spaces with designated functions, such as the main house, courtyard, and church, all connected by roads and paths, but the movements of the planter and enslaved people between those spaces created different White and Black landscapes.

Whitney Battle-Baptiste (2011: 86-90) has defined a "functional plantation model" with four realms—the plantation proper, captive domestic sphere, labor sphere, and wilderness—emphasizing how the plantation was experienced by enslaved men, women, and children. I organize the remaining discussion of the archaeology of plantation landscapes around these four spheres. Similar to Upton, Battle-Baptiste states that the plantation whole functions as a self-sufficient "distinct entity" (p. 87). Drawing on Foucault (1979), archaeologists have analyzed plantations as landscapes of power, designed to control a coerced labor force, and as such reflect the broader societal organization, hierarchies, power, and resistance. The plantation has been analyzed as a negotiated, built environment; tensions existed between planters wanting both panoptic surveillance of the laboring population and efficient use of space to maximize profits,

and labors who vied for privacy and independence (Delle 1998; Epperson 2000; Singleton 2010, 2015; Leone et al. 2005; cf. Bates 2015).

Situated in the labor sphere (Baptiste 2011: 87), a smaller number of archaeological studies have examined plantations as industrial complexes, focusing on the technological processes involved in refining sugar and the ruins associated with such activities (Ryan et al. 2010; Meniketti 2016). The process of sugar production required careful planning, because as soon as the cane was ready in the fields it had to be cut to avoid a decline in the sucrose of the juices. Fermentation, rot, or desiccation could set in quickly, especially in tropical climates, so cut cane had to be quickly carted to the sugar mills and pressed to extract the juices (Mintz 1985: 21). Juices were then heated in the boiling house to attain a liquid with a high concentration of sucrose and ultimately its crystallization. The layout of the industrial landscape needed to be planned strategically to facilitate laborers' smooth transition into the fields and efficient transportation of the cane to the mills.

The realm Battle-Batiste (2011: 88) calls the "captive domestic sphere" has been crucial for archaeologists to examine everyday life on plantations, because enslaved peoples could express their humanity in domestic spaces. The enslaver was watchful of this sphere but never fully in control of what went on there. Enslaved and sometime free men, women and children who worked on plantations typically inhabited a designated nucleated domestic quarter or "slave village" consisting of housing, yard spaces, sometimes a walled enclosure. The practice of defining the laborers' domestic quarter in the landscape is related to but distinct from a "nucleated plantation village," a village within a village. For example, at Drax Hall plantation in Jamaica, Douglas Armstrong (1990) describes the designated area that enslaved peoples inhabited as the "Old Village," a term he learned from the descendants of slave families who transformed the slave

quarter into a free laborer village and lived there until the 1920s. The quarter or domestic village was usually part of the centralized zone that combined domestic and industrial life, a common spatial pattern found on multiple plantations in the Atlantic including in Jamaica (Armstrong 1990; Higman 1998; Bates 2015), Bahamas (Wilkie and Farnsworth 2005: 145-8), Cuba (Singleton 2005: 181-6; 2015), Guadeloupe (Kelly 2008: 395-6), St. Croix (Chapman 2010:108), Montserrat (Pulsipher and Goodwin 2001: 191), and Virginia (Upton 2010[1985]; Heath 2012). Singleton (2010: 168-70) notes that there are cases of dispersed slave settlements or multiple dispersed slave quarters, for example in the Georgia Lowcountry, on Chesapeake tobacco plantations, and sugar plantations in Louisiana. Settlement dispersals likely arose depending on the labor and land requirements of the cultivated crop, such as crew management, soil or topography, or planters' desires to divide a large enslaved population to prevent uprising (Neiman 2008; Singleton 2010; Bates 2015). A notable exception to the domestic village layout is found in Sarah Croucher's investigation of Mogli, a nineteenth-century Omani clove plantation on Zanzibar, Tanzania. Croucher (2015:106-7) argues that, unlike Euro-capitalist plantations, concerns over "surveillance and control" were not a guiding factor in the spatial relationship between the owners' house and enslaved people's dwellings. Although the owners' house was the central focal point of the plantation landscape, the slave houses were built around and in close proximity to the main house, positioned to "protect" the owners as opposed to be controlled by them, revealing important differences in the perception and approach to slavery and power within Omani/Zanzibari society compared to that of the Euro-Atlantic.

The "wilderness" realm was another place for enslaved people to spend time outside the gaze of plantation owners and overseers or to escape to (Battle-Baptiste 2011: 90). The wilderness was also important resource for hunting wild species and gathering medicinal herbs (e.g. Wilkie

2003). Herein I consider how culturally specific concepts of health and wellness shaped the lives of indentured laborers and plantation landscape over the *longue durée.* I draw from medical anthropologists and historians of science and medicine working in the Indian Ocean who trace the emergence of a syncretic medical practice in Mauritius. This examination of the materiality of health practices fits within the small but growing scholarship on the archaeology of medicine in institutions, hegemony of bio-medicine, and subversive systems of care (e.g. Reifschneider 2018). In defining common sets of landscape features and spheres of plantation life, archaeologists have established "the plantation" as a recognized spatial practice.

Post-Slavery Plantations and Settlements

Landscape scholars have also noted that as planters shifted from enslaved to wage labor, occupational spatial patterns also changed. The decree ending legal trade in enslaved people in the French empire came into effect in 1826 and slavery was finally abolished in 1848 in the colonies.[1] In the British Empire, the slave trade was abolished in 1807, followed by the abolition of slavery in 1833, however enslaved men, women, and children in all the colonies were not freed until 1838. After abolition in the Caribbean, formerly enslaved families often remained on plantation land, but moved from nucleated villages to dispersed homes on designated land parcels, or a segment of the population moved off the plantation to towns or peripheral lands, leaving more space in the original village for those who stayed (Thompson 2010[1932]:98; Armstrong 1990; Pulsipher and Goodwin 2001:175; Wilkie and Farnsworth 2011; Harris 2016). With the exception Armstrong and Hauser's (2004) study of a South Asian house in Jamaica and the Mauritius

[1] Slavery had actually been abolished in the French Empire for the first time in 1794, however the decree was rescinded by Napoleon in 1802.

Archaeology and Cultural Heritage (MACH) project's investigation of the Trianon sugar estate that is discussed later (Calaon et al. 2013; Seetah et al. 2018), little archaeological or other spatial research has been conducted on plantations worked by South Asian indentured laborers prior to this project. Therefore, it was unclear what kind of spatial patterning might emerge during the survey of Bras d'Eau National Park. Though there is no comparative scholarship on the spatial organization of plantations in Mauritius, colonial reports suggested that immigrant laborers did not just replace slave quarters, but expanded on whatever existing structures remained, building not just homes but religious structures and community centers on plantation properties or on the peripheries of estate lands. In several cases, nucleated indentured laborer quarters on Mauritius developed into fully fledged towns after the decline in sugar industry in the last quarter of the nineteenth century and still exist today (Allen 1999: 164; Govinden and Carter 2012).

The sheer number of people living on plantations during the period of indenture was far greater than it ever was during the period of slavery, indicating that within Mauritius the settlement landscape must have changed over the course of the nineteenth century. Allen (1999: 139-171) has traced through the documentary record the increasing number of formerly indentured people who were able to purchase or lease small parcels of land, subdivisions of larger estates, starting as early as the 1840s.

Identity, Diaspora, and Political Debates in North America

Plantations have been considered spaces of cross-cultural interaction. Archaeologists working on plantation sites have sought evidence of the agency and identities of enslaved people through the archaeology of slave dwellings. This scholarship fits within the larger realm of the

archaeology of imperial contexts in which researchers have considered the different ways colonialism draws together multiple indigenous people, and people in diaspora, and how everyday practices change as a result of such cross-cultural interactions. American archaeologists began to consider how slave identities might be defined archaeologically by searching for the distinctive cultural "origins," so-called "Africanisms" or continuities in practices. Comparisons were made between enslaver/colonists' and enslaved people's material culture and spatial practices.

Archaeologists' analytical models can still be traced back to the contentious debate between anthropologist Melville Herskovits and sociologist E. Franklin Frazier. Early assimilation and acculturation models of cultural interaction depicted change as a unidirectional shift, in which subaltern groups assimilated to dominant colonial practices (Frazier 1939; Kroeber 1948). Following these theoretical models, Frazier (1939, 1972[1963]) argued that the trauma of capture, travels to coastal African ports, the Middle Passage, and the brutality of slavery severed all cultural ties that slaves had to their African past. In *The Negro Family in the United States* (1939) Frazier argued that through the process of enslavement and removal from their homelands and families, enslaved people were "stripped of their cultural heritage" (p. 8), were dehumanized, and when confronted with American cultural practices such as Methodist and Baptist religious practices, they readily embraced and assimilated to their enslavers' cultural "attitudes and sentiments" (1939: 35). Frazier (1939: 34) believed the extent of assimilation or acculturation of the white worldview depended on the degree of interaction between the two groups, and he argued that Blacks ability to acculturate Euro-American culture was evidence *against* those who believed in Black racial inferiority (see also Frazier 1957). African-American himself, Frazier was criticized by his contemporaries for being a traitor because he believed in integration (Smith et al. 2009). Archaeologists working in the modern colonial era drew on such anthropological studies of

cross-cultural interactions, ethnicity, pressures of acculturation, and power dynamics (Otto 1984; Weaton and Garrow 1985; cf. Lightfoot 1995; Singleton 1999).

Contradicting Frazier's argument that enslaved Africans had lost their culture by the time they reached American shores, Herskovits (1969 [1941]) made a connection between African cultural practices and African-American culture, finding "retentions" or "continuities" from the African slave past. As a student of anthropologist Franz Boas, Herskovits also rejected the biological understanding of race. His argument in *Myth of the Negro Past* (1969 [1941]) was not, by that time, a new idea: that Americans of African descent identified themselves as African-Americans as early as the beginning of the nineteenth century (Berlin 2003). Famously, W.E.B DuBois (2007 [1899]) had written about African-American culture prior to Herskovits. But Herskovits (1969 [1941]) was one of the first anthropologists to make the connection between African and North American cultures through ethnographic data he collected from the Dahomey Kingdom in modern Benin and from African-American the Eastern U.S., including kinship, foodways, religion, and music. Herskovits is considered by many to be the father of African-American anthropology.

In practice, these two different theoretical positions strongly influenced the way African-American culture and ethnography were interpreted, often with political consequences. For example, Frazier believed the multiplicity of "broken families" among the African-American community, where a single mother or grandmother raised children, was the legacy of slavery, racism, and social circumstance, whereas Herskovits believed this was a vestige of African matriarchal family organization. Frazier was concerned that recognizing the African cultural influences that defined African-American culture as something distinctive and separate from white American culture would fuel segregationists. The historical context of segregation politics

is crucial to understanding how this debate played out and was received by the public (see also Baker 1998, 2010 for racial politics).

Following Herskovitz, archaeological studies coalesced around efforts to 'prove' that enslaved Africans created creolized cultural practices that had their origins in West Africa. The materials and ethnographic cultural practices of communities of West Africans were compared with those of enslaved people on plantations (Farnsworth 2001; Fennell 2007; Ogundiran and Falola 2007). For example, different foodways are often seen as indicating multiethnic households and creolization, because ingredients and cooking practices are often culturally and regionally specific (Delle 2000; Deagan 2003; Delgado and Ferrer 2012).

The Herskovits-Frazier debate over the nature of African-American culture had a lasting impact on Black and slave studies, including plantation archaeology, as well as colonial, post-colonial, and diaspora studies more broadly. The debate indicates not only the variation in ways one might interpret the past, but perhaps also reveals the real complexities of colonial entanglements. Together Herskovits and Frazier occupied the ends of a continuum that provided scholars with a range of theoretical possibilities and indicates that there are myriad ways people, when confronted with difference and unequal power relations, express, remember, forget, adapt, modify, or conform to their cultural practices and beliefs.

Cultural innovation and transformation within colonial contexts have been described as "creolization" by archaeologists to explain processes of social interaction, cultural exchange, ethnogenesis, and transformation of multi-cultural people in diaspora (Deetz 1977; Ferguson 1992; Deagan 1996; Dawdy 2000; Trouillot 2002; Fennell 2007; Palmié 2007). Creolization, in its many forms, might be seen to hover between Frazier and Herskovitz or, as Groover (2000: 101) puts it, between "assimilation and pluralistic societies." Proponents use it to describe agency,

innovation, and creativity in the entangled processes that occur when people confront unfamiliar cultural materials and practices. Mintz (1971), Mintz and Price (1992[1976]), Trouillot (2002), and Price (2006) have repeatedly urged scholars to pay more attention to the historical particulars of creolization, criticizing the uncritical application of the term as ahistorical, hegemonic, and over-generalized (Mintz and Price 1992[1976]; Khan 2001; Palmié 2006). "Creolized" cultural practices are read as subversion or perversion only under the western gaze (Bhabha 1994). Scholars of the South Asian diaspora in the Atlantic see creolization theories as excluding Indian contributions to Creole societies, disregarding how Indo-Caribbean culture itself is creolized (Khan 2001; Munasinghe 2006), or ignoring descendants' complex relationship with their homeland (Jain 2011).

Archaeologists were also influenced by Bourdieu's (1977) theoretical framework in which people create and reshape their own cultures (identities) or naturalized social norms through the processes of learned habitual action (practice), and through the interplay between structure and agency. *Habitus* is the "systems of durable, transposable *dispositions"* one learns through daily processes of socialization that are both derived from and contribute to the often unconscious "generation and structuring of practices and representations" (Bourdieu 1977: 72). Embodiment can be seen as the physical manifestation of *habitus* in both people and in objects (Hendon 2010: 147). If materiality or embodied materiality is the means through which we express ourselves consciously and unconsciously, then archaeologists have shown that identities, especially in colonial contexts, are fluid and multiple.

Differences between the material remains of households are indicative of particular differences in the inhabitants' identity practices, such as status, economic access, gender, class, race, religion, etc. Archaeologists' comparisons of household assemblages from slave or servant

quarters with the owners' house have unsurprisingly revealed differences in consumption patterns, and have attributed such differences not just to class distinctions, but also as evidence for cultural practice, identity, and ethnicity (Armstrong 1990: 135; Beaudry et al. 1991: 286).

Archaeological research foregrounded the agency that colonized peoples exercised throughout daily life (Agorsah 1993; Weik 1997; Marshall 2012), through outright negotiations over material conditions within the power structure (Farnsworth 2001; Kelly 2011), and persistence (Panich 2013). Studies of enslaved communities show that even under the harshest conditions, men and women created dynamic social and material worlds, and as their identities changed over their lifetimes, their material culture both followed suit and played an active role in such transformations (Agbe-Davies 2002; Battle-Baptiste 2007; Samford 2007; Lane 2011). Historical archaeologists have examined plantation landscapes and other sites of displaced labor not just as places of exploitation and coercion, but also of resistance, negotiation, and differently lived experiences (Fennell 2010; Battle-Baptiste 2011; Singleton 2015; Bates et al. 2016). Archaeologists in North America and the Caribbean continue to identify the cultural expressions of enslaved African communities through tobacco pipes, subfloor pits within houses, Colonoware ceramics, foodways, religious practices, charms, burial practices, and housing styles such as wattle-and-daub (Ferguson 1992; Galle and Young 2004; Ogundiran and Falola 2007; Samford 2007; Kelly and Hardy 2011; Marshall 2015). Such cultural practices are still identified as creolized African continuities, but archaeologists also interpret them as examples of daily resistance, persistence, and survival strategies within dehumanizing conditions.

While some archaeologists have struggled to get out of the undercurrent of acculturation and identity-seeking scholarship, recently archaeologists have increasingly recognized that enslaved and other subaltern peoples operate within their own cultural guidelines, and while they

may have aspired to 'whiteness' as a representation of wealth and status, measures of success were dictated on their own terms through their own cultural practices (e.g. Battle-Baptiste 2011). For example, Battle-Baptiste (2011: 50) critiques Frazier for "adopting a Eurocentric patriarchal family structure as the ideal," even while he recognized the important role of Black women in family structures. Quoting James Sweet, she argues that rather than searching for the origins within creolization, we should assume African ways of life survived and focus on the process of creolization (p. 50). Lydia Wilson Marshall (2015: 15) points out that historical archaeologists rarely address the processes of enslavement, sustained captivity, and their lasting impact on descendant communities, which "naturalize" social categories such as slave and owner. More recently, Agbe-Davies (2018) advocates for a pragmatic approach to historical archaeology in which we shift a focus away from questions of ethnicity and origins, and focus on questions about the contexts of everyday life and social relationships, and how knowledge about the past is politically positioned in the present. Though the American legacy of slavery is still felt by its descendants on a daily basis, the archaeology of African heritage and resistance can be seen as a claim to the agency of people living under slavery (Agorsah and Childs 2006). The modern descendants of colonized people may have strong feelings, positive and negative, about their own cultural heritage that should not be ignored.

A debate emerged in the 1990s over the difference between diaspora and transnationalism. Scholars of transnationalism see the *continued* movement between homeland and settled land as what distinguishes migration and transmigration from diaspora. In other words, transnational people maintain a "cross-border mobility" whereas people in diaspora have a collective sense of identity in a foreign place (Faist 2010: 21). Transnational migrants often maintain multiple 'national' identities because they are linked both to their new home and their homeland (Schiller

et al. 1992). Anh Hua (2005: 195) explains, “Those living in the diaspora have a double perspective: they acknowledge an earlier existence elsewhere and have a critical relationship with the cultural politics of their present home—all embedded within the experience of displacement.” Memory, therefore, plays a crucial role in defining oneself or one’s community as migrant, both in terms of remembering the homeland and remembering the actual move or migration to a new place. Hua (2005: 193) includes “collective memory and trauma involved in such a dispersion” as part of her definition of diaspora.

While some form of displacement or movement seems to be a precondition for the conceptualization of a homeland, the notion that identifying with one requires fixity in a landscape is a recent phenomenon of the rise of modern nation-states with defined borders (Malkki 1995; Brettell 2007; Salazar 2010; Schiller and Salazar 2013). Nomadic or seasonally migrant communities whose way of life is defined by geographic mobility, often have very strong connections to place and multi-generational memories associated with them (Dubuisson and Genina 2011; Salazar 2013). Despite the precariousness of their place and time, displaced refugees and migrant laborers continue to engage in placemaking or homemaking activities (Malkki 1995; Sampson and Gifford 2009; Han 2018). As such, place plays an important role in how colonialism was experienced by subjects who were displaced or transported away from their various homes.

Archaeological studies of Chinese and Japanese labor diaspora provides an important comparative body of research. Chinese and Japanese women and men emigrated to the Americas in the nineteenth century to work on the trans-continental railroads and in the mining industry, and lived in both marginalized labor camps and thriving ‘China towns’ (Wegars 1991, 2003; Chung and Wegars 2005; Voss 2008; Ross 2011; Merritt et al. 2012; Harrod et al. 2012). Kraus-Friedberg

(2008) and Ross (2011, 2013) identify the material practices of East Asian communities in diaspora in North America and Hawaii as transnational. They see the collective nature of the Asian diaspora as generating overt expressions of ancestral ties to homeland, regardless of the fact that cultural practices changed over time. In most cases, archaeologists shed light on the ability of laborers living in the diaspora to foster social connectivity, build communities, adapt, and persist.

On Mauritius, practices from multiple different origins became enmeshed as the local culture of the island, although some may have maintained more aspects of culture brought with them than others. Given the island's relatively recent settlement (more discussion to follow), all Mauritians are arguably part of a diaspora, descendants of those who claim foreign homelands. It is a population which an outsider may be consider to be in diaspora, but who themselves have crafted a national Mauritian identity that is by definition diverse (see Eriksen's corpus of work on nationalism, ethnicity, and identity in Mauritius and Trinidad, including the 1988 monograph of his PhD dissertation; Hurgobin 2016; Seetah 2016).

Previous Archaeological Research in Mauritius

Archaeological research in Mauritius to date has emphasized the uniquely Mauritian nature of colonial infrastructure, depositional patterns, and artifact assemblages, and what the material remains of the past tell us about the diverse origins of the island's population. Archaeological studies coming out of the Mauritius Archaeology and Cultural Heritage (MACH) project, directed by Dr. Krish Seetah (Stanford University), have highlighted that the multicultural, -racial, and -ethnic nature of material culture and landscapes on the island are in themselves what define Mauritian socio-cultural identities and archaeology (Seetah 2015a; Seetah

et al. 2017). They have done this through the study of temples, churches, roadside shrines and cemeteries (Čaval 2018); burial objects and human remains (Appleby et al. 2012; Seetah 2015b); ancient and modern DNA of the local population (Fregel 2014); and the materiality of colonialism and colonial infrastructure (Calaon 2013; Seetah et al. 2018).

Surveys and excavations of several other key archaeological sites conducted by local and foreign archaeologists have focused on the integration of archaeological data with archival research, oral histories and memories. In 2002-‘03 the Maroon Slave Archaeological Investigation Project (MSAIP), directed by Dr. Amitava Chowdhury, identified 97 sites related to maronnage including lava tunnels, caves, rock shelters and open-air sites, by focusing on locations that were previously documented as maroon sites either historically or through oral traditions and were known to have either caves or overhangs (Chowdhury 2003). MSAIP completed six excavations at the sites of Baie du Cap, Black River Gorges, Trois Cavernes and Le Morne Brabant with the recovery of predominantly faunal remains from wild, feral, and domesticated animals (Chowdhury 2006, 2015). This project contributed to the process of inscribing Le Morne Brabant as a UNESCO World Heritage Site for its intangible significance, in the memories of Mauritians, as a site of remembrance for maronnage and resistance to slavery.

Dr. Geoffrey Summers and Françoise Summers (2002-2006 field reports) conducted surveys, architectural documentation, and excavations on Île de la Passe, a small island off the southeast coast that guards a break in the coral reef, where ships pass to reach the port of Mahébourg. Summers and Summers documented the architecture of the fort on the islet and excavated several trenches. They argue that the fort was important during the Napoleonic Wars when the island changed from being under French to British control, but found that many of the

ruins on the small island also dated to the twentieth century, and demonstrated Mauritius's role in the Second World War.

The Moulin à Poudre Cultural Landscape Project, run by an interdisciplinary team of archaeologists and historians, focuses on the large gunpowder mill complex consisting of multiple structures, occupational areas, and waterways in the Pamplemousses district. Teelock (2017: 76) argues that the powder mill is uniquely Mauritian because in the eighteenth century it made Mauritius—then called Île de France—the only French colony to produce gunpowder, made possible through the labor of hundreds of enslaved men, women, and children owned by the government. Excavations of slave quarters uncovered metal identification tags of these people as well as architectural features (Teelock 2017; Kimberley and Nidhi 2018). Various structures that were part of the Moulin à Poudre complex were later converted or reused under British colonial rule as prisons for Kandyan political prisoners, a Buddhist temple, orphanage, and leprosy hospital (Kimberley and Nidhi 2018).

Underwater archaeology of shipwrecks around Mauritius holds great potential, but studies thus far have been limited due to the resources necessary for both data collection and on-land preservation of underwater archaeological materials. One exception is Le Coureur, a slaving ship that illegally brought hundreds of enslaved people to Mauritius and was wrecked off the coast in 1821. Excavations uncovered the material remains of enslavement including iron rings and metal identification tags similar to those found at Moulin à Poudre (Metwalli 2007; van Arnim 2015). Preliminary surveys of sites like Makak, a post-emancipation *gen-de-couleur-libre* (free people of color) settlement (Colwell-Chanthaphonh et al. 2014), have been smaller in their research scope, but are important contributions to the growing number of sites defined as archaeological (see also

Calaon and Forest 2018 for a discussion of the distribution of archaeological research in Mauritius).

Two plantation sites have been investigated archaeologically prior to the Bras d'Eau project. Survey work at the Forbach sugar estate conducted by Summers and Summers (2009) identified and documented standing architecture, including a stable, chimney, and mill. Despite pedestrian survey through fields and around standing architecture, researchers were unable to identify a laborers' quarter or any housing associated with the indentured laborers (Geoffrey Summers, personal communication). The Trianon Sugar estate was investigated as a joint venture with the Aapravasi Ghat Trust Fund (AGTF), the managing body of one of two UNESCO world heritage sites in Mauritius, and the MACH project. Similar to Forbach, the estate has been encroached upon by development and private landowners. The main laborers' quarter where 95% of the enslaved or indentured labor force would have lived was not available for research (Seetah et al. 2018), but a barracks constructed completely of stone still stood. The MACH project conducted a surface collection of artifacts and excavated a trench next to the barracks. Following the Atlantic model of plantation archaeology described above, Seetah et al. (2018: 159) describe the estate layout as a "'Big House and Slave quarters' pattern," a spatial hierarchy reflecting the social relationally between master and slave.

In addition, archaeologists and collaborating researchers, including those involved in the Bras d'Eau project, have maintained a public component to their various undertakings. Local and foreign archaeologists' collaborations with government and research institutions include those with Le Morne Heritage Trust Fund, Aapravasi Ghat Trust Fund, National Heritage Fund, Mahatma Gandhi Institute, Nelson Mandela Center, Mauritius Museums Council, and SOS Patrimoine. This practice has set a precedent for all scholars working in Mauritius to take

seriously the role of archaeology as local, national, and international heritage, the importance of public engagement, and the critical necessity for preservation and protection of Mauritian archaeological sites (Calaon and Forest 2018). Mauritius is a densely populated island; Summers and Summers (2005) argue that the negative impact of both international and Mauritian tourists is seen on sites such as Île de la Passe. There, stunning historical petroglyph graffiti, usually consisting of dates and names or initials of visitors or temporary residents of the island, cover the exterior and interior of many stone structures on the island, and are now threatened by modern spray-paint graffiti and trash. Other long-standing local activities, such as the common practice of removing cut basalt blocks from historic structures to be used in new buildings, causes irreparable harm to the national heritage of the island (e.g. Seetah 2015c: 289-91). Meanwhile, spiritual practices such as Longanis*,* which taps into earthly and spiritual forces to influence the destiny, life, and health of oneself or others, are part of the ongoing use of 'archaeological' spaces that contribute to the materiality of a site rather than harm it (see Caval 2018). The present Bras d'Eau project contributes to this growing body of Mauritian archaeology as a study of landscape construction and the domestic household assemblages of indentured laborers found within and demonstrates how the perspectives and daily practices of colonists and indentured laborers articulated within one landscape.

Chapter Outline

Ch. 2, *Project Methodology and Fieldwork Results,* describes the archaeological field methods and the layout of the plantation in detail and includes an excavation report. My analysis draws on Smith (2003: 5), who considers landscapes to "incorporate the physical contours of the

created environment, the aesthetics of built form, and the imaginative reflections of spatial representations." The natural topography of the Bras d'Eau property, current vegetation, ruins of features and architecture, faded archival maps, dense distributions of objects among the ruins of dwellings, and conversely, the conspicuous absence of such objects among other structures, are the archaeological elements that contribute to my understanding of what life was like for the men, women, and children who lived and worked at Bras d'Eau.

Ch. 3 traces the origins of eighteenth- and nineteenth-century indentured laborers to India, China, and eastern/southern Africa, and contextualizes Bras d'Eau within the larger colonial, capitalist, and Indian Ocean historical contexts of the time. The occupational history of Bras d'Eau ('Arm of Water', or inlet) spans 118 years. Bras d'Eau was granted as a concession in 1786 and shortly thereafter census records indicate that it was a livestock farm with around 60 enslaved Africans (ANOM: G/1/476). For the following 50 years, it is unclear whether Bras d'Eau remained a working farm and how many more enslaved men, women and children lived there. By the 1840s Bras d'Eau was established as a sugar estate and between 200 and 550 indentured laborers lived and worked there in the mid-nineteenth century (Seetah et al. 2017*).* The sugar mill closed in 1868, cultivated fields were abandoned, and the colonial government acquired it in 1904 with the intention of reforesting the land. This effectively preserved the archaeological remains of the sugar estate over the last century, including c. 5 ha of structure and feature ruins. In Ch. 3 I weave together the archival records pertaining to Bras d'Eau with historical and ethnographic material from India and Mauritius found in primary and secondary sources. The larger argument in this chapter is that the history of epidemics and rapid environmental change in Mauritius over the last 200 years is intertwined in the current physical landscape, and ultimately led to Bras

d'Eau becoming a national park dedicated to promotion of endemic species in the twenty-first century.

Ch. 4, *Health, Surveillance and the Domestic Landscape,* considers how space was defined and used at Bras d'Eau focusing on the laborer's quarter. Digital maps I created of the ruins are the foundation for the landscape analysis. The chapter asserts that the landscape reflects the colonial practices of surveillance and regulation of indentured immigrants, shared preferences within the domestic sphere, and emerging Mauritian health practices. I engage with comparative plantation landscape studies that interpret meaning within the built and natural landscapes. Drawing together a spatial analysis of the regional landscape and intimate domestic spaces and archival documents, I suggest that men, women, and children crafted their material worlds specifically to deal with the heavy physical burden of cultivating sugar cane and working in the mill, and the impending threat of epidemic-level diseases, particularly cholera in the mid-nineteenth century and malaria from the 1860s and after. More broadly, the materiality of the plantation resembles that of other nineteenth-century plantation sites found elsewhere in the world, but with spatial practices specific to the Indian Ocean.

Ch. 5, *Domesticity and the Intimate Objects of Daily Life,* is an in-depth analysis of artifacts and excavations that brings life to the intimate domestic spaces of laborers on the plantation. I compare identity practices of indentured laborers to other archaeological studies of coerced labor. I consider how each artifact type—glass, metal, shell, fauna, small finds—tells us something about the activities and work that men, women, and children did at Bras d'Eau.

Ch. 6, *Ceramic Artifacts at Bras d'Eau,* is the in-depth analysis of the ceramic assemblage. The increasing presence of a wider variety of ceramic imports over time suggests that inhabitants of the domestic quarter embraced diverse objects available through global trade

networks. The chapter ends with a summary of all the artifact types and the conclusions I reached about daily life at Bras d'Eau.

Ch. 7, *Plantation Archaeology as a Contemporary Issue,* draws together conclusions of the previous chapters and considers the future of archaeological research on indentured labor and in Mauritius. This project was guided by current anthropological literatures on heritage and memory in post-colonial contexts. Public and government interest in Mauritian cultural heritage has increased within the last three decades. My approach to archaeology and heritage in the Bras d'Eau project and collaboration with National Parks and Conservation Services (NPCS), the managers of Bras d'Eau National Park, and AGTF was inspired by other collaborative and public archaeology projects that center indigenous perspectives. As the ethics and practices of community and public archaeology become more standardized and common, I believe that to move historical archaeology forward we must continue to consider the reasons why we study the past and what it can tell us about the contemporary world. Migrant men and women are still working within indenture-like conditions and on plantation-like landscapes today. I believe this dissertation can be a step towards understanding how inequalities perpetuated in such labor regimes persist and adapt from the past to the present.

Chapter 2: Project Methodology and Fieldwork Results

A two-lane public road passes through the center of Bras d'Eau National Park. This road branches off the main coastal road that encircles the island, and leads to Roche Noire, the closest village to the park. The village is named after the black basalt that dominates the landscape. Bras d'Eau has become a peripheral space, quiet compared to the heavy traffic moving between the capital city, Port Louis, and the central plateau on the west coast of the island where the majority of Mauritians live or work today. Where sugar cane, manioc, aloe, and other crops were once cultivated, the Forestry Department planted forests of mahogany, Moreton Bay pine (araucaria), tacoma, forest red gum (eucalyptus), and others in the twentieth century. Mango orchards and araucaria trees were also planted inside the ruins of what we now know was the heart of plantation domestic life and sugar production. When the sugar mill was running, the landscape of Bras d'Eau would have looked quite different from how it looks today; the dense forestation was not what its inhabitants saw. Since the Forestry Department took over the park in 1904, for more than 100 years the standing features of the sugar estate have been largely left alone to the processes of ruination. These forests have served to protect the larger landscape, even as tree growth has disrupted archaeological deposits. My archaeological and historical research has lifted the sugar estate from the shadows of the dense foliage, so to speak. In this chapter I present the historical archaeological research methods I employed in the Bras d'Eau project and provide a detailed description of the archaeological features and excavation results.

Archaeological Research at Bras d'Eau National Park

Preliminary Fieldwork

The archaeological research at Bras d'Eau started at the request of personnel from National Parks and Conservation Services (NPCS) of Mauritius, the managers of the larger Bras d'Eau National Park, after they heard from local villagers that indentured laborers lived and worked there when it functioned as a sugar estate. National Parks and Conservations Services first contacted Aapravasi Ghat Trust Fund in 2012 to ascertain what kinds of culturally relevant materials might exist within the park, and to consult with heritage experts on how best to manage any archaeological remains there. Descendants of enslaved and indentured laborers themselves, and with knowledge of the ecological heritage of Mauritius, staff members at the park and within NPCS at large had observed rising national interest in archaeology through the national celebrations of UNESCO's recognition of the Aapravsi Ghat and Le Morne sites, noted in Ch.1. At the time, the ruins at Bras d'Eau were completely overgrown. Park employees and Mauritians familiar with the site reported that even the more than 3 m-high stone walls of the sugar mill were essentially invisible. At AGTF's recommendation, NCPS endeavored to remove most of the large trees growing inside and on top of the sugar mill. Clearing the vegetation revealed the poor conditions of the walls in many areas. Whole sections had crumbled, with many of the rectangular, dressed cornerstones taken over the years for construction of other buildings or to sell. Two large trees could not be removed safely and without threat of crushing stone walls. Banyan trees in particular, with their numerous above-ground penetrating roots capable of engulfing whole structures, had completely integrated themselves into areas of the mill structure, simultaneously pushing their way through mortared seams, intertwining around stones, and

holding the wall together in the absence of mortar. Since the cleaning, new palm trees were planted in front of the mill structure by the park management, but otherwise the mill has remained visible, still an imposing structure to encounter in the forest despite its crumbling walls.

I began research at Bras d'Eau with an exploratory season in July 2014 under the auspices of MACH. The northeast region of Mauritius is geologically the youngest of the 8-million-year-old island, and black basalt outcrops cover the ground surface.[2] In addition to the sugar mill structure, basalt was used for the construction of many archaeological features including roads, enclosure and boundary walls, house foundations and walls, well linings, water tanks, and platforms. Many of these features are still standing today; however, the majority of archaeological features on the site, like the mill, are obscured due to the overgrowth of the dense tropical vegetation. The highly porous gray-black basalt is a typical material used in Mauritian construction of freestanding walls, building foundations, and to a lesser extent, complete structures. Vestiges of colonial architecture employing the basalt with dressed masonry can be seen around the island. In the national capital of Port Louis, the post office, churches, and government offices were built of carefully carved, rectangular blocks of less-porous basalt. The black stone absorbs heat from the tropical sun during the day and radiates warmth after sunset. Many colonial structures such as the houses of plantation owners (often confusingly called 'castles' in Mauritius, a translation of *châtEau*), have verandas that encircle the building to shade the dark walls of the houses and help mitigate the heat. Several abandoned nineteenth-century structures on Île Plate, a small island off the coast of Mauritius used as a quarantine base, were

[2]Torsvik et al. (2013) recently found evidence that Mauritius was part of a microcontinent called Mauritia; the island may actually have formed between 83.5-61 million years ago when it broke away from Madagascar.

found to have thick plaster whitewash on the buildings, likely in part to keep them cooler in the sun.

With the MACH project, our basic reconnaissance began with walking the roads and boundary walls using a hand-held GPS. This gave us a preliminary sense of how big the estate was prior to acquiring historic and modern maps of the property. We first identified the ruins of structures other than the sugar mill from the roadside and survey and established a mapping procedure. First, areas with evident structures were cleared of undergrowth. Once visible and identifiable, all features, mostly low walls and house foundations, were mapped by taking points with a Leica total station. We digitized full structures in 2D using AutoCAD. During this initial season, six structures and adjacent low walls in the domestic quarter and the water complex north of the quarter were identified and mapped. We also completed photogrammetry of the mill structure walls, luckily prior to the construction of a shade house, a large metal building covered in shade cloth NPCS uses as a nursery, on the west side of the mill and planting of new trees (Fig. 2.0). During excavations of two 1 x 1 m units in the laborers' quarter we recovered what looked like a nineteenth-century domestic assemblage consisting of bottle glass, buttons, nails, cowrie shells, faunal remains, and ceramic dishes (Units 1 and 2 discussed below and Appendix I). Critically, ceramic sherds confirmed that the domestic occupation dated to the indenture period of Mauritius. The preliminary season was key in substantiating the incredible potential scope of archaeological research I could conduct at Bras d'Eau. Unlike Trianon, another plantation investigated by the MACH team (Seetah et al. 2018), or Forbach plantation (Summers and Summers 2009), we had identified the first complete and intact domestic quarters inhabited by indentured laborers that had not been disturbed by modern development. However, I anticipated that the tree roots would remain a disruptive factor in excavations, which was indeed the case.

The Present Project

As discussed in Ch. 1, my research questions for this project centered around the organization of the plantation under the indenture system of labor, and everyday practices of men, women, and children living in the domestic quarter. To accomplish the fieldwork necessary to answer these questions, and following the initial groundwork, I spent 17 months at Bras d'Eau identifying the complete extents of ruins, mapping, carrying out surface collections within survey grids, excavating, cataloguing artifacts, and conducting archival research, which I directed from July 2015 to November 2016. My research was supported by the National Science Foundation (grant #1536095), Social Science Research Council IDRF, Fulbright Association International Institute of Education Fellowship. It was carried out under a research permit granted to me by the Mauritian Ministry of Agro-Industry and Food Security through National Parks and Conservation Services, and the Ministry of Arts and Culture. I carried out the work with a team of six Mauritian research assistants, one French expatriate research assistant, researchers from AGTF, a ground crew from NPCS, and intermittent participation from MACH members and students from the University of Mauritius and Stanford University over their 2015 and 2016 July field school seasons. My specific objectives for surveying the site were to understand the spatial organization of the estate: fields, roads, industrial areas, and domestic areas. Within the latter, I sought to identify structures that may have been used as housing by laborers and determine the layout of housing. As noted in Ch. 1, plantation landscape studies have been a fruitful method for archaeologists to better understand how daily life was experienced by the laboring community, such as the ways the population was divided into households or domestic groups, and how work

time was regulated through spatial organization of paths and strategic positioning of fields, industrial features, and domestic quarters. The complete mapping of the site allowed me to determine the types of plantation features employed under the indenture system of labor, and whether these had changed or remained the same as features typical of plantations with enslaved men and women, although as I noted in Ch. 1 I was not able to locate features that could be dated to the slavery period at Bras d'Eau.

Survey

I dedicated six months to surveying and clearing the forest and identifying and mapping ruins. The estate was assessed by pedestrian survey: systematically walking across the entire property at 5-m intervals. The NPCS field crew also helped identify areas with outlying structures which they came across during forest maintenance. The greatest challenge to mapping the site was the need to maintain line-of-sight with the digital surveying equipment or total station. Geological landscape features accompanied by the plantation forest, dense tropical undergrowth, and the collapsed state of walls made it particularly hard to visualize any pathways and sight-lines that might have been important to the overall layout of estate when it was in use during the nineteenth century. While there were likely trees on the property in the eighteenth and nineteenth centuries, they would not have been located inside such small dwellings, or so densely clustered as they are today. As such, the total station could only record approximately a 10 x 10 m area before needing to be moved to a new base. The need to move the total station often and the changes in elevation each time it was moved compounded the error over the entire 4 ha that was mapped. Despite these challenges, the error seems to have remained within a minimal 10-15 cm across the site, and therefore has relatively small impact on the type of spatial analyses I focused

on in this project. The extensive surveying of the site has allowed for a birds-eye perspective of the organization of the laborers' quarter and means to examine visibility on the site in the past.

As the survey progressed and the organization of the plantation began to take shape, I created a typology based on different feature forms, which were later symbolized when mapped digitally in AutoCAD and later ArcGIS, as represented in Figs. 2.1 and 2.2. Vertical walls and structures were the most common feature and were further categorized as rectangular structures (in royal blue), free-standing dividing walls (red), long buildings (purple), and barracks-style housing (green). Wells, water channels, water tanks, stone and plaster platforms, and natural stone outcrops were also identified. Collapsed sections or loose rocks that had clearly fallen from a structure, often from corners or ends of walls, were also recorded (pale blue). All remaining basalt features that were clearly anthropogenic but did not fall in linear patterns nor appear to have been clean masonry walls were also documented (orange). Due to time constraints and the size of the estate, the individual stones of each structure were not drawn, but I focused rather on mapping the inner and outer edges of walls and door or window openings.

When fieldwork was completed, I georeferenced the CAD file in ArcGIS using Albers Equal Area Conical projection. Albers projections maintain accurate area measurements, which was my primary concern for this project. The largest archaeological feature in the park is the c. 27 km of roads that crisscross the property (Figs. 2.1 and 3.2). The roads were mapped precisely if there were ruins adjacent. For the majority of the estate, I ground-proofed roads in the field following highly detailed maps on a 1:2500 m scale produced in 1982 by cartographers of the Ministry of Housing and Land Mortgage (MHLM), and through satellite imagery from Google

Earth and ESRI.[3] All roads and paths were later digitized using the georeferenced MHLM 2500 maps as a guideline. These maps also provided 2 m incremental contour lines for the entire estate property. We did not map the structures in Zone 5 (see description of zones below) on the ground because the distance was too great for us to move the total station and maintain a continuous map with the other ruins, and the key feature in this zone, the lime kiln, was clearly visible from satellite imagery. The remaining features in this zone were digitized based on the 2500 maps, and satellite imagery. Additional spatial analyses were conducted within the ArcMap GIS platform, including calculations of structure areas, road lengths, housing orientations, and reconstructions of topography and viewsheds.

In summary, the results of the survey revealed that within the road-grid blocks, about 98% of the property consists of plantation fields and 2% consists of archaeological ruins, for the most part consolidated in the southeast corner of the estate (Fig. 2.2). Every block with archaeological ruins within the estate was assigned an alphanumeric code, starting with Area 1A. I identified five major archaeological zones, four centered around the sugar mill and one located on the coast (Fig. 2.1 and Table 2.0). The roads divide the estate not just into smaller agricultural fields, but also form the boundaries between differently functioning zones. Descriptions of the features and excavations within each zone are found below.

In addition to identification and mapping of the site, the survey component of the project also included surface collection of artifacts. A gridded surface collection was carried out on a 2 x

[3] Maps depicting satellite imagery throughout this dissertation were created using ArcGIS® software by Esri. ArcGIS® and ArcMapTM are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri® software, please visit www.esri.com.

2 m grid in the areas around the mill (Zone 1) and in the laborers' quarter (Zone 3). Artifacts visible on the surface were collected within each block and ground visibility was noted in each case. We conducted surface collection in six different areas, three around excavated units and three in unexcavated areas (Fig. 2.3-4). The surface collection provided a comparative assemblage for the excavations and shows the spatial distribution of artifacts across the site (Table 2.1). As a part of the spatial survey, 18 shovel-test pits (STPs) were also dug at 10 m intervals in a 0.08 ha area off the southeast corner of the mill, where the ground surface was covered by grass and no surface artifacts could be identified. Deposits around the mill were very shallow and only 30 artifacts were recovered from the STPs. The surface collection in the area north of the mill (Area 5A) was the most informative because it contained multiple structures whose function is yet to be determined and was a zone in which the owners' house may have once stood. Brief discussion of the results of the artifact survey are discussed in Ch. 5.

Excavations

Guided by the test excavation conducted in July 2014, I led excavations in July 2016 with the MACH project and extended them into August with the core Bras d'Eau archaeology project team (Table 2.0 and Appendix I). I focused on structures and yards in zones believed to be domestic spaces for plantation laborers and on interior and exterior spaces. As such, six of our excavation units were located in the domestic quarter (Zone 3, Area 2B) and covered a larger surface area. I determined it was important to excavate in barracks, individual dwellings, and yard spaces because they may have been constructed and inhabited at different times, and different groups of people could have been living in specific structures which I expected to be reflected in the material culture excavated. Archaeologically, yards are also important areas of activity and

trash disposal and often yield greater quantities of artifacts than within houses themselves. Smaller excavation units were placed in the zone north of the domestic quarters and in the area east of the mill to help determine what those areas were used for, and again I targeted two different types of structures. If they were used as housing, I expected that there would be differences in the artifact assemblages that reflected who resided in each area. We chose structures that either did not have a large tree growing directly in them, or open spaces with at least 6 m between any large mango, acacia, or araucaria tree. Including the July 2014 season, we excavated ten units: two individual houses, two barracks, and two yard spaces in Area 2B, the main laborers' quarter; two long buildings and one individual structure in the northern area, Area 6B; and one yard space in Area 1A (Fig. 2.6-7, 2.10).

In the following excavation report, excavation units will be discussed zone by zone, rather than by the arbitrary numerical identifier assigned to them based on the chronological order in which we excavated them. Units were excavated by natural stratigraphic layer or unit and are designated numerically in the following excavation report by the acronym *SU*. The significant amount of small and large root disturbance was a consideration in determining how discretely the stratigraphic layers were preserved through the post-occupational period. All soils were sieved through ¼-inch screens. Macro-botanical (flotation) samples were collected from each excavation unit except for Unit 9 because the limited amount of soil in Unit 9 was interpreted as post-occupational fill during excavations and from all stratigraphic levels where the volume of the deposit was sufficient to produce at least 2 liters of soil. The flotation samples were processed in Mauritius, and heavy fractions were picked through manually for small artifacts and bone. The macrobotanical remains were analyzed by Jacob Morales-Mateos (Universidad de Las Palmas de Gran Canaria) (Appendix II). Micro-botanical soil samples for pollen and phytolith analysis were

collected after excavations were complete, from the profile walls, by natural stratigraphy or in 5 cm segments where stratigraphic layers were thicker than 10 cm. No soil samples were collected for stratigraphic layers not represented in the profiles. The pollen samples were processed by QUEST labs at the University of Reading, UK (Appendix III). Maureece Levin (Stanford University) processed and analyzed phytolith samples (see Appendix IV).

As I have noted, no material remains of the period of slavery at Bras d'Eau have been yet identified. Given the brevity of habitation and limited scale of excavations in relation to the size of the plantation ruins, determining precise and discrete dates of stratigraphic layers was also challenging (see Ch. 5). Change over time within the plantation was thus also considered with data derived from archival maps and records, which both the periods of slavery and indenture.

Archival Research on Bras d'Eau Estate

Archival documents have helped to reconstruct an overview of the how the function of the estate changed over time and who might have been occupying and working in the ruins discovered during survey and excavations. I conducted archival research in the Mauritius National Archives in Coromandel, Forestry Department Archives in Curpipe, Mauritius Housing and Land Mortgages (MHLM) in Port Louis, and Les Archives Nationales d'Outre-Mer (ANOM) in Aix-en-Provence, France. I also examined digitized archives through the Hathi Trust Digital Library and the Internet Archive. Archival research in Mauritius was conducted in collaboration with researchers from the Aapravasi Ghat Trust Fund.

Using the chain of ownership reconstructed by Rouillard (1979) in *Histoire des domaines sucriers de l'Ile Maurice* as a starting point, we searched for mentions of the 19 names listed as the previous proprietors of Bras d'Eau, all of whom were of French descent. We focused on

recovering documents concerning the estate and land sales/transactions, investments, marriage contracts, and wills to understand the ownership history, and investment and land divisions and estate consolidation within the surrounding districts. Historic maps of the region aided in identifying changes in the property boundaries, roads, and settlement patterns in the surrounding region. Census records, inventories and immigration papers from ships carrying indentured laborers, official enslaved and indenture complaints, colonial reports on the state of the colony, and British anti-slavery abolition papers helped to reconstruct how many laborers were engaged at Bras d'Eau, where they were from, and their reported living conditions. Archival research in the Mauritius Forestry Department Archives revealed the activities undertaken by the Forestry Department after the Mauritian government purchased the property in 1904.

Briefly, from these records we also know that Bras d'Eau began as a livestock farm and was transformed into a sugar estate by the 1840s. This property, including the limits of the national park, has been defined by virtually the same boundaries since 1786. There are three exceptions: a plot added to the west of the estate at an unknown date in the nineteenth century; the elimination of a triangular plot on the north side to construct a wind-energy farm; and a smaller segment for the construction of two apartment complexes in the eastern corner, near the coast, within the last 5 years. Otherwise this has been a remarkably stable location in terms of boundaries. As noted above, the records also reveal that at least 60 slaves lived and worked on the estate during the late eighteenth century, and that between 200-500 indentured laborers lived there through the middle of the nineteenth century, ending in 1868 when the sugar mill closed. The annual reports of the Forestry Department and the Government Gazette of the Island of Mauritius from the twentieth century tell us when different plant species were planted and about

the construction of other features, such as the large dry-stone enclosure walls around the mango orchards in 1970. Results of this archival research are expanded upon in Chapters 3, 4, and 5.

Summary of the Results of the Bras d'Eau Archaeology Project

Zone 1: The Sugar Mill and Industrial Infrastructure

The large sugar mill sits at the center of c. 6.1 ha of smaller stone structures, tank features, and platforms (Fig. 2.6). This zone of the park is where the manager and his family lived when the park was managed by the Forestry Department. It is also the center of National Parks and Conservation Services (NPCS) activity today, and as such has been subject to significant modern disturbance. The mill building itself is constructed from cut and natural stones, mortared together (Fig. 2.0). The entire roof is gone but was likely timber-framed. The long central room is 340 m^2. The south end of the mill is partitioned into two smaller rooms, one 10 x 10 m, the other 7 x 4 m. On the north end of the structure, the Forestry department built a small office building, so it is unclear how far the mill might have extended. At the southeast corner of the mill there is the base of the mill chimney, a large rusting iron barrel, and a small room extension. Off the west side of the structure there is a narrower 6.6 x 50 m room addition, stretching almost the length of the entire mill structure. It seems this wall was added as an extension to the main structure. Unfortunately, about 60% of this wall has either collapsed or been dismantled. Over the summer of 2015, NPCS build a shade house directly abutting the western wall, which inhibits will greatly inhibit our ability to carry out further research in this area in the future (Fig. 7.0). The interior of the central room, now covered in grass, has terraced levels, rising towards the north end of the

building. The ground may have an underlying natural basalt outcrop, or the variability of the interior surface levels maybe be caused by collapsed internal walls. On the north end of the structure, a small doorway and collapsed stairs descend below current ground level appearing lead to a basement or accessible crawl space, suggesting that the rise in elevation may be related to a two-story architectural design.

The only traces of infrastructure visible within 40 m of the mill are two plaster-lined tanks, and a single 4 m-long, brick wall foundation located just to the south. Other features likely existed but were either dismantled or built over by the modern nursery garden, shade house, gravel parking lot, parking circle, giant tortoise pen, and visitors' center/office building. The main road once cut a slightly different path near the mill, but according to park employees it was relocated in the last 30 years, possibly to avoid flooding. Beyond this 40 m buffer, we uncovered substantial structures and features, most of which seem to comprise supporting infrastructure for sugar production based on the construction style of cut stone and mortar, shape and architectural features, such as large door openings, and what appear to be stables and work platforms. Fully stone-and-mortar walls and plastered floor platforms are more common in the vicinity of the mill than elsewhere on the estate.

North of the mill, in Area 5A, a deep well is still intact, with a substantial stone platform from which to collect water, all encased by a square, mortared stone wall. Doors or windows were later filled in with more stone and mortar. One narrow doorway was left open to access the well. Next to the mill are the remnants of an iron platform, possibly for a water pumping system, and a channel funneling water away from the area. Water was of course critical to life on the plantation but was also necessary for the industrial production of cane sugar and the gunny sacks made of fibers from different plants called *vacoas*, *laloa*, or *aloe* in Mauritius within the *Pandanaceae*

family. When processing and refining cane sugar, water was necessary at multiple stages; during extraction, cane stalks were soaked between pressings to expel more juice. In 1822 planters began to replace animal-, water- and wind-powered sugar mills with steam-powered mills, and by 1848, 80% of all factories were steam powered (Storey 1997). In the mid-nineteenth century, Bras d'Eau acquired a 6-horsepower steam mill with a boiler of 18 horsepower from Fawcett & Co., Liverpool, which would have required a steady replenishing of water as well (MNA: 1858).

A few meters north west of the well there is also a large recessed stone lined pool or tank with steps descending into it. The east side contained one plaster platform, at least three smaller rectangular structures, a series of walls, and a 40 x 40 m square enclosure, divided in two with 5 m wide door openings. I undertook a gridded surface collection over an area of 1,208 m^2 in this eastern area (Fig. 2.3). The surface collection assemblages from these areas as well as other domestic areas are described in Ch. 5. This area is now planted with araucaria trees. In 2015-16, new picnic benches were erected, and a walking trail leading to the seaside was cleared through this area.

West of the mill (Area 1B), the ruins of five mortared stone structures stand in close proximity and in varying states of disrepair. This area is planted with mango and lychee trees. The closest of these structures has the finest example of masonry work on the plantation apart from the mill itself. This structure has a wide arched doorway, high walls, and square-cut block corners, many of which have been now robbed out as noted above. The original railroad platform marks the western edge of Area 1B. Like Area 5A, Area 1B had a particularly dense distribution of ceramic and glass artifacts on the ground surface, though surface collection was not carried out in this area. These are suggestive of domestic life taking place in one of the nearby structures, rather than just sugar-related activities.

Although many plantations on Mauritius have a *château* or "main house" for the owner and their family, Bras d'Eau did not, at least during its use as a sugar plantation. An 1858 inventory of the estate lists a "manager's residence house," 20 x 30 ft [6 x 9 m], with 11 door openings and divided into 4 rooms (MHLM TV 64/308), among other structures. Two years later an advertisement for the licitation, meaning auctioning, of the estate, in the September 29th issue of *The Mauritius Government Gazette,* includes a "strangers' residence, a house in palissades [sic] covered with an argamasse [local mortar of crushed coral lime and decomposing sugar, often used in roofing], 30 feet long by 30 feet wide [9 x 9 m], having eleven openings divided into four rooms." These two descriptions likely referred to the same building despite the discrepancy in dimensions. This house perhaps functioned both as the manager's residence and temporary lodgings for the proprietor during visits. For example, Dr. Clément Jean Ulcoq, the estate owner from 1841-1863, is usually described as a resident of Port Louis in archival documents, regardless of whether the document itself is about Bras d'Eau. Unfortunately, none of the recorded ruined structures are large enough to fit this description. Based on previous historical studies of plantation landscapes and given the isolation of the laborers' quarter from the industrial functioning of the estate, it seems unlikely that the manager's house would have also been located near the mill. The north and west areas of Zone 1 are the most likely candidates, but the exact location of the house is yet to be determined.

Area 1A, located just east of the mill, contains two small, square structures, and a semi-rectangular complex with dividing walls that extend half way into interior. The semi-rectangular structure was perhaps used as a stable or animal pen (Fig. 2.3 and 2.6). It is unclear whether these stone features were foundations or low dividing walls, because I was unable to determine whether they were collapsed vertical walls or whether were always stones piled in a linear fashion.

Irregular, low stone walls, with meter-wide openings to pass through, divide the remaining spaces between the structures. These low walls did not just divide the area into smaller sections, but also effectively cleared the land of large boulders, providing open plots for gardening or rearing animals, much as happens in many parts of the world with rocky fields. It is possible that more ephemeral structures could have stood inside these sections as well. Since this area was an enigma, with many cleared areas but only two standing structures, I decided to place a small excavation unit in an open spot in the eastern corner of Area 1A between several low basalt walls. We also did a gridded surface collection in the immediate surrounding area. This is the only excavation within Zone 1 other than the STPs near the mill.

Excavation Unit 11

Excavation Unit 11, 1.5 x 1.5 m in plan, was positioned 1 m west of the large rectangular stone feature described above on property's edge (Fig. 2.6). The majority of artifacts were found in the well-developed topsoil, only 10 to 12 cm thick, that gave way to yellow sandy silt subsoil. The assemblage consisted of artifacts of daily life such as ceramics, shell, glass, metal, and a few broken pieces of bone (Table 2.2). Two pit features were dug into the subsoil and filled with an ashy lime with small charcoal fragments. While originally these two pit features were thought to be hearths, both soils tested positive for lime when HCL was dropped on the sediments. The texture of the soil was ashy rather than charcoal-filled. In addition, only one green transfer printed whiteware sherd appeared to be slightly burned, but this was found in the topsoil. Otherwise, artifacts found in the two pit features did not appear to be heat-altered. It seems clear that these pits were not hearths as originally thought. It is more likely they were small pits for processing lime to use in mortar for the neighboring structures; 496 g of mortar or lime plaster were also

collected from the excavation, almost all of which were in the topsoil. It is also possible that the pits were small trash deposits; ashy crumbled lime as well as some scattered artifacts were swept up from an activity area, possibly from inside one of the neighboring structures or walled enclosures, and deposited in small pits. The pits were then covered by anthropogenic deposits from site use, trash and a naturally developed topsoil. We conducted a gridded surface collection in the 662 m^2 around Unit 11 and recovered a similar assemblage to that excavated.

Unfortunately, this small excavation and the surface collections did not clarify what this area was used for when the sugar mill was running. While there may have been a habitation near this excavation trench, the recovered artifacts were likely distributed across the ground surface as a means of trash disposal. The excavations did establish that the area was used in the same time range as the laborers' quarter and does not appear to have been occupied earlier during the slave period as I initially thought possible. Larger excavation blocks inside and outside structures in the immediate vicinity of Unit 11 would further clarify the use of this area as well as the function of the lime pits. Excavations targeted in the many diverse structures around the mill would greatly assist in determining their function, whether domestic or industrial.

Zone 2: Tank-Well Complex and Storehouses or Workspace

Located 600 m walking distance from the mill is Zone 2, Area 6B (Fig. 2.7). The area is subdivided into two sections by a 100 m long wall. The west section consists of an elaborate waterworks infrastructure in an area measuring 0.5 ha. A well has two sets of stone steps that lead down to a small platform from which one could collect water (Fig. 2.8). The whole eastern side of the well is eroding into the well hole, but seems to have been lined with square-cut blocks, at least

along its upper 4 m. About 2 m from the well, a mortared wall with a narrow plaster channel on top slopes gently down to a 1 x 2 m plastered open tank, c. 50 m away. The sides of this small tank rise about 50 cm above the ground, and the interior extends below the surface level, though the exact depth is unknown as the base is filled in with soil. Another 40 m north, two larger plaster-lined, sub-surface, open tanks sit side-by-side. Broken fragments of a mortared stone and plaster-lined channel are scattered between the small tank and the two larger tanks, indicating that all three were connected at some point. Water would have been retrieved from the well, poured into the first narrow channel to fill the series of tanks.

On either side of the water channel stand one stone-and-mortar building, a plaster platform, and the bases of several walls close to the road. These upper portions of these walls may have been dismantled by the Forestry Department in 1970 to build the large orchard enclosure-walls that run alongside the roads (Forests Annual Report 1970). No systematic surface collection or excavations were conducted in this area, but anecdotally the surface artifact scatter is significantly lower than among the ruins around the mill and laborers' quarter. One can hardly walk 1 m without seeing a piece of glass or potsherd in Zones 1 and 3, even when the undergrowth has not been cleared. Around the waterworks the undergrowth has been kept remarkably clear by NPCS, perhaps because the last ebony tree in the park stands between the well and the first small tank, and yet only a few ceramic and glass pieces were seen on the ground surface during the mapping process.

The use of this waterworks is still unknown. The complexity of the infrastructure would have required planning, engineering and resources, and it is located in prime flat land near the center of the estate. Though it still needs to be confirmed in the archaeobotanical record, in the first 10 years after Bras d'Eau became crown land the Forestry Department reported that they

were caring for a sisal-hemp plantation on the property (Forests and Gardens Department 1908, 1909). The sisal plantations were typically a residual from the estate's growing, processing, and weaving fibers into gunny sacks to package sugar, and potentially to sell to other local estates to supplement income from the global sugar market. Sisal processing requires the pulpy tissues of the leaves to be beaten and washed out with water several times, leaving only the fibers. Once cleaned, fibers are hung to dry, woven into sheets, and finally sewn into sacks. On the other hand, we must consider the amount of water needed to support the 200-500 people living inside the estate, as well as workhorses, oxen, mules, and any animals that men and women raised for food independent of the estate owners. The closest dwelling in the laborers' quarter is more than 200 m walking distance from the water and well complex. The well next to the mill is about the same distance in the other direction. The tanks and channels may have been put in place to avoid congestion around the well itself, drawing water, bathing, watering animals, laundry, and so on. If this space was used for bathing and washing, the lack of artifacts might be more reflective of the laborers' desire to keep this area clean of the trash and refuse that is scattered around the rest of the site, than of its use as an industrial work space.

On the eastern side of the 100 m wall, the second half of Zone 2 covers approximately 0.82 ha. The west section of this zone consists of three long structures, c. 20 x 6 m, each with 4 to 5 openings on the length of one side. The east of the three long buildings are 24 smaller square or rectangular structures, and two large dividing walls. Next to the road was a fourth long building of the same dimensions as the other three long buildings. In hopes to determine whether these structures were used as housing or for other purposes, excavation Units 8, 9 and 10 were all situated inside different structures in the eastern zone.

Structure 4, Excavation Unit 8

Unit 8, a 1 x 2 m rectangle, was excavated in the center of Structure 4. Structure 4 was one of the four long buildings in this zone and was situated between two other parallel structures of the same size and shape. The long axes of these structures run north-south. The west wall of Structure 4 had at least four, possibly five, door openings. The entire east and south walls were completely solid. The north end of the structure was either collapsed or was disassembled by the Forestry Department in the twentieth century to construct the large wall that ran along the road and enclosed the mango orchard within Area 6B. The excavation in Structure 4 yielded very shallow deposits; overall less than 20 cm of excavated soil were associated with anthropogenic activity. Considerable root disturbance made it impossible to identify an intact working or living surface in this structure, if one were ever present. Despite the lack of a clear floor, the occupational stratigraphic layers we identified were horizontally and evenly distributed across the unit, starting with topsoil, down to the basalt boulders under the anthropogenic fill. The interior of the structure was clearly leveled for use, possibly as far down as the boulder surface when the foundation walls were first constructed. The paucity of both features and artifacts may indicate that either 1) the structure was in use for only a short period of time, particularly compared to structures found in the laborers' quarter; or 2) the interior structure was regularly swept, allowing for only gradual soil accumulation and few artifacts. We would expect to find artifacts accumulated around the edges of the unit and outside the door if the latter were the case, but unfortunately the unit was situated directly in the center of the structure. As such, we were also unable to determine the relationship between the stone structure foundation walls and the soil layers inside. Regardless of the taphonomic processes that resulted in essentially a single

depositional layer, it remains unclear whether the structure may have been used as housing, a warehouse, a workshop, or something else entirely.

Structure 5, Excavation Unit 9

Structure 5 was a small square structure with two defined rooms, situated on top of a smooth basalt outcrop rising several meters above the surrounding area. The room on the east was the larger of the two rooms and had a single door opening facing north. Excavation Unit 9 encompassed the entire interior space of Structure 5, 3.75 x 2.16 m in plan. A smaller rectangular room extends from the west wall of Structure 5, however it was too collapsed to determine the interior dimensions or the location of the door opening. There did not appear to be a passageway between the two rooms. The bedrock flooring was exposed in the center of the room prior to excavations. A limited amount of fill accumulated in the corners and low points in the bedrock on the east and west sides of the structure, thus creating a level and horizontal surface.

There are two possible taphonomic processes that contributed to the soil depositing in these depressions. First, compact earth—likely an earthen clay and cow-dung mixture—may have been intentionally added to level the surface of the natural bedrock. This technique was employed in the laborers' quarter inside Structure 2 (see excavation Units 3 and 7 below). If soils were intentionally added to a living surface, any stratification was lost from the subsequent bioturbation. The second, more likely possibility is that soils developed naturally over time. The walls of Structure 5 sit directly on the bedrock and heavy rains, winds, and even tree roots would also have caused soils to distribute across the bedrock surface, trapped in cracks between the boulder walls. Organic materials that accumulated inside Structure 5 could have led to the natural

development of organic soils like in stratigraphic units (SU) 300 and 301. Following the law of horizontality, these soils would have gradually filled in the east and west sides of the unit. It would follow then that in the western side the unit where the fissure in the bedrock extended deeper than elsewhere inside Structure 5, the soil was filled in when the structure was in use. Furthermore, the artifacts were distributed between all three identified stratigraphic units of soil (296, 300 and 301). Similar to Structure 4, excavations in Structure 5 did little to clarify how this building and the others in the area were used.

Structure 7, Excavation Unit 10

Structure 7 was a well-constructed, roadside long building of similar shape and dimensions as Structure 4 (excavation Unit 8) however, the long axis of the structure was oriented east to west with five door openings all on the northern wall. The intact the walls of Structure 7 were 1 m tall, almost double the height of the walls of other long buildings in this area. The east end walls had largely collapsed inward, obscuring at least one door opening in the north wall. The interior floor was also not level across the structure; at the east end any topsoil or surface level was concealed by basalt rubble from collapsed walls. In the center of the structure there was a depression and it was unclear whether this was original to the structure or dug later by the Forestry Department during the reforestation process. The ground surface of the western half of the structure was generally level.

Excavation Unit 10 was a 1 x 2 m rectangle placed in western half of the structure approximately 20 cm from the southern foundation wall. Since the basalt walls were significantly higher than other structures at Bras d'Eau, we did not excavate directly next to the foundation due to safety concerns, which meant that we were unable to determine the relationship between the

walls and excavated stratigraphic units. This was the only structure we excavated with a stone flooring made of irregularly shaped basalt slabs (Fig. 2.9). Broken or lost items often accumulate between spaces in flooring, like the gaps between these slabs, when a structure is in use; however, almost all of the artifacts from this unit were recovered from the shallow layer of topsoil above the flooring, not between or below. Presumably the walls were constructed just prior to the stone-slab flooring. I determined two anthropogenic taphonomic phases: the first associated with a continuous construction/occupational period, and a second associated with both abandonment and disturbance of ruins from the first phase. The fill below the flooring (SU315) did not seem substantial enough to represent a discrete phase that pre-dates the construction of the flooring. In addition, this fill was cut through by modern roots and was likely to have been mixed during the placement of the floor slabs. As such, the fill above the subsoil is considered to be contemporaneous with the construction of the structure and the flooring. The similarity in the soil found between the stone slabs and that found just below the floor, suggests that the cracks between the slab flooring were filled during the placement of flooring. As the stone settled into the silty foundation, the soil from below then pushed up to fill the spaces between. Though thin, the topsoil contained the richest artifact deposits and it is likely that many of the artifacts were scattered across the interior of the structure when holes were dug to plant trees. Segments of the interior floor of the structure were clearly disturbed during the twentieth century when mango trees were planted. Otherwise, the topsoil that had accumulated on the stone flooring was not substantial enough to suggest that the structure was used as a dumping ground, like other barracks structures in the quarter.

Summary of Zone 2

In all units, stratigraphic layers associated with human occupation were only 5-10 cm deep, significantly shallower than deposits found in the laborers' quarter. In addition, the artifact density per m^2 excavated was lower in these three units than any in Zones 1 and 3 (see Fig. 4.5). Datable imported ceramics were all whitewares (produced c. 1820 into the twentieth century), compared to Zones 1 and 3 where pearlware (produced c. 1779-1840) was present, albeit in far lower quantities than later ware types. The mean ceramic dates are discussed further in Ch. 6, but the dates of the ceramics raise the possibility that structures in Zone 2 were constructed towards the end of the nineteenth century, and therefore were used for a shorter time before the estate was abandoned in 1868. Perhaps more tellingly, no faunal material, charred macrobotanical food remains, or small finds were recovered except for a single brass button from Unit 10 (Table 2.2). The limited artifact assemblage and distinctive shape of the long buildings is strong evidence that the northern area of this zone was not consistently a center of domestic life for laborers, and structures here were used as storage buildings, work spaces, or animal sheds. The eastern half of Zone 2 was the closest to the well, and presumably having easy access to water would have been a desired feature for the inhabitants. During the survey we were unable to identify any obvious paths in the eastern area—accessing most of the structures in the center of the area required some climbing and scrambling over rocky outcrops and depressions. In contrast, the landscape around the water features and in the laborers' quarter seemed to guide movement through the area on level ground surface.

Zone 3: Laborers' Quarter

Zone 3, the main laborers' quarter, is situated between the two previous zones, 250 m distant from the sugar mill. and covers c. 4 ha (see Fig. 2.10). The quarter is enclosed on the north and west sides by two roads meeting at a right angle. A curved road creates the south and eastern boundary of this zone. This curved road is built up 0.5 to 1.0 m, and its surface is noticeably less smooth than some of the other roads that led directly to the mill as part of the grid system. There do not appear to be wheel ruts, suggesting that the road was used primarily by laborers on foot rather than animal-drawn carts. Housing for Bras d'Eau's laborers is within this 4 ha quarter block and next to the southern roads that define the zone (see Fig. 2.10). Ch. 4 contains a much deeper analysis of the laborers' quarter landscape, but briefly, within this zone there are five types of stone features:

1. 63 individual rectangular dwellings
2. 1 long rectangular structure, 20 x 6 m
3. 4 long, parallel barracks-style buildings divided into at least 31 rooms total
4. low humped walls that delineate open enclosures or yards
6. 1 large T-shaped dry-stone structure or enclosure of indeterminate function, 23 x 33 m

Six excavations distributed within two barracks, in two yard spaces between barracks, and in individual houses revealed a denser artifact distribution than excavations in the area to the north (Zone 2), comprising of ceramic, glass, metal, stone tools, fauna, small finds, and macro- and microbotanical remains.

Structure 1, Excavation Units 1 and 2

Excavation Units 1 and 2 were both 1 x 1 m in plan. Unit 1 was situated in the center of Structure 1, a rectangular individual dwelling 5.6 x 6.4 m in plan. The southern and western walls of Structure 1 were largely intact and were 1.5 m in height. The eastern wall had collapsed; many

boulders had fallen to the exterior of the structure and down the gentle slope. The northern side of the structure was completely open, though some rubble and aligned, buried boulders suggested that a wall may have once existed. The structure was located 9.5 m from one of the few vehicle-accessible roads at Bras d'Eau, so it is likely the wall was dismantled for reuse elsewhere or taken outside the park. Unit 2 was placed in the space between the road and Structure 1, approximately 3 m north of what would have been Structure 1's northern wall.

Excavations in and around Structure 1 resulted in a relatively straightforward taphonomic history of occupation and abandonment. Builders likely chose to locate it on the naturally higher ground and further elevated and leveled the surface during the construction phase. As the structure was occupied, the creation of a clay flooring and gradual material accumulation would have elevated the interior structure surface even further. Artifacts collected on the surface and within the topsoil were likely redistributed during later activities on the site, such as planting as noted above. Potsherds from the surface collection cross-mend suggesting that the artifacts washed down the slope during heavy seasonal rains after the north wall was removed because the elevation inside Structure 1 was higher than the immediate surrounding area. Unit 2 did not provide enough information to determine specifically how this exterior space was used by residents. The excavation indicated, however, that the area was used continuously to allow for such an accumulation of anthropogenic fill and artifacts (SU 18 and SU 22).

The larger basalt boulders exposed in the C-horizon, the rocky substratum, created open cavities with soil loosely interspersed between. During the excavation process, these cavities caused some soil and artifacts to fall to depths lower than they were originally deposited, particularly in Unit 2. The irregular nature of the bedrock would have made it difficult for laborers to create a level floor surface. We attributed the missing remnants of flooring in Unit 1 to

bioturbation from trees, but it is also possible that such a clay flooring would have eroded or collapsed into the porous spaces between the underlying large cobbles and boulders. Test Units 1 and 2 allowed me to confirm that the structure we first identified and mapped during the first season of field work were associated with nineteenth-century inhabitation of the site.

Individual Dwelling: Structure 3, Excavation Unit 5

Structure 3 was located in a depressed area of the laborers' quarter to the west of Unit 1. It was one of the only other individual dwellings that did not have a live tree growing inside, although a very large stump was rotting inside against the southern wall. In addition, the walls were largely intact, with significant collapse only occurring on the exterior of the east wall. We excavated a 5 x 3.5 m unit across the 12 x 4.5 m structure, such that it covered the entire east side of the interior space and extended approximately 0.5 m north of the exterior wall. The unit also bisected the door opening.

Structure 3, like Structure 1, was built in an area where the ground surface was a layer of uneven basalt boulders and cobbles filled in with natural soils, as opposed to the smooth basalt bedrock found under structures situated on higher outcrops. The uneven nature of this ground surface, combined with unexpected bioturbation from the large mango tree roots, made it particularly difficult to identify discrete and preserved living surfaces. Nevertheless, we were able to identify 1) an upper fill, 2) layers likely associated with occupation of the home, 3) stratigraphic units associated with the original construction of the structure, and 4) subsoils.

While the stratigraphic layers at the center of the unit were horizontally distributed sediments around the perimeter of the excavation unit, the stratigraphy was slightly more complex. A trench running on the south wall (SU273 and 276) was likely the builder's trench for the southern wall, cut into by the rotting stump in the south edge of the structure. Along the

northern wall there would have been a corresponding northern builders' trench, but a large root, 15 cm in diameter, was exposed and removed from the original trench cut and fill (237/275). The southern and northern trenches came together at the western wall. In addition, the soil profile under the northern stone wall (SU182) revealed a compact red clay layer, visible in the profile walls inside and outside of Structure 3. This layer was not evident in the center of the unit. This compact layer would have been created as builders trampled ground while constructing the walls of Structure 3. A similar context was found under the walls of Structure 2 in Units 3 and 7 when collecting pollen and phytolith samples.

There may have never been compact clay floor surface in Structure 3 as was found in Structure 1 and Structure 2, the large barracks. Two anthropogenic layers (SU 228 and 233), the lower slightly more compact, were possibly the last remnants of an earthen living surface. Under these layers, the soil became very loose with an increasing amount of basalt. In Unit 1, 2, and Unit 5, this basalt functioned as a natural sieve, filtering soils that developed through natural decomposition. The deeper we excavated, we found increasingly larger boulders and correspondingly larger air pockets between them. As such, in both the interior and exterior areas of the structure was easy for artifacts to fall from the last layers of anthropogenic fill down into the undisturbed sub-layers. Two unique features were noted in excavation Unit 5. First, there was a small stone-plaster low shelf or platform in the southwest corner of the structure. Second, a small charcoal pit feature just outside of the structure door, dug into the subsoil and covered by fill, indicated that the pit feature might not be associated with Structure 3 as a home, but is rather associated with building of the structure soon thereafter. Interestingly, no macrobotanical remains were recovered in Unit 5 (see Ch. 5). As noted in Ch. 5, the accumulation of waste was significantly higher in and around the barracks, including macrobotanical remains, and cooking

was often done outside. It is possible that the areas of food preparation or disposal were outside the excavation unit, but this also raises the possibility that men, women and children were eating communally elsewhere in a centralized location.

Long Barracks Interior: Structure 2, Excavation Units 3/7

Structure 2 was one segment of the longest barracks in the laborers' quarter. This barracks has a long, mortared wall that runs 110 m in length with 12 rooms of various sizes extending from the southeastern side (see Figs. 2.10 and 4.3). Structure 2 is the second largest of these rooms. The northern wall of Structure 2 had collapsed, in sections, but remnants of the mortar between rocks was still apparent, particularly on the exterior wall surface. The southern wall had completely collapsed, making it difficult to determine the exact dimensions of the structure prior to excavations and impossible to identify the doorways. The interior space could have been partitioned further, but no evidence of interior walls was identified in the 2 x 2.30 m unit we dug inside the structure. Small, low, mortar-lined niches in the northern wall may have held beams that supported a dividing wall, but without the opposite wall intact we cannot confirm this.

The first 2 x 2 m excavation block, Unit 3, was situated inside Structure 2, strategically placed at least 2 m from a large mango tree growing in the center of the structure and abutting the long, northern wall. Unit 7 extended Unit 3 to the south by 1.3 m to reach the structure's southeast foundation wall. Together, Units 3 and 7 allowed us to obtain a profile across the short axis of the barracks interior.

Scatters of artifacts found on the surface, and the fill excavated, suggested that the structures were used as a dumping ground post-occupation. The Structure 2 barracks is built on the edge of a rocky outcrop, and access to the structure from the north is somewhat difficult due

to the drop-off of the outcrop. Trash therefore would have been deposited from the south side of the structure, perhaps also evidenced by the fact that six particularly heavy artifacts (not easily swept), including a 20 cm long iron bolt, grindstone, and horseshoe, were found at the same upper elevation (SU 236) near the south wall of Structure 2, under the boulders from the collapsed wall. The flooring of Structure 2 was partly exposed bedrock, with uneven areas filled in with a hard soil, similar to that found in Unit 1.

The documented differences between the north and south ends of this excavation block may have also been due to the depositional process: if waste was being deposited in the structure from its south side, the accumulation of fill would have mixed more thoroughly with the degrading lime mortar/plaster, resulting in the ashy loam layer we uncovered. It is important to note also that a mango tree was planted only a few meters from this excavation unit and an acacia stump still stands in the corner of the structure. Holes dug for planting could also have deposited extra fill onto the units and disrupted the stratigraphic integrity of artifacts as well. The multiple different layers of deposits of an ashy-textured lime mortar and fine yellow silt concentrated in the 75 cm closest to the barracks' walls, particularly in Unit 3, suggest that walls were plastered and segments of it gradually fell off, breaking down at various rates into patches. These lime mortars are typically known for being very durable and resilient, more so than modern concrete, so it is somewhat surprising that so much of the mortar was found to have deteriorated and crumbled over time. The loss of mortar perhaps suggests lower quality workmanship than found in colonial structures such as the sugar mill, which would have been built by the most skilled stone masons with the best materials, evident in the use of dressed masonry such as archways, and lintels.

Barracks Yard: Excavation Unit 4/6

Excavation Units 4 and 6 were situated in a yard area with only one small acacia sapling growing within the immediate 3 m vicinity. Unlike other yard areas in the domestic quarter, including the open area where Unit 2 was excavated in 2014, the ground surface was smooth, level and relatively clear of boulders and cobbles, which excavations revealed was due to accumulated sediment. The area is south of Structure 2, bound by a small rectangular structure to the west of the structure and a depression to the south east encircled with low wall of basalt. Unit 4, a 2 x 2 m square, was situated 2 m from Structure 2's exterior wall, slightly southeast of units 3 and 7. Unit 6, a 2 x 2 m square, extended Unit 4 north to abut the exterior edge of the barracks.

Units 4 and 6 proved to be the richest units excavated at Bras d'Eau, both in terms of artifacts and defined features. A rich organic topsoil and three consecutive layers were the primary contexts that covered the basalt bedrock and sterile yellow silt. The stratification in these four layers seem to be the result of natural depositional processes rather than periodic occupational phases. Within these layers, there were several small deposits of dense red clay and multiple lenses or areas of fill mixed with fine white ashy lime that were possibly dropped when the structure was being re-floored or plastered, or the materials for such activities were being processed. At some point the natural bedrock must have been the living surface, because anthropogenic sediments directly covered the bedrock in Unit 4 and artifact-rich sediments filled in cracks and crevasses in the bedrock.

There were two unique features in Unit 6. First, the lime and charcoal pit or layered deposit seems to have been some kind of processing area for coral quicklime. This pit was one of the lowest deposits on the subsoil. The relative chronology of deposits suggests that is was used early on in the occupation of the area, possibly when the barracks were first constructed. Second,

the post hole cut into the bedrock, fill, and charcoal-rich deposit above may have been associated with an actual post that burned. If the gray-white ash pit was indeed a space for small-scale production of lime, then the post could have propped up an awning to shield the space from the rain. Without an extension of the excavation block to see if there are more postholes, we cannot determine whether the post-hole was a singular feature or whether it was part of a row of molds along the entire barracks that might indicate the presence of a frame-supported awning or overhanging roof, as seen in some historical photographs of houses on plantations in Mauritius (Figure 4.5).

Short Barracks Interior: Structure 9, Excavation Unit 12

Unit 12 was located in the center of Structure 9, the southernmost long barracks identified in the laborers' quarter. Originally situated in plan as a 1 x 1 m square, after discovering root disturbance was minimal within the first square meter, Unit 12 was expanded 30 cm on the north and west sides, which was the largest extension possible while still leaving a buffer space between existing trees growing inside the structure.

Excavation of Unit 12 in Structure 9 resulted in two discrete layers associated with the occupation of the site (SU331 and 332). Similar to the excavation in Structure 2, small patches or lenses of white lime powder and some small pieces of lime mortar and plaster with flat smoothed surfaces were found, suggesting that lime was used in plastering or mortaring the walls or floor, at least in segments. We excavated down to the bedrock surface, which was used as a floor surface in Structure 2, but the subsoil was not disturbed prior to excavations.

Summary of Excavations in the Laborers' Quarter

The five excavations in the Laborers' Quarter most importantly confirmed that this area was, indeed, used as domestic living space. Excavated fill further assisted in defining architectural elements that were not evident from a superficial survey of the structures, including the recovery of large quantities of mortar, plaster, and small residual patches of compact flooring in Units 1, 3, and 7. Only a few samples of mortar and plaster were collected during excavations in 2014, whereas all mortar and plaster pieces found during excavations were collected in 2016, therefore, the quantitative measurements of mortar for Units 1 and 2 cannot be compared directly to all other units. There was far more mortar and plaster recovered from the barracks than individual dwellings (Fig. 4.2). Mortar and plaster required lime, and mortared structures are often expected to last longer, as they are less prone to collapse. Mortaring the long barracks' foundation walls would have required large batches of mixed lime, but the lime pit we found in the barracks yard excavation was small. This suggests the estate management maintained the barracks structures, drawing masonry resources from the lime kiln in Zone 5.

The relatively small size of the excavation blocks limited my ability to determine more minute spatial details, such as the location of hearths, storage features, discrete sleeping areas, internal diving walls, or doorways if the structure had collapsed. Clearing the rubble from inside Structures 2 and 3, the long barracks and individual dwelling, revealed the degree to which the foundation walls had collapsed and exposed the interior vertical wall surfaces and construction techniques. The great density of material artifacts and botanical remains recovered from these excavations revealed that there was continuous occupation in the laborers' quarter over a short period of time, and provided a window into the lives of indentured laborers explored in Chs. 5 and 6.

Zone 4: Roadside Structures

Zone 4 consists of a 400 m long road extending to the west from the Laborers' Quarter up one of the highest hilltops in the park (Fig. 2.1). Twenty-four structures were situated on either side of the road, usually a few meters from the edge. Nineteen structures were similar in size and shape to the individual dwellings in the laborers' quarter and may have been additional housing. Three structures were 3-sided and could have been spaces for open-air work or storage. Although we have not conducted a systematic survey for surface artifacts there, during the survey and mapping process very few artifacts were found on the surface. This lack of material culture suggests further that the structures were not used as housing, but rather related to the industrial function of the estate. I created a viewshed map illustrating the sight lines that would have existed during occupation of the area, from the top of the hill in the center of the road, which will be discussed in Ch. 3.

Zone 5: Lime Kiln and Distillery

The last, fifth zone is separate from the four described previously, located in the easternmost edge of Bras d'Eau in the triangular portion of the property (Fig. 2.1). This area is just 150 m from the coast, across from the Poste Lafayette beach. A lime kiln still stands 1.5 km from the center of industrial and domestic ruins, as well as foundations of a rectangular structure, and a chimney that was likely part of a rum distillery, labeled 'Monti Cristo' and 'Spa' on archival maps from the nineteenth century. This area was originally part of the Bras d'Eau sugar estate and the Monte Cristo distillery under separate ownership. About 200 m^2 are now on private property

beyond the park. The chimney and lime kiln also are no longer part of the park. Residential housing was constructed several meters from both structures, diminishing the possibility to conduct archaeological research on these industrial aspects of the estate. The lime kiln and distillery are integrated into the road network of Bras d'Eau, and are conveniently situated close to the coast, which provided a source for coral to burn for making lime, as well as access to the coastal road. Although the distillery was under a different name, it is possible that indentured laborers engaged to Bras d'Eau were also working there. Forty meters into the park from the lime kiln are two small brackish ponds. According to park employees, local people believe one of the ponds, called Mare Mahogany for the trees growing in the area, was a cremation ground. Unfortunately, the Forestry Department built a stone pathway across the pools, large steps like an amphitheater around the high banks of the pond, and stone platforms for picnic benches around the pond.

Conclusions and Summary

As demonstrated above, the archaeological work conducted at Bras d'Eau allowed me to identify features of the former estate that had been lost and forgotten over time. By the same token, there are a few features that are mentioned in historical documents that would have been integral to the functioning of the estate that we have yet to identify archaeologically. These include the "stranger's house," hospital building, and forge. If the former two structures were not dismantled by the Forestry Department's activities in the last century, it is likely that the house and hospital have been mapped and we will need to identify them through artifact assemblages

collected by additional surface surveys and excavations. Forges typically leave distinctive archaeological signatures, including concentrations of various forms of iron slag, burned contexts, and other discarded tools. During the surface survey and excavation, we collected several small volcanic droplets called “Pele’s tears,” nothing close to resembling the quantity of slag one expects around a forge.

The general conclusions drawn from the survey and excavations were that 1) the entire landscape of ruins at Bras d’Eau is segmented into different use areas with unique features and structures in each; 2) work-spaces related to the functioning of the plantation were separated from the dwelling area for laborers and the laborers were housed in one defined domestic quarter; 3) within the laborers’ quarter two types of dwellings were identified, barracks and individual houses; 4) the estate was interconnected internally and to external properties through stone-built roads; 5) occupation of the site is securely in the nineteenth century.

A total of 12,824 artifacts were collected in excavations and surface collections and all artifacts were sorted and catalogued into seven categories based on the material or function: ceramic, glass, metal, small finds, shell, mortar, and fauna (see Table. 4.0, and Figs. 4.0 and, and Fig. 4.1 for summaries of artifact counts and weights). The artifact assemblage is discussed in detail in Chs. 5 and 6, therefore only a brief note on artifact cataloguing and dating is included here. Although the Bras d’Eau estate was first established at the end of the 1700s, based on ceramic dating methods (detailed in Ch. 6) the ruins date to between the late 1820s and the end of the nineteenth century, which situates the occupation from the period of transition from slavery to indentured labor to the last few decades of the period of indenture in Mauritius. Therefore, it is also likely that the estate was converted to a sugar plantation during the transitional period from slavery to indenture or early indentured labor period. Despite the lack of archaeological data

definitively associated with the period of slavery in Mauritius, colonial archival sources provided information on the first phase of occupation. The following chapter discusses the larger colonial circumstances that resulted in the settlement of Mauritius and brought about indenture as a system of labor. In addition, I provide an overview of the history of Bras d'Eau based on my archival research and some survey results to provide the larger context for my investigation of life on the estate.

Figures and Tables

Figure 2.0 Photogrammetry of mill structure prior to construction.

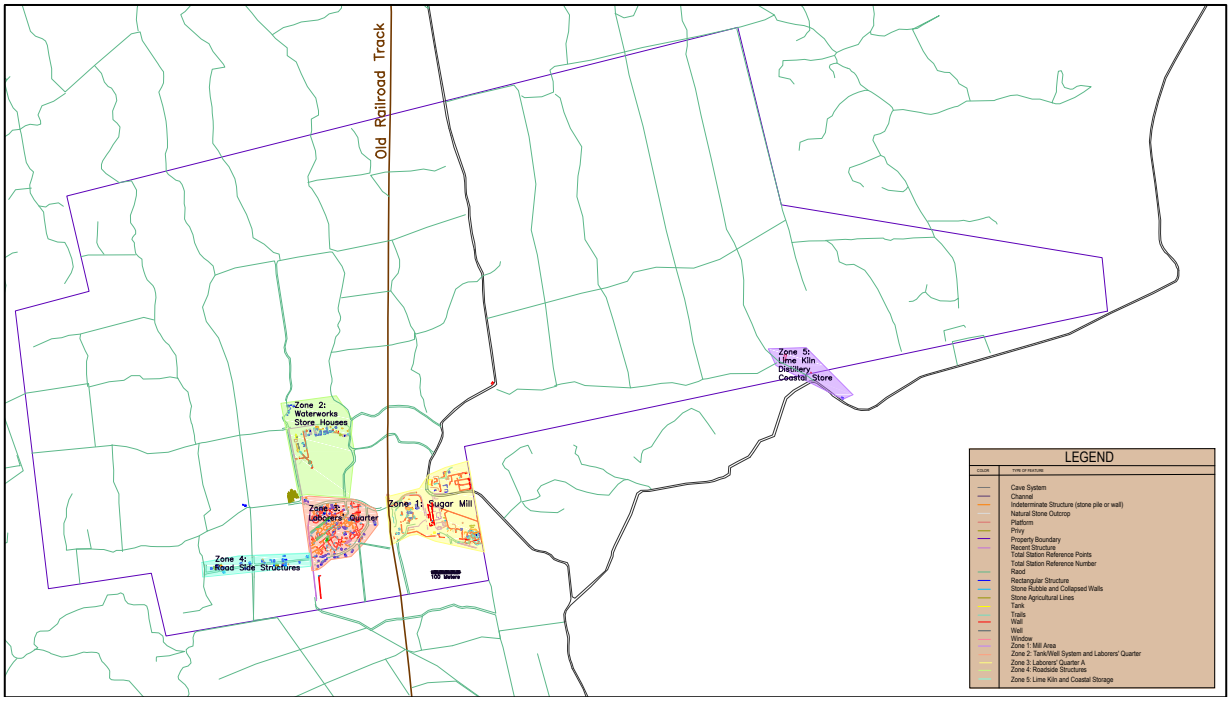

Figure 2.1 Map showing Bras d'Eau's historic property boundary, path of the old railroad (1864-1964), and archaeological zones 1-5.

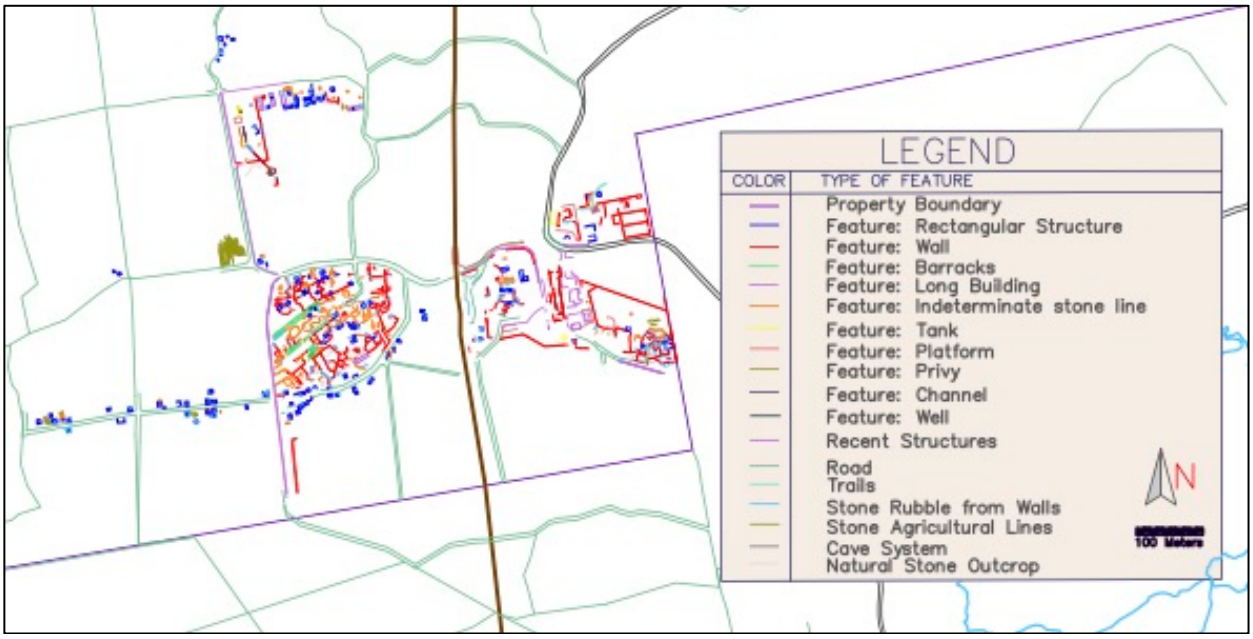

Figure 2.2 Archaeological ruins at the core of Bras d'Eau with different feature types symbolized by color.

Figure 2.3 Map of gridded surface collections in Zone 1 around the mill, well and other stone structures.

Figure 2.4 Map of gridded surface collections in Zone 3 around excavations in barracks, individual dwellings, and unidentified large T-shaped structure.

Figure 2.5 Photograph of excavations in Zone 3, Structure 3, Excavation Unit 5

Figure 2.6: Map of Zone 1 showing the sugar mill, modern NPCS structures, surrounding archaeological features, and Excavation Unit 11 in the southeast corner.

Figure 2.7 Map of Zone 2 showing the mill and water tank infrastructure, long buildings, rectangular structures, and Excavation Units 8, 9, and 10

Figure 2.8 Photograph of well in Zone 2

Figure 2.9 Photograph of Stone Slab Floor in Structure 7, Unit 10, Zone 2

Figure 2.10 Map of Zone 3, the Laborers' Quarter, showing barracks (green), individual dwellings (blue), dividing walls (red and orange), and Excavation Units 1, 2, 3, 4, 5, 6, 7, 12

Zone	Description of Main Features	Areas	Excvation Units	Structure	Structure Type	Features of note	Stratigraphic Units
Zone 1	The Sugar Mill, Purgery, Boiling House, Likely owners house	1A, 1B, 5A	11			2 lime-ash pits	319-325
Zone 2	Well, water infrastructure, plaster platforms, 4 long buildings, small square structures	6B	8	Structure 4	Long Building	None	282-289, 298-299
			9	Structure 5	Square Structure	None	290-297, 300-302
			10	Structure 7	Long Building	Stone slab flooring	303-316
Zone 3	Laborer's Quarter	2B	1	Structure 1	Individual Dwelling	Residual clay flooring	19-21, 23, 25-27
			2	Structure 1, Yard	Individual Dwelling Yard	None	22, 24
			5	Structure 3	Individual Dwelling	Builders trenches	224-226, 228-238, 243, 273-281
			3 & 7	Structure 2	Long Barracks	Residual clay flooring	200-223, 236, 240, 241, 244, 245, 257-262, 265, 317, 318
			4 & 6	Structure 2, Yard	Long Barracks Yard	Lime pit, basalt post-hole	203, 204, 206, 210, 211, 242, 250-256, 263, 264, 266-272.
			12	Structure 9	Short Barracks	Lime-ash deposits	326-340
Zone 4	Road Side Rectangular Structures		-	-	-	-	-
Zone 5	Lime Kiln, Distillery, Pond		-	-	-	-	-

Table 2.0 Archaeological Features in Bras d'Eau National Park

Summary of Artifacts from Surface Collection						
	Zone 1, Area 1A		Zone 1, Area 5A		Zone 2, Area 2B	
	Artifact Count	Weight (g)	Artifact Count	Weight (g)	Artifact Count	Weight (g)
Ceramic	517	10036	685	4528	372	3777
Glass	629	6956.11	114	1357	685	6995
Metal	204	4334	21	1171	120	4745
Shell/Mortar/Lithic	247	3618	238	3847	35	4058
Small Finds	87	832	1	0	3	8
TOTAL	**1684**	**25776.11**	**1059**	**10903**	**1215**	**19583**

Table 2.1: Surface Collection Artifacts

Summary of Artifacts from Excvations																			
		Ceramic		Glass		Metal		Shell		Small Finds		Mortar and Plaster		Lithic		Fauna		Total	
		Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (pe	Count	Weight (g)
Zone 1	Unit 11	44	131	19	46	17	40	28	76	0	0	136	496	0	0	7	2	**244**	**789**
Zone 3: Laborers' Village	Unit 1	14	N/A	4	N/A	115	N/A	17	N/A	0	N/A	3	N/A	1	N/A	1	N/A		N/A
	Unit 2	40	N/A	11	N/A	39	N/A	19	N/A	0	N/A	2	N/A	0	N/A	1	N/A		N/A
	Structure 2	14	93	25	310	26	69	2	97	0	0	2	21	0	0	0	0		
	Unit3	165	420	396	527	249	1116	40	49	24	55	151	634	1	3	69	315	**2901**	**17398.6**
	Unit7	81	153	242	795	492	4138.6	63	298	26	57	903	8566	10	4116	231	747		
	Unit4	288	564	615	656	179	1597	66	145	9	4	10	25	5	89	43	38	**2811**	**13647.2**
	Unit6	386	1087	687	1412	354	5922.2	111	421	27	95	79	1719	10	1102	73	17		
	Unit5	85	283	186	899	286	2866	59	303	25	201	32	123	18	95	195	218	**673**	**4675**
	Unit12	19	88	163	350	36	240	9	24	10	6	764	3807	2	5	25	34	**1001**	**4515**
Zone 2	Unit8	1	29	1	2	42	57	0	0	0	0	0	0	0	0	absent		**44**	**88**
	Unit9	3	13	104	228	7	28	3	6	0	0	0	0	0	0	absent		**117**	**275**
	Unit10	8	33	8	152	33	285	8	18	1	0	0	0	0	0	absent		**58**	**488**
Total		**1148**	**2894**	**2461**	**5377**	**1875**	**16358.8**	**425**	**1437**	**122**	**418**	**2082**	**15391**					**8113**	**41875.8**

Table 2.2 Artifact Summary from Excavation

Chapter 3: The Colonization of Mauritius and Bras d'Eau National Park

In this chapter I review the colonization of Mauritius and the history of Bras d'Eau within this context. I use archival data to expose the ways in which the local and regional landscapes of Mauritius transformed over the course of the slave period and set the stage for indentured laborers to produce sugar for the global market. Mauritius can seem geographically isolated, lying some 900 km east of Madagascar. Nonetheless, it came to be seen as the "key to the Indian Ocean" for European colonists from the seventeenth to nineteenth century, eager to advance their enterprises in Southeast Asia and East Africa, and in need of a military base from which to protect global capitalist interests against other imperial powers (Carter 2006: 808).

Mauritius benefits from having both protected ports and arable land with freshwater sources. The island is just under 2000 km^2 and surrounded almost entirely by a coral reef, which proved to be treacherous for large ships as evidenced by shipwrecks found scattered around the island (Lane 2012; Van Arnim 2015). However, the reef also provides a protected harbor, as well as bountiful fishing grounds that small boats navigate easily.[4] There are two natural passes within the reef system wide and deep enough for a tall ship to navigate. Mauritius has a central platEau and three small mountain ranges that peak 828 m above sea level, but almost the entire northern half of the island and much of the southern coastal lands are relatively flat, providing more arable land than other Indian Ocean islands of comparable size.

Mauritius stands out from other sugar plantation island colonies in two crucial ways. First, it had no indigenous population. Western settler colonialism around the globe is predicated

[4] Mauritius Meteorological Services issue separate reports and warnings for the areas within and beyond the reef because sea conditions can be so different.

on the concept of *terra nullius* or empty land. More often than not, multiple indigenous peoples were already living on the land; however, colonists driven by capitalist enterprises considered whole continents untamed and 'free' for the taking as private property, disregarding or disparaging indigenous ways of living or using the land (Johnson 1996; Ashmore 2004; Gosden 2004: 27; Hauser and Hicks 2007). The absence of an indigenous population set unique historical trends in motion. Second, the Dutch, French, and British did not initially occupy Mauritius with the intention of turning it into a plantation island. Mauritius's strategic position on the East India trade route meant that during the seventeenth, eighteenth, and early nineteenth centuries the Dutch, French, and British wanted to use the island as a resupply station and/or strategic military post from which to attack other colonial trade ships and colonies. Every time the island was claimed, captured, or settled by one of these three European powers, preventing other colonial powers from taking advantage of this strategic military and mercantile location was as important as availing themselves of such an advantageous position (Teelock 1998: 21; Vaughn 2005: 7, 19; Floore and Jayasena 2010: 332).

Colonization

Dutch Republic and VOC

The Dutch Republic first laid claim to Mauritius in 1598 through the Vereenigde Oost-Indische Compagnie (VOC) or Dutch East India Company, and they named the island Mauritius after Prince Maurits Van Nassau (Floore and Jayasena 2010: 332). The VOC hoped to monopolize the spice trade in East Asia and intended to use the island as a waystation and refreshment station for their trading fleet in the Indian Ocean (Floore and Jayasena 2010: 332).

Facing threats from both France and England and fearing they might lose control over the island, in 1638 the VOC established the first permanent settlement on the east coast called Fort Hendrik, strategically situated near a passage through the reef by Île de la Passe (Vaughan 2005: 7). Settlers were sailors, soldiers, convicts from Batavia, and slaves from Madagascar (Vaughn 2005: 8). The Dutch also began to heavily exploit the ebony forests growing in the northern half of the island. Though the settlers did plant some of the first crops on the island and raised livestock, some historians have argued that the Dutch settlements functioned more like a logging camp than supply base or military fort (Grove 1995: 132; Vaughan 2005: 8). Marooned slaves and sometimes convicts formed resistance communities together on the island or escaped on foreign or pirate ships that still landed on the open shores (Vaughan 2005: 10). They would occasionally return to steal food, livestock, and other supplies from the Dutch settlers. When the Cape colony was established on the southeast tip of Africa in 1652, Mauritius was effectively replaced as a waystation. Unable to control slaves and convicts, losing crops to rats introduced to the island by visiting ships, the first Dutch settlers abandoned the island in 1658, possibly leaving behind maroons (Floore and Jayasena 2010: 332).

The VOC's second attempt at settlement started in 1664, again for the strategic location and to exploit ebony and ambergris resources. Some of the lumber was sent to construct the Cape Colony settlements (Vaughan 2005: 12). In addition to rebuilding Fort Hendrik, farmers established small farmsteads around the coastal parts of the island. They also introduced sugarcane. This second wave of settlers suffered from delayed shipments of supplies as well as disease and famine. Floore and Jayasena's (2010) archaeological study of Fort Hendrik demonstrated that colonists had to rely on fish as a primary food source and were continually

plagued by rats. They also found the remains of a building set on fire by four slaves in 1694 (Floore and Jayasena 2010: 330).

In 1710, the Dutch evacuated their settlers, servants, convicts, and slaves from the island and sent them to the Cape Colony or to Batavia (now Jakarta), again leaving behind unknown numbers of maroon and convict communities. From historical documents it is unclear exactly how many enslaved captives were brought to Mauritius on Dutch ships, but there were about 300 freedmen and company servants on the island when evacuations started (Vaughan 2005: 15). The Dutch did not leave the island unchanged; before leaving they had cut down most of the ebony forests for lumber, left behind millions of rats, and decimated much of the unique flora and fauna, including the dodo and giant Mauritian tortoise.

French Colonization

The French laid claimed Mauritius in 1715 through the Compagnie des Indes (French East Indies Company), though like the Dutch did not settle immediately. Mixed families of French, Malagasy, and Portuguese origin and enslaved Malagasy men and women had been living on the nearby island of Île Bourbon (Réunion) and Rodrigues since 1643 (Vaughan 2005: 20-21). After the Dutch had evacuated Mauritius, the c. 300 settlers of Île Bourbon saw the empty island as a power vacuum, a potential threat to their own nearby island settlement if any other power were to capture it first (Vaughan 2005: 21). In hopes of preventing the latter, 16 people from Bourbon sailed to Mauritius in 1721 and built a small settlement on the northwest coast. While, the initial French settlement of Mauritius was intended to deter other powers from acquiring the valuable position, the French East Indies Company also hoped they might establish plantations on the island to provision company ships with wheat, rice, maize, tobacco, and spices

and turn a profit with coffee plantations as they had on Île Bourbon (Vaughan 2005: 23). They renamed the island Île de France and set about establishing settlements on the abandoned Dutch settlements and in a sheltered northwest harbor that would eventually become the capital of Port Louis. These early colonists suffered many of the same problems the Dutch had, including rats, cyclones, famine, and a lack of reliable labor. Not only did slaves maroon, but unhappy servants, sailors, and soldiers recruited to colonize the island were also prone to fleeing into the forests. Marooned slaves in groups as large as 50 attacked the settlements. The colony still suffered throughout the mid-eighteenth century; however, the island gradually developed into a successful and diverse colony. Under the direction of the Governor Mahé La Bourdonnais (1735-1746), the Port Louis was built up. In 1742 he convinced the Companie des Indes temporarily to allow for free trade in Port Louis, which gave the colony a boost in commerce. La Bourdonnais is also attributed to building the first sugar refinery on the island.

After the Companie des Indes went bankrupt in 1764, the French government took over the rule of Mauritius until 1810. In 1766, of Mauritius's 1,865 km^2 of land, only 840 km^2 (200,000 arpents), half the island's arable land was concessioned (granted) out to land owners, and less than 210 km^2 of that land was under cultivation (Allen 1999: 17).[5] Many of the wealthy landowners left their families on their plantations but lived in Port Louis because they could make more money in commerce, including the slave trade, than in agriculture (Vaughan 2005: 63). Plantation cultivation and the population increased, especially with the importation of enslaved Africans, but the colony continued to consume commodities rather than producing them

[5] Measurements found in historical documents can be difficult to translate into modern metrics. In Mauritius today, an arpent is approximately 1.04 acres or 4220.87 m^2 (International Monetary Fund 2006 :39). In North America, an arpent was slightly smaller and in France, an arpent, or *arpent carré,* was slightly larger.

(see Table 3.1). The government reopened Port Louis to free trade in 1787, allowing the island to become the Indian Ocean trading entrepôt that Île Bourbon could never be due to its lack of safe harbors (Metz 1994; Carter 2006). The port also became an important base for slavers exporting East African captives to the Atlantic (Vaughan 2005: 77). Between 1721 and 1810, 101,000 enslaved people were brought to Mauritius, making up 75-85 percent of the population between the 1730s and 1820s (Allen 2001: 166). The majority of enslaved Africans came from numerous groups on the east coast of Africa and from Madagascar, through trading ports such as Mogadishu, Lamu, Malindi, Mombasa, Zanzibar, Kilwa, Sofala, and Chibuene (Pollard 2016). A smaller portion of enslaved people originated in India and elsewhere in East and Southeast Asia and West Africa. The Haitian Revolution (1791-1804) and loss of French sugar production in St. Domingue encouraged French planters to increase cane plantations. At the beginning of the nineteenth century, the colonists who had struggling for so long to define the shape of the Mauritian colony—was it a plantation colony, trade hub, provisioning base, or all of the above?—finally reached the point at which agricultural production was supported by investment from commerce particularly from privateers (Vaughan 2005: 257).

British Colonial Rule

From the middle of the eighteenth century the British had established themselves as the most powerful naval military force in the world, which strategically supported their ambitions for dominance in transoceanic capitalist enterprises in the Atlantic as well as Pacific. During the Napoleonic wars (1803-1815), British forces captured Mauritius from the French in 1810 along with several other key sugar islands in the Caribbean and Indian Ocean, including Trinidad in 1797 and St. Lucia in 1814 from the French, and Essquibo, Berbice, and Demerara in 1814 from

the Dutch, consolidated as British Guiana in 1831. France had launched several attacks on British India from Mauritius and used the island to supply their ships; therefore, the British capture of the Indian Ocean base was a blow to French forces. At the time of capture, the island population consisted of 55,422 slaves, 7,133 free non-whites or *gens de couleur* and 6,227 mostly white settlers of French descent (Teelock 1998: 21). The original governing legal and administrative systems were left in place, along with French landowners, and as such the island retained close ties to France culturally and economically.

The Abolition of the Slave Trade Act had been passed in 1807, and as these colonies were brought into the British Empire, they were subject to its rule. The elite class of white Franco-Mauritians were resistant and hostile to British authority (Teelock 1998: 21). Even after 1810, Allen (2001) estimates the illicit importation of slaves continued until c. 1827 and approximately 52,550 enslaved men, women, and children arrived in Mauritius and the Seychelles in the interim years. In addition, when slave ships were captured by British naval forces the people on board became "liberated Africans" and, rather than being returned to their homelands, were brought to the colonies as wards of the state. From 1800 to 1840, in major sugar-producing districts such as Flacq and Rivière du Rampart, the slave population increased 20-36%, while the population in non-major districts decreased proportionately (Teelock 1998: 100). Nevertheless, after 1810 the British knew the abolition of slavery was on the horizon and that landowners would need a reliable source of labor. They turned their attention to India, targeting and exploiting many of the same populations in northeast India that had been subject to enslavement in the eighteenth century, and participated in interior seasonal labor migrations (Carter 1995; Kumar 2017). The British East India Company had been coercing the local Indian population into producing export crops, especially opium, on their own land (Richards 2002;

Derks 2012). Fearing a pending labor shortage, the British Government saw Mauritius as part of 'the great experiment' to see whether it was possible to maintain the same levels of agricultural productivity with "free" labor. Starting in 1815, the first Indian convicts were brought to Mauritius as an alternative labor source. In the mid- to late-1820s there were several attempts to import Chinese, Indian, and African indentured laborers to Mauritius (Carter and Ng 1997: 4-5).

In 1833, the British finally abolished slavery across their empire, but Mauritian landowners and enslavers were strongly resistant to losing enslaved labor force. When the Slavery Abolition Act was enacted in Mauritius on February 1, 1835, there were 66,343 enslaved people, 65% of the population, for whom Parliament compensated Mauritian slave owners with a total sum of £2,112,632 (Storey 1997: 30; Allen 2004: 34). Formerly enslaved men, women, and children entered what were called five-year "apprenticeships," essentially an extended 'grace period' of continual enslavement. The apprenticeship system was deemed unsuccessful and enslaved people received full emancipation in 1838.

From 1834 to 1909 around 452,000 indentured men, women, and children arrived in Mauritius, twice as many as any other British plantation colony. More than 294,000 remained on the island permanently. Indians across caste and religious lines made up 95% of the indentured in Mauritius, but Southeast Asians, Africans, Chinese, and other non-western indentured laborers also immigrated to British colonies. More laborers came from Madagascar and China during years when immigration from India was halted (1839-1843) due in large part to protests by the Anti-Slavery Society (British and Foreign Anti-Slavery Society 1888). Most indentured laborers were seasonally mobile agriculturalists from north and southeast India.

At the same time there was an increase in the number of plantations, putting the island on the road to becoming a major center of industrial sugar production (Table 3.1). Teelock

(1998: 46) argues that after two cyclones hit the island in 1824 and devastated coffee, clove, and other food-crop plantations, planters shifted their focus to sugar cane because they believed it to be studier. Critically, in 1825 the British government passed a trade bill that lifted a preferential tariff on sugar produced in the Caribbean. The number of sugar mills had risen from 60 in 1801 to 296 in 1860, such that for a short period in the 1860s Mauritius was producing 6.8% of the world's sugar (Allen 1999: 23). New sugar plantations necessitated new infrastructure and trade networks to support the industry, and indenture as a system of labor became a part of that growth.

The global price of sugar declined in the early 1860s due to increased global production of cane sugar and beet sugar. In response to this economic strain, the Mauritian plantocracy began to sell off small parcels of less valuable land, in a movement that is called the *grand morcellement* or "great dividing." In addition, in 1867, Mauritius witnessed its most devastating malaria epidemic, claiming the lives of some 40,000 people out of the total population of 330,000 (Boodhoo 2010). Prolonged periods of drought also affected sugar estates. The number of mills steadily declined thereafter; across Mauritius planters and family estates pooled their resources, merged assets into overarching companies and centralized and mechanized the process of cane milling (Storey 1997: 39-40). Having fewer, larger mills was a more efficient means to produce several hundred thousand tons of raw sugar each year in the twentieth century. The number of functioning sugar mills dropped from its peak of 259 in 1858, to 137 in 1888. Towards the end of the nineteenth century, more and more former indentured laborers acquired small plots of land to grow their own food, or sugar which they could take to centralized sugar mills (Allen 1999). Around 20% of estates in Mauritius were sharecropped during the last five years of the nineteenth century and in the first decade of the twentieth (Allen 1999: 161). At the

turn of the century there were 85 open sugar mills, and 66 in 1908. Indentured labor immigration ended in 1920. Today there are only ten mills open.

Within 250 years, the island that was unpopulated before 1638 had become a complex cultural landscape dominated numerically by exploited laborers from East Africa, India, China, and Southeast Asia. Hundreds of these indentured laborers ended up living and working on the Bras d'Eau sugar estate.

Defining Indentured Labor in Mauritius

The question of how to define the indentured labor experience in Mauritius, particularly in comparison to slavery, has generated much scholarly work based on archival records. In 1974 Hugh Tinker famously dubbed the indentured system "a new system of slavery," but since then, historians have advanced more nuanced understandings of indentured immigration. Tinker did not take into account a range of factors: the greater personal agency of indentured men and women (Lal 1980, 1998) relative to the enslaved; the fact that indentured labor recruitment as well as coercion changed over time (Bates 2017); and the important role returnee laborers had in recruitment practices (Carter 1995). Anderson (2009) argues that the categorization of indenture as slavery neglects the process of Indian slavery and the new colonial approaches to incarceration and confinement that blur the boundary between indenture contracts and convict sentences. Further, she explains that emigrants, who returned to India after finishing their sentences early, would choose to migrate again. Hurgobin and Basu (2015) similarly describe indentured workers as "globally mobile," participating in trans-colonial migration between Asia, the Indian Ocean and the Caribbean in the nineteenth century. Carter (1995) has argued that as

mobile laborers in India, many were already vulnerable to exploitation when recruited into indentured contracts, especially during periods of drought and famine. Some were convicts sentenced to overseas labor, while others signed themselves up out of economic necessity.

Indian Ocean scholars have noted that for land-bound people, the concept of stepping aboard ships and voyaging to foreign lands was terrifying, summed up in what was referred to as the Kala Pani or "black waters," a combination of the waters themselves and the experience of dislocation. Anderson (2009: 104) argues that Indians believed the transportation and migration of indentured laborers led to "social rupture and permanent loss." The dread of the Kala Pani included the loss of caste and religion through forced interaction with members of other castes in the confined spaces of ship, such as having to consume food with, or prepared by, those in other castes (see also Brown and Mahase 2009 and Kumar 2016 for the indentured experience of shipboard food and drink). It has been difficult for historians to reconstruct caste data due to regional variation in the perceived status of specific of castes and tribal groupings and misunderstanding or misrepresentation by colonial archivists. Carter (1995) and Lal (2004) nonetheless have shown that people from the lowest to highest caste groups became indentured immigrants, though planters' preferences in recruits changed over time in favor of agriculturalists and artisan caste members. An overemphasis on the connection between the Kala Pani and caste anxiety for all indentured migrants must be cautioned. Not only did approximately 20% of indentured laborers return to India after the five-year contract, but many went on to encourage kin and village members to make the voyage, becoming instrumental in recruitment of new laborers (Carter 1995, Bates 2017, and Kumar 2017 all argue for the importance of these informal networks in India). A smaller number of laborers chose to re-contract themselves to the

same estate, or boarded sailing vessels bound for other colonies such as Natal, Guyana, and Trinidad.

Colonial administrators were clearly concerned about whether Indians made for 'suitable' workforce, particularly in comparison to slaves, because they periodically collected and compiled reports on the status of indentured laborers, first to gauge how the system was working, and second, to assess reported abuses on estates, particularly after the five-year hiatus on indentured immigration ended (MNA HA101 and HA73). Colonial administers wanted to see equal labor output without the system looking too similar to slavery. These reports were partially based on the word of the landowner and partially on observations of local magistrates. Colonial officials asked for landowners' perspectives on the quantity and quality of work an indentured laborer would perform compared to a slave, and potentially equally subjective reports on the overall health of indentured immigrants based on how many days they had fallen sick, and the number of laborers who were absent for certain periods of time (MNA HA73 1844). For example, an owner of Brad d'Eau, Ulcoq, reported in 1844 that among his laborers, "The average of sicknesses 10%, chiefly in first six months—of absences without leave 5 to 6 %, chiefly in the last six months" (MNA: HA101). Overall, planters in the district of Flacq reported in 1845 that on average, 8% of laborers were absent for longer than two weeks and 3% were absent for less. When asked to compare the amount of work done daily, Ulcoq reported, as all other planters did, that slaves could dig 80 holes and fill 1½ carts of canes; apprentices (former slaves) could dig 60 to 70 holes and fill 1 cart; and Indians during their first year could do a little less than the apprentices and after their first year would do about the same as the apprentices.

As described earlier, Mauritius has a long history of maronnage, a pattern of resistance that continued into the indentured period. Initially, colonial administrators thought that the

branch of the colonial police department responsible for finding and returning fugitives from slavery, *chasseurs de police*, would be unnecessary after abolition. Planters and the colonial government soon realized, however, that desertion, absenteeism, and vagrancy among the indentured labor population would remain a problem, and therefore the *chasseurs de police* continued to operate into the period of indenture. Nested in nineteenth-century science, assumptions based on essentialized traits of racial ethnic groups were built into the structure of such colonial reports. For example, the number of absentee laborers reported on each estate was subdivided based on their ports of departure: Bengal, Madras, Bombay, Madagascar, and Chinese [sic], thus the report inherently presumes that ethnic/racial identity might be a factor in laborers' propensity to be absent (see Table 3.0). In reality, place of origin did not seem to matter much. A slightly higher percentage of immigrants from Bombay were absentee, but immigrants from Bombay only made up 7% of the total number of immigrants, whereas almost equal numbers of immigrants came through Bengal and Madras.

The maintenance of Indian religious practice by Indian and Chinese immigrants is a significant point of difference between the way enslaved and indentured laborers were treated. Enslaved men, women, and children converted to Catholicism either by force or coercion by French owners throughout the eighteenth century. For example, near the center of the Bras d'Eau estate on the main road, one of the earliest roads built on the property, a Kalimai shrine stands with a Shiva Lingum, the phallus representing the Hindu god Shiva. Many more small shrines sit among the tall green stalks of sugar cane, on plantation lands, and are only visible when the cane is cut. These vary in size and are usually built into, next to, or shaded by a tree.

Roadside shrines of various sizes are also common throughout Mauritius and can be attributed to Catholic, Hindu, and Tamil religious practices. Such shrines include the more

elusive *longaniz,* locally thought of as evidence of witchcraft, but more neutrally understood as a "Mauritian syncretic belief system borne out of a range of African traditions" as described by Seetah (2015: 2) (see also Colwell-Chanthaphonh and Salle-Essoo 2014 and Caval 2018). Couacaud (2013) argues that Kalimai shrines are a distinctive Mauritian feature, smaller than a temple but more substantial than the roadside shrines. The Kalimai at Bras d'Eau is still in use, frequented by local people and Mauritians who work in the national park.

At the end of the nineteenth century, laborers who had no intention of returning to their homelands began to invest locally in the land, landscape, and country by building larger temples and mosque at the edges of plantations and in villages (Claveyrolas 2018: 23). In addition to temples, mosques, and shrines found in villages and on former plantations, in the center of Mauritius's mountainous southern half stands a crater lake called Ganga Talao or Grand Bassin. There are several different legends about the lake, but most say that in 1897 two priests, Shri Gossayne and Sajiwon, saw in a dream the lake being filled by or springing from the holy river Ganges in India. In 1898 Pandit Giri Gossayne led his Hindu followers on the first pilgrimage to Ganga Talao from the village of Triolet on the northwest coast of Mauritius (Claveyrolas 2018). It is a distance of 50 km, almost the full length of the island, and rises from sea level to 550 m in elevation. Every year, there is an island-wide festival and pilgrimage called the Shivratri during which thousands of Hindus walk to Ganga Talao and purify themselves in the sacred waters. Other legends say that the lake is connected directly to the Ganga by subterranean channels, or was filled from a tear shed by the goddess Ganga as she witnessed Indians voyaging for Mauritius and then carried by the god of the winds, Vayu, to Mauritius (Eisenlohr 2004: 86).

Grand Bassin is one of the destinations nineteenth-century European 'gentlemen travelers' visited and later wrote about in their published journals, along with sketches of the

landscape and Mauritian people (Holman 1835; Beaton 1859; Flemyng 1862; Boyle 1867; Pike 1873). They invariably describe the many deer in the dense forest vegetation around the lake, the elusive giant fresh-water eels, and local lore of the unfathomable depth of the water, but two accounts suggest that the Ganga Talao became a place of religious importance well before the 1890s. Boyle (1867: 93) writes that on the edge of the lake is a "a mud hut, bedizened with sundry bits of dabbled dripping calico of every sort of color bespoke an Indian place of pilgrimage. All I could learn about it was that a cock is always sacrificed by the pilgrims, and that the principal rite consists in gourmandizing." Pike (1873) includes a sketch of Grand Bassin, and on the southwestern bank of the lake he depicts several rectangular buildings with peaked roofs and a single round building with a domed roof, typical of Hindu temples in Mauritius. Perhaps the Ganga Talao came to embody the social memory of Shivratri and of bathing in the river Ganges as a means to mitigate the fears of pollution after the Kala Pani, such that practicing Hindus could purify themselves without returning to the homeland. This material conscription of the Indian river Ganges into the Mauritian landscape was conceptualized from a self-awareness of the migrant past.

History of Bras d'Eau

First Concession under French Colonial Rule

Bras d'Eau sits in the main region of Mauritius where exploited ebony forest once grew; therefore, even prior to permanent settlement in this area the landscape would have already been dramatically altered by Dutch exploitations. The French East India Company granted a "937 arpents 87 square perches" (396 ha) land concession to brothers Michel and Louis Claude

Champeaux in 1786 for rearing animal herds (MNA LC 13: 47). Comparing archival maps of this region over time provides a sense of how quickly the landscape changed, as spatial connections were drawn across the property in the late eighteenth and early nineteenth centuries. A map of the region from 1795 shows the name of the Bras d'Eau proprietor Champeaux, with no property boundaries drawn, amidst mostly unclaimed territory as far as the coast (Fig. 3.1, MNA: Garnier). The coast to the east appears to be vacant, indicating the land was still officially unsettled. Michel Champeaux developed the property into a working farm. According to census records, in 1788 he owned 26 enslaved men, 20 women, 13 boys, and 4 girls, as well as 3 horses, 50 cows, 46 calves, and 100 pigs (ANOM G/1/476: 329-330). It is unclear whether any cultivation was undertaken by the enslaved men and women, but raising livestock was critical for the island's growing population. The demarcation of the land for the Champeaux concession, though seemingly simple, was an important form of landscape transformation because it defined the space within which all subsequent activities occurred. The original property lines can still be seen from satellite imagery today because of how much the land inside those boundaries was altered (Fig. 3.2). Furthermore, intentionally imported species such as deer, pig, cattle, cats, and mongoose, and unintentionally introduced species such as rats and insects have had a major impact on Mauritian ecosystems, by destroying local flora and fauna, enabling other exotic species to flourish, and changing soil chemistry and decomposition processes (Seetah 2018: 293-4). At Bras d'Eau, raising some 100 cattle and 100 pigs would have dramatically altered the local ecology.

Jean and Magdelaine Baptiste

By 1801, the remaining surrounding land had been granted as concessions to other French settlers and Champeaux property lines were defined essentially as they remain today, with one exception. The western adjoining property of c. 30 ha is the only land not originally part of the Champeaux concession, but was later incorporated into what became the nineteenth-century Bras d'Eau sugar estate. On a map from 1795 and in census records, this plot of land was owned by one Jean Baptiste. A map drawn in 1801 shows that the remaining land in the region had been partitioned (Fig. 3.3, MNA B3/A2.1/12, Garnier). Accuracy of map-making clearly improved, such that we are able to overlay historical and current property boundaries to show they were the same, with the exception of Baptiste's land on the west, now labeled "J. B^{te} noir libre" (i.e. free Black) (MNA B3/A2.1/12, Garnier). A map dating to 1813 shows Bras d'Eau was accessible from a road that passed through Baptiste's property to the west, connecting to the larger trans-island thoroughfare (see Fig. 3.4, MNA A3/A6.5/2, Walker). Baptiste's land was incorporated as part of Bras d'Eau by 1840 (MHLM 130, 115-118). Other than the roads themselves, no other archaeological features were discovered on Baptiste's portion of the park during ground survey. Large sections of the forest in this area were practically impenetrable due to wild undergrowth. It is possible that any features built and used by Jean Baptiste were dismantled as the sugar plantation was established or were ephemeral in nature and may be detected in the future using remote sensing techniques such as LIDAR. French colonial census records of 1788 list Baptiste and his wife Magdelaine as *gens de couleur libre* (i.e. free people of color), both from Mozambique (ANOM G/1/476: 359). The profession of Baptiste is "*Noir de détachement allant à la poursuite des noires marrons,*" a Black member of the troops who would have chased maroons or runaway slaves (ANOM G/1/476: 359).

Allen (1999, 2002) and Vaughan (2005) have argued that white settlers' fears of maroons, prevalent under Dutch, French, and early British colonial rule, were as powerful a motivator for the formation of *chasse des marrons* (slave hunts) as were the real rates of maronnage: by the 1820s, c. 11-13% of the 62-65,000 enslaved people every year. As urban spaces began to expand and forests dwindled from exploitation, it is also possible that maroons were not living in marginal communities, but made their way to the capital in the hopes of being lost in the city crowds, to find work as free laborers or escape on an outbound ship to return to Madagascar or the African continent (Vaughan 2005: 265). Jean and Magdelaine Baptiste likely interacted with enslaved people, many of whom were also born in Mozambique or elsewhere in East Africa and who might have attempted to escape bondage themselves.

On the other hand, Allen (2002: 147) notes that free persons of color and enslaved people could have strong relationships with one another, evidenced by the fact that "entries in the colony's police registers confirm that free persons of color often willingly helped fugitives evade detection and capture." As such, the French 1723 Code Noir stipulated that free people of color, if caught aiding maroons, received a heftier fine than white people, the assumption being that they needed a greater disincentive to come to the aid of runaway slaves. The relationships between the enslaved men, women, and children, and growing number of *gens de couleur libres* such as Baptiste, were understandably complex and warrant further scholarly attention. The landscape provides only a hint of the brutal history that surrounded the Bras d'Eau property during this early period; nevertheless, the plantation has its place in the deeper legacy of maronnage in Mauritius.

Ownership, Roads, and Neighboring Estates during British Colonial Rule

Prior to survey and mapping I undertook, the only maps of the Bras d'Eau estate consisted of the property boundaries described above, roads that passed through the estate, and occasional indications of the location of the sugar mill. Archaeological survey of the site revealed that the estate land is divided into rectangular blocks by a network of 35.5 km of road beds on elevated basalt platforms, approximately 4-8 m in width, and not drawn on island-wide maps (Fig. 3.2, roads in gray).

Archival maps of Mauritius dating to the early 1800s depict two roads, suggesting that the modern road running north-south, and an earlier road running through Baptist's land from east-west, were meant for public use, whereas all others were built for and by the estate. Transporting sugar c. 45 km overland to ships in the coastal entrepôts of Port Louis, Grande Rivière Sud-Est, or Mahébourg was costly, and transport by sea was also used. Roads are discussed further in Chapter 4. Many plantation owners controlled multiple estate properties, often in the same district, and they may have invested in these substantial road constructions to connect and consolidate their neighboring properties under one family. As demonstrated by the chain of ownership below, when the property changed hands throughout the nineteenth century, the new proprietors always already owned land in immediate vicinity of Bras d'Eau.

In 1816 Pierre André Carcenac and Marie Dessachy purchased Bras d'Eau (Rouillard 1979: 65). They also owned and purchased three other estates between 1816 and 1819, including Haute Rive, Beau Séjour, and Beau Port in neighboring districts to Bras d'Eau (Rouillard 1979: 65). According to the slave census from 1817, Carcenac owned 168 slaves (MNA T71/572). From 1818 onward, the main, paved road that runs north-south through the property today appeared on maps, directly connecting Bras d'Eau and Haute Rive (Fig. 3.2). Perhaps other

internal roads were established under the ownership of Carcenac as well. Carcenac died of cholera in 1819 and the property, then including 256 enslaved men, women and children, passed to Mme. Dessachy until she remarried in 1821 to Jean François Frédéric Rouillard, resident of the nearby northern town, Poudre d'Or, and Bras d'Eau came under their joint ownership (MNA NA38/73).

The roads demonstrate that those living on the plantation cared about interaction with adjoining properties. All three of the adjoining plantation properties have evidence of sugar mills. The Choisy estate borders Bras d'Eau to the south and contained both a water mill and steam mill of 6-horse power (Rouillard 1979: 269). Less than 5 km to the north was the mill of the coastal, territorially larger Roche Noire Estate, owned by K. Jean and sons, though it was divided into smaller land parcels later. Petite Retraite is also less than 5 km to the southwest, slightly larger and connected by land to one of the first roads that stretched across the island. Centralization of milling in the last quarter of the nineteenth century would have made such cross-boundary roads a desired advantage for estates whose own mills were shut down.

Following Carcenac, Dessachy and Rouillard, Bras d'Eau was briefly co-owned from 1835 to 1840 by Louis le Breton, Charles le Breton, and Adrien d'Epinay, all prominent land owners and political figures in Mauritius at the time. Adrien d'Epinay was an anti-abolition lobbyist and ultimately played an instrumental role in getting slave owners financial compensation for 'lost property' after abolition was passed. The end of the 1830s seems an odd time for them to invest in a new property, given the turmoil around slavery. From 1841 to 1904 Dr. Clément Jean Ulcoq and Mme. Jeanne Louise Laure Lucas and her descendants, were the last private owners Bras d'Eau, though they drew investment from other speculators. Most likely many of the ruins we uncovered on the site relating to sugar production were erected under their

watch. The family owned large estates in the northeastern region around Bras d'Eau—Bel Etang, Bonne Mère, Belle Vue La Nougarède—and one in the district of Moka named Côte d'Or (Toussaint 1942: 791).

At Bras d'Eau the number of indentured laborers fluctuated from year to year (see Table 3.0). With the periodic expiration of labor contracts there was a rotating population of new and established immigrants living and working together. A record from 1845 shows 293 laborers engaged to Bras d'Eau from the three main ports or districts in India, Bengal, Madras and Bombay (MNA: HA101). One year later, there were 35 married men, 379 unmarried men, 35 married women, 35 unmarried women, 32 male children, and 29 female children, a total of 545 laborers contracted to Bras d'Eau (House of Commons 1847: 187). Their housing reportedly consisted of 5 barracks and 54 "huts" of various sizes (HMSO: 1847). In 1864, the Protectorate of Immigrants reported that 251 laborers were working at Bras d'Eau: 141 new male laborers, 50 "old" (re-contracted) male laborers, and 60 women (MNA: Series). The precise racial, caste, or regional breakdown of Bras d'Eau laborers is not available, so we assume that most of the laborers were from India; however in 1841, 10 Chinese men arrived from Penang to work at Bras d'Eau, and it is possible there were more coming from ships departing from Indian ports (MNA RA667).

Population fluctuation would also have been caused by the high mortality rates stemming from epidemic-level breakouts of diseases such as malaria and cholera that swept through the island. It is less clear whether laborers had to move between estates over short periods of time, because they might be engaged to a proprietor who owned a stake in multiple properties with variable labor requirements. As noted above, the estate roads that extended over the property boundaries and into adjacent properties could easily have facilitated such movements. While the

scattered archival records indicate hundreds of indentured laborers were specifically contracted to Bras d'Eau, Ulcoq & Co. may have easily moved workers around to other estate depending on where the labor was most needed.

Closing of the Mill

Perhaps due to island-wide mechanization and consolidation of sugar production, drought, epidemics, unstable sugar prices, the sugar mill at Bras d'Eau officially closed in 1868 and the *Mauritius Almanac* lists all 1100 arpents of Bras d'Eau as "uncultivated" (MNA Bolton 1868: 148). In the following year, for the first time since 1851, Bras d'Eau no longer appeared on the list of sugar estates in Mauritius (MNA Bolton 1869: 496). The cultivated fields were abandoned for the next 36 years; however, 'abandoned' is misleading because it remained occupied for the following three decades. The last will and testament of Bras d'Eau's last private owner, Mr. Louis Jean Arthur Michel, states that he held residence at his home in Curepipe, the central plateau of Mauritius, *and* at Bras d'Eau. Arthur Michel died a childless bachelor in 1901. He left his sister Caroline Michel as heiress to the estate (MNA NA 118/314). Married and living in France at the time, she put the property and all possessions up for auction (MNA NA 118/307; NA 308).

The list of items auctioned on the 21st November, 1903, from Michel's Bras d'Eau estate demonstrates a well-furnished house, including serving dishes, plates, and teawares "en placage," likely meaning decorated, chamber pot, 173 bottles of wine, a bottle of whisky, satin drapes, various pieces of furniture and several high-priced items, such as a full-sized wooden canopy bed, large iron bed, two mirrors, several clocks, armoires, one gold chain, one gold clothes pin, and a double-barreled shotgun (MNA: NA118.308). The inventory contained no

livestock. A manioc mill, corn mill, and various agricultural or gardening tools such as hoes, shovels, watering cans, wheels, and iron bars, were auctioned off. These tools may have been remnants from the previous functioning of the estate or may signal that small-scale domestic agriculture or gardening was still taking place after the mill itself was closed. When the Mauritian government purchased the property in 1904, the land “was partly planted with canes, but the same are now abandoned and of no value" (MHLM TJ 100/ 12; TJ 2/10).

Colonial Forestry Department and National Park

In 1904 the Mauritian Colonial Government purchased the land with the intention of reforesting the region, which effectively preserved the archaeological remains of the sugar estate over the last century (Rouillard 1979). An increasing concern over deforestation of the island, paired with anti-malarial campaigns in the twentieth century, became a powerful motivator for the colonial administration to take steps to modify the landscape by planting thousands of non-endemic trees. European health professionals, realizing that swamps seemed to breed the disease, assumed it came from "bad air,” “spores” in the air, or “marshy exhalations.” This was based on the longstanding belief in *miasma*: that disease comes from bad air in poor environments. The colonial administrators believed that the construction of gardens and tree-planting would drain swamps and eliminate dense vegetation and rotting organics, thus reducing miasma-producing elements (Beattie 2012: 109).

In the nineteenth century *Eucalyptus globulus* in particular, a species native to Australia, was believed by doctors and forestry administrators to have great healthful properties due to the species’ ability to absorb large quantities of water from the soil, thus draining swampy land, and

to secrete oils that rid the surrounding air of miasmas (Bennett 2011: 129; Beattie 2012: 110). Malarial fever hit the northern low plains and western leeward coast of Mauritius the hardest, and in multiple reports from the late nineteenth and early twentieth century, Bras d'Eau among other regions is identified as a hazardous marshy area (Tessier 1870: 700; Small and Power [1870s]: 8; Anderson 1892: 728, 1918; Ross 1908). Medical scientists continued to debate miasma theory in the nineteenth and twentieth centuries. Davidson's (1892: 685) concluding remarks on Mauritius note that it is unclear whether "the air or the drinking water be the more common medium by which the malarious contagion, developed in marshy soils, makes its entrance into the system." Even after Ronald Ross's discovery in 1897 that Anopheles mosquitos are the vector for malaria and not noxious air, Eucalyptus remains a preferred tree and sometimes recommended treatment of choice. In a later volume, *The Epidemics of Mauritius with a Descriptive and Historical Account of the Island,* Anderson (1918: 135) recommends eucalyptus oils be administered to cholera patients (local medical practices are discussed further in Chapter 4).

Forestry records from early 1900s describe Bras d'Eau as a nursery for experimental imported plants, such as mahogany, toons, eucalyptus, and acacia, many species coming from Australia via Indian forestry actives (Forestry Service 1906 – 1925). The Forestry Department used both the cleared rows in agricultural fields and open spaces inside structures and yards to plant new trees. During the second half of the nineteenth and twentieth centuries, the seemingly contradictory endeavors of forest conservation and lumber production went hand-in-hand with the British establishment of forestry services and rise of forestry science[6] (see Kumar 2011 for

[6] Grove (1995: 168-263) also argues conservation efforts on Mauritius began in the eighteenth century with physiocrat, Pierre Poivre, who studied Chinese, Indian, Zoroastrian, and Dutch environmental knowledge systems, thus challenging western notions of cultural imperialism.

forestry in India). The development of the techno-science of terraforming also took place in the colonial landscape of tropic diseases. The expansion of imperial infrastructure projects such as ship building and railroad construction necessitated the rapid renewal of lumber forests. Through the 1820s, however, the Forestry Department reliably spent more money at Bras d'Eau on reforesting with eucalyptus and other tree species than they could make back from lumber profits from the land.

Mr. Deepak Budree, an assistant park ranger at Bras d'Eau National Park today, informed me that more eucalyptus trees once grew in the park, a residual of the 1950s anti-malaria campaigns, but many were cut down within the last 40 years and replaced by other species. The Bras d'Eau forestry service had a staff of around 200 men to undertake large-scale projects such as reforestation and construction of large stone walls around the mango orchards (and archaeological ruins). Across the island, the malaria eradication efforts included drainage of marshes, rerouting of rivers and streams, and afforestation (Bruce-Chwatt and Bruce-Chwatt 1974: 1075). In the 1960s and '70s, other Eucalyptus strains such as the *E. hybrid, E. camaldulensis* and *E. tereticornis,* the species found at Bras d'Eau today, were believed to be better suited to warm climates than *E. globulus* (Bennett 2010). Afforestation efforts coincided with a widespread spraying of DDT and hexachlorocyclohexane (HCH) on the inside surfaces of houses, temples, churches factories, and animal sheds around the coastal areas of the island where malarial infection was pervasive (Dowling 1951). The eradication program was effective and in 1973 the World Health Organization declared Mauritius malaria-free. One year later an

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Poivre is also fictionalized in Amitav Ghosh's novel *River of Smoke* (2011), the second volume in his *Ibis* trilogy that spans the Indian Ocean world.

article appeared in the *Bulletin of the New York Academy of Medicine* by Bruce-Chwatt and Bruce-Chwatt (1974: xx) declaring: “Malaria in Mauritius—As dead as the Dodo.”

In 2011, the Mauritian government designated the Bras d’Eau National Park, recognizing that the land was plantation forest but had become a sanctuary to multiple endemic flora and fauna. The park includes the former Bras d’Eau estate and a tract of land north of Bras d'Eau's eastern end that skirts the coast and includes the large brackish lake, Mare Sarcelle. Although larger region is known by local people for this swampy lake and brackish ponds, and for the underground rivers in lava caves in the northern town of Roches Noire, historically the estates of this region were sensitive to drought (Rouillard 1979). The process of the long-term and ongoing island-wide ecological change is evident in the material landscape of the site today. Already having undergone deforestation under Dutch colonial ebony exploitation, during the period of enslavement the landscape of Bras d’Eau and the surrounding area were drawn into the local intricacies of global labor practices. As slavery transitioned to indenture, life was punctuated by the intersection of sugar, creativity in everyday life and resistance to disease and colonial hegemony in domestic spaces.

Within the boundaries of the original 43 ha estate, virtually none of the c. 7.3 ha of ruins in the park had been documented before the present project (see Fig. 3.2). In the next chapter I analyze the domestic landscape at Bras d’Eau.

Figures and Tables

Figure 3.1 A georeferenced early map of the region around Bras d'Eau showing Champeax and Jean Baptiste as property owners, but no concessions northwest of the current park location, MNA: Garnier 1795

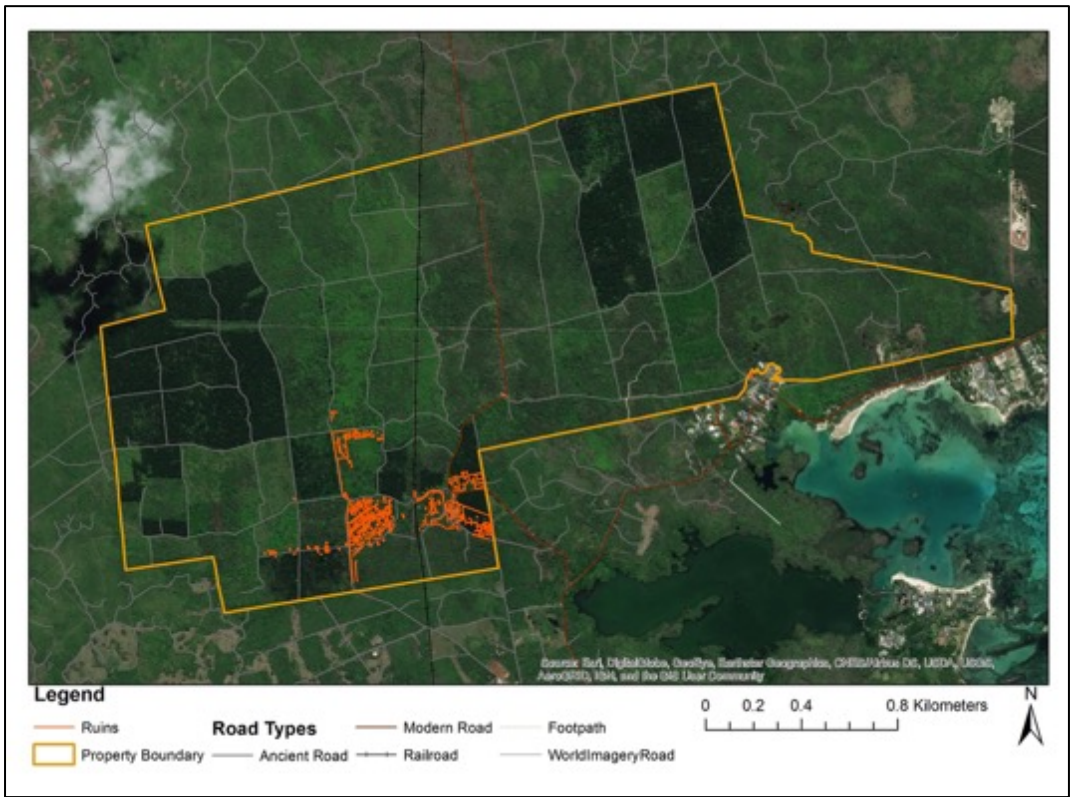

Figure 3.2 Map with satellite imagery of Bras d'Eau National Park showing historic roads, ruins, and property boundaries.

Figure 3.3 Map of properties of Michel Champeaux and Jean Baptiste showing the surrounding properties have now been claimed. Garnier. (c. 1801). *Quartier de la Riviere Du Rempart*. Remounted in 1958. MNA: B3/A2.1/12

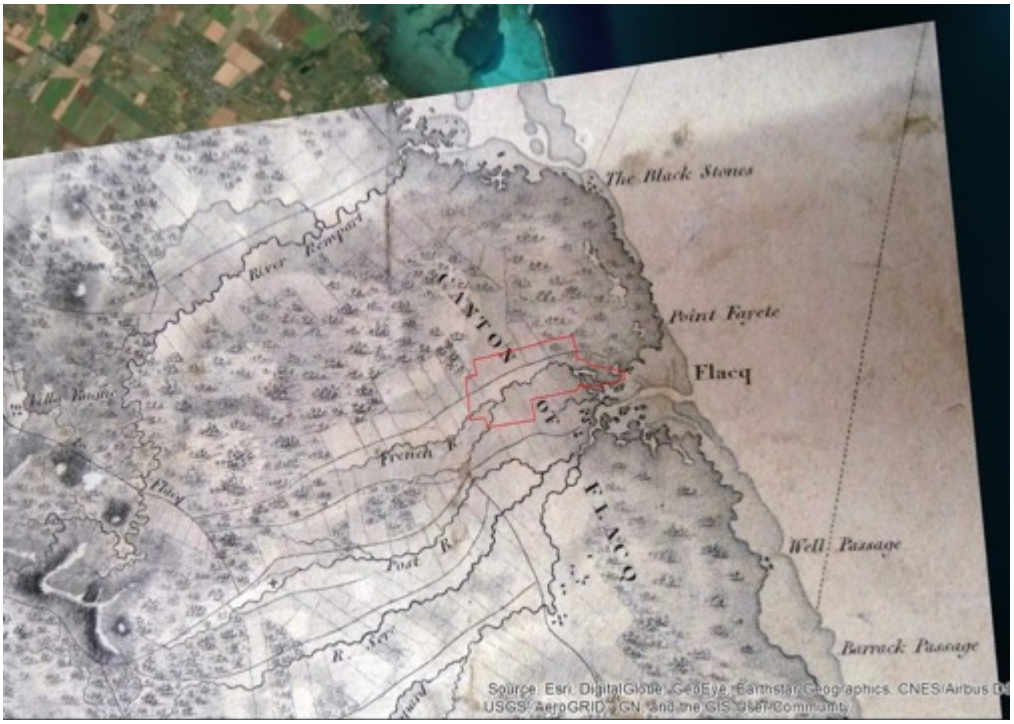

Figure 3.4 Map of region around Bras d'Eau showing roads and agricultural land. Walker 1813, MNA A3/A6.5/2

Date	Owner or Manager	Number of Laborers							Other Notes		Reference
		Men		Women		Children		Total			
19 March 1844	Ulcoq & Co.					*Male*	*Female*		*Observations on the conditions of the Indians*	*Description of Lodgings and Hospitals*	
		235		31		7	9	295	Good conditions, 13 deserters	One dwelling place 130 ft. long & 15 broad. Two others- 40 ft. & 12. 40 cottages covered with straw of 20 & 16 ft. long and 14 & 12 ft. broad. One hospital, 50 ft. long, 20 broad	HA101, 263
23 July 1844	Ulcoq & Co.	257		25		16		298			HA101, 267
1847	Ulcoq & Co.	*married*	*unmarried*	*married*	*unmarried*				*Description of Buildings*		
		35	379	35	35	32	29	545	5 Barracks, part stone and part wood of various sizes. 54 Palisade huts of divers dimensions, divided according to size.		British Parliamentary Papers, 187
1864	C. Grivot	*New*	*Old*	*Engaged*	*Not Engaged*				*Estate Land*		
		141	50	..	60	absent or not recorded		251	1007 arpents of land		Protectorate of Immigrants, R
1865	C. Grivot	141	50	..	66	absent or not recorded		257	1009 arpents of land		Mauritius Almanac, 147
1868	Mrs. Michel & Menneville & Mr. C Ulcoq	0		0		0		0	1100 arpents of uncultivated land		Mauritius Almanac, 148

Table 3.0 Number of immigrants engaged to Bras d'Eau

YEAR	Land under cultivation Sugar cane (Mauritius is 545,760 arpents)	Number of sugar mills	Sugar production in tons
1766	Less than 50,000 arpents cultivated in total		
1789	1000 arpents	8-10	300
1803	6000 hectares		
1810	9000-10,000 arpents		3000-4000
1825	24,000 arpents	157	21,000
1830	51,000 arpents		
1860	129,000 arpents	303	
1864	-	262	
Data drawn from Storey 1997: 27; Teelock 1998; Allen 1999:12-17; Vaughan 2005: 257; Allen 2008: 152			

Table 3.1 The amount of land under cultivation, sugar mills and sugar production in Mauritius over time

Chapter 4: The Domestic Landscape

In this chapter I discuss the domestic landscape at Bras d'Eau. I analyze the residential quarter with barracks and houses, and what these structures reveal about plantation life (Fig. 4.0). As demonstrated in the previous chapter, the landscape of the Bras d'Eau plantation can be approached through archaeological and archival lenses, both of which provide an enduring record of meaningful actions in the past: the desires, agency and experiences of both estate managers and laborers. This analysis is informed by archaeologists who consider the landscape as a material sociocultural construction and, in turn, as having the capacity to organize and establish social relationships (Robin and Rothschild 2002: 161). Archaeological research sits at the intersection of the physical landscape—ruins or the built environment, and geographic, geological, or otherwise 'natural' features—and landscapes in the abstract—the cultural landscape, religious landscape, healthscape etc. Recognizing that archaeological landscapes are neither timeless nor static, constructed through human agency and continuously informing human interaction, the notion of process has become central to landscape archaeology (Ingold 1993; Hirsch 1995; Beaudry and Mrozowski 2001). One must, therefore, juggle interpretations of the landscape as venues though which ideologies are expressed, on the one hand, with interpretations of how ideologies informed social behavior and cultural action, on the other. In other words, it is perhaps more productive to consider people as a part of the landscape, rather than separate from it. Below I discuss the interconnection and organization of roads, centralization of infrastructure, quality and orientation of structures, and artifacts as indicative of landscape use.

The data for the landscape analysis advanced in this chapter are founded on the detailed digital map of the above-ground ruins I created as one outcome of my archaeological survey (Fig. 4.0). My analysis engages the archaeological landscape as embodying dynamic processes of daily life, as well as a means through which one can understand the cultural landscape of immigrant laborers.

As Mauritius transitioned from slavery to indenture, landscapes built by enslaved men, women, and children were a palimpsest on which new immigrant laborers forged communities of shared practices. As far as could be determined through the archaeological survey, Bras d'Eau did not have a "big house" or "master's house." As mentioned previously, archival records list a 30 x 30 ft., 4-roomed 'strangers' residence' that perhaps functioned as the owner's house when he or she stayed on the estate (Pragassa 1860: 329). The fact that the proprietors did not live on-site full-time already distinguishes the spatial layout of Bras d'Eau, and social dynamics of power in the indenture period, from other plantations on Mauritius where absentee landowners were rare in comparison to the British Caribbean (Burnard 2004). Nevertheless, it is plausible that molding the landscape to facilitate surveillance and control of one's workforce remained a concern, if not a central one, for planters into the indentured period.

The Plantation's Spatial Layout

The occupational history of Bras d'Eau spans 118 years (see Ch. 3 for historical context). The c. 28 km of roads at Bras d'Eau demonstrate a huge investment by plantation owners, their presence in the landscape today a testament to the quality and skill of the masonry labor that went into their construction at least 150 years ago (Fig. 3.1). The road network runs across

outcrops as well as level terrain, but where necessary, long platform-like sections were dry-constructed by moving basalt boulders plentifully located over the ground surface. This raised the road height above the many hollows in the terrain to maintain a good traveling surface. Roads at Bras d'Eau had multiple functions. Most obviously, the roads were used to transport cut cane to the mill and refined sugar to the main international shipping ports, until the northern railroad line opened in 1864 which passed through Bras d'Eau. Cart wheels wore grooves into the stones, particularly evident on roads that led directly to the mill, indicating the most heavily used routes on the estate. As discussed in Ch. 2, the establishment of at least two roads at the end of the eighteenth and beginning of the nineteenth centuries indicates that infrastructure was developing before the plantation itself was producing sugar. The choice to construct the mill where it stands today may have had much to do with proximity and access to the earliest roads in the region.

The roads also organized the property into segmented blocks. The ruins at Bras d'Eau follow a clustered settlement pattern or the "nucleated plantation village" spatial layout seen across plantations in the Americas (Ch. 1 and 2; Upton 1984; Fennell 2011; Singleton 2015). With the exception of the lime kiln which is in Zone 5, the sugar mill, other work buildings, and domestic quarter are all clustered in the southeast region of the estate on c. 7.5 ha. However, within this centralized 'village' the roads separate domestic spaces from labor spaces. This demarcation of the land articulates with the western capitalist tradition of distinguishing between "domestic life" and "industrial/work life," evident, for example, in the ordering of the hourly work day or five-day work week (Johnson 1996: 3). The clustering of the distinct domestic sphere and labor sphere on the plantation (Battle-Baptiste 2011: 85) reflects the capitalist ethic of the division and regulation of labor and time through the efficient organization of space.

The remaining c. 420 ha of the property consists of plantation fields, with thousands of long, low rows of basalt fieldstones and furrows, spaced at 1 m intervals, created by laborers as they cleared land for planting (Fig. 4.1). Due to the rocky nature of the land, to cultivate sugarcane the laborers also dug holes between the volcanic stones, moving them with crowbars to plant the canes, but soils were known to be fertile (Clark 1859: VI). The stone furrows appear on no historic maps, and themselves are challenging to date archaeologically. They may have been moved by enslaved laborers for growing sugar or other crops, lessening the burden for the next wave of laborers. The coarse rock at Bras d'Eau dictated the bodily experience of laborers when they had to crack through the crust of basalt to create pockets for planting and to move rocks into neat lines to plant the sugar cane. The furrows also evoke the process of cutting the sugar cane, a notoriously difficult labor. Regardless of whether all the roads and fieldstones were created during the first occupation phase, we know that the establishment of the first roads at Bras d'Eau connected the landscape to the rest of the island and created the foundation upon which indentured laborers could produce and transport sugar cane.

Lastly, the roads also provided an elevated view from which one could observe laborers in the fields, at least when the cane was not too tall, and in other workspaces. Northern and western roads around the laborers' quarter are at ground level; however, walking along the road that encircled the quarter on its southeast side would have provided an elevated view of at least the outer sections of the quarter, and the few roadside structures and agricultural fields on the southern side of the road (see Fig. 4.2). For plantation mangers and overseers, ensuring easy surveillance of fields and workspaces may have critical, whereas surveillance of domestic space may not have had the same stakes during the indentured period as during slave period, when people represented not just labor, but property and capital.

Plantation Landscape Archaeology

Multiple meanings and ideas can exist in landscapes and as such a single location can be multiple places for different people (Thomas 2001: 176). Recognizing that simultaneous and perhaps conflicting landscapes can coexist allows for western and non-western understandings of time, landscape, and place (Atalay 2012; Hantman 2013). Within the colonial context, non-western laborers conceptualized themselves and their relationship to the landscape on their own terms (e.g. Upton 1984; Chan 2007a; Kraus-Friedberg 2008; Reilly 2015). Landscape features are usually considered 'immovable' data, differentiated from portable artifacts; however, space is malleable, constantly altered, and reorganized through intentional and unintentional actions (Rubertone 1989: 50). The spatial distribution of artifacts is a part of the landscape.

Archaeologists of plantation landscapes have emphasized the various methods of control and discipline exercised over laborers through materialized space. Planters' perceived needs to build an environment that facilitated panoptic visibility and surveillance of their slaves (Delle 1998, 2002, 2016; Armstrong and Kelly 2000; Epperson 2000), and efficient functioning of the agricultural production (Orser and Nekola 1985; Ryden 2000; Bates 2015), were tempered with their desire to shield from view the 'unsightliness' and 'filth' of the slave village, particularly from the owners' family and guests (Chan 2007a; Singleton 2015b). Historical archaeologists working on plantations in the Atlantic have found that plantations were modeled after sixteenth-century Italian architect Andrea Palladio's ideal villa where the 'great house,' in a neoclassical architectural style and situated atop a hill, visually reinforces the hierarchical relationships on the plantation (Singleton 2015b). The literal embodiment of hierarchy in the landscape also allowed the plantation owner to observe those living and working below, and for laborers in turn to be

reminded of the (seemingly) ever-present, watchful slave owner (Epperson 2011; Lenik 2011). Seetah et al. (2018) argue that the barracks on the Mauritian Trianon sugar estate were situated conveniently between the owner's house and plantation fields; slave or indentured laborers remained within eyesight while maintaining racial and ethnic hierarchical segregation. Of the more extreme forms of surveillance, Singleton's (2015a) study of the Cafetal Biajacas coffee plantation on Cuba, and Kelly's (2008) study of Grande Pointe plantation on Guadeloupe, found entire slave villages confined by stone and mortar walls. Biajacas' wall included a gate that could be locked at night to prevent enslaved people from absconding. As discussed in Ch. 1, the ideal plantation landscape was a capitalist landscape that allowed for efficiency in production, and controlled the movement and time of the workers (Curtin 1998), though the ideal organization was not always reflected in architectural reality.

Croucher (2007) has argued that the nineteenth-century Swahili clove plantation, Mgoli (Pemba Island, Tanzania), was organized such that the male owner could observe the enslaved people at work. Somewhat contradictorily, she also challenges historical archaeologists' focus on surveillance and the "western gaze," and highlights the need for indigenous or alternative perspectives on the landscape (Bender 1999; Croucher 2007). Although the visual experience tends to be what archaeologists focus on, landscapes are experienced through all of the senses (Hendon 2010; Spencer-Wood 2010). A soundscape of bells often marked the beginning and end of the work day, meals, and prayer (Smith 1996; Tarlow 2007; Singleton 2015b: 105).

Layout of the Domestic Quarter at Bras d'Eau

Two types of housing were found in the domestic quarter: four parallel rows of line barracks or ranges, and 63 smaller, rectangular, individual houses.[7] Low partitioning walls further define the remaining space in the 4 ha laborers' quarter (Fig. 4.0, stone features shown in green are also described in Ch. 2). The barracks are made of continuous 0.5-1.0 m high walls, with vestiges of mortar present in patches (Fig. 4.3). The rooms are on average 22 m^2 in size. A single row of variably sized rooms extends from one side of these walls, such that all doorways into the rooms face the same side. Coral-lime mortar was used to fill in cracks more than to secure the masonry. Coral-lime was produced on the estate in the lime-kiln close to the coast for both sugar production and for construction, however lime pits in the long barracks yard (excavation Unit 4/6) indicated that indentured laborers were perhaps processing their own mortar.

The four barracks are organized into two sets; the doorways on the outermost barracks face inwards toward those on the innermost barracks. The northeastern-most barracks is the longest, extending about 105 m without breaks in the long wall through which one could pass. The middle two and southwestern barracks are about 100 m long and have two or three entrance openings, though they were considerably more collapsed, and reconstructing their exact shape was difficult. The line of the barracks runs southeast to northwest, such that entrance into the areas between them was limited to the southwest or northeast ends. Since the rooms can only be accessed from one side, an overseer could have easily walked their length to check in on every room block, discussed in detail below. Similar to the road network which is built on a grid as

[7] In 1970 the Forestry Department "improved and extended" stone walls to enclose part of Zone 1 and all of Zones 2 and 3 (Forestry Service: 1970). There were structures behind where the large walls now stand, but they must have been dismantled to build the walls. We found traces of structure foundation stones along all of these walls.

much as the natural contours of the rocky land surface allowed, the barracks imposed order on the domestic landscape.

In contrast, the 63 individual dwellings identified in the domestic quarter, are 14 m^2 in size on average and are scattered around the quarter (Fig. 4.0 and 4.3). These dwellings are similar in that they are oriented towards the north-south axis, though structures tended to have one wall aligned parallel to a road if one was nearby. About half of these dwellings are situated along a road, while the other half are in open areas with their own enclosed yard. As noted in Ch. 2, there are about 50 similar structures divided between two other zones—one to the north and one to the west—that may have also been used as dwellings, but their use remains unknown pending further excavations. Compared to excavations in the main quarter, there was a paucity of artifacts and deposits excavated in the northern zone, which suggests that if these structures were used as dwellings as opposed to storage facilities or work houses, occupation was short-lived. In the quarter, of the 45 house entrances we identified, 37 faced between north and west, with only 7 facing south, southeast or southwest, and only a single structure facing east. The orientation of doorways was likely a practical adaptation to the local environment; the prevailing winds come from the southeast year-round and are quite strong on the east coast. Doorways of two of the barracks faced directly into the winds, whereas almost all of the doorways on individual dwellings faced away from them, protecting the threshold and immediate vicinity from the wind. We did not find any hearths during the excavations or survey but based on oral accounts of Mauritians, cooking over open fires in the home's yard space was the norm. Planters imposed restrictions that were supposed to prevent laborers from building fires inside dwellings, but colonial reports indicate that Indian immigrants still cooked inside their homes. One can imagine

that when cooking over open fires, strong gusts were not just a nuisance, but dangerous inside or next to thatched houses.

Excavations revealed a greater accumulation of fill and refuse inside the barracks than in the individual structures, indicating indentured laborers abandoned the former over time, using them as trash dumps, and opted to live in the individual dwellings (Fig. 4.4). The fine, yellow, silty deposits found during excavations in the upper stratigraphic zones were possibly from decaying organic architectural material and white-lime mortar pieces from collapsed structures. Descriptions of housing at Bras d'Eau and old photos of Mauritian laborer camps indicate that the upper portions of the houses were made around a wooden frame, supported by the basalt foundations, and covered with straw thatching (MNA: HA101). If we look to India for potential inspiration, vernacular architecture has great regional variation even within the northwest region where the majority of indentured migrants originated. Ethnohistoric photographs from the northeastern districts of India revealed architectural styles similar to those found in Mauritius: rectangular structures with peaked roofs of straw (Kolkman and Blackburn 2014). However, rectangular wood-framed structures with thatched roofs are also common in Madagascar and elsewhere in sub-Saharan Africa, making the direct link between Indian and Mauritius architectural knowledge less remarkable (see Fig. 4.5). Normally, wood frames are secured in postholes dug into the ground. As evidenced by the post feature bored into the basalt bedrock in Unit 6, this task was certainly possible, if not difficult and time-consuming (see Ch. 3).

Constructing foundation walls likely served a dual purpose. First, they secured the frames on which thatching could be applied and saved laborers the tasks of boring holes in the rock. Second, building the foundations also cleared the land of the largest boulders and rubble, providing level indoor and outdoor living surfaces. Evidence of such carefully displaced rocks is

found across the entire estate. Thatching was eventually replaced by corrugated metal sheets at the end of the nineteenth century. Vestiges of compact, red clay flooring layers, uncovered during the excavation process, were likely a mixture of Mauritian soils and cow dung, still used for plastering house floors and walls as recently as 50 years ago and recalled through oral histories. This was also a practice in India. The hard-packed flooring, combined with the bedrock, suggest the strategic use of natural features and available materials.

The low, humped, rock walls are quite distinct from the rectangular masonry of the structures; they snake between the long barracks or around individual houses, thus demarcating the remaining open space. Like the structure foundations, these walls served the dual purpose of providing level, usable ground surfaces, and delineating gardens or workspaces. The preference for individual houses with defined yards indicates that personal outdoor spaces were important for residents of each household however configured. While the line barracks were designed to control and confine domestic space and allow for visibility of the single rooms on either side, the humped walls impeded easy movement through these spaces, all the more so if people were cooking, gardening, and going about their daily lives in them. Yard spaces such as these have been recognized by archaeologists as important extensions of the home space, particularly among communities where much household activity occurred in the open air (Heath and Bennett 2000; Battle-Baptiste 2007). The social significance of the yard varies, though on plantations it has been found to represent more freedom of action for enslaved inhabitants (Heath and Bennett 2000; Wilkie 2000). Outdoor communal spaces were important for community bonding, particularly around places for cooking and eating (Battle-Baptiste 2007), and for leisure activity at the end of the workday. As such, the area in front of the doorway is potentially more than just a threshold.

Excavation units 2 and units 4/6 were situated in yard spaces in the laborers' quarter (see Ch. 3). Units 4 and 6 had the densest artifact assemblage of all units excavated (see Fig. 4.4), likely related to the process of trash disposal outside the home. In addition, it had the highest density of bottle glass, and of fragments from both imported white kaolin pipes and Indian chillum, conical clay pipes. This suggests that yards were also communal spaces for leisure activity at the end of the workday. The acting director of the NPCS suggested that some of what we are calling houses may have been used as animal pens; he had just come from a modern farm where he saw animals penned in similar structures. The sheer number of houses and quantity of ceramic, glass, and metal found on the surface suggested that many structures were likely housing, but it is also possible that animal pens may have been scattered between the human dwellings.

The preference for smaller, isolated dwellings as opposed to barracks follows laborers' desires to choose both whom they wanted and did not want to live with. European colonists took note of the cultural differences between themselves and laborers. An 1875 "Report of the Royal Commissioners Appointed to Enquire into the Treatment of Immigrants in Mauritius," notes that,

> The stone ranges of buildings at [seven different sugar estates] strike Europeans as being far preferable to the straw and thatch which we see even on those estates, and generally throughout the island. The labourers, however, infinitely prefer the huts which, Dr. Leery informs us, most of the planters are satisfied to give their men, and are as such under another *régime*, and before the introduction of Indian immigrants (under which euphemism he means in the days of slavery) constituted the lodgings of labourers. We were able to verify this at "Mont Choisy" and "La Gaieté" where they had the choice; and at "Grand Baie," where the roofs of the stone ranges having fallen into disrepair, the labourers preferred having huts built in front of them, than to having the roofs repaired. Dr. Finnimore, in his evidence, is of opinion that the straw huts are more healthy for Indians than the stone ranges, as "you cannot get contagion out of stone walls," and though the stone buildings are more lasting and, the first expenses having been incurred, are more economical, it appears better to indulge the Indians' taste and allow them to live in

> huts as they do in their own villages…. There are the ranges, whether of stone or other material, which resemble the chawls [tenement buildings] which are to be seen in Bombay and the Concan. There are the huts, much as we see them above the Ghauts and in the Mawuls; none so good as the houses of well-to-do ryots [peasant agriculturalists or tenant farmers] in Guzerat, the Deccan, and Southern Mahratta country; but still, there is nothing for the immigrants generally to complain of, for the huts are much the same, perhaps, as they would have in their own country; though the European officer traveling through the district would certainly find fault with the state of the villages, and require them to be improved. (353-4)

This passage suggests that plantation owners perceived the change in labor regime as a substitution of indentured for enslaved laborers, attempting to place the new workers in the same housing used previously. Despite the planters' efforts, the shift from slavery to indenture clearly had an impact on occupational patterns throughout the plantation system. The passage further suggests that the preference for 'huts' had to do with the architecture itself. At Bras d'Eau however, both the stone barracks and the individual houses were constructed with stone foundations and wood/thatch uppers, which suggests that there must have been other motivations for laborers' preference for houses beyond the construction material (see Calaon et al. 2013 and Seetah et al. 2018 for an example of a barracks range constructed entirely from stone on the Trianon sugar estate).

Social Organization

Under both slavery and indenture, a social world existed among many of whom were at first strangers to one another. Plantation inhabitants would have had some desire to shield themselves, family members or their community from the scrutiny of others, keeping in mind that non-western perceptions of privacy often prioritize the family or community, compared to

Euro-western notions of privacy that focus almost entirely on the individual and his or her perceived freedoms (Holmes 2013: 54; Dillon 2014; van der Geest 2018). Smaller dwellings yielded space and privacy in the home that was not afforded in the barracks.

Indentured men outnumbered women 1 : 7 at the start of the indentured period and 2 : 3 by the end of the period, in the early 1900s (Carter 1994). After 1842 colonial authorities established gender quotas for ships transporting immigrants to colonies that increased through the nineteenth century. Despite these efforts, men remained in the majority, though the number of single women and families immigrating increased at the end of the nineteenth and beginning of twentieth centuries (Bates 2017). Indentured laborers also forged kinship ties called *jahaji-bhai* (ship-brother) and *jahaji-behan* (ship-sister) while living in close quarters on the ships that brought them to colonies. *Jahaji-bhai* and *jahaji-behan* sometimes strengthened the familial bond by arranging the marriage of their children even after leaving the plantation (Carter 1994). These kinship bonds likely guided laborers' choices in housemates and with so few women living on the estate, a household could consist of a male/female couple or more commonly two or three men.

Regulation of sex and sexuality were part and parcel of colonial enterprises (Carter 1994; Clancy-Smith and Gouda 1998; Stoler 1991, 2002; Voss and Casella 2012). The hegemony of western ideals and taboos on nature, gender, and sexuality influenced how labor relationships were defined, and attempted to regulate the movement of colonized subjects within the empire. The Indian Penal Code, originally drafted in 1839, effectively criminalized homosexuality by including a clause on "unnatural offenses." Those accused of the latter, which has come to be associated primarily with same-sex coupling though it also referred to bestiality, were sentenced to convict labor and transported out of India to overseas colonies. Weston (2008) argues that the

penal code also had implications for colonial authorities' subsequent surveillance of those predominantly male convicts. Colonial administrators acted on their heteronormative anxieties in two ways: first by attempting to increase the number of female convicts, and second by increasing surveillance of the convict male population.

By extension, the British Anti-Slavery Society, remaining active even after slavery was abolished across the empire in 1833, adapted the same language from the Penal Codes in an effort to put a halt to indentured labor immigration, arguing that the deplorable conditions for immigrants were too analogous to slavery. They, also, argued that "unnatural practices" were too common among the predominantly male laborers. The president of British and Foreign Anti-Slavery Society petitioned the UK's House of Commons Parliament to put an end to the export of east Indian laborers, describing the men as follows: "Deprived almost wholly of female society, they have sunk into the most degraded state and the practice of the most unnatural vices" (Clarkson 1845: 50).

Seven stipendiary magistrates from the districts around Mauritius were dispatched to report back on the gendered conditions and sexual activities of immigrant men and women on plantations. They reported back about the numbers of married/unmarried men and women, and children from married/unmarried parents, and found that for the most part, married or coupled men and women lived in accommodations separate from the mass of single men. Single women and men were housed separately, many of the former residing with other Creole women, the household being the presumed unit of domestic organization (see Uberoi 2003 for a critique of equating household with kinship). Invariably, they found no evidence of "the horrible and unnatural practices," or at least reported that the proprietors pled complete ignorance of any such behavior. As if to distract from this issue at hand and shift potential blame from landowners, one

magistrate states “if ‘camps’ are dirty, and the buildings in a dilapidated state, it cannot be attributable to any negligence of the master, but to the natural filthiness of the occupants” (Elliott 1845: 189). Such reports reveal more about the gendered and sexual ideals of European colonial officials and planters than of the Indian, Creole, and other non-Europeans living on estates. Multiple reports describe the women on the estate as “well behaved” without further explanation on what good behavior entailed. Carter (1994) explains that the colonial administration failed to recognize marriages conducted between Indian immigrants or the local free population that were not also performed in a civil court, which further led to colonists confusing and misinterpreting female behavior.

The single women who voyaged to the colony, were often coerced into marrying other immigrants upon arrival. During an interview, a local resident of Poste de Flacq, the closest town south of Bras d'Eau, recalled that his grandfather worked on a large sugar estate next to Poste de Flacq called Constance. His grandfather told him that he came to Mauritius from India. When he arrived on the plantation to work, the plantation owner or manager presented a line of women to him and the other new men and they were told to pick a bride. His grandfather chose a Creole woman, a woman of mixed ancestry descended from enslaved Africans.

Women were seen by the colonial government to hold opposing positions in Mauritian society. On the one hand, under the British patriarchal system that favored heterosexual nuclear families, women who were associated with a man as wife or daughter were considered “respectable,” whereas single women, including widows, were considered immoral miscreants and presumed to have turned to prostitution for survival (Carter 1994: 25). On the other hand, the Indian Penal Code and gendered immigration regulations, while explicitly promoting heteronormative relationships, implicitly solidified expectations that women would act as a

"civilizing" influence among men.[8] In comparison, Chinese exclusionary and anti-miscegenation laws of 1870s and '80s in the United States aimed specifically to *prevent* Chinese women from immigrating and immigrant men from establishing families. Similar to Indian women, effectively all single female immigrants were painted as prostitutes (Voss 2012). Later in the nineteenth century, Indians increasingly immigrated with family and village members. Women in particular tended to voyage with a husband, child, or both (Carter 1995: 97).

Health and Religion

Contemporary medical belief systems within India and Europe also are compelling reasons that indentured laborers, and indeed plantation owners and managers, would have oriented homes away from winds. Indentured laborers from India could have initially observed one of three established heath systems in India: Ayruveda, Sidha, or Unani-tibb. Although these are commonly associated with Hinduism, Tamil Hinduism, and Islam respectively, the practices share much in common and historically were not distinguished religiously (Pugh 2003; Berger 2013; Mukarji 2016).[9] Within their corpuses, one's daily activities, diet, bodily constitution, and

[8] Laws targeting LGBTQ communities in many post-colonial nations in the global south are a legacy of British colonialism. In the first week of September 2018, the Indian Supreme court ruled unanimously to strike down section 377 of the Indian Penal Code. News coverage of the vote describes the act as "decriminalize gay sex."

[9] Ayurveda, meaning "knowledge of life," first emerged in the mid-second millennium BCE. Buddhists were observers of and contributed to Ayurvedic medicine through the first millennia of its development (Mishra et al. 2013: 469). Siddha medicine, practiced in South India by Tamil people, is similar to Ayurveda and emerged around the same time. Unani-tibb, a Greco-Arabic medical practice was brought to India around the twelfth century CE during the rise of the Mughal Empire. After Unani was brought to the subcontinent, exchange occurred between the two traditions in the form of indigenous medicinal drugs and ideologies (Siddiqi 1980; Mishra et al. 2013). Berger (2013) argues the direct association with Ayurvedic practices and Hinduism

environmental conditions are considered central to maintaining a balanced body to prevent vulnerability to illness (Pugh 2003: 416). Diseases are believed to stem from imbalances in the bodily humors of air, blood, phlegm, and bile, caused by behavioral or environmental factors. For example, exposure to wind or cool environments, particularly after strenuous labor, could cause sickness (Pugh 2003). Diseases like smallpox were seen as the result of an imbalance or disorder in the three humors of wind, bile, and phlegm (Arnold 1993). Rheumatism and arthritis are primarily wind distorters in the joints, though phlegm and black bile were thought to also be involved (Pugh 2003).

The institutional establishment of biomedicine by the British Acts targeted the body politic through health regulations and the creation of medical colleges, in the latter half of the nineteenth and first half of the twentieth centuries; they called into question the validity of indigenous medical practices (Mishra et al. 2013; see Arnold 2000 for indigenous and western traditions in medical colleges). European colonists and their accompanying physicians introduced allopathic or western biomedicine to India, including the concept of *miasma*, discussed in Ch. 2. Recently, historians of medicine and anthropologists have shown that indigenous and local practices did not disappear in the face of western hegemonic biomedicine. Indian physicians, and a few British officers sought to syncretize western and Indian medical practices during the first half of the nineteenth century, and engagement in medical pluralism was widespread (Kumar 2005: 80; Alavi 2008; Nair 2012). On the ships that carried indentured

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emerged during anti-colonial/Indian-nationalist movements in the first half of the twentieth century. Ayurveda came to be seen as a north Indian "Hindu" medical British hegemonic biomedicine culture through these movements and also put Unani/Muslim and Ayruveda/Hindu in opposition to one another. See also Bala (2012) and Quaiser (2012) for the relationship between Unani and western medicine.

laborers around the globe, for example, surgeons made use of a range of herbal remedies from Victorian, Ayurvedic, Unani, and South American medical traditions (Deb 2018: 122).

Sussman (1981), Reddi (2008), and Teelock (2008) have similarly shown that from the eighteenth century on, multiple medical systems from Asia, Africa, and Europe have been in integrated in Mauritian health practices, to the point that many have indistinguishable origins and include the incorporation of plants endemic only to Mauritius (see also Caval 2018 for related pluralism or syncretism in Mauritian religious practice). Teelock (2008: 76) further argues that the perception of 'two worlds' where western biomedicine was associated with white plantation owners and their male doctors, is in opposition to 'traditional' healers or slave remedies offered by women from their homes, is a stereotype that does not fit with the historical reality of the exchanges and power relations at play during the eighteenth and early nineteenth centuries in Mauritius. Though we might presume hegemony of western biomedicine, white colonists and captive Africans, and Indian Immigrants sought treatment from both medical disciplines and as such, female healers held significant social capital within colonial society (Teelock 2008).

On plantations, hospitals and doctors were available to men, women, and children, by plantation owners who had a stake in maintaining at least the semblance of healthy workers up to their contract expiration date (see also Boodhoo 2010). In practice, doctors undermined laborers' sickness and pain, and if hospitalized they would miss wages and be penalized for missing work (Hurgobin 2016). Modern ethnographers have noted distinctive Mauritian health practices, often rooted in religious practice. Sussman (1988), Gopauloo (2008) and de Salle-Essoo (2008) describe Mauritian conceptions of 'natural sicknesses' or *malad bondieu* consisting of cold—

freser (Mauritian Kreol)—and hot—*gayn soley* or *koutsoley*—sicknesses.[10] These are respectively caused by exposure to cold or hot water, drinks, or air that stay in the head unless treated, creating a bodily imbalance. Even in summer, Mauritians will insist on wearing slippers or socks inside the home, because most floors are made of either tile or concrete which remains cool on bare feet.

Indentured laborers and European colonists may have found common ground in their understanding that environmental conditions were a significant factor in health. The daily strains of heavy field labor would have made laborers vulnerable to physical ailments and joint pains. While acknowledging that the wind disorders are not the literal result of exposure to wind, the Ayurvedic and Unani holistic approach to health that integrates environmental factors, and modern ethnographic analogies, suggest that the avoidance of strong cooling winds may have been a guiding principle for the organization of the dwellings. In addition, directly to the southeast of the core activity areas at Bras d'Eau is a *somad* or brackish inlet that would have contained exactly the marshy airs that nineteenth-century people wanted to avoid, and yet the prevailing winds would carry that air directly into the core of the estate (Fig. 3.1). Exercising their preference for housing could have been a means for indentured laborers to manage their day-to-day health and mitigate the constant and imposing threat of epidemic.

Related to Indian health and medical practices are understandings of auspicious directionality, guided by an underlying mandala or Vastupurusamandala. Armstrong and Hauser (2004) identified a nineteenth-century East Indian laborer's house on the Seville plantation (Jamaica), that was separate from the contemporary African Jamaican settlements. It was twice

[10] The literal translation of *Gagn soley* is 'getting sun.' *Koutsoley* translates colloquially to 'sunburn'.

as big as other laborer houses, and had a different orientation, flooring style and kitchen, a higher percentage of clothing ornaments, and an absence of western hygiene/health objects that would have been foreign to both Africans and Indian laborers. Armstrong and Hauser drew on the architectural analyses of South Asian vernacular houses from Bafna (2000) and Moore (1983). They found the house's long access was oriented northwest to southeast, location of the kitchen in the north-northeast corner and places for bathing outside the house to the southwest, all characteristics that adhere to a South Asian cosmology called Vãstuu. Antithetically, the idealized Vãstuu prescribe the orientations of temples and sacred spaces (Daware 2017), but in India it was only adapted into vernacular architecture in the twentieth century (Bafna 2000). Therefore, while texts on the *vastusastra* are indeed quite ancient, the creation of non-religious Vãstuu compliant buildings and homes is part of a new-age trend that only purport the ancient origins to modern practices, similar to popularized Feng Shui guiding principles of spatial organization or energy (Birtchnell 2016). If Indian immigrants were applying Vãstuu concepts to vernacular architecture as early as the nineteenth century, it represents a significant departure from contemporaneous Indian practices and highlights the malleability of diasporic identity practices. Following this analytical model, the individual structures at Bras d'Eau seem to conform to the same auspicious orientation. The separation of a bathing or washing area in Zone 2 may reflect western ideals in the division of space but may also have correlated with South Asian understandings of cleanliness.

Visibility and Viewshed

Inside Bras d'Eau today, visibility into the forest is only about 50 m at most, and it is impossible to discern the proximity to the coastline. When the domestic quarter was inhabited dwellings' and barracks' stone foundations would have had earth-and-thatch upper walls that blocked sight-lines, instead of the mango trees, vines, and acacia saplings that grow there today. Viewshed analysis is a spatial analytical tool that shows the areas that can and cannot be seen from a chosen location, typically based on the natural contours of the landscape. To better understand visibility, surveillance, and privacy during the period of habitation, I constructed viewshed maps around ruins that took into consideration both the natural topography of the site and plantation and quarter infrastructure. I digitized contour lines from highly detailed survey maps created by Mauritius Lands and Housing department in 1982 to create a topographic surface inside Bras d'Eau. I then added 4 m of height to the mapped structures to represent the upper walls of the buildings. For the purposes of this analysis I assumed all structures had erected walls at the same time. While the move from the barracks to smaller houses affords more privacy inside the home, I assumed that laborers would be sacrificing some of their privacy in the yards, at least from outside spectators, because the individual dwellings are closer to the roads.

However, the viewsheds indicate that between the two longest barracks one could see across the entire yard when standing at either end (see Fig. 4.6). When standing between the individual structures north of the barracks, one could see around some of the other dwellings, but there is only one main line of sight to the road (see Fig. 4.7). Similarly, when standing on the southern road in the midst of individual dwellings, there is only one line of sight towards the west (see Fig. 4.7). These viewsheds suggest laborers sought privacy and avoided scrutiny for their indoor and outdoor homespaces, however the household was constructed.

Another disadvantage to the modern forest growth is that we cannot get a sense of what estate residents were able to see of the surrounding landscape. The landscape changes dramatically twice a year with gradual growth and subsequent cutting of the sugarcane fields. Mauritians like to say there are only two seasons on the island—summer and winter—while average daily minimum and maximum temperatures only range from 16.4 to 29.2°C (~62 to 85° F) at the height of each season. When the cane is fully grown, walls of green line the roads, obscuring villages and other landscape features. When the cane is cut and dark red fields are laid bare, wide vistas open up across the island such that one can almost see, if standing in the center of the northern section of the island, from the east to west coast. During these months, the ruins of old sugar mills' stone chimneys that barely showed above the sugar stalks are exposed, and plantation temples or shrines, once hidden in the cane, suddenly emerge.

Figure 4.8 represents the view one could see at the top of a hill at the west end of Zone 4 when the fields were bare, and if we presume that all the estate land was cultivated (we know this was not the case). In the forest today, you can neither hear nor smell the ocean, so it is impossible to tell that the coastline and all its resources are only 1 km from the domestic quarter. The viewshed shows that from the hilltop one could have seen all the way to the coastline and into what would have been neighboring estate lands if the cane was cut, which easily could have impacted residents' perceptions of the local region. The surrounding features, including an ocean with marine food, neighboring estates, and villages were not just within walking distance, but visible during specific times of the year.

Conclusion

The landscape of Bras d'Eau is the lasting embodiment of interconnections among peoples, places, and materials that existed within and outside the plantation and at various scales. Temporality is integral to the landscape, not just in these overlapping generations of laborers and owners who left themselves in the landscape (Ingold 1993: 152), but also in the connected small processes that occurred throughout the landscape. The organization of the infrastructure and fields on the plantation show us the places indentured workers moved through in the course of their day, ultimately returning to the laborers' quarter at the end of each. The process of sugar production—breaking the earth, moving the stones, the biannual planting of sugar, carting the cane stalks across roads to be pressed, and finally shipping them out through other estates to the markets—is also in the landscape.

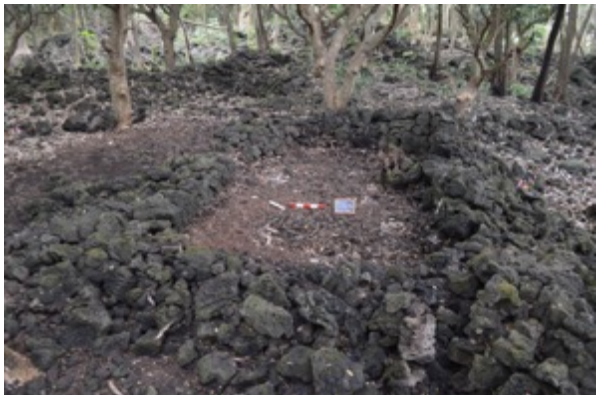
Figures and Tables

Figure 4.0: Ruins in the Laborer's Village

Figure 4.1 Agricultural rock lines in Bras d'Eau

Figure 4.2 Anusha standing on elevated road bed

Figure 4.3: Photograph of Structure 2, line barracks



Photograph of Structure 3, Excavation Unit 5, Individual Dwelling

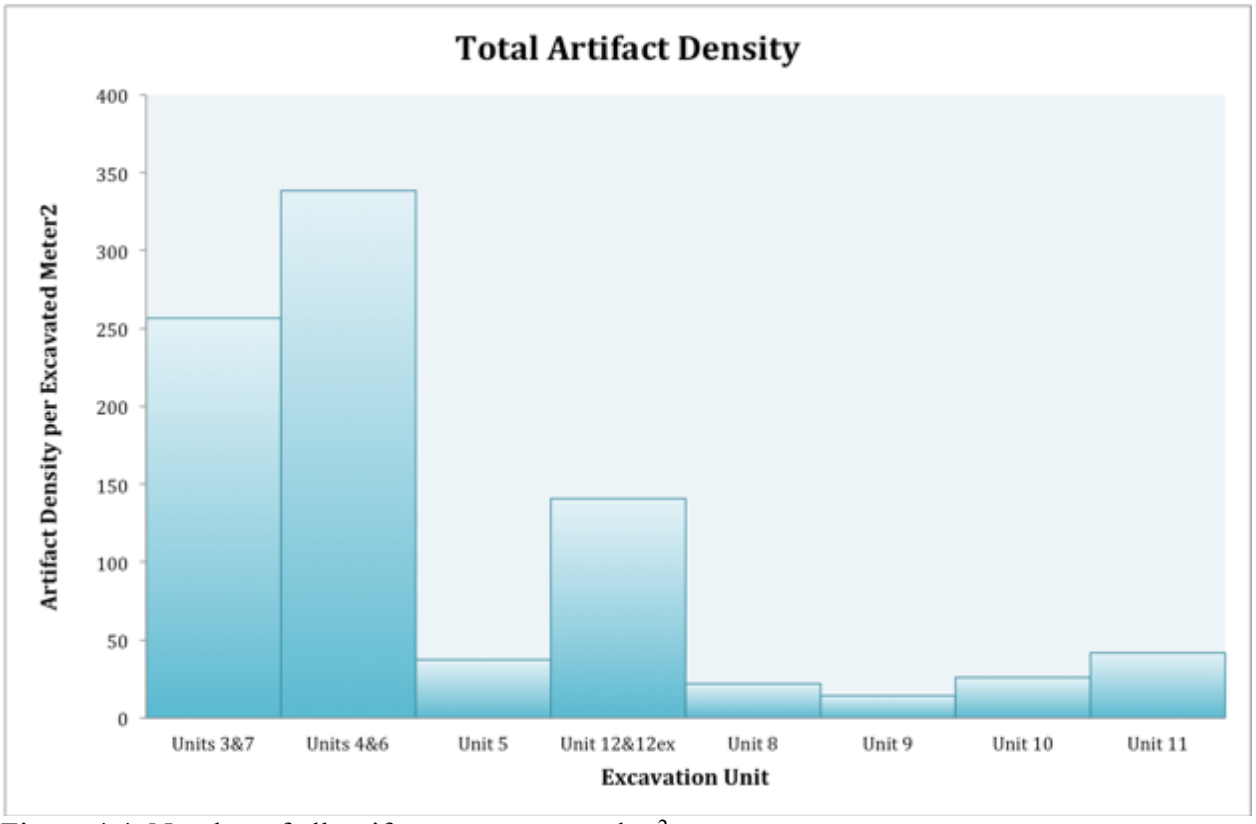


Figure 4.4: Number of all artifacts per excavated m^2

Figure 4.5 Historic photographs of Mauritian village houses made of thatch c. 1930. Mauritius Department of Agriculture Archives

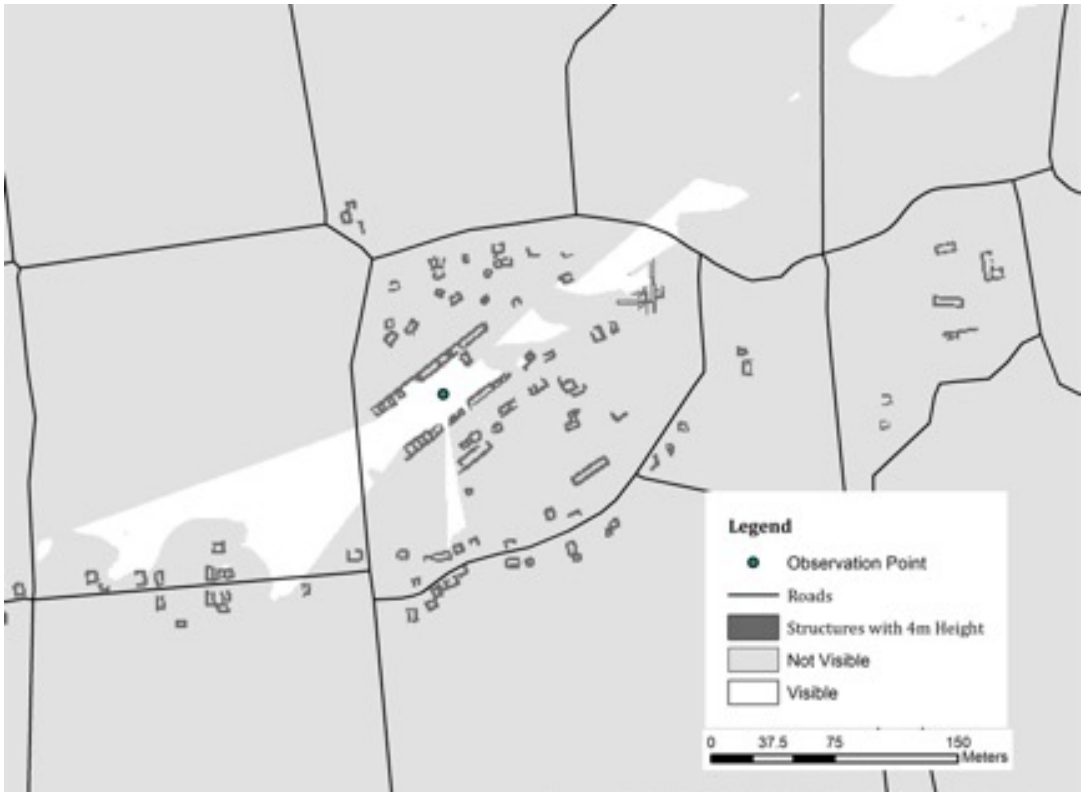


Figure 4.6: Viewshed from barrack's yard showing the line of site extends across the entire barracks yard space

Figure 4.7: Viewshed from individual dwellings showing limited line of sight in a single direction

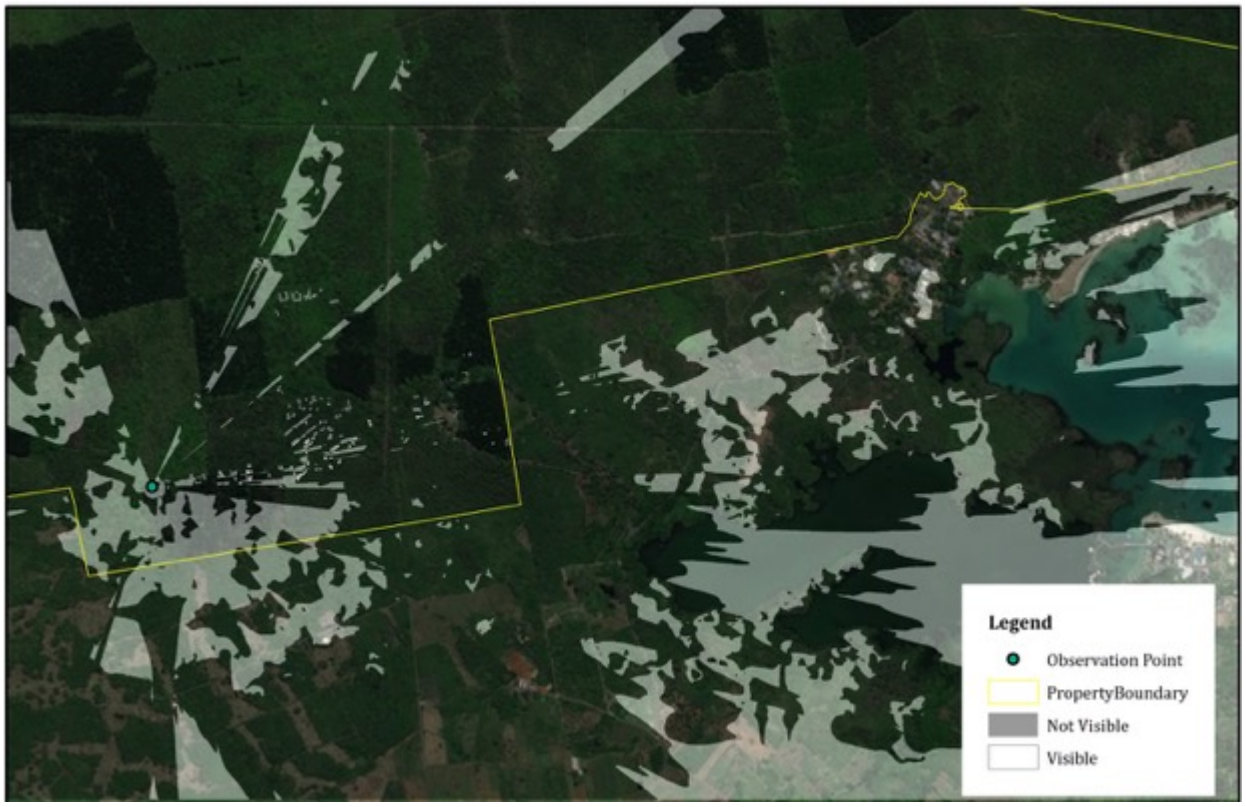


Figure 4.8 Viewshed from hilltop on the western end of Zone 4, west of the laborers' quarter.

Chapter 5: Everyday Objects at Bras d'Eau

This chapter and Ch. 6 build on my previous discussion of the landscape(s) of Bras d'Eau and the surrounding region, using the artifact assemblage as evidence to further my investigation of the everyday lives of the men, women, and children on the estate. I begin my discussion of excavated artifacts focusing on material found during excavations in the domestic quarter of Bras d'Eau. The following sections of this chapter highlight the attributes of six out of the seven specific artifact types—glass, metal, lithic, shell, fauna, and small finds—as well as their frequency across excavation areas and cultural importance. I discuss ceramic artifacts in Ch. 6.

In Ch. 4, I demonstrated through an analysis of the landscape that men, women, and children dealt with plantation conditions by creating homes adapted to the immediate landscape and climate, thus transforming the local cultural and ecological environment to suit their own needs. The two different types of housing—barracks and individual dwellings—in the domestic quarter highlighted that there were differences between households and suggested that laborers had the opportunity to exercise preferences for housing that better fit their needs, and perhaps to choose housemates whom they felt closer to.

At Bras d'Eau the widespread scatter of broken ceramic, glass, and metal artifacts across the ground surface of Zone 3 was one of the first indications that this area was the site of laborers' domestic habitations. In this chapter, I examine whether the material culture excavated from within these two types of housing also indicate differences related to the identities of inhabitants. This analysis is based on practice theory of identity: the appreciation that identity is enacted in our daily lives through habitual and repetitive practice (Bourdieu 1977). As such, the material remains of households are indicative of particular identity practices. Variation in

household assemblages can indicate differences in status, access, gender, class, race, ethnicity, or religion of its residents.

My hypothesis was that the barracks spaces would have been occupied by newly arrived indentured laborers. Some voyaged to Mauritius with kin or other members of their villages in India, but men and women also developed bonds with shipmates, establishing new support networks. The barracks, as communal living spaces, would have been the first place newly arrived immigrants were sent to live. Those who had been living on the estate for longer would have the opportunity to move to the more private, better oriented individual dwellings with improved yard spaces. We would expect to see more valued artifacts or luxury goods in the individual dwellings. As it turns out, a greater accumulation of refuse and earlier mean ceramic dates in the longest barracks, as compared to the individual dwellings and the smaller barracks, suggest that the communal living areas were inhabited first, abandoned as people moved into smaller dwellings, and later used instead as a dumping ground for trash.

Based on statistical comparisons of artifact types and the distribution of specific objects, the overall quality and type of objects laborers used and discarded were consistent across all types of housing. I was able to identify only subtle differences in the proportional quantities of artifact types in the barracks and individual dwellings. This indicates that household members had relatively equal access to resources and that consumption of these classes of material goods was not used to express social difference. Meanwhile, it also indicates that the types of activities in which residents engaged varied slightly depending on whether they lived in a barracks or an individual dwelling, and residents of the individual dwellings had lived on the island long enough to acquire skills to exploit resources from the surrounding environment and engage with local trade networks. As noted in the previous chapter, indentured laborers were living in the

context of several epidemic-level outbreaks of cholera in the mid-nineteenth century, and malaria became an issue starting in the 1860s. Men, women, and children crafted their material worlds specifically to deal with the heavy burden of cultivating sugar cane, working in the mill, and disease.

By comparison, the archaeology of plantation spaces in the Atlantic region have shown that enslaved men, women, and children were mostly unable to bring objects with them from their homelands. They nonetheless carried with them knowledge, skills, and belief systems that manifested in new locally made ceramic types, a widespread one of which being colonoware (Hume 1962; Ferguson 1992; Armstrong 2011); spatial patterning in dwellings and domestic spaces (Samford 2007; Neiman 2008); burial practices (Armstrong and Fleischman 2003; Seetah 2015b); and religious practice (Handler 1997; Wilkie 1997; Brown 2015). In Mauritius, men, women, and children transgressed, maintained, and reformed cultural practices inherited from their (presumably) South Asian homeland, signaling the creation of a formative, original Mauritian cultural milieu.

Introduction to the Excavated Artifacts

I consider three scales of comparison when examining whether there are differences in material culture found within the excavation units placed in different spaces around the laborers' quarter. First, a statistical comparison of the proportion of types of artifacts found within specific locations brings out the consumption patterns. More specifically, similarities and differences in the assemblages from dwellings tell us whether residents had differential access to goods or chose to consume different products. Second, idiosyncratic artifacts also indicate more fine-

grained choices the residents of the quarter made and signal potential differences between residents. Lastly, I consider how this assemblage compares to those from other archaeological sites in Mauritius as well as other colonial plantation assemblages in the Indian Ocean and Atlantic region. Because historical archaeology of the nineteenth century has not been conducted in the regions from which indentured laborers came, we cannot compare the assemblages in Mauritius with those in East or South India, Bengal, or China. As Reeves (2011:185) argues, conducting analyses at regional, community, and household levels is important because of a range of complex forces and stresses that impact consumption patterns at every scale, including access to market goods from the individual to global level.

My excavations produced 8874 artifacts. In addition, 3,950 surface finds were collected in Zones 1, 2, and 3 (see Table 5., and Figs. 5.0 and 5.1 for summaries of artifact counts and weights). My discussion of the artifacts centers on those recovered during excavations, but the surface finds from the mill zone are referred to occasionally for comparison. All artifacts were sorted into seven categories based on material—ceramic, glass, metal, shell, lithic, fauna, and mortar and plaster—with the exception of the small finds category that encompasses identifiable small objects, typically personal items, made out of all of the previously mentioned materials. These include finds such as buttons, coins, parasol parts, and jewelry. Our excavation and cataloguing methods changed slightly from the trial season in 2014 when we excavated units 1 and 2 in an individual dwelling and yard, to the full excavations conducted in 2016. Where these differences matter to the analysis, I will make it clear in the relevant discussions. In addition, none of the artifacts were weighed or measured with calipers in 2014, a practice I began in 2016.

To assess the proportional distribution of material culture in the barracks and the individual dwellings I created mosaic plots with shaded standard residuals. A standard residual is

a measure of the strength of the difference between a measured value and the expected value. This tests the null hypothesis that we would expect to see the same proportion of artifacts in each location if they truly were independent variables. The shaded blue and red colors indicate the standard residuals, and the width and height of each artifact bar show the margin of proportions. In this case, the mosaic compares actual measured proportions of artifacts within each location in relation to the expected proportions (Fig. 5.2). The mosaic shows that within every location, the quantity of multiple artifact types falls outside of the range of what we would expect if location were not a factor. In other words, the proportions of those artifact types within the whole are not independent of location, with the exception of small finds.

To reduce some of the noise, I combined the assemblages for all the individual dwellings and their exterior spaces (units 1, 2 and 5) and the assemblages for all the barracks and the exterior spaces (units 3/7, 4/6, and 12), and created a simplified mosaic plot (Fig. 5.3). Although the barracks assemblages were far denser in terms of artifacts per square meter excavated (Fig. 5.3), proportionally, we recovered significantly more fauna, lithics, metal, and shell in the individual dwellings than expected, and significantly more glass in the barracks. I will continue to refer back to Figs. 5.2 and 5.3 throughout the following two chapters as I discuss each artifact type in detail.

Glass

Glass artifacts, with 2472 individual shards, made up 32.74% of the entire excavated assemblage, or 11.37% of the assemblage by weight (Fig. 5.0). This is the single largest category of material culture. Artifacts were catalogued based on the form, vessel, or object category,

specific artifact identification, color, and manufacturing technique if identifiable. I relied on the glass cataloging typologies and identifications from the Corning Museum of Glass online catalogue and research resources, as well as Stelle (2011) and Lindsay (2019), though the latter covers bottle production in the US and Canada from 1800 to 1920 only. Glass vessel size, shape, and color offer clues to what the vessel may have contained; however, similar vessels could hold any number of alcohols, mineral waters, tonics, medicines, poisons, and inks. As such, identified vessels are categorized generically either as alcohol bottles, medicinal bottles, tablewares, or unknown vessels or bottles. In some instances, color can be a good indication of the vessel type. For example, olive green glass is almost always used to make tall beverage bottles such as modern-day wine bottles, rather than tablewares. Cosmetic or medicinal bottles come in a range of colors from colorless to aqua to amethyst to blue but tend to be much smaller in size than alcohol bottles (though medicinal uses of alcohol will be discussed later). Unlike green glass, colorless or aqua glass was also used for a variety of objects such as tablewares, window panes, bottles, or other commercially sold vessels.

The majority of all glass artifacts (87.8% by count) were from green wine or alcohol bottle glass ranging from pale green to very dark olive green, sometimes called black glass (Fig. 5.4 and Table 5.1). The unidentified glass including unidentified bottles and vessels made up 7.48% of the glass assemblage and all of it ranged from colorless to aqua. Only 4.45% of the assemblage consisted of identifiable tablewares—mostly cups, and a single stemware base—and these were distributed between units 1, 2, 4/6, 5, and 12. Flat glass made up 3.68% of the assemblage. The vast majority of flat glass was found in the large barracks units—54% in units 4/6 and 36% in units 3/7; almost half of the shards were recovered from the second stratigraphic layer in the barracks yard (Unit 4/6). The remaining 10% of flat glass was found in the individual

dwellings (units 1, 2, 5). The flat glass, likely window glass, suggests that planters may have found it a worthwhile investment to place window panes in the permanent reusable barracks structures, but no one made such an effort for the individual dwellings. This pattern of investment in the architectural features of the barracks follows with the other architectural materials—we recovered more mortar pieces in the barracks than we did in the individual houses. The general distribution of glass types outlined above shows that laborers potentially consumed a range of products held in glass vessels, but European-style tablewares were not an important feature of their daily lives (see also the distribution of ceramic tablewares and teawares). Those living in the laborers' quarter must have consumed beverages from vessels made of other materials, including ceramic, metal, or perishable materials like wood. By all statistical measurements conducted, including distribution of artifacts by excavated volume (Fig. 6.20) and standard error of the proportional distribution of artifacts (Fig. 5.3), significantly more glass was found in the barracks than in the individual dwellings. This distributional pattern provides insight into how activities in the central barracks differed from the individual dwellings and who might have been living in either space, and is discussed below.

Returning to the bottle glass, the vast majority of all bottle and vessel shards (96%) were body shards: the majority (70%) were from round bottles with straight sides, minority (16%) rectangular bottles with straight sides, and the remainder were from unidentified vessels. Based solely on these central portions of vessels it is somewhat challenging to identify the containers' function or date of manufacture. Mold seams along the sides of a body shard or on the neck and shoulder fragments indicate manufacture in the nineteenth century and after. If shards are large enough to determine the container's shape it can help with dating, because over the seventeenth and eighteenth centuries glass bottles became less globular, with straighter sides to better

facilitate storage in crates for travel (Hume 1963: 266-271). Square, green Dutch "gin" bottles commonly found on archaeological sites in West Africa, for example, fit nicely in square cases for transport (Richard 2010: 12-14). Based on the number of bottle finishes (the opening) and taking into account determined cross-mending shards, an estimated 24 bottles were recovered.

Only three bottle finishes could be identified as possibly being small medicine vials or perfume bottles and all were found in the barracks and barracks yard. These finishes included two partially complete finishes and one cross-mended vessel made of five shards (Fig. 5.4). These seven shards, together with four neck and body shards from small medicinal bottles, were all recovered from the barracks structure and yard spaces, though as noted above, some of the unidentified shards may have also been medicine or cosmetic bottles. Sixteen of the finishes were applied and tooled with a v-shaped string to accommodate a cork closure: 3 in the individual dwellings (all from Unit 5) and 14 in the barracks and yard. These types of olive-green finishes were produced between c. 1825 to 1875, and are referred to as “wine bottles,” though as noted above, they may have contained non-alcoholic beverages or spirits other than wine (Stelle 2011; Lindsay 2019).

In addition to the finishes, 18 green bottle bases with identifiable basal profiles were identified, including cross-mending fragments (Fig. 5.1). Of these complete bases, 3 had evidence of pontil marks and 2 bottles had large mamelons, a bulbous protrusion at the center of the push-up common on champagne-style bottles. Pontil marks are indicative of the manufacturing process: a rod with hot glass is attached to the bottle base after it has been formed in order to complete work on the finish or other features of the bottle. When the bottle is broken or cracked off the pontil it leaves a mark on the base. Pontil marks are common on any non-machine-made bottles from antiquity to the present, but become increasingly less common on

commercial bottles after the 1870s (Lindsay 2019). Mamelons are thought to be a remnant of mold air-venting, a technique developed in the last quarter of the nineteenth century to release hot air from within the bottle's interior during manufacture (Lindsay 2019). Base fragments were more evenly distributed across all excavation units, though the barracks excavations still had more than other units, with 8 total base fragments compared to 5 found in the individual dwellings. I have yet to determine when bottle glass began to be produced locally, though flat window glass has always been imported into Mauritius (Summers 2011: 21). As with ceramic sherds, British glass is commonly found on non-British archaeological sites, as England was a prolific producer of glass bottles in the period of colonial expansion (Smith 2008: 16, 6-26 passim, and Hume 1963: 266-274 for brief modern histories of bottles). Cases of full bottles, and empty bottles to be filled locally, were exported from Europe to the colonies (Adam 2002: 50; Lindsay 2019). Further complicating glass analysis is the fact that glass bottles could also be continually washed and reused to store water or home-brewed beverages and concoctions. With no real potential for conducting residue analysis on bottle fragments, I turned to other historical and comparative sources for interpreting what these bottles may have been used for.

Alcohol and Colonialism

Numerous scholars have noted the seemingly contradictory role alcohol has played in societies, holding a tenuous place as a substance that can foster social cohesion or tear at social stability. Within colonial encounters alcohol in particular encapsulates the violence of colonization and resistance to it. Alcohol and other addictive drugs have been used as a tool to manipulate and control colonized people; the consumption of alcohol has been documented and imagined by colonizers as a native or local disorder, and the consumption and production of local

alcohol has also been a means to resist colonial authorities and subvert colonial economies (Jankowiak and Bradburd 1996; Bradburd and Jankowiak 2003: 3-4; Dietler 2006: 239). Alcohol imported into Africa during periods of colonial expansion was an important commodity during the trans-Atlantic slave trade, and it played a role in shifting social relationships and consumption practices within the continent itself (Ambler 2003; Dietler 2006). For example, François Richard (2010: 15) argues that imported gin and wine *(alcohol de traite)* became the central trade commodity on the Senegalese coast in the 1700 and 1800. It was both adapted into political, ceremonial, and ritual practice and consumed throughout the social landscape of the Siin province, as evidenced by the proliferation of case gin bottles in both elite and non-elite settlements; over-consumption of alcoholism became a social pathology there that "eroded the local social fabric." Compared to western and southern Africa, imported alcohol and glass bottles found in archaeological contexts on the East African coast have received far less attention from scholars than other imported goods like glass beads and ceramic dishes, even though they are commonly found in eighteenth- and nineteenth-century domestic assemblages (Marshall 2011; Croucher 2015; Biginagwa and Mapunda 2018: 545-550). The influence of Islam on alcohol consumption in East Africa has perhaps unintentionally dissuaded western archaeologists from delving into the social and political role alcohol may have played in Swahili society and how East African's relationship with alcohol changed over time.

In contrast, archaeologists have paid considerable interest to alcohol consumption, production, distribution, and influence on plantations and other colonized settlements in the Americas and Caribbean. Alcohol consumption among enslaved men and women on plantation colonies is often interpreted as having been a means to escape or mitigate the extreme hardship of their daily lives, relieve boredom, and as a form of entertainment to accompany communal

activities (Heath 2004: 29; Smith 2008; Singleton 2015: 175-180). Singleton (2015: 175) points out that on Cuban plantations, slaveholders would often complain about slaves' excessive alcohol consumption while simultaneously participating in the distribution of alcohol to "energize, medicate, or reward slave laborers" (see also Richard 2010). A similar pattern was identified by Dwight Carey (2018), where French planters in eighteenth-century Mauritius imported Eau de Vie, a fruit brandy, specifically to "appease" their enslaved men. Planter women, at the same time, complained that their slaves were constantly inebriated, with their quality of work suffering as a result. Paired with a material study of poor-quality mortar from contemporaneous colonial structures built by slaves, Carey interprets reports of drunkenness and poor masonry work as evidence for slave resistance. North American and Caribbean archaeologists have noted that bottles or vessels were also used in ritual or spiritual practice within and around households and in burials among enslaved Africans (Ferguson 1992; Health and Bennett 2000: 43; Wilkie 2003; Singleton 2006; Samford 2007: 163) as well as British and Anglo-Americans (Smith 2008: 27).

Drinking restrictions in both Hinduism and Islam have greatly influenced the role of alcohol in the Indian Ocean. That being said, in practice, social codes restricting drinking for religious or other reasons do not always manifest in everyday life. There is a spectrum of reasons why one might transgress what seem like strict religious proscriptions, including differential interpretations of the law in terms of how much if any drinking was acceptable, and variable definitions of what actually qualifies as an alcoholic beverage regardless of the actual quantity of ethanol present (Dietler 2006; Michalak and Trocki 2006). Therefore, despite the fact that the majority of indentured laborers were Hindu and a significant minority were Muslim, men and women certainly could and did drink alcohol. The bottles recovered from domestic spaces at Bras d'Eau may have contained imported alcoholic beverages, but they may also have been used

for locally made rum, keeping in mind that the Monte Cristo (later renamed Spa) distillery was located on the outskirts of the plantation property next to the seaside in the nineteenth century as discussed in Chs. 3 and 4. Laborers may also have been distilling their own rum called *ti lambik.* The name likely derives from the term "alembic," a distilling apparatus. Pale yellow in color and quite strong, *ti lambik* is typically consumed in its purest form, without added filtering, aging, or blending. Boswell (1999:179-80) found that distilling *ti lambik* was an important source of income for Creole Mauritians living in rural areas (see also Dietler's [2006: 240-1] review of the significance of home brewing and distilling for women).

Anthropologist Michael Angrosino (2003), in his study of Indian indentured laborers in Trinidad, found that they brought ganja (marijuana) with them to the Caribbean for both personal and spiritual use. Planters and missionary allies attempted to shift laborers' preferences away from ganja to locally produced rum.[1] Coercing laborers to purchase rum from the company store created an insidious cyclical relationship of debt and credit, such that planters profited further from the very labor they employed (for comparison, see Blackmon 2008 on post-Civil War debt systems in the US). Some planters on Mauritius minted currency that could only be used at the company store (see Bissoon 2018 for examples of plantation coins), though French *franc* coins and cowrie shell were the only forms of currency found during excavations. In their study of plantation coins from the Dutch East Indies, such as from estates in Sumatra, Lansen and van der Beek (2018) noted that for those living on estates in remote areas, the plantation store was often the only option anyway for purchasing commodities and furthermore, the shortage of silver coins in the colonies sometimes led planters to print their own paper notes or make metal or wood tokens.

Other artifacts commonly found archaeologically in domestic spaces which indicate alcohol was consumed include stoneware beer bottles, drinking vessels made of glass, pewter, or ceramic, and metal artifacts from wooden barrels or casks, such as barrel hoops, copper cocks, spigots or faucets (Smith 2008: 23). As noted earlier, we found very few glass tablewares at Bras d'Eau. We did recover barrel hoops but no accompanying spigots (metal artifacts discussed below). All stoneware sherds were found in the large barracks and the only identifiable vessels came from ink bottles and an almost complete cup; therefore, it is possible that some of the stoneware sherds came from beer bottles, further reinforcing the pattern that more alcohol containers were found in the barracks than in the individual dwellings (Fig. 6.16).

The fact that more glass was found in the barracks than in the individual dwellings by all statistical measures conducted, may stem from the fact that the barracks was a communal living space, and therefore more people were consuming more products. Alternatively, the distributional pattern suggests that those living in the barracks seem to have been engaging more in collective social activities such as drinking, smoking, and gaming as diversionary activities during their limited leisure time. As noted in the previous chapter, round re-worked ceramic gaming pieces were also found in the barracks, but not in the individual dwellings. Singleton (2015:175-180) interprets similar material remains of drinking, smoking, gaming, music, and dance as diversionary activities among enslaved men, women, and children who had very little leisure time, but found space for these activities.

I posit that alcohol, tobacco, and marijuana may have been consumed for leisure, but they may also have been a means to manage pain without the help of the estate doctor, particularly because we found very few artifacts from medicine bottles or other strictly Euro-medical products. While germ theory, and thus the knowledge of alcohol's sterilization capabilities, was

still a contested concept in the nineteenth century, alcohol's effect of relaxing the body and potentially easing physical pain was certainly understood, and marijuana would have been self-administered for similar pain-management issues. Merritt et al. (2012: 689) in their study of railroad line camps in the American Northwest, found numerous opium pipes and alcohol bottles left behind by Chinese immigrant workers, noting that opium was taken as a pain medication until aspirin came on the market. Alcohol, tobacco, and marijuana all may have been consumed in a similar fashion among the men and women at Bras d'Eau.

As noted in Ch. 4, Armstrong and Hauser (2004) identified a nineteenth-century East Indian laborer's house on Seville plantation, Jamaica, separated from the contemporary village of African Jamaican workers. Armstrong and Hauser found that the Indian house was twice as big as other village households, and had a different orientation, flooring style, and kitchen. Compared to houses in the Africans' village, the artifact assemblage had a higher percentage of clothing ornaments, and a lack of western hygiene/health objects including glass pharmaceutical bottles and tooth brushes. Armstrong and Hauser argue that such items would have been foreign to both African and Indian laborers. And yet, Africans living on the plantation were choosing to consume western hygiene/health objects, whereas the residents of the East Indian house were not. Although there is no identified African diaspora component at Bras d'Eau to use comparatively, we found the same consumption pattern as in the East Indian house on the Seville plantation.

Metals

Metal artifacts represented 21.2% of the entire artifact assemblage (Table 4.1, Fig. 5.9). The metal assemblage discussed here does not include 71 metal artifacts—mostly clothing- or jewelry-related and cuprous, which were catalogued with the small finds. Without further testing, we were unable to determine whether artifacts were made of pure copper, brass (copper and zinc alloy), or bronze (copper and tin alloy, historically) artifacts. Both alloys patinate in a similar fashion to copper: darkening in color, often with a greenish hue. Therefore, any artifacts made of copper or a copper alloy were identified as 'cuprous' in the artifact catalogue. That being said, several types of cuprous artifacts recovered at Bras d'Eau showed signs of metallurgical working such as hammering marks, and it is reasonable to assume these are copper, which is much softer and easier to work and rework than its alloys. As noted previously, archival records indicate that a forge was present on the property, but I recovered no evidence of heavy metallurgy or slag from the surface collections or excavations.

A wide range of different types of objects were made of iron, representing 97% of all the metal artifacts by count. The preservation quality of many iron objects was very poor—many were fragmentary or had eroded beyond recognition. Metal was found in all excavation units, though density per cubic meter was greatest in the interior barracks space (units 3 and 7). Identifiable metal artifacts have been clustered into three groupings: hardware consisting of architectural metal elements, tools, and miscellaneous objects (see Table 5.2-5.3, Figs. 5.5-5.9).

Iron sheet metal represented the greatest majority of iron artifacts (Table 5.2 and Fig 5.5). The average thickness of all sheet metal was 2.36 mm and the iron vessel fragments we identified were also 2.30 mm thick on average. We also recovered identifiable fragments of round-bottomed iron pots called *marmites*, some with stamps indicating manufacture in India.

Most of the rim fragments found belonged to marmites with a 20 cm diameter, a small standard size when cooking for 1 to 4 people. A single vessel fragment was found in the interior barracks excavation that had a measured diameter of 96 cm, though the fragment represented only 15% or less of the vessel and could have been flattened slightly to make the diameter seem larger (Fig. 5.6). Such large vessels are typically used when cooking for a whole community or ritual event such as a wedding. Metal and clay pots are cured over time, developing a thick black patina that makes food taste better and less prone to burn and the vessel easier to clean. According to Mauritians interviewed, the older the marmite the more valuable it is, and the less likely it will be discarded unless it develops cracks or breaks. This seems to have been the case at Bras d'Eau. Other artifacts related to food preparation included lead fragments that are folded around fishing lines as weights (see also the section on fauna and shell) and two knife blades from the barracks. Overall, the cooking tools suggest that communal cooking was generally not the norm, but varied household to household.

The hardware category consists of architectural elements, including only a few hinges and fasteners, and hundreds of different types of nails (Fig. 5.7). Many of the nails were too corroded to identify, but there was a range of square hand-wrought nails with both tapered and flat, round heads, copper roofing-style nails, and possibly machine-cut nails (Wells 1998; see also Franklin 2011 on hand-wrought tools). Nails most obviously would have been used in the upper, wooden portion of the houses, and possibly on furniture as well. Nails typically would have been made in the estate forge and laborers could have taken them surreptitiously from the estate resources or purchased them for improving housing. Few other identifiable tools were found, but those that were recovered came from the large individual dwelling (Unit 5) and main barracks (see Table 5.2 and 5.8). Other miscellaneous metal artifacts such as horseshoes, chain

links, and heavy machinery parts found in these domestic spaces are indicative of how integrated the work on the plantation became in the lives of men and women, despite the fact that industrial and domestic spaces were separated. In the surface collection assemblage, a small hand-held sickle blade was found in the domestic area and two hoe fragments were found near the mill structure, but these were the only recovered artifacts explicitly related to sugar cane cultivation. Since iron materials were imported to Mauritius, gathering rejected metal fragments for repair or to sell as scrap could provide supplemental income. The metal artifacts remind us that though agricultural production was the defining activity in the lives of indentured men and women at Bras d'Eau, they engaged in other activities that required different skills. Laborers were also coppersmiths, blacksmiths, farriers, carpenters, masons, butchers, fishers, hunters and cooks.

Lithics

Lithics represented one of the smallest artifact categories—48 artifacts recovered in all from the laborers' quarter (see Table 5.4 and Fig. 5.10). Flint or chert artifacts are the most common among the lithics. Only 2 chert artifacts were worked and both were found in the interior of individual dwelling Unit 5. The gun flint was likely imported from Europe (Fig. 5.10). Trapezoidal in shape with a clear bulb of percussion, the gun flint had a gray-brown, fine-grained, uniform texture indicating it was made from high-quality chert. The other chert artifact is a flake. The gun flint corresponds to lead musket balls and a metal rifle part also recovered in the long barracks and Unit 5, indicating that these are not unique finds but rather part of a small assemblage associated with hunting.

The remaining 24 chert artifacts had no evidence of being worked and several were gastroliths (stones eaten by birds or mammals and smoothed through digestion), suggesting the animals that were raised in areas where they were excavated. Eleven of these un-worked chert artifacts were recovered from the exterior yard portion of excavation Unit 5, secondarily from the house interior of Unit 5, and Unit 4/6 excavations. Basalt and coral sand are typically the only geological resources mined in Mauritius, but quartz and limestone are also available locally (De Haga Haig 1895; Ashwal et al. 2016). The few quartz and limestone pebbles and cobbles are not worked, so they are likely unmodified ecofacts, but they could have been collected for a variety of purposes.

Other imported lithic artifacts are the 5 flat slate fragments with a blue-gray hue. "Slates and Stones for building and paving" are listed among the imported goods that were charged duty at customs in Mauritius in the 1906 *Blue Book for the Colony of Mauritius*. Not enough fragments were found in excavations to suggest that slate was used as a roofing material in the domestic area, but one fragment had an iron deposit rusted onto it, which could have occurred if the material was once used as roofing. Men, women, and children likely salvaged the slate fragments for personal use. Slate was used for writing tablets, perhaps associated with the two small slate pencil fragments recovered in the barracks.

In the barracks and barracks yard excavation we found 8 basalt grindstones, called *ros kari* 'curry rock' and *baba ros kari* 'baby curry rock' locally (Fig. 5.10). These sets are used to crush spices, lentils, wheat, and other foods. According to local commentary, grindstones improve over time; they develop a patina of spices that enhances the taste of the mixture and the ease of use. As the porous basalt is smoothed, the spices remain in the small holes and flavor is absorbed into the stone. Using a grindstone is considered a skill in Mauritius; you have to know

how to use a *ros kari* and some people are better than others at the repetitive ritual of selecting spices, grinding, adding more spices and water, regrinding, and rinsing the stone. Many of the *baba ros kari* also had peck marks on the ends from hammering. Only one of the larger unbroken *baba ros kari* had begun to develop the worn look of a well-used tool. It seems unlikely that heavy grindstones could be easily lost inside or outside the house. Such an object could have been deemed too heavy to carry on the return voyage to India or even when laborers moved off the estate to settle elsewhere on the island when the mill closed. It is unusual for an unbroken grindstone to have been intentionally abandoned given the value that time gives such tools, and as such it is one of the few embodiments of the process of site abandonment we recovered.

Small Finds

The small finds category consists of 115 different, small personal items made from various materials for use in daily life (Table 5.5-6 Fig 5.10-4). The majority were objects relating to dress, including clothing fasteners and jewelry. Modes of bodily adornment express individual style, but also signify belonging to a community or group (see Miller 2005). Diana Loren (2012) among others has argued that in colonial contexts, clothing and bodily adornment were a powerful expression of identity, because of the colonial interest in controlling, surveilling, and defining the bodies of colonized people (Stoler 1995; Voss 2008). Based on the clothing assemblage recovered, there is a collective patterning in the ways people dressed at Bras d'Eau. We found few idiosyncratic artifacts and most of those were jewelry pieces. Even artifacts that were distinctive within an excavation unit could easily be associated with those in other units.

Similar to the flint/bullet and slate/pencil examples above, we found four different singular parts of parasols or umbrellas. Two runners, the copper piece on the central pole from which the arms extend, were found in units 5 and 12, and parasol tips, which hold the stretched fabric onto the ends of the arms, were found in units 3/7, and 4/6 (Table 5.5 and Fig. 5.12; see Ogborne 2013). Parasols or umbrellas also hold a dual position of being functional, protecting from the sun and rain, but also can be seen as a luxury item or object of conspicuous consumption.

Two padlocks and four keys were found in the barracks and one padlock and key set were found in Unit 5 (Fig. 5.11). Neiman (2008) has argued that multiple sub-floor pits found in the houses of enslaved people in the Chesapeake functioned like "safety security boxes" for men and women to store their personal and private items securely while living in large communal houses with non-kin housemates. Locks and keys, together with cuprous hinges and brackets (see metal discussion above), indicate men and women here exercised similar precautions, particularly in the barracks where presumably more people lived together. Six silver coins dating between 1839 and 1842 were recovered from the long barracks. Five coins were found deposited together, perhaps originally in a lost coin purse that disintegrated over time (Fig. 5.11). Interestingly, the coins date to the British-indentured period (1810 and after) but are of earlier, French origin, suggesting they were curated for some reason.

Buttons made up the largest subset of small finds, with a total of 64 buttons or button fragments recovered (Table 5.6 and Fig. 5.10 and 5.13). As fasteners, buttons are certainly a functional part of clothing but they can be used decoratively, and can also be an outward expression of the identity of their wearer (see Hesse 2007 for brief history of buttons, focusing on modern production in the US). By material, 59% of all buttons found were cuprous, 30% were bone, 9% were mother-of-pearl, and a single button (1%) was glass. Only five were truly

unique items: a perfectly flat 4-hole cuprous button, a milk-glass button, and three cuprous buttons decorated with geometric patterning, found in different excavation units (Fig. 5.13 decorative buttons from Unit 10, 3/7, and 4/6). The remaining buttons fall into four general categories: four-hole mother-of-pearl, back-loop regimental, four-hole thin cuprous, and four- or five-hole bone buttons (Fig. 5.13). The distribution of different button types across all the excavation units in the domestic quarter suggests that there was little variety in the ways people were dressing. The greater variety of button types in the long barracks than in any of the other excavation areas is perhaps a reflection of the greater number of different people living there. It is possible that the buttons were used in other ways, as exchange tokens, gaming pieces, or jewelry. A cuprous thimble, the only identifiable sewing item in the entire assemblage, indicates that at least in one dwelling, residents were repairing and patching if not sewing their own clothes.

Archaeologists Geoffrey Summers and Françoise Summers (2005: 18) found bone buttons, and half-carved bone fragments with circular button impressions, in early nineteenth-century contexts on the military guard post on Île de la Passe, the small island off the southeast coast of Mauritius. While we did not recover button-making materials from Bras d'Eau, the Summers' discovery of evidence of a bone button-making industry suggests that other bone buttons found in Mauritius were likely made locally by hand. Likewise, mother-of-pearl buttons could have been made locally. These buttons are therefore one of the few items that indicate laborers at Bras d'Eau participated in local markets. Of the cuprous buttons, we recovered 20 back-loop buttons, 6 of which were from British military-issued uniforms with a crown and regiment number in the center (No. 12, 16 and 35). Button backings usually had maker's marks indicating they were made in London, most commonly by the Firmin & Sons uniform button

company (1655-present) who used the mark found on Bras d'Eau buttons "Firmin & Sons" from 1839 to 1875, and the Nutting company, open 1840 to 1912 (Callcut 2019; http://www.firminhouse.com/international/buttons.htm). It is reasonable to assume that the other cuprous 4-hole buttons were imported as well, or came off imported clothing.

The presence of so many buttons is particularly interesting in this context because Indian clothing for men, women, and children typically did not make use of button fasteners prior to the integration of western clothing styles in the nineteenth century (Tarlo 1996)[11]. Dhoti, lungi, sari, kurta, pajamas, salwaar, kameez, churidar, lehenga and choli can all be designed to be worn without fasteners, though wearers might secure the fabric with a discrete pin or eye-hook on the inner blouse, similar to four hook-and-eye closures found in this assemblage (Fig. 5.13). Emma Tarlo (1996) argues that the integration of western clothing into Indian practice held a contentious place in the nineteenth-century because it represented the balance between resisting British colonial authority, maintaining what were seen as traditional values, and the desire for modernity. Tarlo (1996: 46) explains that women compromised by wearing saris made of fabrics with English-influenced patterns, and men made gradual changes to tailoring and fit. Men and women also adopted western fasteners, like buttons or perhaps belt buckles such as the D-rings found at Bras d'Eau (Fig. 5.13).

Identity photographs taken of newly arrived immigrants have provided Mauritian researchers a rich source of information on the types of dress nineteenth-century indentured laborers wore despite that they only capture their head and upper torso. These photographs were

[11] Ironically, some of the earliest known archaeological buttons are from the Indus valley, Pakistan, associated with the Harappan civilization (c. 2300 to 1700 BCE). These single-hole buttons were typically made of made from ceramic, shell, bone, and ivory and likely decorative as opposed to fasteners, or were inscribed and function as seals (Kenoyer 2006).

a required form of identification for indentured immigrants after 1867, though earlier examples exist (Mishra 2010). Nalini Treebhoobun (2012) examined identity photographs for differences in north and south Indian dress and jewelry and observed that many men were already wearing western-style shirts and coats when they arrived in Mauritius as indentured laborers, which presumably would have used buttons. Amenah Jahangeer-Chojoo (2004), in studying the identity photos of Muslim immigrants, similarly found that men often wore shirts with heavy coats over them and *kufi* (*tok* in Creole) or turbans on their heads and. Women wore saris or long skirts called *lehenga* and *penoir,* an old Mauritian term for blouse.[12] Identity photos depict several new immigrant men wearing coats with large brass buttons, but according to Jahangeer-Chojoo (personal communication), indentured laborers sometimes purchased second-hand British uniforms in Mauritius because of their warmth and tailoring.

Anthropologists have looked critically at the intersection of globalization and second-hand clothing in non-western societies (Hansen 2000; Na'amneh and Husban 2012; Appelgren and Bohlin 2015) and in doing so are moving away from older anthropological models that identified such societies as "cargo cults" (see also discussion of the ceramic market and non-western demands). These buttons represent the beginning of this global trend of selling second-hand clothing to the global south.

Jewelry

Jewelry items represented 10% of the small finds category. The 86 cowrie shells found across almost all the excavation units could have been used as beads, currency, or both (see more detailed discussion in Fauna and Shell section). Jewelry items included a cuprous ring in Unit 5,

[12] From the French *peignoir* which refers to a robe or dressing gown.

some very small fragments of a red and black glass bangle from Unit 3/7, and a decorative metal fragment that is likely a broken bangle or anklet (Fig. 5.14). We also found a total of only 7 beads, even after sorting the heavy fractions from flotation sampling. A single, round yellow bead was found in Unit 5 and the remainder were in the long barracks and yard. Glass beads hold a prominent role in southern and eastern African archaeology (and beyond) as valued objects of adornment as well as trade items, most of which were imported to Africa from South and Southeast Asia until the mid-seventeenth century, when Europeans, imitating Indian bead styles, took over the market (Marks 1972; Dussubieux et al. 2008; Robertshaw et al. 2010; Wood 2018). A small round copper bell in Unit 12 could have been attached to an ankle strap worn by dancers, used like a bead to adorn one's dress, or it could have been part of a toy for a child.

Jewelry was a portable form of wealth and personal identity that could be carried on the Indian Ocean voyage, and heirloom pieces appear in the documentary record when descendants used the courts to contest inheritance after a family member's death (Carter 2006). Both Treebhoobun (2012) and Jahangeer-Chojoo (2004) in their scholarship on indenture identity photographs chose to reprint photographs of women who seemingly arrived heavily adorned in necklaces made of beads, solid metal, or strung coins, as well as earrings, nose rings, and head ornaments. However, it is unclear how representative these select portraits are of the general immigrant population. Production of glass beads and bangles began at least 2000 years ago on the subcontinent (Kanungo et al. 2010). Bangles were part of the exchanges between China, India, the Middle East, and eastern Africa that formed the Silk Road (Boulogne and Hardy-Guilbert 2010). It is unknown whether the bangle found at Bras d'Eau was made in India or imported from elsewhere. Bangles of carved conch shell (chank), gold, ivory, bone, iron, glass,

or clay are an important part of a woman's wedding garb in India and often became symbols of a woman being married (Thaliath 1962; Tarlo 1996; Dasgupta 2017).

Rochona Majumdar (2009: 142-148) conducted a study of changes in marriage and kinship among urban middle-class families in Bengal the end of the nineteenth to beginning of the twentieth centuries. She notes that at the end of the nineteenth century, urban middle-class Bengalis sought a position of compromise in their marriages, between the Victorian "companionate couple" and nuclear family model on the one hand, and the more familiar joint family model in which a marriage encompassed the extended family on the other. Jewelry remained an important part of the marriage process, for the bride herself to wear, as well as in the dowry sent to her in-laws (pp. 142-145). Among higher castes, upon becoming a widow a woman would break her bangles (Hornell 1918: 444; Sankalia 1947: 253; Tarlo 1996: 157). Oldenburg (2002) and Majumdar (2009: 57) both state that dowry practice itself emerged in the second half of the nineteenth century across different parts of India and replaced earlier systems of bride price, dowry, and *stridhan* or woman's wealth. In Mauritius, however, Sooben (2013: 68) asserts that marriage practices shifted from the general tradition of bridal dowries for the groom or his family to the bride price (or bride wealth) paid to the bride's parents in nineteenth-century as a result of the lack of Indian women in the colony (see Quedou 2013 and Dilbur 2013 for modern marriage practices among Mauritian Hindus and Mauritian Muslims, respectively). In Mauritius, different types of jewelry or adornment were outward statements that a woman was married or her husband was alive and varied depending on where in India the woman was from (Treebhoobun 2012: 92). These symbolic objects included gold or silver nose rings in the left nostril (*nath*), pendants called *thali* worn on threads or black beaded necklaces (*mangalsutram*), and toe-rings (*bichiya or bichuwa*). The most important and most common symbol was the

placement of *sindoor*, a red powdered pigment made from vermillion, along the central part of one's hair (Treebhoobun 2012: 92-3).

In the plantation context where men could outnumber women seven to one, efforts to mark marital status may have been particularly important. We might also consider that women were not the only group to wear jewelry. Indentured women inhabited a shifting role in their relation to men, engaging in polyandry, separation, remarriage, and multiple relationships (Carter 1994; Sooben 2012: 62), and although no men are wearing jewelry in the identity photographs as noted previously, plantations could be a space for the restructuring of gendered relationships and masculinity. The soundscapes of clothing and jewelry can be a provocative and tantalizing way to adorn the body (Loren 2012), such as the clinking of bangles, light and hollow rattle of cowrie shells, jingle of strung coins, tinkle of a bell, or swish of fabric. Perfume might also be considered a form of bodily adornment; a single blue glass bottle stopper was found in Unit 5 (Fig. 4.8). Small and yet conspicuous as the only blue glass artifact within the entire assemblage, it is one of the only luxury items we recovered in the assemblage and hints that the residents of individual houses may have had better economic means than their fellow immigrants residing in the barracks.

Whether new modes of dress and identities that integrated multiple ideas, styles, designs, and patterns was the westernization of Indian practices, or the "indigenization" of western practices, to borrow from Majumdar (2009), is a matter of perspective. In Mauritius, we can interpret these consumption patterns as contributing to the emergence of Mauritian identities and cultural practices. Indentured immigrants undoubtedly learned terms like *penoir* from the formerly enslaved and free Creole population.

Shell and Fauna

Fauna

We recovered the bone from a range of animal species that show laborers supplemented their diets with animal protein, consuming sheep, goat, rabbit, pig, and poultry. Mammal, fish, and bird bones were found during excavations in both barracks-style structures and in the individual house (Unit 5), whereas only a few fragments were found in the excavation unit in Zone 1 and *no* animal bone was found in any excavation units in Zone 2. Furthermore, when looking at the entire excavated artifact assemblage, more fauna was found in Unit 5 and units 3/7 than expected. When comparing the individual dwellings and barracks, more fauna was recovered from the former than latter. This suggests that residents of the individual dwellings had accumulated the means to either purchase meat, or had been living on the estate long enough to buy and raise their own animals. This is supported by the numerous chert gastroliths found in the exterior yard space of Unit 5, already noted.

Shell

The shell and coral assemblage also resulted in interesting differences between the barracks and individual houses. Of the 425 fragments, I was able to identify only a little over half to taxonomic family (Table 5.7). Of those identified, 86 belonged to the Cypraeidae family, commonly known as cowrie shells. Cowries were one of the few items found in all excavations units with the exception of Unit 8. Most were single loose shells, but in Unit 1 we found 7 shells clustered in a small cache, similar to the cache of silver coins found in Unit 3 mentioned above. Cowries were used as currency into the nineteenth century in China, Southeast Asia, and the Indian Ocean all the way to West Africa, and transported in large quantities from the Indian

Ocean to buy into local markets by European traders (Yang 2011) and as beads (see previous section). Cowrie shells made up a much larger percentage of the entire shell in the individual units than in the barracks (see Fig. 5.15). Other identifiable shell included species gathered for food. Small clams called *tektek* in Mauritius (*Mesodesmatidae* family, possibly *Paphies* genus) are dug from the sand and boiled into a broth. Large snail-like *gonogono* (*Turbinidae* family, *Turbo* genus) are typically eaten raw or grilled. More tektek and *gonogono* fragments are likely among the miscellaneous shell (Fig 5.16).

Far more coral was found in the long barracks than in the individual structures, particularly by weight, which is likely due to the fact that more mortar and plaster was used in the barracks than in the houses, coral being the source of the lime needed (see Table 5.7). Akin to the abundance of fauna in Unit 5, the quantity of fauna and shell in the individual dwellings indicates that residents of those houses knew how to exploit ocean resources, suggesting they had lived on the island long enough to acquire those skills and had time to raise or purchase animals.

Archaeobotanical Remains

During excavations we also collected visible charred macrobotanical samples and processed flotation samples for the carbonized remains of foodstuffs and charcoal. Jacob Morales-Mateo (Universidad de Las Palmas de Gran Canaria) analyzed all flotation samples (Appendix II macrobotanical report). Samples contained rice and two identifiable types of pulses: pigeon pea and grass pea, both common in Africa and India, and passion fruit seeds, the only likely plant species grown locally. These samples tell us that laborers at Bras d'Eau were

able to maintain a familiar and culturally consistent diet, but this had unintended consequences for the environment. Pigeon pea and grass pea must have been imported because they require a winter seasonality and cannot be grown in Mauritius's tropical climate. Jacob also found two rice weevils that exclusively feed on stored cereal grains such as rice, wheat, or maize. It is likely that these were not the only species that hitched a ride in transcontinental shipments of food and other products. Modern examples of displaced insects, such as the Asian long-horned beetle, are an indication that small species like the rice weevils can have a huge impact on local ecologies. The shift to monocrop agriculture of course had significant consequences for the island environment, but the desire for specific non-local foods by indentured men and women also meant that Mauritius had to import food to feed the growing population.[13]

The only wild plant taxon retrieved were acacia seeds, similar to the *acacia concinna*, also called *shikaikai*, native to central and south India. The acacia seeds, leaves and bark are used as soap, particularly for the hair and scalp to treat dandruff or itchiness. Among the Tamil community in Mauritius, *shikaikai* is also used to purify children during Diwali, the festival of light (Boolell and Semboo 2008). The green leaves have an acidic taste and are crushed and added to chutneys *(satini)*. While the history of mass importation of foodstuffs and introduction of new domesticates like sugar cane and manioc are evident through archival documents, the archaeological record suggests that indentured laborers may have also brought wild species with them from India.

[13] Archival documents indicate that Bras d'Eau was growing manioc in addition to sugar, but indentured laborers complained of having to eat manioc when rice was not available or not provided by the estate. The resistance to manioc seems to have continued into the twentieth century; an elder from the nearby village of Roches Noires recalls eat manioc flour when her family could not afford rice.

Mauritian friends and colleagues of all generations also recall their parents and grandparents cooking in gardens over wood fires, in *marmites* propped on three stones or bricks. Whenever we would find a *marmite* fragment in the field, a research assistant in her late 20s, Anusha, would tell me how much better curries tasted when cooked over open flames: "*to bezin manzmanzé cui lor di boi déhor! Li ena plis gou—extra bon*." Although some younger Mauritians do not remember cooking outside, many can point to *marmites* still kept in gardens and sets of basalt grindstones used to crush spices, lentils, wheat, and other food products by their grandparents. I continue my analysis of artifacts at the end of Ch. 6 after reviewing the ceramic assemblage.

Figures and Tables

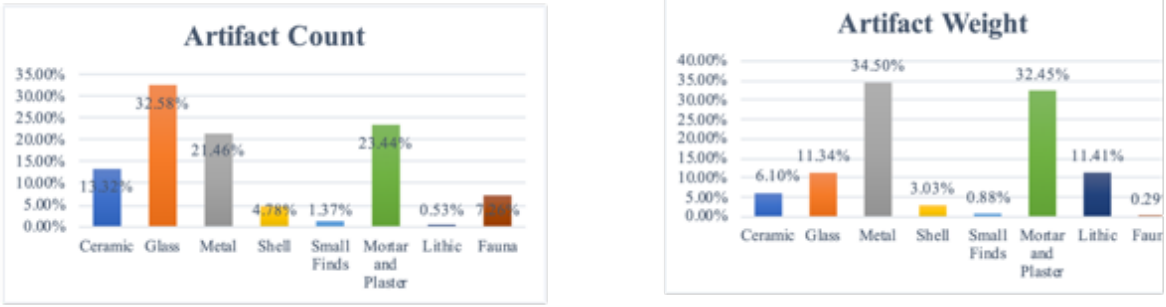


Figure 5.0 Summary of all artifacts from excavations

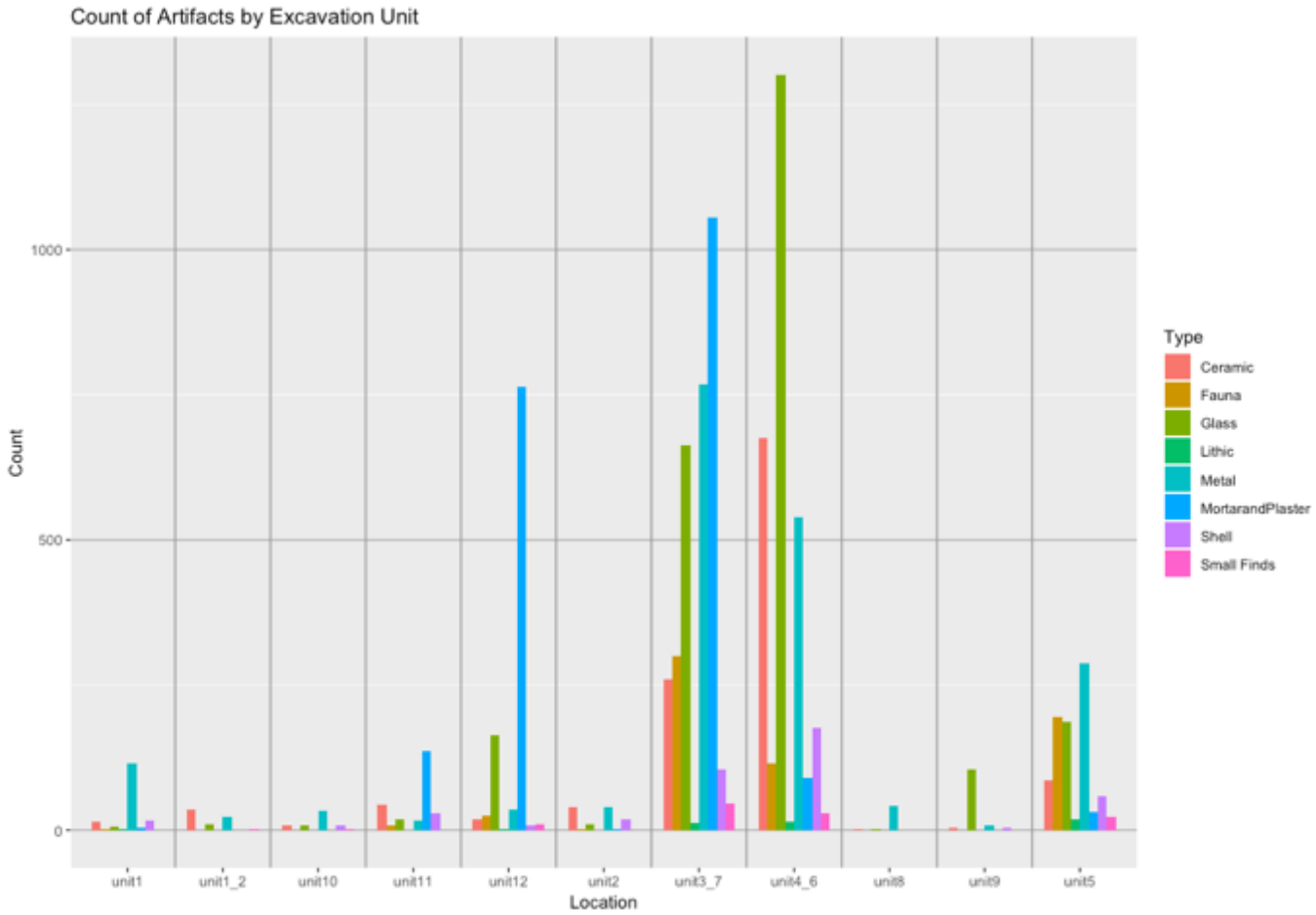


Figure 5.1 Distribution of artifact types across excavation units

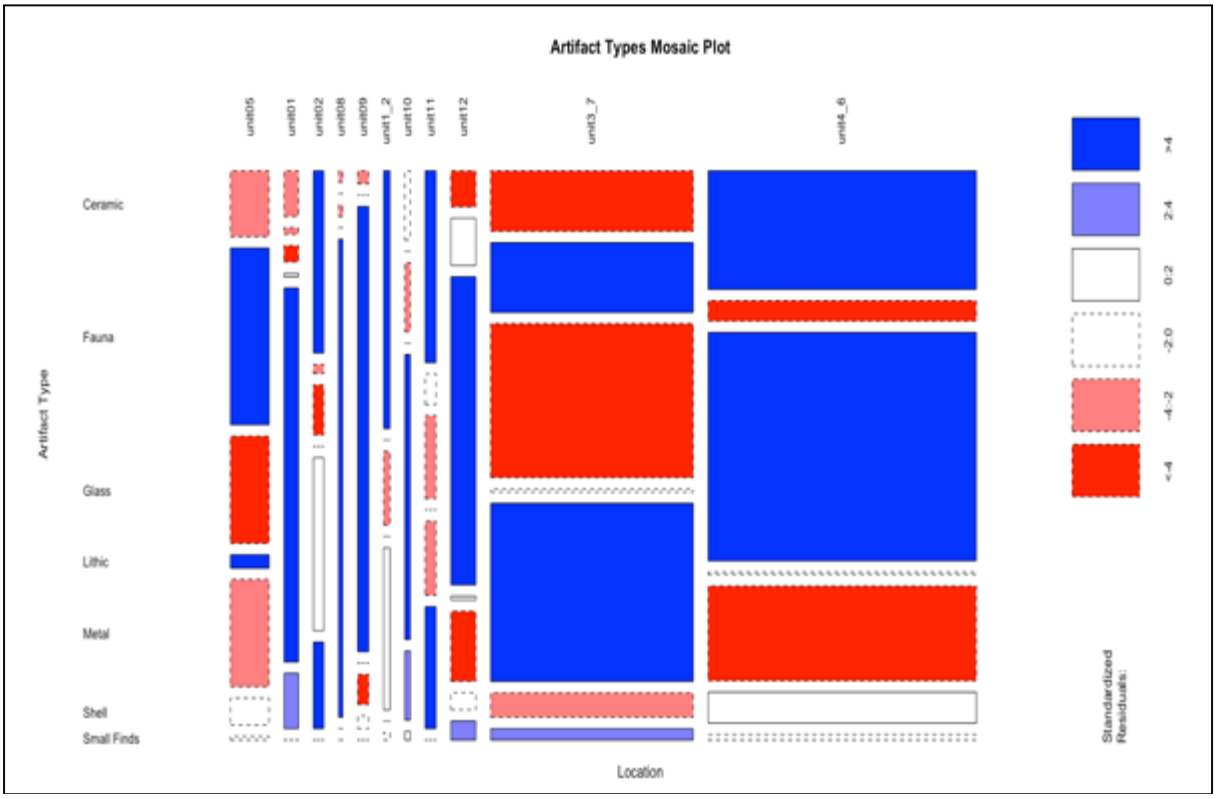


Figure 5.2 Mosaic plot of all artifact types per excavation unit

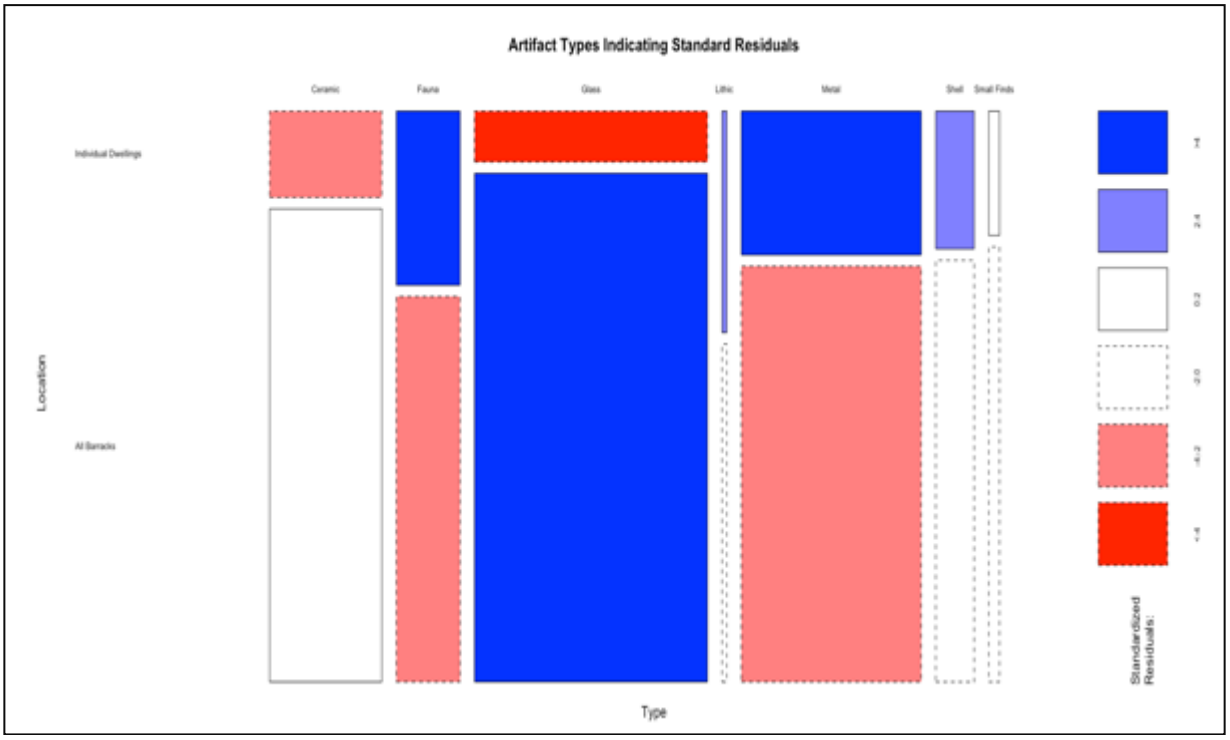


Figure 5.3 Mosaic plot of artifact types by individual dwellings and barracks

Figure 5.4 Photographs of glass artifacts

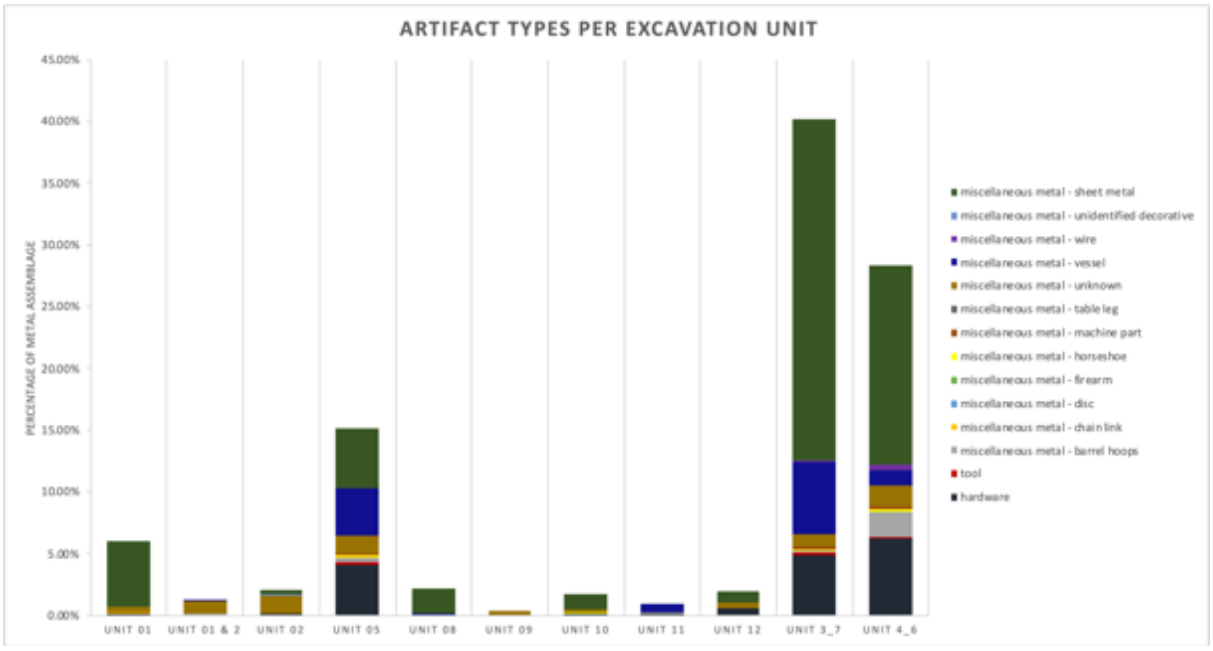


Figure 5.5 Proportional distribution of metal artifact types per excavation unit

Figure 5.6 5.7 5.8 Detailed proportions of metal artifact types based on category

Figure 5.9 Photographs of metal artifacts

Figure 5.10 Photographs of lithic artifacts

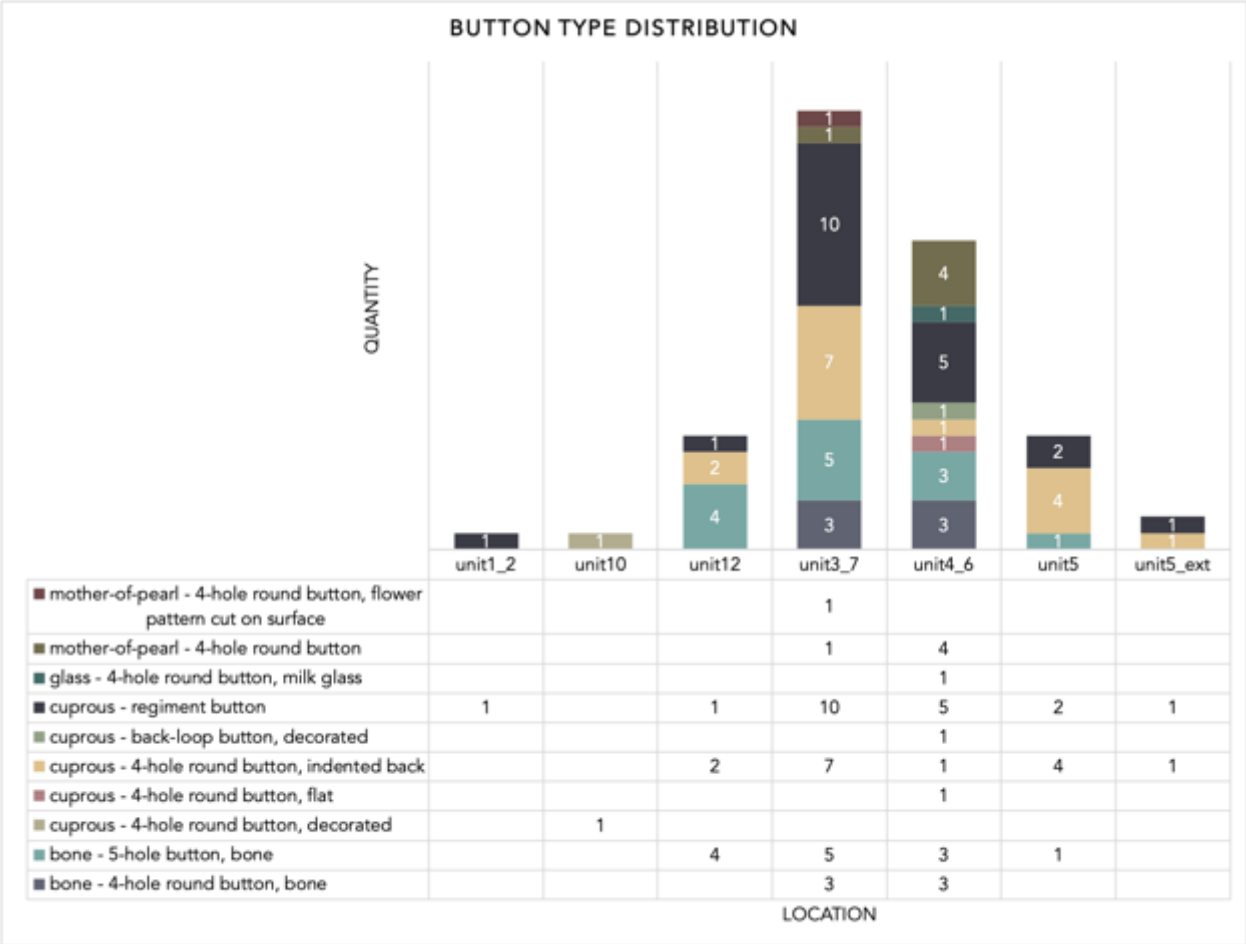


Figure 5.10 Distribution of buttons based on style

Figure 5.11 Photographs small finds

Figure 5.12 Photographs of umbrella parts

Figure 5.13 Photographs of objects of adornment

Figure 5.14 Photographs of jewelry

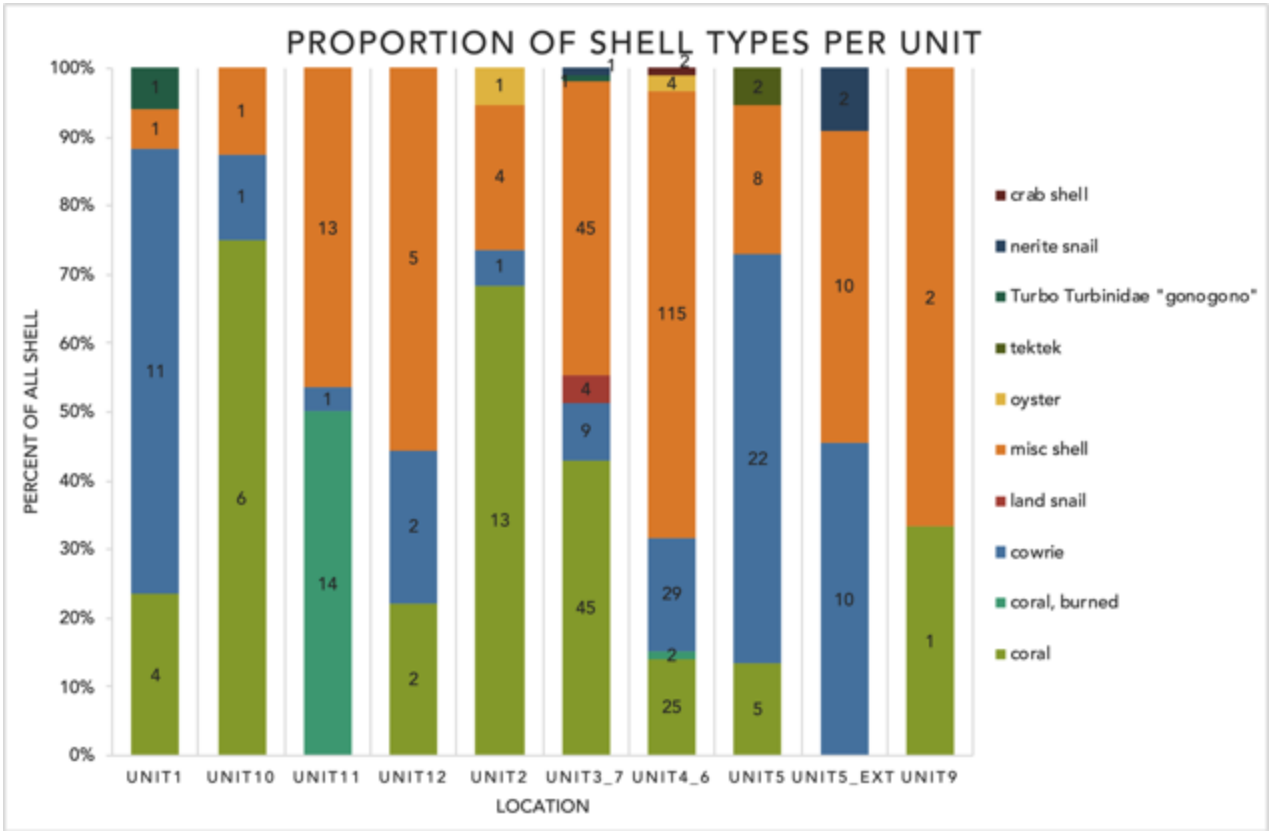


Figure 5.15 Graph showing the proportion of shell artifacts in each unit

Figure 5.16 Photographs of shell artifacts

Summary of Artifacts from Excvations

		Ceramic		Glass		Metal		Shell		Small Finds		Mortar and Plaste		Lithic		Fauna		Total	
		Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)	Count	Weight (g)
Zone 1	Unit 11	44	131	19	46	17	40	28	76	0	0	136	496	0	0	7	0.2	251	789.2
Zone 3 Laboteri Quarter	Unit 1	14		5		115		17		0		3		1		1		156	
	Unit 2	40		11		39		19		0		2		0		1		112	
	Unit 1 and 2 surface	35		10		22		0		1		0		0		0		68	
	structure 2 surface	14	93	25	310	26	69	2	97	0	0	2	21	0	0	0	0	3212	21623.8
	Unit3	165	420	396	527	249	1116	40	49	24	55	151	634	1	3	69	31.5		
	Unit7	81	153	242	795	492	4138.6	63	298	26	57	903	8566	10	4116	231	74.7		
	Unit4	288	564	615	656	180	1597	66	145	9	4	10	25	5	89	43	3.8	2949	14843.7
	Unit6	386	1087	687	1412	360	5922.2	111	421	27	95	79	1719	10	1102	73	1.7		
	Unit5	85	283	186	899	288	2866	59	303	23	201	32	123	18	95	195	21.8	886	4791.8
	Unit12	19	88	163	350	36	240	9	24	10	6	764	3807	2	5	25	3.4	1028	4523.4
Zone 2	Unit8	1	29	1	2	42	57	0	0	0	0	0	0	0	0	absent	NA	44	88
	Unit9	3	13	104	228	7	28	3	6	0	0	0	0	0	0	absent	NA	117	275
	Unit10	8	33	8	152	33	285	8	18	1	0	0	0	0	0	absent	NA	58	488
	Total	1183	2894	2472	5377	1906	16359	425	1437	121	418	2082	15391	47	5410	645	137.1	8881	47423

Table 5.0 Summary of all artifacts from excavations

		BOTTLE				TABLEWARE			VESSEL	DECORATED		FLAT	UNKNOWN	
		alcohol	medicinal	unidentified bottle	cosmetic bottle stopper	cup	stemware	unknown	unknown	boss	unknown	window	unknown	Grand Total
BARRACKS	Unit 12	155 95%				1 1%			7 4%					163 100%
	Unit 3 & 7	576 87%	7 1%	8 1%					39 6%			33 5%		663 100%
	Unit 4 & 6	1147 88%	4 0.3%	53 4%		5 0.4%	1 0.1%	1 0.1%	30 2%	1 0.1%	2 0.2%	49 4%	9 1%	1302 100%
INDIVIDUAL DWELLINGS	Unit 1 & 2	14 54%		7 27%		1 4%			2 8%			2 8%		26 100%
	Unit 5	163 88%		7 4%	1 1%	2 1%			6 3%			6 3%	1 1%	186 100%
1A	Unit 11	15 79%		3 16%					1 5%					19 100%
6B	Unit 8	1 100%												1
	Unit 9	92 88%							12 12%					104
	Unit 10	7 88%										1 13%		8 100%
Grand Total		2170	11	78	1	9	1	1	97	1	2	91	10	2472
Percent of total		87.78%	0.44%	3.16%	0.04%	4.45%			3.92%	0.12%		3.68%	0.40%	100%

Table 5.1 Glass artifacts by vessel type or function

	Location	hardware						tool						miscellaneous metal											Grand total
		bolt	fastener	hinge	nail	washer	TOTAL	chisel	knife	metal working	screwdriver	spike tool	TOTAL	barrel hoops	chain link	disc	firearm	horseshoe	machine part	table leg	unknown	vessel	wire	unidentified decorative	sheet metal	TOTAL	
Individual Dwellings	unit 01				3		3								1						9				102	112	115
	unit 01 & 2			1			1							1							19	1			21	22
	unit 02				2		2														28	1		1	6	36	38
	unit 05		2	2	73	1	78	1		2			3	7	2			3	3		27	72	1		92	207	288
6B	unit 08													1								1			40	42	42
	unit 09																				7					7	7
	unit 10				3		3											1			4				25	30	33
1A	unit 11				3		3							1							13				14	17	17
Barracks	unit 12				11		11											1			7	1			17	26	37
	unit 3_7	1	4		86	2	93		2	1	1		4	2			1	2	4		20	110	3		528	670	767
	unit 4_6	1		2	114	2	119			1		1	2	38		1		3	5	1	32	23	8		308	419	540
	Grand Total	2	6	5	295	5	313	1	2	4	1	1	9	50	3	1	1	10	12	1	153	222	12	1	1118	1584	1906

Table 5.2 Metal artifacts by type

	PROVENIENCE	cuprous	iron	lead	Grand Total
BARRACKS	short, unit12		34	2	36
	long, unit3_7	10	753	4	767
	yard, unit4_6	13	522	5	540
INDIVIDUAL DWELLINGS	dwelling, unit1		114	1	115
	surface, unit1_2		22		22
	yard, unit2	3	36		39
	dwelling, unit5	13	268	7	288
1A	unit11		17		17
6B	long structure, unit8		42		42
	square structure, unit9		7		7
	long structure, unit10		33		33
	Grand Total	39	1848	19	1906

Table 5.3 Metal artifacts by material

LOCATION:	unit 1	unit5	unit5_ext	unit3_7	unit4_6	unit12	Grand Total
BASALT				**6**	**2**		**8**
"ros cari", smoothed on one side				1	1		2
cobble, "baba ros cari"				1	1		2
cobble, "baba ros cari", peckmarks on side				2			2
worn cobble				1			1
worn cobble				1			1
CHERT	**1**	**6**	**11**	**1**	**5**	**2**	**26**
chert, unworked	1						1
gray chert, cortex, broken, unworked		1					1
gray chert, cortex, unworked						1	1
gray chert, water worn pebble		1			1		2
gray chert, water worn pebble, cracked in half					1		1
grayish yellow chert, gun flint with bulb of precussion and trapezoidal shape		1					1
red chert, unworked					1		1
red chert, unworked		2	9				11
tan chert flake		1					1
tan chert, unworked					1		1
white chert, unworked				1			1
white, burned chert					1	1	2
yellowish brown chert, cortex, unworked			2				2
LIMESTONE					**1**		**1**
QUARTZ				**3**			**3**
quartz, water worn cobble				1			1
quartz, water worn pebble				2			2
SLATE		**1**		**2**	**2**		**5**
flat slate with iron deposit on side of slate				1			1
slate				1	2		3
slate, possibly carved curved side		1					1
UNKNOWN				**1**	**4**		**5**
sedimentary fragment, rectangular with rounded corners and apprently cut and smoothed flat on one side					1		1
water worn pebble				1	2		3
water worn pebble with hole in middle					1		1
Grand Total	1	7	11	13	14	2	48

Table 5.4 Lithic artifacts

SMALL FINDS

Row Labels	unit1_2	unit10	unit12	unit3_7	unit4_6	unit5	unit5_ext	Grand Total
bell			**1**					**1**
small ball copper bell (jingle)			1					1
button	**1**	**1**	**7**	**27**	**19**	**7**	**2**	**64**
clothing			**1**	**4**		**3**	**1**	**9**
belt buckle				1		1		2
D-Shaped buckle				1			1	2
hook-and-eye fasteners			1	1		2		4
small copper loop				1				1
coin				**5**	**1**			**6**
1st side: bust "-1839. 2nd side: woman in chariot					1			1
Side 1: "Louis Phililppe I / Roi de Francais" around circumference with bust Side 2: "1/2 / FRANC / 1841" inside garland wreath				4				4
Side 1: bust at center- illegible writing Side 2: illegible writing inside garland wreath				1				1
decorative ornament					**1**	**1**		**2**
disc shaped decorative ornament with embossed 8-petal flower and scallops					1			1
dome shaped decorative ornament with starburst pattern on the center						1		1
jewelery				**5**	**5**	**2**		**12**
bangle or anklet with molded columns and two cord-like bands					1			1
bangle-sized ring with mesh bars and dots					1			1
bangle, black and red glass				2				2
flat, round shell bead				2	1			3
ring, slit at center, tapers						1		1
round glass bead, red					1			1
round glass bead, yellow, oxidized						1		1
seed-bead, white				1	1			2
key				**3**	**1**	**1**		**5**
iron key with a round loop handle				3	1	1		5
lock					**2**	**1**		**3**
iron padlock, copper door cover					2	1		3
toy				**1**	**1**	**2**		**4**
limstone marble				1	1	2		4
umbrella or parasol			**1**	**1**	**1**	**1**		**4**
parasol runner			1			1		2
parasol tip				1	1			2
lead bullet				**1**		**1**		**2**
slate pencil				**2**				**2**
sewing thimble						**1**		**1**
Grand Total	**1**	**1**	**10**	**49**	**31**	**20**	**3**	**115**

Table 5.5 Small find artifacts

BUTTONS							
	Individual Dwellings		Barracks			Area 6B	Grand Total
	unit1_2	unit5	unit3_7	unit4_6	unit12	unit10	
BONE		1	8	6	4		19
4-hole round button, bone or horn with incised center circle			3	3			6
5-hole button, bone or horn with incised center circle		1	5	3	4		13
CUPROUS	1	8	17	8	3	1	38
4-hole round button, flat				1			1
4-hole round button, indented back		5	7	1	2		15
4-hole round button, with decorative embossed circle of small dots. Back missing						1	1
back-loop button, "ROYAL SAPPERS & MINERS" with center initials "JR"?					1		1
back-loop button, 12 Regiment with crown				1			1
back-loop button, 16 Regiment with crown, back: corroded	1						1
back-loop button, 35 Regiment with circle BACK: "NUTTING LONDON"			1				1
back-loop button, 35 Regiment with crown			1				1
back-loop button, 35 Regiment with crown FRONT: "SUSSEX" BACK: "NUTTING LONDON"			1				1
back-loop button, circle on front, heavily corroded				1			1
back-loop button, front missing, "+ FIRMIN & SONS + LONDON"		1	2				3
back-loop button, front: "QUO FATA INVOCANT" around prancing horse. Back: "FIRMIN LONDON"		1					1
back-loop button, front: corroded Back: "--UTTING LONDON"		1					1
back-loop button, heavily corroded			4	2			6
back-loop button, pattern of stripes of dots with polka dots between				1			1
back-loop button, plain front, heavily corroded				1			1
monographed molded round button with crown (back missing)			1				1
GLASS				1			1
4-hole round button, milk glass				1			1
MOTHER-OF-PEARL			2	4			6
4-hole round button			1	4			5
4-hole round button, flower pattern cut on surface			1				1
Grand Total	1	9	27	19	7	1	64

Table 5.6 Buttons

Sum of Number of Fragments	Column Labels										
Row Labels	coral	coral, burned	cowrie	land snail	misc shell	oyster	tektek	Turbo Turbinidae "gonogono	nerite snail	crab shell	Grand Total
unit1	4		11		1			1			17
unit10	6		1		1						8
unit11		14	1		13						28
unit12	2		2		5						9
unit2	13		1		4	1					19
unit3_7	45		9	4	45			1	1		105
unit4_6	25	2	29		115	4				2	177
unit5	5		22		8		2				37
unit5_ext			10		10				2		22
unit9	1				2						3
Grand Total	101	16	86	4	204	5	2	2	3	2	425

Sum of Weight	Column Labels										
Row Labels	coral	coral, burned	cowrie	land snail	misc shell	oyster	tektek	Turbo Turbinidae "gonogono	nerite snail	crab shell	Grand Total
unit1											
unit10	6.5		1		11						18.5
unit11		29	2		45						76
unit12	5		11		8.5						24.5
unit2											
unit3_7	264.5		54.5	3	69.5			55	1		447.5
unit4_6	120	3	158		258	27				1	567
unit5	20		107		75		6				208
unit5_ext			62		27				7		96
unit9	5				1.5						6.5
Grand Total	421	32	395.5	3	495.5	27	6	55	8	1	1444

Table 5.7 Shell artifacts

Chapter 6: The Ceramic Assemblage at Bras d'Eau

Ceramic artifacts are one of the most well studied artifact types in archaeology because of their durability, omnipresence, and range of information that can be gleaned from them. In this chapter I discuss my methodology for cataloguing the ceramics at Bras d'Eau, describe the different ware types, and compare this assemblage to other regionally available collections. In the last section I draw together the results of my analysis of the entire artifact assemblage and discuss the conclusions I reached through material culture as indexing the activities and emerging identity practices of the laboring population.

Dating of archaeological remains was based on ceramic sherds collected through excavation and systematic gridded surveys of four targeted areas of the site around the sugar mill and the laborers' quarter. Historical archaeologists can determine the date range of a site's occupation to within a few decades using specific types of ceramic artifacts known to have been produced in Europe between specific dates, and which went through phases of popularity. Production dates of particularly ubiquitous types like polychrome hand painted and sponge painted whiteware should be applicable to archaeological sites around the world (see descriptions below). In addition to using ceramics for dating stratigraphic levels and household occupations, as with all imported goods, ceramics are also helpful for understanding the global flow of trade goods into Mauritius and what markets indentured laborers had access to. Ceramic vessel sizes, shapes, and styles also can indicate cooking and eating practices, changes in foodways, and social differentiation between households or communities. The heterogeneity or homogeneity of household ceramic assemblages in terms of the vessel forms, ware types, or in decorative motifs and colors can indicate important intra- and inter-site social dynamics. However, a comparison of

style largely depends on how the archaeologist defines the units of design, and whether the potter's process and choices are considered (Rice 1987).

Ceramic assemblages have been used to look at social stratification or class differentiation based on market access (Spencer-Wood 1987; Hauser 2008), but archaeologists have also cautioned against the idea that "people = pots"; while material goods are a reliable indication of past activities, they are not always a perfect indication of identity (Sinopoli 1991). Determining the "quality" or "value" or "function" of ceramics within a specific culture is not always obvious. Nevertheless, production of local ceramics by enslaved Africans and other colonized persons on plantation systems has been a central line of inquiry for archaeologists working in the Atlantic region, as well as for those working in colonized contexts in other locales around the world (Ferguson 1992; Wilkie 2001; Fennell 2003; Marshall 2011).

Ceramic artifacts make up only 13% of the excavated artifact assemblage (N=1184 individual sherds) at Bras d'Eau (Fig. 5.0). This fact alone may set this assemblage apart from contemporaneous historical archaeological sites, since ceramics most often represent the largest class of artifacts found in excavations (Barker and Majewski 2006: 205), yet at Bras d'Eau they represented the third most common type behind metal and glass. The ceramic assemblage from excavations in barracks, yards, and dwellings is considered here based on ware type, decoration, and vessel type or form.

Methodology of Ceramic Analysis in the Indian Ocean

In my analysis of the Bras d'Eau assemblage I consider the ratio of ware types, decorative patterns, vessel shape and use, and compare these categories within excavated structures. The

macro vessel form was recorded for identifiable sherds: hollow (hollow vessels with unknown opening), open (vessels with decorative patterns on the interior indicating an open rim, but unknown body shape), hollow open (primarily bowls), hollow closed (jars or other closed-lipped vessels), and flat (for plates). Where possible, the specific vessel type, such as teacup, plate, bowl, jar, pipe, or hookah fragment was recorded.

One of the challenges of working in the Indian Ocean on colonial-era sites is that few comparative studies are available to assist with artifact identification and dating. I relied primarily on artifact topologies established from North American sites and British Caribbean sites where both local and British, American, Spanish, and to a lesser extent French export wares dominate the ceramic landscape (see Barker and Majewski 2006 for a review of the development of American and British ceramic typologies). Reference collections I consulted include Monticello's Digital Archaeological Archive of Comparative Slavery (daacs.org), The Florida Museum Historical Archaeology Digital Type Collection (floridamuseum.ufl.edu), Jefferson Patterson Park & Museum's Diagnostic Artifacts in Maryland (jefpat.org), the online resource "An Archaeological Guide to Historic Artifacts of the Upper Sangamon Basin, Central Illinois" (Stelle 2011), The Parks Canada Glass Glossary (Jones and Sullivan 1989), and the historical archaeology section in Museums Victoria Collections online (collections.museumvictoria.com.au). I also consulted excavation reports from the East African coast including Lydia Wilson Marshall's (2011) dissertation work on *watoro* (maroon) settlements in Kenya, Sarah Croucher's (2015) work on clove plantations in Zanzibar, and James Kirkman's (1974) exploration of Fort Jesus, Kenya.

The majority of the ceramics recovered were imported tablewares, mass-produced in Europe during the nineteenth century for both local use and export. Durable and easily

identifiable, European-made ceramics are ubiquitous across colonial archaeological sites around the world and central for establishing the dates of habitations. The principal European-made ware types which historical archaeologists have identified for the eighteenth, nineteenth and twentieth centuries relevant to the Bras d'Eau assemblage are creamware (1762-1820), pearlware (1775-1840), whiteware (1820-present), ironstone (1840-present), stonewares (1600-1900) and porcelaneous /English Hard Paste (1820-present) (see Aultman et al. 2013). Different patterns, motifs and decorative technologies enjoyed periods of popularity and are therefore useful for dating (for seriation of datable motifs see Madsen and White 2011: 57; Bates and Cooper 2014). The same nineteenth-century wares are found in the Americas as in the Indian Ocean colonies and settlements in southern and eastern Africa, Australia and Mauritius (Kirkman 1974; Marshall 2011; Le Chartier et al. 2013).

Britain was a prolific producer of ceramics, particularly white-bodied tablewares, but other production centers, albeit smaller in scale, exported similar ware types. For this project it was important to consider that some of the ceramic at Bras d'Eau were likely produced in these smaller production sites given Mauritian colonists' continued close familial and economic ties to France, and trade networks within the Indian Ocean. For example, salt-glazed stoneware blacking and ink bottles are typically attributed to British production in the Atlantic world. However, turning to archaeological sites in Australia, comparable blacking bottles were *also* produced locally (Brooks 2005). For example, the Epsom Pottery—later known as the Bendigo Pottery—located in Victoria, Australia, was founded in 1858 by a Scottish immigrant (Graham 1979: 71). The workshop produced a range of stonewares: smooth creamy-white "Bristol"-style ceramics; high-luster brown and rough-surface salt-glazed stonewares in various vessel forms—jugs, bottles, ink pots, and pitchers etc. (Graham 1979: 75). Furthermore, from the fourteenth

through nineteenth centuries several French potteries, such as the Martincamp potters in Normandy, also made stonewares similar to what are typically identified as British in the Americas (Hébert 2012). Among historical assemblages in the Atlantic, faience is often the only ceramic type which archaeologists catalogue as originating in France. Faience is a seventeenth-eighteenth-century soft-paste earthenware with a tin-enamel glaze (Arcangeli 2015: 85-6). Faience table wares were often handprinted with floral or geometric patterns and cosmetic jars were stencil-printed. DAACS mean ceramic dating puts 1802 as an end date for tin-enamels. However, those working on French colonial sites such as the Rising Sun Hotel in New Orleans, claim the production of tin-enamel artifacts, particularly cosmetic containers, continued well into the nineteenth century (Dawdy and Weyhing 2008).

In eastern Africanist ceramic typologies, pottery with monochrome turquoise and blue alkaline, copper, or tin enamel glazes (previously called 'Sasanian-Islamic' or 'Near Eastern' wares) are attributed to North African and Middle Eastern production centers and are thought to range in date from the sixth through the twelfth century CE (LaViolette 2008: 35). Green-glazed decorated ceramics, often referred to as *sgraffiato*, range in date from the twelfth through seventeenth centuries CE (Chittick 1974: 302-304; Horton 1996: 15-16; LaViolette 2008: 35-37). Outside the eastern African context however, a North American specialist might call these same decorated green wares French faience. This inconsistency of basic nomenclature highlights the need for systematic comparisons of archaeological assemblages in the southern and eastern hemispheres.

Asian and European Ceramic

Ceramicists have only recently begun to focus on utilitarian export wares produced in Asia. Collectors' catalogues provide the best comparative references, however these typically are not based on archaeological material, at least in the Atlantic world where the majority of historical archaeological research has been conducted (Madsen and White 2011: 10). Chinese potters produced ceramics for local, European *and* non-Europeans markets, a fact often overlooked by historical archaeologists working in Euro-colonial contexts. Porcelain produced in the southeastern Chinese city of Jingdezhen, for example, was exported to Korea, Japan, Vietnam, South and Southeast Asia, Africa, and the Middle East (Finley 2010:169-74; see also Priestman 2018). Furthermore, porcelains and other mass produced stoneware are typically attributed to China, however Bing Zhao (2012) has recently noted that some of these industrial export ceramics found on eleventh to sixteenth century sites in eastern Africa were made in kilns and workshops in other parts of Southeast Asia such as Thailand, Vietnam, and Myanmar. For the purposes of this chapter I do not attempt to distinguish between Asian production sites, but it is critical that archaeologists bring some skepticism to the assumed origins of porcelains that date to the second half of the last millennium. Asian porcelains found on eastern Africa's Swahili coast in the period leading up to European colonial expansion exemplify coastal towns' engagement with global trade networks and the long importance that porcelains have had as luxury goods (Zhao 2012; Zhao and Qin 2018). The ceramic assemblages provide some interesting insight into Swahili society. For example, during the mid-eleventh century there was a shift from jars to bowls in the ceramic assemblage, which may be related to new rice cultivation and foodways in Africa (Zhao 2012: 63). However, Zhao (2012) also cautions against interpreting ceramics only as tableware because Swahili also incorporated ceramics into

architecture, setting them in plaster siding as decoration on houses and mosques, perhaps seeing decorative imported ceramics as a symbol for wealth, status, and feasting, and desiring a more public display of these goods than use within the household provided (Chittick 1974: 306; LaViolette 2008: 37; Fleisher 2010).

In the eighteenth century, Asian export porcelains became increasingly popular in Europe, in American and Indian Ocean colonies, as part of European interest and taste for Chinese aesthetics dubbed "chinoiserie" (Madsen and White 2010). There were other popular Chinese trade goods such as tea, spices, and fabric, but porcelain is one of the only durable goods and is therefore available in the archaeological record. During the seventeenth century in England, manufacturing and trade classes grew and sumptuary laws that forbid lower and middle class people from owning luxury goods were repealed. This led to an increase in middle-class consumption of local and imported ceramic goods that had been previously restricted to the elite classes (Madsen and White 2011: 7). Together, Asian- and European-produced ceramics are part of a larger global interaction network and it is perhaps misleading to consider these production and consumption markets as separate entities.

Stephen Plog (1983) argues that similarity in ceramic styles among different groups of people is linked to the level of social interaction between those people. On the other hand, dissimilarity does not necessarily mean that groups do not have a high level of social interaction, yet understanding why differences exist and how the archaeologist interprets them is a more difficult process. The interaction between Europe and China is a particularly striking example of Plog's former explanation of stylistic exchange. In response to the new market demands for Chinese ceramics, in the seventeenth century manufacturers of tin-enamel earthenware in Holland and England began to copy Chinese designs even though they were unable to replicate

the Chinese quality of porcelain and stoneware. Manufacturers such as Josiah Wedgwood and others in Staffordshire adopted the cobalt blue on white Chinese motifs, and vessel shapes such as straight sided posset pots (posset is a warm beverage made with milk and wine or ale), barrel shaped mugs, and teapot styles and handles (Madsen and White 2011: 24). The invention of creamware (mid-eighteenth century to c. 1820), pearlware (c. 1779 to 1840), and whiteware (c. 1820 to twentieth century) were attempts to create a thinner, harder-paste ceramic more similar to porcelain than earthenwares with softer pastes. Chinese producers also began to modify ceramic forms adding, for example, European-style handles to teacups.

One of the longest running design motifs is the "willow" or "pagoda" landscape, popular from the beginning of the eighteenth century through the middle of the nineteenth century (and still in use today). Early hand painted renditions of this pattern varied, but always depicted a willow tree and pagoda on a water's edge with mountains in the distance; the landscape image became a standard and iconic trope into the nineteenth century (Madsen and White 2011: 78-86; Fig. 6.1). We see evidence of other copying and pattern exchanges. For example, a whiteware, shallow bowl fragment found at Bras d'Eau is a perfect copy of a common bamboo pattern found on blue-on-white porcelain rice bowls at Bras d'Eau (Fig. 6.1 and 6.9), as well as earlier sites on the Swahili coast (see image of fourteenth-fifteenth-century blue on white pottery from Chwaka, Pemba Island, Tanzania in LaViolette 2008: 36; and eighteenth-century example in Kirkman 1974: plate 37). This consideration of the interaction between continents and changes in ceramic production and consumption is helpful not just for dating ceramics and site occupations but gives us some insight into one of the largest exchanges of ceramic products, ideas, and technologies.

The economic landscape of ceramic production is almost always portrayed as a two-way relationship between Chinese potters and European purchasing clients, traders/shippers, and

ceramic producers (who often imitated Chinese designs), leaving out the role that non-Europeans had in market demand even in seemingly peripheral spaces. As previous studies of the domestic spaces of enslaved people have shown, colonized or otherwise marginalized people did not accept imported foreign commodities without concern over preference, style, design, and function (see also my discussion of dress in the small finds section of the previous chapter). They did not exercise choice just within the range of materials offered to them, but influenced the shape of the market itself. Matthew Reeves (2011: 188, 196) notes that in the nineteenth century, Jewish ceramic merchants who brought goods to colonial Jamaica were well aware of the market they were buying for and kept not just Euro-Caribbean elite households in mind, but the broad population base of enslaved people (see also Wood 2018 on African rejection of European beads).

Although archaeologists catalogue ceramic artifacts by ware type, this cataloguing system also tends to divide the assemblage based on the place of production. In historical archaeology it is especially difficult to understand the meaning behind preference for different decorative and stylistic features because of the increasing ubiquity and global distribution of ceramic wares. The presence of Chinese or Asian porcelains in an assemblage do not necessarily represent Chinese or Asian Immigrants, just as European imports do not signal a European colonist's household. The same polychrome sponge and hand painted whitewares made in Staffordshire, England are found in nineteenth-century household assemblages at Bras d'Eau, *watoro* communities in Kenya (Marshall 2011), Benga settlements in Corisco, Equatorial Guinea (González-Ruibal 2015: 436-438), Inuit domestic and burial sites on the Canadian Labrador coast (Cabak and Loring 2000), and other plantation sites across the Caribbean and Americas

(Lange and Carlson 1985), but the significance of consumer choices presumably varied a great deal.

Alternative Possibilities for Ware Types in Mauritius

Archaeology is still relatively new in Mauritius. It is still unclear from archaeology whether any ceramics were produced locally, or if all ceramics were imported as has long been largely assumed. There has only been one close study of possible locally made ceramics from the Dutch and French periods at Fort Frederick Hendrik. In the early 2000s a team of Dutch archaeologists excavated sections of the fort (Floore and Jayasena 2010; Jayasena and Floore 2010). Jayasena and Floore (2010) found that in contrast to other Dutch Indian Ocean settlements such as Ceylon's (Sri Lanka's) Katuwana Fort, Fort Hendrik had to be self-sufficient because there was no local population to trade with, and inhabitants were unable to maintain a defensible fort without sufficient manpower, materials, or knowledge. Spijker (2006) closely studied Fort Hendrik's collection of almost two thousand "Mauritian coarse ware" sherds, an earthenware thought to be the only type of locally made ceramics. Spijker refines this ware category into four different types based primarily the fabric quality:

> *Coarse ware* has a soft paste, with an ochre-brown to salmon-pink exterior and grey or brown fraction (interior paste color caused by oxidation during firing). It is tempered with basalt, shell, coral and quartz temper. Sherd thickness ranges from 4 to 15 mm. Most coarse wares have a wheel-thrown rim, but a handmade base and shoulder, a technique that is also used in Malawi, Sri Lanka and India (p. 253).

Fine ware has a soft paste, orangey brown exterior color, gray faction, fine sand and mica temper, and is often burnished or painted with red or black/brown decorations. Sherds are thinner, ranging from 2 to 8 mm.

Hard fired ware has a hard paste and melted temper, typically with a brownish exterior and dark gray fraction. Sherds range in thickness from 5 to 18 mm. Both fine ware and hard fired ware are mostly wheel-thrown, though there are some handmade examples.

Tile-like ware is bright orange, has a semi-rough textured surface with abundant mica on the surface and a temper of sand, mica and few basalt fragments. Most of these wares are handmade, though there are some wheel-thrown examples (*tile-like* refers to the fabric, not the ceramic form).

No complete profiles are available unfortunately, but despite differences in fabric, Spijker argues that similar vessel forms are made with all ware types. Her analysis of vessel function is somewhat limited. Rather than considering the functional of the form, Spijker assumes vessels with crude rims are more likely to be used for cooking and storage, and those with polished and painted rims are more likely to be tableware (p. 262). This may be the case, although there are a range of open and closed vessels, and flat-bottomed and rounded vessel bases, that could help further clarify function. Use-ware patterns described by Hally (1983) may be better indications of the use of these ceramics. These patterns including sooting from heating the vessel over fuels such as wood, oxidation discoloration as "an indicator of how vessels were positioned relative to a heat source" (p. 12), and interior surface pitting from "thermal shock, chemical corrosion or physical abrasion" (p. 18) caused by stirring or scraping. Spijker concludes Mauritian coarse ware was probably imported along with porcelains and other goods from China, Japan, or South Asia, but notes that there are parallel manufacturing techniques in Africa as well. As

archaeological research progresses in Mauritius, comparative assemblages will help complete the "Mauritian Coarse Ware" typology, including the vessel profiles. A more rigorous comparison of these sherds to materials found in eastern Africa, Madagascar, and South Asia will be important as well.

Mauritian Potri

An alternative method for sourcing any unidentifiable coarseware sherds is to compare them with modern pottery made in local workshops and their clay sources. A report published by the University of Mauritius on the intangible heritage of local pottery (*potri*) manufacture suggests that red clay was not extracted to make bricks and pottery until 1920. It is very possible nonetheless that ceramic production occurred earlier either on an individual household level, in forgotten workshops, or on plantations that were later abandoned (UoM 2013: volume V).[14]

Two family-owned, multi-generational pottery workshops are located in the northern district of Terre Rouge, named after the area's bright red clay soils. Clay is collected from sugar cane fields after a harvest, usually from deposits 50 to 60 cm below the surface. At the potter's workshop, the clay is processed to remove organic materials, stones, and other impurities, soaked for about 15 hours, and kneaded to remove air pockets from the clay so it does not explode during firing (UoM 2012: 65). Basalt dust is added as a temper and the clay is kneaded again for an even texture. Vessels are left to dry for several days and are fired with the gradual increase in

[14] The Mauritian National Heritage Fund (NHF) and the Ministry of Arts and Culture and the University of Mauritius (UoM) initiated a project to inventory intangible cultural heritage following guidelines established by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) within the Convention for the Safeguarding of Intangible Cultural Heritage (UoM 2012: V). Two pottery workshops were designated as within the domain of traditional craftsmanship (UoM 2012 V: p. 65-66).

temperature to prevent objects from cracking (see Velde and Druc 1999: 108 for kiln technologies).

These workshops create a range of religious objects, vases, plates and vessel types. The most common are small clay oil lamps called *diyas* or more commonly *lamp* in Kreole (pronounced *lɒmp*). About 5 cm in diameter, potters shape the lamp quickly on a wheel and pinch the edge of one side to make a spout for the wick to rest on. These vessels are traditionally associated with the Diwali festival of light; however, they are also used during daily rituals within the house, at road intersections, at public shrines and temples, cemeteries, and small prayers on the beaches. While publicly, the lamps are used in Hindu ritual practice, the lamps are also used in the religious practice called *longanis*, and non-Hindu households will decorate their houses with lamp during Diwali. *Longanis* practitioners have the magical ability to heal the sick, divine the future, and influence people's character and destiny (see Caval 2018).

Kalsa or *kalasha* is a medium-sized vase used in Hindu wedding ceremonies. Such vases typically have a rounded body, narrow neck, and wide flared lip. The vessel is used to symbolize abundance; it is filled with water, milk, or coconut water, coins and precious metals or gems, and a coconut is placed over the opening (the wide lip allows it to sit upright). Other objects include *karha* or plate, *bandana* or incense burner, and *surah* or water vessels, though today *surah* are used as decorative objects. Bras d'Eau coarse earthenwares are compared to the ceramic wares documented by Spijker, east Africanist archaeologists, and modern Mauritian pottery, but the fragmentary nature of the ceramic assemblage and variability in the few examples of sherd types has made it challenging to identify explicit corollaries in other archaeological sites.

'Indian' Ceramics

Identifying ceramics that could have been made and imported from India is considerably more difficult than identifying those from Europe or Asia, given how little archaeological research has been conducted on archaeological sites in India from the colonial period (see Hauser and Wilson 2015). It is worth noting also that the "historical period" in South Asia begins in the mid-first millennium BCE (Smith 2016) and medieval period or (middle period) extends up to the 1600s (Morrison 2016), and therefore "historical archaeology" has a very different connotation in India than elsewhere in the world. Several studies of ceramics excavated from sites along the Swahili coast and Madagascar provide comparative examples to Spijker's (2006) description of fine ware. On the Swahili coast "Indian coarse earthenware" is a type of redware described as having a hard, fine-grained fabric, with a mica temper and are often painted red or black (for descriptions of Indian wares on earlier sites like Kilwa and Shanga see Chittick 1974 and Horton 1996, respectively).

Indian coarse earthenware found by Marshall (2011) on nineteenth-century fugitive slave sites in the hinterland of Kenya are pink to orange-red to reddish brown in color, with mica temper (compared to grit- and sand-tempered, locally produced ceramics) and have an average minimum thickness of 3.2 and average maximum thickness of 4.1 mm (p. 204). Marshall found only four sherds with red- or black-slip painted decoration on *watoro* sites contemporaneous to Bras d'Eau, but these "Indian wares" were the most common imported ceramic type recovered. Mica-tempered earthenware was also found by Croucher (2006: 439-440) on a nineteenth-century clove plantation on Pemba Island, Tanzania, and Kirkman (1974: 91-94) describes mica-tempered redware water pots in nineteenth-century occupation of Fort Jesus in Mombasa, Kenya. Wilson and Omar (1997: 57) describe a similar red ware with black painted designs on multiple

East African sites. The vessel forms are “utilitarian” closed vessels with typically narrow rims, and flat, conical or curved bases (Marshall 2011: 206). Marshall (2011) and Kirkman (1974) concede that it is possible potters were Indian by origin but lived in urban centers in Africa. Clay sourcing or comparison to nineteenth-century ceramic assemblages in India would be necessary to confirm potter’s manufacturing location, but the similarity in these rough descriptions suggests that pots, potters, or manufacturing methods were moving between these locations and more broadly around the Indian Ocean.

A Question of Value

To better understand a household's class and socioeconomic status, historical archaeologists have used Miller's (1980) ceramic value index (CVI) based on Staffordshire documents of price-fixing agreements. He argued that consumer prices of vessels were directly correlated to decorated and undecorated wares and remained stable through the eighteenth and nineteenth centuries. Thus, Miller assigned a number for historic ceramic types based on the “value” or cost of the decoration, undecorated wares having a 1.00 and transfer prints having a 2.5 (Miller 1980). Mauritius presents a unique dilemma, because as an island it is completely dependent on its location on major shipping trade routes between Asia and the Americas. Asian porcelain in the Americas has been used as an index for identifying elite assemblage (see Lewis 1985), but this does not apply in Mauritius due to its proximity to Asia. For example, ceramic assemblages from colonial sites in Cape Town, South Africa are dominated by Asian wares, in addition to locally made ceramics and European imports (e.g. Markell et al. 1995: 25; Malan and Klose 2003). VanderVeen (2007) critiques the use of the CVI, arguing that market access and the location of a site (urban or rural frontier) is a key component to actual experiential value of

ceramics. She proposes comparing the ratios of utilitarian ceramics such as redware, to tablewares such as thin white-bodied earthenware, as a better indication of domestic economy and class.

The Bras d'Eau Ceramic Assemblage

Ceramic sherds were found in every single excavation unit. They represented the largest artifact class in surface collections (if not the total artifact assemblage). The distribution of the quantity of ceramic sherds follows other artifact types: the long barracks yard (4/6) and interior (3/7) had the greatest quantity of ceramic by far (Fig. 5.1 and Table 5.0). The density and distribution of the artifacts are discussed further below. Briefly, based on the ceramic artifact count per cubic meter excavated, the long barracks still had a greater density than other units, but overall the ceramics were more evenly distributed between units than other artifact types such as glass and metal (Fig. 6.20).

The proportional distribution of ceramics within the excavation units varied, as shown by the mosaic plot showing standard residuals (Fig. 5.2). All units in Area 6B, north of the domestic quarter, had either a lower proportion of ceramic than we would expect or about what we would expect. The excavation units in the interior spaces of both barracks and individual dwellings (Units 1, 5, 3/7, 12) had less or slightly lower proportions than we would expect, and excavation units situated outside of the structures (Units 2, 4/6, and Unit 11 in Area 1A) had proportionally more ceramic than we would expect. This suggests that depositional processes for ceramics were consistent for residents of all structures—ceramics were discarded at a greater rate outside of the home than within. When I combine the individual dwellings and the barracks into a mosaic plot (Fig. 5.3), location is less of a factor in the proportion of ceramics; there is a slightly lower proportion in the individual dwellings, and the proportion in the barracks is what we would

expect. This indicates that living in the barracks and in the individual dwellings did not influence residents' access, purchasing power, and preference for the general quantity of ceramics.

The ceramic assemblage can be subcategorized in multiple ways. In this analysis I consider two different categorizations: ware type, and vessel or object shape and form. There are overlaps in the categories, such that ware type is often an indication of vessel type and vice versa, but it is important to consider the covariables separately as well as together. Within each ware type, I look at the distribution of decorative patterns and object shapes, and consider their function.

Ware Types

There are six overarching ware types found within this assemblage: refined earthenwares (white-bodied earthenwares) made up 61% of the entire excavated assemblage, followed by coarse earthenwares at 22%, porcelain at 8%, kaolin pipe fragments at 5%, stoneware at 2%, and lastly soft-paste earthenwares, including tin enamels and lead-glazed red wares at 1% (see Table 6.0). In Area 6B only 1, 3 and 8 ceramic sherds were found in Units 8, 9 and 10, respectively (Fig. 6.0). The surface collection and excavation Unit 11 in the area southwest of the mill (Area 1A), and the surface collection of the area north of the mill (5A) are used as a comparative assemblage to the excavations in the domestic quarter, but are not specifically analyzed here (Table 6.1). For the remainder of the ceramic analysis I will be focusing on the ceramic recovered from the individual dwellings, barracks, and yards in the domestic quarter.

Refined Earthenwares

Refined earthenwares, with 727 sherds, represented the largest ware class by far. As noted in the previous section on mean ceramic dates, these white-bodied earthenwares were all imported from Europe. The vast majority were whitewares (91%). Less than 10% were pearlwares, yellowwares, a thin-bodied refined earthenware with yellowish paste with a colorless glaze, or unknown white-bodied earthenwares, either heat-altered or too small to determine the specific ware type (Table 6.2). Refined earthenwares can be further categorized based on the decorative style. These decorations are helpful in dating the occupation (see previous section), and differences in household assemblages indicate the residents' preferences and identity practices.

Transfer printed earthenwares is the most common decorative technique within this assemblage (Table 6.3, Fig. 6.1). In the mid-eighteenth century the manufacture of ceramic was increasingly standardized and mechanized. Instead of hand painting a design on the ceramic, ceramic makers etched or stippled patterns on to a metal plate. They then literally transferred the pattern onto a bisque dish using tissue paper initially, and later using a 'glue bat', a rubbery, flexible sheet (Hern 2019; The Transferware Collectors Club and The Northern Ceramic Society 2019). Patterns such as the willow scene that were once carefully hand painted were elaborated upon, and detailed borders were added to the repertoire of design motifs (as above). A close analysis of the distribution of transfer printed patterns is not included in this discussion; however, the most common color was cobalt blue, often in the willow design. Other transfer print designs were floral, paisley, geometric, and scenic landscapes (see Fig. 6.1 for distribution of transfer printed colors; Fig. 6.2). Related to transfer printed wares is flow, a design technique in which

the colors of the transfer print were allowed to run, thus creating softer lines, often with more saturated color (Fig. 6.1).

Hand painted wares were the second most common decorated type. Ninety-five percent of these wares fit in the same stylistic genre: painted quickly with large, single-stroke leaves and flower petals in a very bright polychromatic pallet that included dark pinks, bright apple greens, blues, browns and blacks, and less commonly yellow (called "Polychrome, cool" in DAACS, see Fig. 6.3). The remaining 5% consisted of the small-stroke, earth-toned, hand painted wares that were the precursor to the brighter and bolder patterns common in the nineteenth century, and all-blue hand painted floral patterns that also predated the polychrome designs, but continue to be in use in the twentieth century. Some vessels in this category were both sponge decorated and hand painted, simple sponged rosettes often overlapping hand painted flowers.

The remaining styles were far less common overall. Spongewares, sponge decorations without any accompanying hand-painting, in often monochromatic geometric, floral, paisley patterns, represented only 10% of the overall assemblage, but make up 19% of the barracks assemblages (Table 6.3, Fig. 6.3). Slipwares, sometimes referred to as mochawares, typically have machine-applied annular bands, and less commonly "worm trail," "marbleized," and "dendritic" designs (Fig. 6.3). The color pallet tends towards the earth tones (hence the term mocha), with the addition of muted robin's egg blue (Summers 2011). Shell-edge is a decorative technique in which the outer edge or rim of the vessel is painted and/or impressed with grooves like a scallop shell. Shell-edge is typically found on plates, and less commonly on hollow vessels in blue and green. Once applied by hand, the impressions become more uniform over time. Only 4 total sherds of shell-edge were found in the quarter (Table 6.3).

Similar to the distribution of ware types, a mosaic plot of the proportion of decorative features and the standard residuals show that for the most part location (in this case housing) did not make a difference in the type of decorative or non-decorated ceramic used and discarded by residents (Table 6.3 and Fig. 6.4). The interior long barracks (3/7) had the most anomalies, having slightly more hand painted and yellow wares than expected, and fewer slipwares.

Mean Ceramic Dating

Relying on the refined earthenwares described above, I used mean ceramic dating to determine when the site was inhabited. Only 59 sherds pearlware (manufactured 1775 to 1830) were found from excavations in and around the barracks, compared to the 630 sherds of whiteware (manufactured after 1820) most of which had hand painted, transfer printed, and sponge painted decorative motifs, common only after 1829 and 1845, respectively (Table 6.2) We found no creamware (eighteenth-century) and very few pearlware artifacts, and no ironstone, which would have signaled either an eighteenth- or later nineteenth- to early twentieth-century occupational phases, respectively.

Mean ceramic dates always provide only an estimate of when the site was occupied. Furthermore, since pottery is used well past the date of production, there is always a lag in the mean dates of production and consumption. For the purpose of this study, I assume that these types of ceramics were in use in the Indian ocean over the same temporal range as in the Atlantic (see Appendix V for the date production ranges used for different types found in the Bras d'Eau assemblage). Using R code provided by Lynsey Bates of the Monticello Department of Archaeology, I calculated standard mean ceramic dates (MCD) and Best Linear Unbiased Estimator Mean Ceramic Dates (blueMCD), which give less overall influence to ceramic types

with long manufacturing spans (Neiman and Smith 2005; Galle 2006). Some 521 out of the 1184 ceramic sherds could not be included in the mean ceramic date calculation because either their origin or type were unknown (Table 6.4). These artifacts were predominantly coarse earthenwares, including smoking paraphernalia that likely came from India, a variety of porcelains probably made in Asia, and coarse earthenware that may have origins in the Indian Ocean, possibly including Mauritius itself (see discussion above).

The standard MCDs ranged from 1786 to 1913, and the blueMCDs ranged from 1829 to 1909, as shown in Fig. 6.5 and Table 6.4. I calculated confidence intervals of the dates using a bootstrap percentile method built by Peeples (2011) (Fig. 6.6, see also Efron and Tibshirani 1994). [15] Mean ceramic dates were not calculated for Units 8 and 9 because only 1 and 3 ceramic sherds were recovered during excavations, respectively. Figure 6.5 and Table 6.4 show the number of sherds used to calculate the mean ceramic dates; the lower the artifact count the less reliable the MCD, particularly since I used sherd quantity rather than the minimum number of vessels. Furthermore, none of the lower confidence intervals extended past 1824 CE and the assemblages that dated later than the 1870s (based on blueMCD) had 35 sherds or fewer.

Blue mean ceramic dates were calculated for stratigraphic layers in Units 2 and 5 for the individual dwellings, 3/7 and 4/6 in the long barracks, and Unit 12 in the short barracks, with the expectation that relative dating of stratigraphic layers should be reflected in the mean ceramic dates. However, in most cases the dates of each layer were not consecutive (Fig. 6.7). The irregularity in the dating of stratigraphic layers, suggests either 1) the disturbance of discrete deposits from bioturbation caused so much mixing that stratigraphic layers are unreliable sources of relative chronology, or 2) that the time period was so short that the MCDs are unable to reflect

[15] Percentile confidence intervals were calculated via bootstrap (B = 1000).

dates that accurately correspond to subtle relative chronologies of the stratigraphic layers. Unit 4/6, the long barracks yard had the highest artifact count and the MCDs did decreased from the surface (49 sherds) to the second layer (222 sherds) to the third layer (200 sherds), which perhaps suggests that if the artifact count were higher, we would have captured the relative chronology of each stratigraphic layer. In all likelihood, both issues factored into the skewed MCD results.

The MCDs indicate that occupational deposits began at the earliest in the transitional period from slavery to indenture, but keeping in mind the lag between production and consumption, are more solidly in the post-slavery/indenture period up to the mill closing in 1868. As discussed, I initially expected to recover deposits dating to the period of enslavement. If the history of ownership is any indication of land use, these dates do align with shifts that occurred on the estate when it changed hands in 1835 and again in 1841, then remaining with the same family until the mill closed in 1868. Supporting the mean ceramic dates, 5 coins found in and around the largest barracks held various dates between 1839 and 1842, as well as button backings with makers' marks that were in use during the same time period.

Given the variability in the sherd count and tight chronological period, it is also difficult to say whether the MCDs of specific locations are reliable indications that some dwellings were occupied earlier or later than others. It does seem that the long barracks area was the earliest occupied area within the domestic quarter, based on the MCD of the yard space (Unit 4/6). This fits with my assumption that the barracks were initially established by estate management for laborers to live in and the individual dwellings were constructed later as the estate population grew and men and women sought housing that better fit their needs.

Porcelain

A smaller portion of ceramics was identifiable Asian-produced porcelain. In the domestic quarter we found 80 sherds all together, mostly underglazed blue on white abstract or botanical designs, or character prints in gray or green-brown (Fig. 6.8 and 6.9). A small selection were thin-bodied porcelains with red and yellow overglaze. At least 12 different porcelain ware types have been identified based on the paste and glaze quality and decorative motif, but a larger assemblage with more complete vessel sherds would be necessary to create a full typology. Interestingly, many of the Asian ceramics were produced by or for consumption in Asia itself, as opposed to types that were manufactured for export to European and American markets that are found in archaeological collections in the Americas (cf. Aultman et al. 2013; Bates and Cooper 2014). Identifiable vessel types included small rice bowls and larger hollow containers.

Refined Earthenware and Porcelain Vessel Types

Two different mosaic plots of vessel types help illuminate how these refined earthenwares were used by the men, women and children living Bras d'Eau. Based on data from Table 6.5, Figure 6.10 shows a mosaic plot of the surface collection in the domestic quarter (2B collection), individual dwellings, barracks, and the surface collection around the mill (Areas 1A and 5A were combined for simplifying the analysis here), and shows that location did make a difference in the proportions of vessel types. More teawares than expected were found in the mill area, while fewer than expected were found in the domestic areas. Teacups with dainty handles, sugar bowls, teapot fragments and large serving dishes were found in surface collections in Areas 5A and 1A in proportions that were not found in the domestic quarter, supporting my hypothesis that the manager's house was close to the mill. Only handleless teacup fragments were found in

the domestic area. Furthermore, a single identifiable serving dish fragment was found in Unit 5, compared to 11 fragments in the mill areas. The unidentified vessel types were not included in the mosaic with standard residuals. Although we were unable to identify the shape of most of the refined earthenwares and porcelains, it is reasonable to assume that the majority were table wares. Comparing the individual dwellings with the barracks, location made no difference in the distribution of vessel types other than having slightly more teawares (all teacups) than expected in the individual dwellings (Fig. 6.11).

It seems that laborers had access to such specific dining and teawares. In fact, the same decorative types, polychrome hand painted, and sponge decorated and transfer printed sherds, were found in the domestic areas and near the mill. Martin (1996) and Shackel (1992) suggest certain tablewares, such as matching and complete formal dining sets and teawares and utensils are contributors to modern class-based disciplined behaviors. The presence and absence of such sets highlight social differences between those who could acquire not only the dishes themselves, but the embodied knowledge of 'proper' western dining etiquette, and who could not (Mullins 2011; see also Weiss 2011). Other than knife-blade fragments (see metal section), no utensils were found. Rather than viewing the differences in the mill and laborer assemblages as a class distinction, the lack formal European dining sets in the latter assemblages highlights laborers' attitudes towards food and the habitual practice of eating by hand. Formal table-dining was not part of the predominantly Indian laborers' daily practice.

While the proliferation of whiteware ceramics across the globe is one manifestation of imperial expansion in which the materiality of Europe spread throughout the globe, the practices associated with these materials did not necessarily translate within local contexts, nor was

acculturation an obvious choice for many colonized people. And we should not ignore the simultaneous distribution of Indian Ocean materialities.

Kaolin

The 59 kaolin pipes fragments represented 5% of the excavated ceramic assemblage (Table 6.0). White kaolin pipes were made primarily by English and Dutch workshops until the end of the eighteenth century when French manufacturers entered the market, and possibly Australians as well (Coleman 2015; see also Summers 2011, Council of Virginia Archaeologists 2012, Marx 2019). As the pipestems lengthened over time, their bore diameters decreased in size. Bore diameters have been used as chronological measure by archaeologists since Harrington (1954) first created a histogram of pipe stem bores. Since then Binford (1961) and many others have refined this method using regression analyses (Shott 2016).

Most pipes fragments were undecorated (Table 6.6 and Fig 6.12). Two pipe stems were found with cord incisions around the stems. Three pipe stems, possibly from the same pipe, had a brown lead glaze. Only five pipe fragments had maker's marks. The "T.D" stamp is commonly found in North America and is thought to be a British import (Marx 2019). I was unable to identify the "TF" or "RJM" stamps. The pipe with the stamp "F. Fiola / S. Omer" would have been produced in Saint Omer, France by the Louis Fiolet Company (Coleman 2015). In Unit 4/6 we found a unique, molded-face pipe (Fig. 6.12), in which three cross-mending pipe bowl fragments depict a bearded man with a small zig-zag crown. Coleman (2015) has identified similarly decorated pipes as English dating from 1830 to 1860, often depicting famous figures, royalty, or racist caricatures, though she notes also that French, Dutch, English, and German pipe makers tended to copy styles based on what was popular at the time. Kaolin pipe sherds were

found in all barracks excavation Units and in Unit 6. Proportionally, similar numbers of the pipe sherds were found in all four Units (Table 6.6). The significance of smoking is discussed in detail below with the other smoking paraphernalia.

Coarse Earthenwares

Coarse earthenwares are typically hand-built, low-fired ceramics. Within this assemblage the paste is soft (an indication of low firing heat), and colors range from gray, black, buff, pink and red (Table 6.7, Fig. 6.13 and 6.15). Decorative techniques are limited to incisions, cord impressions, slips or paint, and burnishing. While the paste colors and texture are similar to redwares and buff-colored wares in the soft-paste earthenwares, none of the coarse earthenwares in this category have silica glazes, distinguishing them from the tin-enameled and lead-glazed, soft-paste earthenwares. The coarse earthenwares were further split into three categories based on the paste and inclusions grain size: fine, medium and rough (Table 6.7)

Fine-Grained

Fine-grained coarse earthenwares were the most common ware type; with 144 sherds it made up 61% of all coarse earthenware (Table 6.7). They have the thinnest bodies with an average thickness of 3.9 mm and the softest paste with an average of 3.0 on the Mohs hardness test. The paste is very fine with no inclusions other than mica. Almost all of the fine-grained coarse earthenwares are slipped, giving them a glossy surface, which appears to be burnished, however the interior of the fragments look as polished as the exteriors. These sherds came in two different overall forms: 27 of the sherds were narrow cones; 73 sherds were fragments from hollow vessels; the remaining 44 sherds were unidentified forms, typically meaning they were

too small (Fig. 6.13 and 6.14). Interestingly, 45% of the assemblage were rim sherds, a much larger proportion compared to other ware types.

Geoffrey Summers (2011: 58-61) identified cone-shaped fragments as the bowl stubs of hookah or water pipe fragments in the assemblage excavated from the Aapravasi Ghat World Heritage site, the immigration depot in the Port Louis harbor (see Ch. 3). Diego Calaon (personal communication) has posited that some of these sherds may have also been chillum smoking pipes. Chillum are straight conical pipes, smoked by holding the pipe vertically and cupping one or two hands over the lower end of the pipe and mouth. These chillums have been manufactured in India for several hundred years and continue to be produced today in ceramic and glass.[16] Like a hookah, smoking a chillum is often a social activity with ritual significance (Godlaski 2012). One participant prepares the pipe by placing a stone or broken piece of pottery inside the bowl to prevent the product from falling through the cone (Dunhill 1924). Sometimes a small coal is placed directly inside the pipe bowl, or while the smoker cups both hands over the mouth of the pipe, and another lights the opposite end that contains tobacco or marijuana (Du Toit 1977: 239).

I originally thought sherds from hollow vessels were small cups or bowls, despite the fact that we did not have any base sherds. About 10 cm in diameter, these vessels have a brown or red slip on the exterior, often burnished, and incised rim bands and diagonal strokes or crosses as decoration (Fig. 6.13). Profile drawings of these rims show the overall shape and size of each rim sherd (Fig. 6.14). The similarity in paste and surface treatment indicated that these hollow vessels and the cones were manufactured and imported from the same location. We were not

[16] Du Toit (1977; 1996) notes that *Cannabaceae Cannabis* originated around Central Asia the Himalayas and spread to Africa, Asia and Europe. Although *Cannabis* was initially introduced to the Americas and Caribbean by European colonizers and enslaved Africans, Indian indentured laborers also brought marijuana to the Caribbean in various forms, including ganja (flowering plant tops), Charas or hashish (resin), and bhang (dried hemp leaves).

able to cross-mend the “cup” fragments with the cone-shaped fragments and therefore I assumed that they came from different vessels. Without any complete vessels, it is impossible to determine exactly what kind of vessels these rim sherds may have been part of. After investigating some comparative examples of Indian chillum and hookah pipes from the Smithsonian collection and British Museum, it seems most likely that the “cups” formed either the upper bowl of hookah or water pipes, or the lower base (Fig. 6.13). Typically, the upper bowls have a sieve (ceramic with punctured holes) covering the shaft to keep the charcoal in place, and the interior of the bowls would have evidence of burning: a blackened surface and possibly charred deposits. Oddly, there was minimal evidence of heavy burning on most of the fine grained ceramics, other than blackened spots that might have come from hotspots in the kiln during manufacture rather than during use. A metal mesh may have been placed on top of the ceramic to hold the charcoal and smoking material, thus protecting the ceramic from heat discoloration. The lower cone or funnel of the hookah part would be put secured in a vessel, often a gourd or pumpkin, that could be filled with water to cool the smoke and attach pipes through which one would inhale smoke (Diego Calaon, personal communication).

Regardless of their original form, the similarity in paste and surface treatment to pipes in museum comparative collections suggests the fine grained coarse earthenwares were imported from the same locale or carried by immigrants from the same region. As small portable objects, it is possible they were bought into Mauritius by indentured Indian laborers themselves. Together, these fine-grained coarse earthenwares form 12% of the excavated ceramic assemblage.

Like alcohol consumption, smoking was recreational, but was also one of the earliest forms of drug consumption. While 60% of fine-grained coarse earthenwares were found in Units 4/6, suggesting that yard spaces were the site of leisure time and communal smoking at the end

of a workday, proportionally smoking pipes made up 13% of the ceramic assemblage in this barracks yard (Fig. 6.8). In contrast, Unit 5 had 15% of all the fine-grained coarse earthenware, but the 22 sherds made up 26% of the Unit's entire ceramic assemblage. Looking at all smoking paraphernalia together, kaolin pipes and hookah/chillums consisted of 33% of all ceramics in Unit 5, 16% in the long barracks, and 18% in the long barracks yard (Fig. 6.9). Therefore, it seems the residents of Unit 5 were smoking more, and drinking less, and the residents of the long barracks were drinking more and smoking less. From a European perspective, smoking pipes are personal items, owned by an individual. Fraser Neiman has argued that smoking became a powerful form of conspicuous consumption; long pipes could not be smoked while doing any manual labor and therefore signaled wealth and leisure. This ethos of the individual does not seem to extend to chillum smoking, despite the fact that a chillum, unlike a hookah, can only be smoked by one individual at a time (Godlaski 2012). It is certainly possible, that in this context of communal smoking, kaolin pipes were also passed among friends or family members. In the section on glass I discussed how alcohol was used by other plantation laborers as a diversion from the hardships of daily life, but also as a pain medication. Smoking of tobacco, hashish, or marijuana could have also been a means to self-medicate (e.g. du Toit 1996).

Medium and Rough Earthenwares

We recovered far fewer medium- and rough-grained earthenwares than fine-grained coarse earthenwares, 86 (33%) and 19 (7%) of all the coarse earthenwares, respectively (Table 6.7). The fabric of the medium- and rough-grained coarse earthenware had visible inclusions and tempers. Sherd bodies were thicker and they scored higher average numbers on the Mohs hardness test. Inclusions were identified visually using a jeweler’s loupe. The most common

were sand and mica, followed by quartz (often part of sand mixtures), and voids that indicate burning off of organic substances in the firing process (Table 6.11). Surface treatments were minimal, the majority undecorated or slipped, with only 8 sherds with incised decorations, all from Unit 4/6 (Table 6.10).

With only 17 rim sherds it was difficult to identify vessel shapes for the majority of artifacts (Table 6.12). Unidentified body fragments made up 67%. The remaining sherds were from hollow vessels. Of the rim sherds, 4 cross-mended to form a shallow bowl with a flat lip or possibly a lid (Fig. 6.15). Three sherds were fragments from oil lamps excavated from Unit 5 and Unit 3/7 (Fig. 6.15). The oil lamps were identified by comparing the rim sherd fragments with a more complete oil lamp in the Aapravasi Ghat assemblage. In the long barracks, we found carbonized deposits adhered to 24 sherds, indicating use of the vessels over a fire, and 11 were blackened from the application of heat, but 51% of the sherds did not appear to be heat-altered (Table 6.13). Interestingly, none of these sherds were found in individual dwellings were burned or blackened, suggesting that ceramic vessels were only used as cooking pots by residents of the barracks and residents of the individual dwellings opted to use metal pots.

Stoneware and soft-paste earthenware

Only 44 stoneware and soft-paste earthenware sherds were excavated from the living quarter, and all came from the long and short barracks (Table 6.14). Most of the salt-glazed stoneware sherds appear to have been bottles, either for ink, blacking, or beer, with the exception of an almost complete cross-mended drinking vessel found in Unit 4/6 (Fig. 6.16). Lead-glazed redwares and stonewares were often in utilitarian forms, such as jugs, jars, kitchen bowls, and bottles, but mugs were also made. The short barracks was the only Unit with significantly more

soft-paste earthenwares than expected (Fig. 6.19). We found several sherds of buff-pink paste with green lead glaze that resemble Saintonge earthenwares, made in southwestern France and typically dated to the eighteenth century (Drakich 1982; Arcangeli 2015: 85-6).

It is tempting to interpret all coarse earthenwares, stonewares, and soft-paste earthenwares as 'utilitarian', typically referring to use in cooking, and refined earthenwares or porcelains as the more expensive, fancy, higher value dishes used during eating. Indeed, many of the coarse earthenwares were burned or had charred deposits adhered to the surface, suggesting they were used over open fires for cooking. However, in Mauritius today ceramics used in ritual practice are actually quite coarse. As discussed earlier, locally produced ceramics such as oil lamps can be defined as ritual objects by their form, but the fabric is not fine, they are never glazed, and rarely have any decorative elements. While in the household, lamps might be reused throughout the year for different festivals. They are not explicitly made to last for extended periods of time and are not expensive. A single oil lamp costs between 2 to 5 Mauritian rupees (approximately 5 to 15 cents USD at time of writing). Such vases and lamps are often purchased new and left at a temple, shrine, or on the seaside after a specific rite has been carried out. Elderly Mauritians more frequently recall using metal-can oil lamps, but they also suggest that ceramic lamps, though less efficient, were once used for light in addition to for ritual practice. Oil lamps that are partially or entirely closed are less likely to spill, while slips or other surface coatings prevent loss of oil through absorption into the porous clay body. The oil lamp fragments at Bras d'Eau appear to have a red slip surface, unlike the lamps produced today, suggesting the potter created it for continual use. Since many of the sherds seemed to come from hollow vessels, it is possible that many came from 'water pots' as described by Kirkman (1974) and Marshall (2011).

Analysis of the Ceramic Assemblage

Change over Time

There was an inverse relationship in the proportions of the refined earthenwares and coarse earthenwares over time (excluding units with low artifact counts, 1, 2 and 12; Fig. 6.17). The proportion of refined earthenwares decreased over time as the proportion of coarse earthenwares increased, including fine-grained ceramic pipes and medium/rough-grained ceramic identified primarily as cooking pots and oil lamps. Initially I assumed this indicated that in the earlier phases of settlement, laborers did not have access to or take advantage of the whiteware and porcelain ceramic tableware market. However, in Unit 5, interior and exterior, and in Unit 12 the proportion of kaolin increased with the proportion of coarse earthenwares, suggesting that access to western ceramics was not an issue in the earlier phases. Alternatively, men and women may have shifted their practice over time, incorporating iron cooking pots and European tablewares into their foodways, particularly as there were more returnee immigrants.

Household Differentiation

In all units in the domestic quarter, we see similar patterns of distribution of the ware types as the overall assemblage (Fig. 6.18). Units 5, 3/7 and 4/6 are the most similar, with refined earthenwares made up 50% or more of the assemblage, followed by coarse earthenwares, porcelain and kaolin. Stoneware and soft-paste earthenwares were only found in the long barracks. Ware type distribution was slightly different for Units 1, 2, and 12, however that may be attributed to sampling size. Similar to the mosaic plots discussed earlier, this suggests that households were not distinguished based on their ceramic consumption patterns. For comparison,

the proportion of ware types from surface collections in the living quarter and the areas around the mill did differ significantly; the amount of porcelain increased from 8% in the domestic quarter to around 25% in the mill area (Fig. 6.1). Correspondingly, the amount of refined earthenwares decreased slightly in the mill areas and was higher in the domestic area. The percent of coarse earthenwares in both areas was around 8%, however, it was significantly higher in the excavation assemblages at 22%.

These patterns suggest not only that there is a difference in consumption between those living near the mill (presumably the estate managers and sometimes owners), but that ceramic consumption patterns changed over time, as indicated by the increasing presence of coarse earthenwares in the excavated assemblage. The mosaic plot of different ware types is a better visual representation of how similar the ceramic assemblages were within each unit (Fig. 6.19). The plot shows that only 6 out of 36 boxes representing the proportion of ware types within each unit varied from the proportions we would expect, if location were not a factor in determining the distribution of ceramic types. Unit 2 and the surface collection around Units 1 and 2 had slightly more refined earthenware than expected (only refined earthenwares were found in the surface collection of this individual dwelling). Excavation Unit 5 in the individual dwelling had slightly more fine-grained coarse earthenware than we would expect, as discussed below. The long barracks interior had more medium/rough coarse earthenware. Lastly, the short barracks, Unit 12, had more soft-paste earthenwares.

Five sherds rounded into small ceramic discs that were recovered from the long barracks were made from broken pieces of blue transfer printed whiteware, spongeware, hand painted porcelain, and undecorated porcelain each with a diameter of about 2.5 cm. A fifth piece was found in the barracks yard, made from medium-grained coarse earthenware, much thicker than

the other pieces recovered, and had a diameter of 3.4 cm. These have been interpreted as gaming pieces in other plantation contexts (Singleton 2015) and represent plantation laborers' creative use and reuse of materials. Through interaction with the existing Creole population and growing formerly indentured population, men and women seem to have begun to incorporate more items that could be purchased or salvaged on the plantation and surrounding region, rather than relying solely on familiar items.

The men, women, and children at Bras d'Eau used ceramics for cooking, eating, drinking, smoking and writing and the selection of different ware types and objects are indicative of these everyday habits. There were subtle differences in the household assemblages. For example, the residents of individual dwelling Structure 3 (Unit 5) used and discarded both kaolin and hookah pipes in higher quantities than the residents of other structures; however, the overall distribution of ceramic within both barracks and individual dwellings suggests that households did not distinguished themselves through ceramic consumption both in terms of the types of wares and decorations preferred and in terms of vessel shapes and uses.

Conclusions about the Material Culture at Bras d'Eau

The identification of different types of housing—barracks and individual dwellings—during the survey and mapping of the site established a natural comparative line of inquiry when I began excavating. My hypothesis was that the artifacts, as an index of identity practices, would differ among housing type based on the assumption that newly arrived laborers would live in the barracks first, and more established laborers would be in the houses. As noted in Ch. 4, the division of open spaces with rock walls in the domestic quarter signals that private or designated outdoor space was an important and meaningful extension of a household. To conclude my

analysis of the artifacts, I consider the proportional distributions of different ceramic types in different housing structures, the statistical significance of identified differences, and the larger picture the assemblage as a whole provides of indentured life at Bras d'Eau.

Figure 5.1 represents the distribution of artifact types across all the excavation units by artifact count. The table demonstrates clearly that far more artifacts were recovered from the barracks and individual houses in the laborers' quarter than in Zones 1 and 2. Direct artifact count or weight comparisons between units is somewhat misleading, however, due to the variation in the size of each excavation unit and volume of soil excavated per unit. As noted in Ch. 2, the cubic meter volume excavated was estimated based on the unit profiles, but the basalt bedrock, even when smooth, made it difficult to calculate accurately the cubic meters of soil excavated. Often the profile walls were not vertical due to protruding basalt boulders, and the lower limit of the excavations in the C-horizon or R-horizon were not level. During the excavations, the team kept track of the number of 10L buckets of soil served for each stratigraphic unit, but often large boulders or cobbles were first removed from the excavated soil, therefore minimizing the overall measured volume of earth moved. Furthermore, the depth at which we excavated into the subsoil varied from unit to unit. For example, inside the long barracks (Unit 3/7) there was very little subsoil because the actual living surface was the bedrock, which we exposed during excavations, and therefore almost all the soil excavated was anthropogenic. In contrast, we excavated the smaller barracks (Unit 12) down to bedrock as well, but the last 20 to 30 cm of soil was sterile subsoil. Nevertheless, I calculated the count of artifacts per estimated cubic meter excavated and square meter excavated for each unit both by type and cumulatively, the results of which are represented in Fig. 6.20 and 6.21 (mortar and

plaster artifacts were left out of subsequent cumulative analysis due to differences in collection procedures between 2014-16, noted above).

The calculated concentration of artifacts within each unit demonstrate that the barracks spaces (Units 4/6, 3/7, and 12) had a much higher concentration of artifacts than in the individual dwelling and excavations in Zones 1 and 2 (Fig. 6.23). As noted in Ch. 4, I interpret the higher concentration of refuse inside the long barracks (Units 3/7) as a result of residents' abandonment of this section of the structure as a living space, and repurposing of the space as a site for trash disposal. Furthermore, the average weight of each artifact in the long barracks was 6.7 g per artifact, greater than in the other structures in the laborers' quarter. Based on the design of the parallel barracks structures, it would have been unlikely that anyone living in the individual dwellings, apart from one located directly between the two longest barracks, would have walked from their own home to the barracks to dispose of waste. As such, I assume that the barracks assemblage is still broadly representative of residents living in the long barracks complex. Differences in the concentrations of artifacts in the two types of housing are less meaningful than the proportions of artifact types found within each unit and the composition of those artifact categories, such as ceramic types or glass color.

Figure 4.4 shows the ratio of different artifact types found within each location and notably, the excavations in the laborers' quarter also produced a greater distribution of different artifact types (width of the bars not representative of any measurement). The proportional distribution of artifacts in locations with an overall lower count would be more easily be skewed because single artifacts had a greater impact on the proportional distribution. Units 1, 2, and Units in Zone 2 (8, 9, and 10) all had artifact counts of less than 155 (see Fig. 5.1 and Table 5.0). The resulting proportion charts for Units 8 and 9 were heavily skewed towards either metal or

glass, respectively, whereas the other units had greater diversity in types of artifacts distributed throughout the unit. It is clear that the differences in proportions are significant, confirmed by a Pearson's Chi-squared analysis, which tested the null hypothesis that the distribution of artifact types was independent of location. The chi-squared value was 4838.5, degrees of freedom was 77, and p-value of < 2.2e-16; therefore, we can reject the null hypothesis of no relationship at the 0.05 level, though we still do not know the direction of this relationship or whether specific locations or artifacts are different from the expected values. At the most basic level, these statistical analyses suggest that residents had access to, chose to consume, and used different sets of material culture. The mosaic plots discussed above provided greater detail on where these differences lay.

On the one hand, data from the artifact assemblage seem to support my hypothesis that different groups of people were living in different types of housing. Although the barracks assemblages were far denser in terms of artifact quantity per m^2 excavated (Fig. 6.21), proportionally we recovered more fauna, lithics, metal, and shell in the individual dwellings in the barracks. On the other hand, individual-dwelling residents consumed fewer glass bottles that likely contained alcohol than did barracks residents, and fewer ceramics overall (Fig. 4.6), but it seems that at least in one household, Unit 5, residents used a significantly higher proportion of smoking pipes, both kaolin and hookahs or chillums, than in the barracks. When considering specialty items, small finds was the only category where location was not a factor in the proportional distribution of artifacts (Fig. 5.2 and 5.3).

The artifact assemblage of Bras d'Eau indicates that indentured laborers' material worlds extended far beyond what was officially provided by the estate. According to colonial records, laborers typically were given weekly rations of food and a new set of clothing annually by their

employers, but presumably all other material possessions and food goods were either brought from India, made, grown, purchased, traded for, or inherited from other immigrants and the growing local population. The quantity and quality of estate-provided resources varied between estates, despite periodic colonial efforts to regulate and standardized working conditions (Royal Commissioners 1875). Typical indentured contracts stated men would labor for five years, receiving a wage of 5 rupees per month with the option to withhold one rupee for return passage. Contracts afforded daily rations of 2 lbs. of rice, 1/2 lb. of dhal (beans or pulses), and 2 oz. each of salt, oil, and mustard. A sheet and two blankets, a dhoti, a jacket, and two caps would have been provided annually. In practice, there was variety among different plantations in the food provided: some laborers were given only rice and salt, while others were supplied ghee (cooking oil), dhal, and other amenities such as chilies, turmeric, tamarind, flour, onions, sugar, wine, firewood, and earthen cooking pots (see Ballgobin 2013). Salt-fish was rarely granted by planters or requested by laborers, but continued to be listed on contracts throughout the nineteenth century. Colonial administrators note that on most plantations, laborers supplemented their institutional rations with purchased or grown vegetables, and raised goats, pigs, poultry, and cows in the village (Royal Commissioners 1875). However, the majority of artifacts found in the domestic spaces were not listed among the contract materials, such as Indian smoking pipes and metal and glass bangle fragments, cowrie shells, blue and white porcelain and colorfully painted whiteware bowls. A diverse faunal assemblage indicates that meager rations were augmented with an array of animal protein beyond the traditional domesticates.

Indentured men, though they were the majority, were not the only inhabitants of the estate. There were typically a few children living on estates; children sometimes immigrated with their families or single parents. Since the gender demographics were so heavily skewed towards

men, it was less common for children to be born on the estate. There are few artifacts that we can infer were used specifically by children. Toys are some of the few artifacts that archaeologists associate with children, however many are made from perishable materials that are not recoverable (Kamp 2001; Beisaw and Gibb 2009; cf. Baxter 2008). Casella (2012: 38) questions whether iron serving spoons found in the nursery of a women's factory-*cum*-penitentiary in Australia might have been used as pacifiers for babies, suggesting that in situations of material scarcity almost anything could become a play-thing. Broken toy dishes were found in surface collections near the mill, but as noted in the ceramic section, these are also associated with a slightly different assemblage including more teawares and serving dishes, suggesting that those spaces were used by people of more economic means, including the children of owners and managers. The round ceramic gaming pieces and stone marbles could have been used by adults and children alike. The slate fragments and pencils and stoneware ink pots indicate that at least some men and women were literate (Davies 2005 discusses similar artifacts of literacy on contemporaneous colonial sites in Australia). Teaching children or other family members to read and write or seeking a tutor among other laborers would have been considered an important means to improving their future.

Therefore, what is particularly striking about this artifact assemblage is the fact that the types of artifacts found in each household assemblage do not vary much, but the proportional quantities found in each indicate subtle difference in everyday lives of their residents. Items we expect to be more idiosyncratic, such as parasols, firearms, buttons, or even ceramics, turned out to be relatively well distributed across the site. Every indentured laborer did not have a parasol or umbrella, but almost every household did. The large quantities of bottle glass, smoking paraphernalia, and Indian Ocean diet, paired with the orientation of houses, suggests that laborers

spent a good deal of their resources, including time, managing their health and well-being. Prior to the use of aspirin, opium along with medicinal tonics were common pain relievers (Voss 2005: 434; Mullins 2008). Interestingly, no opium containers, typically made of a copper alloy, were recovered in the artifact assemblage. The cowrie shells and silver coins demonstrate potential power of indentured laborers to purchase the objects described, and suggest laborers participated in variable exchange networks. The presence of both forms of currency suggest cosmopolitan engagement in local and global trade economies on the island. Through the archaeological record we see that the men, women and children living in the quarter on the estate also negotiated for, or purchased and owned, a range of globally sourced objects.

Comparative Assemblages in Mauritius

As archaeological research continues to grow in Mauritius, comparative analyses will improve our interpretations of everyday life at various sectors of the island's diverse population. Survey, excavations, and architectural assessments at the Trianon sugar estate stone barracks conducted by the MACH project from 2009 to 2011 (Seetah et al. 2012; Seetah et al. 2018), and survey and excavations at Île de La Passe on the southeast coast of Mauritius, conducted by Summers and Summers (2005), likely resulted in comparable assemblages, but are yet to be published in detail. As noted earlier, the assemblage from Aapravasi Ghat World Heritage Site analyzed by Geoffrey Summers (2011) is a useful catalogue for assisting with identification.

The best published comparative project on a habitation site in Mauritius thus far was conducted by Sophie Le Chartier, Chip Colwell-Chanthaphonh, and Sharron Jacquin-Ng (2013, 2014) on surface collections from Makak, an abandoned village location on a peninsular piece of land in the far southwest corner of Mauritius. In 2007 The Le Morne Heritage Trust Fund

(LMHTF) conducted a brief survey and collection of surface artifacts in two zones at Makak. The original report by Jayshree Mungur-Medhi (2007) concluded that the village was a settlement of wealthy families based on the perceived high quality of artifacts. Since then, Le Chartier et al. (2013) reanalyzed and contextualized the assemblage using oral histories from local communities and archival records.

Oral histories on the island state that marooned slaved inhabited this area of the island, but in the mid-late-eighteenth century several plantation families settled in the area, including some identifying as "Colored," members of an emerging successful middle class or *gens de couleur libre* (Le Chartier et al. 2013: 40). By 1850 the community of Makak and its two neighboring villages, L'Embrasure and Trou Chenille, were "diverse, with a mix of Europeans, French Creoles, Mozambique ex-apprentices, and Malagasy Christians" (ibid.). From the end of the nineteenth up to the mid-twentieth century, the large-estate landowners began to consolidate and sell their land, and people living on or renting land from those families were eventually forced to move (Le Chartier et al. 2013: 41).

Le Chartier et al. reassessed the 638 artifacts that were collected, the majority being ceramic, glass, and metal. Among the glass artifacts 81% were beverage bottles, 8% containers, and 11% medicinal or used for other household purposes. The glass date-range was 1800 to 1930 with only one machine-made bottle that would date to after 1940. Metal artifacts included agricultural tools such as hoes, and iron vessels possibly for cooking. Only a small sample of bricks and roof tiles were collected, though people said the houses at Makak were made of thatch and cow-dung/soil mortar (Le Chartier et al. 2013: 10).

Among the ceramics, 23% were porcelain imported from Asia, 77% were European imports, 8% of the ceramics were undecorated stonewares and plain redwares, and no locally

produced ceramics were found. Colwell-Chanthaphonh et al. (2014) point out the incongruity of finding a mix of ware types that are typically associated with different classes, including Asian porcelains, which they posit are more expensive and rarer, and transfer printed willow dishes, and spongewares, which on sites in the America are identified as middle-class wares and as the cheapest lower-class wares, respectively.

In interviews with Mauritians from nearby villages, Colwell-Chanthaphonh et al. found that "elders today often describe *all* imported ceramics as prestige items during the colonial period since ceramics were still more expensive [than] perishable vessels (like wood) which would have been used by the country's lower classes" (pp. 407-8). The fact that Mauritians themselves remember imported ceramics as high-status goods is not to be taken lightly. It is significant, however, that the proportions of European-made refined earthenwares and Asian-made porcelains in the surface-collections around the mill are so similar to the proportions found in Makak, given that Makak is described as a middle-class or aspiring upper-class community, whereas the proportion of porcelain was far lower in the domestic quarter (Fig. 6.18).

It is also apparent that porcelains and other imported items were a part of everyday life since the beginning of settlement of the island. For example, Floore and Jaysena (2010: 332) found that the assemblage at Fort Hendrik associated with the Dutch settlement (1638-1710) was predominantly Asian ceramics: 56% fine Chinese porcelains from Jingdezhen kilns, 6.5% southern Chinese coarse porcelains, 10.9% Japanese porcelains, and 0.8% other Asian stonewares. The other 12.3% were European-made ceramics, mostly from the Netherlands, and 13.6% were "Mauritian coarse ware" (see Spijker 2006 discussed above).

The MACH project conducted several seasons of excavations in the Le Morne Cemetery from 2010 to 2014 (Appleby et al. 2014; Seetah 2015b). A transfer-print whiteware teacup

depicting a hunting party and large chateau, and hand painted willow porcelain teacup were recovered in the fill of two different graves, obviously imported from different locales. But they have strikingly similar forms and sizes. Emphasizing a distinction between Chinese and European ceramics may not be particularly useful in Mauritian contexts. Other objects buried with bodies included single-hole buttons, 4-hole bone buttons and single-hole buttons, and carefully placed coins, kaolin pipes, a hand-blown glass bottle Seetah suggests may have contained wine, liquor or medicine, above or under the head (2015:11).[17] Creole communities in Mauritius were clearly using materials in very different ways than French and British colonizers would have.

Comparative Assemblages in the Indian Ocean and Beyond

Emphasizing the ubiquity of ceramic ware types in the nineteenth century, the same whiteware bowls and plates were also recovered from archaeological sites on the Kenyan coast by Marshall (2011). In her excavations of Mgoli clove plantation, Pemba Island, Tanzania, Sarah Croucher (2015: 196-201) found the same types of European imported ceramics as we have recovered at Bras d'Eau: transfer prints, including willow pattern, and hand painted/sponge printed whitewares. Unlike the present assemblage, most were large bowls, platters, and teacups. Croucher found imported ceramics comprised only 4% of the ceramic assemblage, but the same imported wares were ubiquitous in surface collections, making up 85% of all sherds (p. 196-197). Croucher argues that the increasing presence of imported wares may signal that imported wares became cheaper and more common over the nineteenth century.

[17] It is also possible it was a lachrymary bottle used to collect the tears of mourners.

The ceramic assemblage of Bras d'Eau emphasizes the importance of more critical consideration of the Indian Ocean context in historical archaeology and the need to reconsider the practice of cataloguing and analyzing artifacts based solely on where they were imported from. The comparison I have drawn between Bras d'Eau and Makak suggests that ceramics in Mauritius may have been used as a distinctive measure of class, as has been identified in the Atlantic world (Brown 2011; Mullins 2011; Reilly 2015; Fracchia and Brighton 2015). But rather than molding their dining practices around expatriated European standards, the men, women, and children who lived at Bras d'Eau chose to use and discard ceramic dishes and pipes that best served the diets and health practices they maintained. Modifications to the plantation landscape were guided by the similar sensibilities.

Figure and Tables

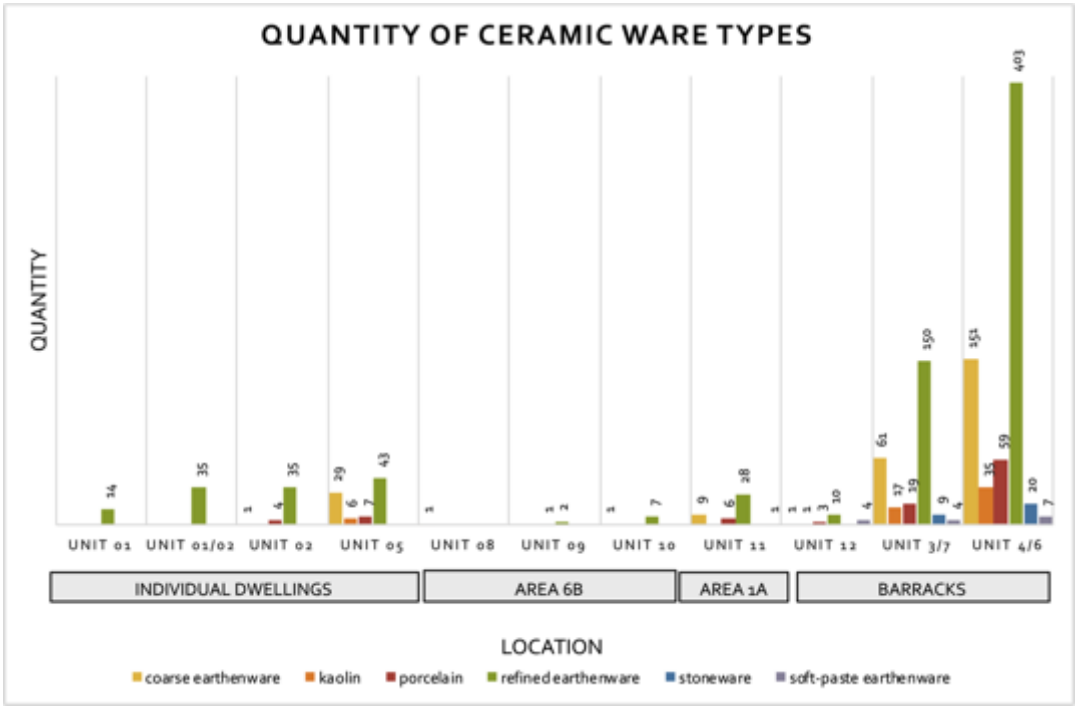


Figure 6.0 Graph of ware types by artifact count

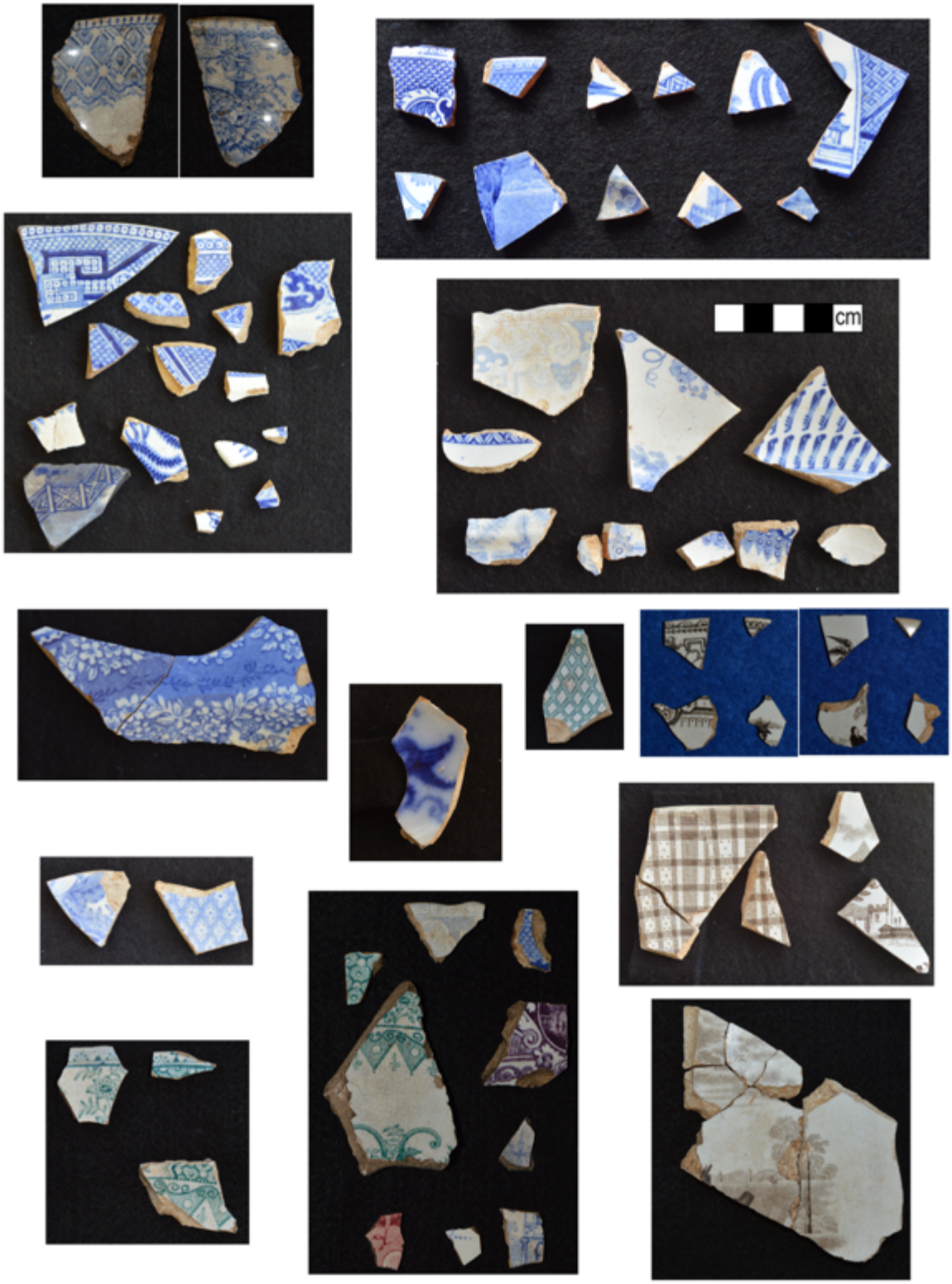


Figure 6.1 Photographs of transfer printed wares

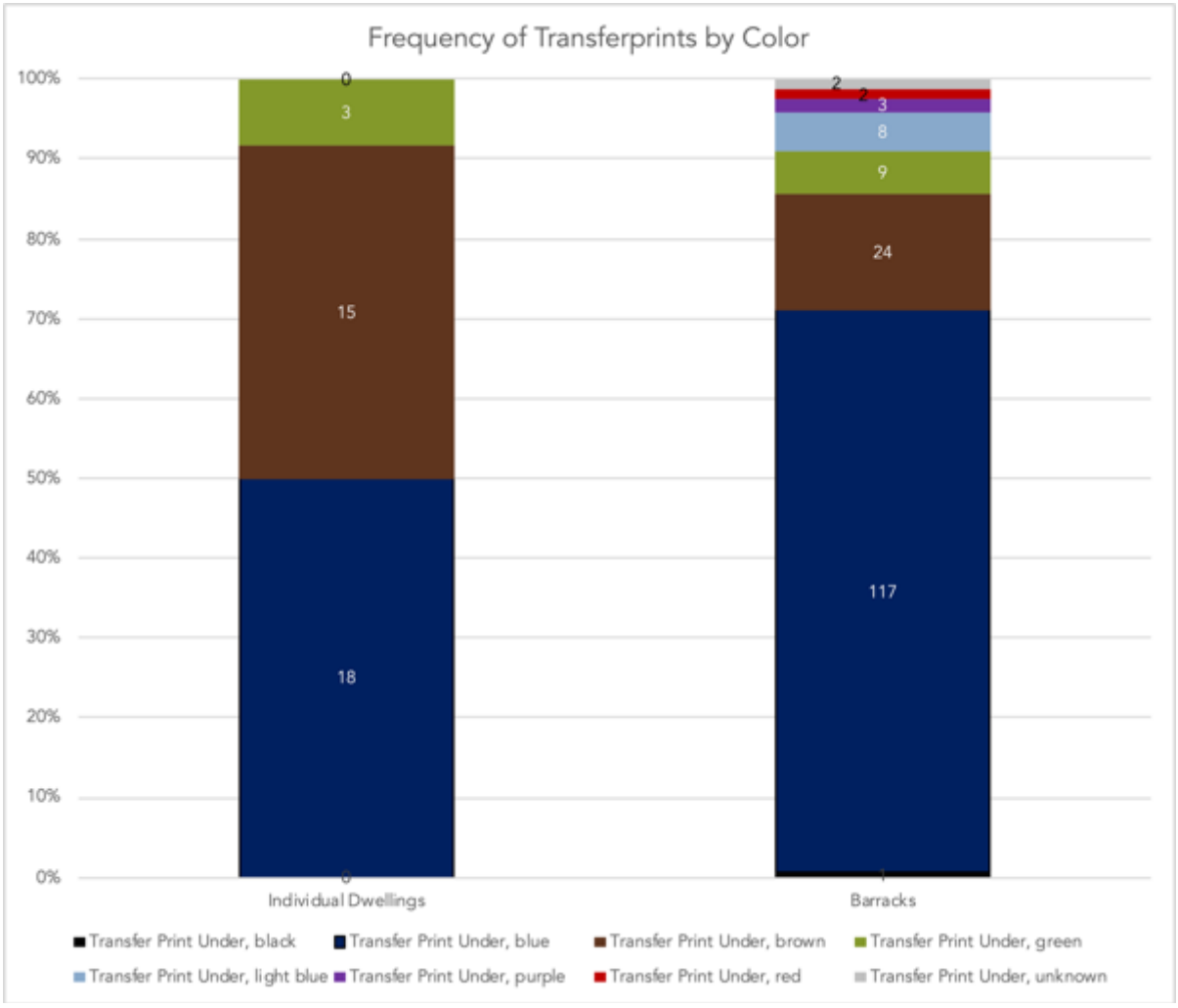


Figure 6.2 Graph of the frequency of transfer printed colors

Figure 6.3 Photographs of spongewares, hand painted, and slipwares

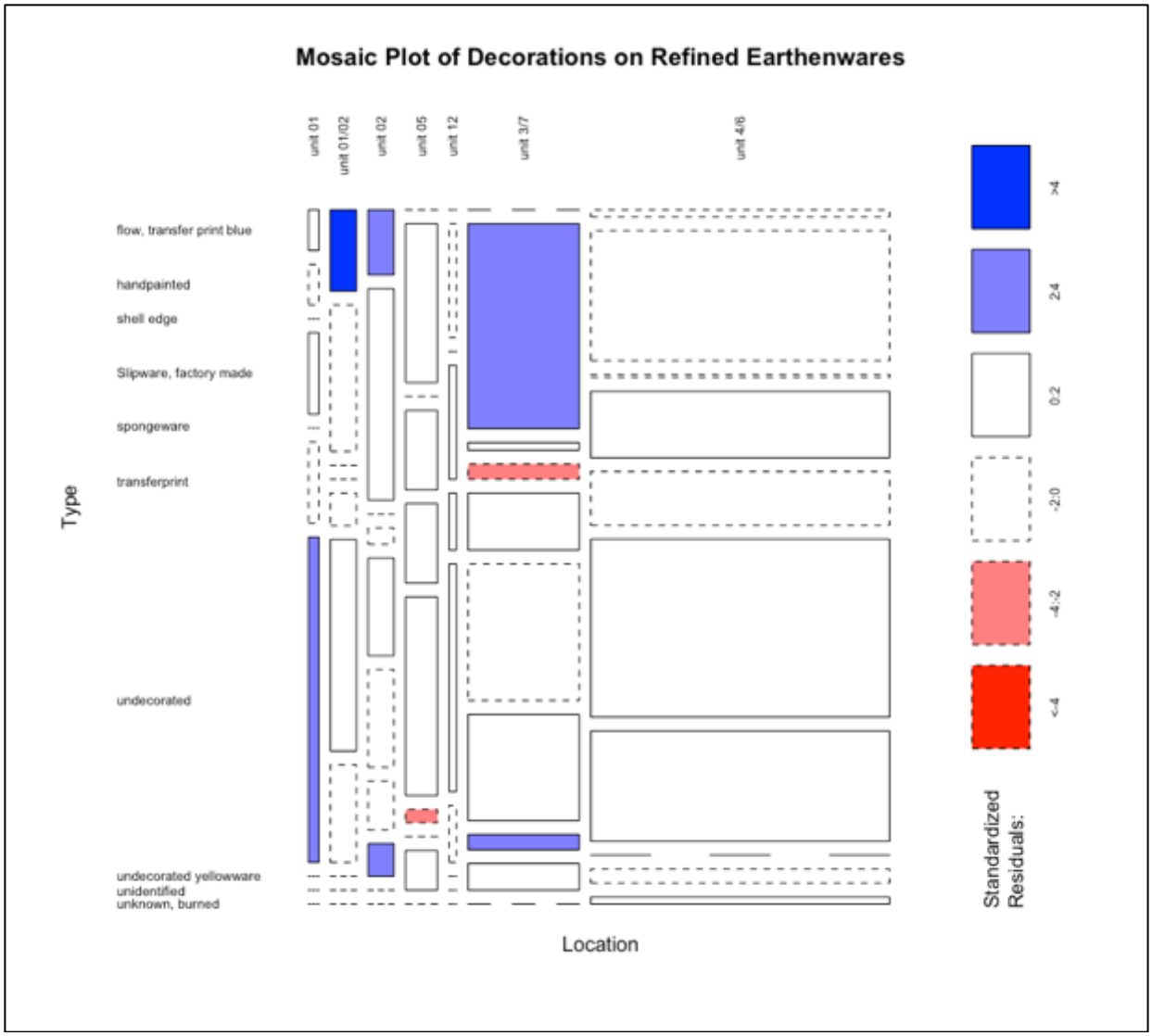


Figure 6.4 Mosaic plot of refined earthenware decorative types

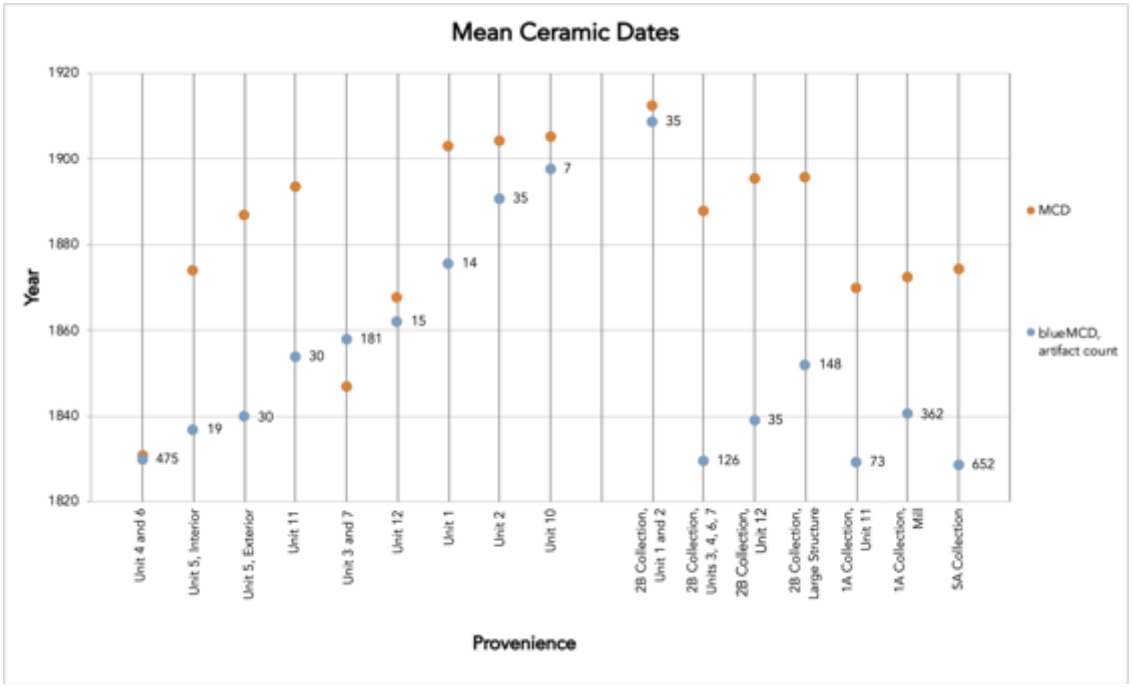


Figure 6.5 Point graph of mean ceramic dates (mcd) and best linear unbiased estimator mean ceramic dates (BLUEmcd)

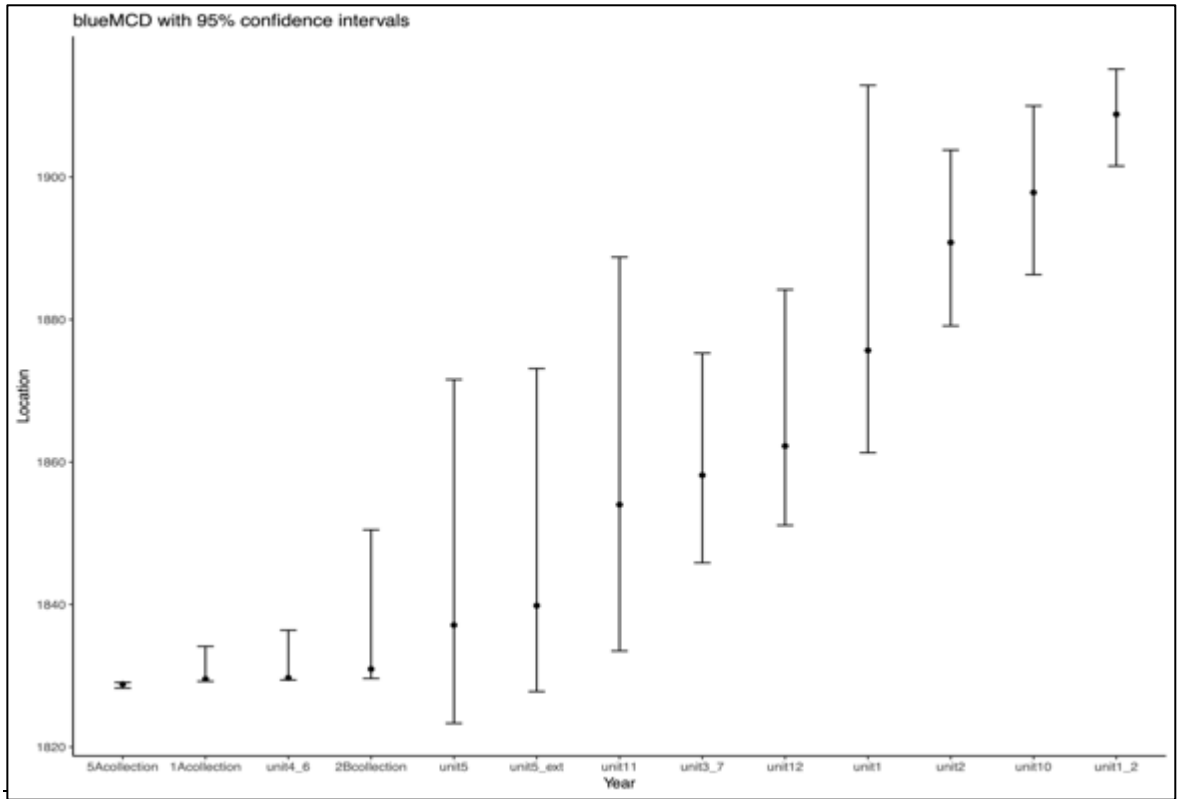
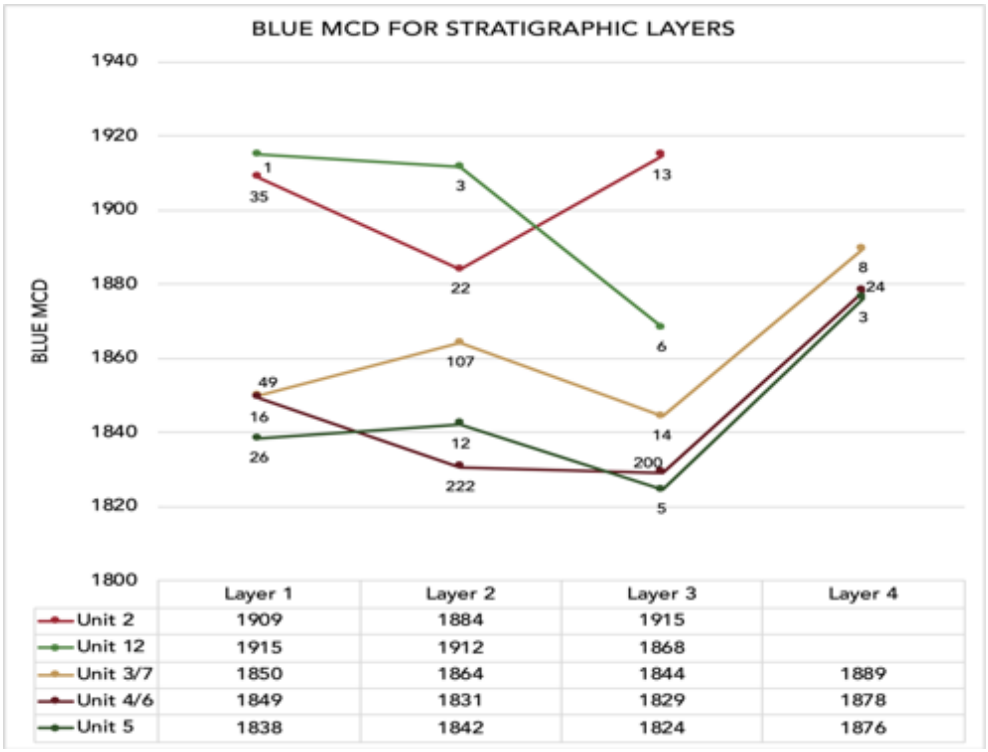


Figure 6.6 BLUE mean ceramic dates and 95% confidence intervals



	Layer 1	Layer 2	Layer 3	Layer 4
Unit 2	1909	1884	1915	
Unit 12	1915	1912	1868	
Unit 3/7	1850	1864	1844	1889
Unit 4/6	1849	1831	1829	1878
Unit 5	1838	1842	1824	1876

Figure 6.7 BLUE mean ceramic dates by layers.

Figure 6.8 Photographs of porcelain sherds

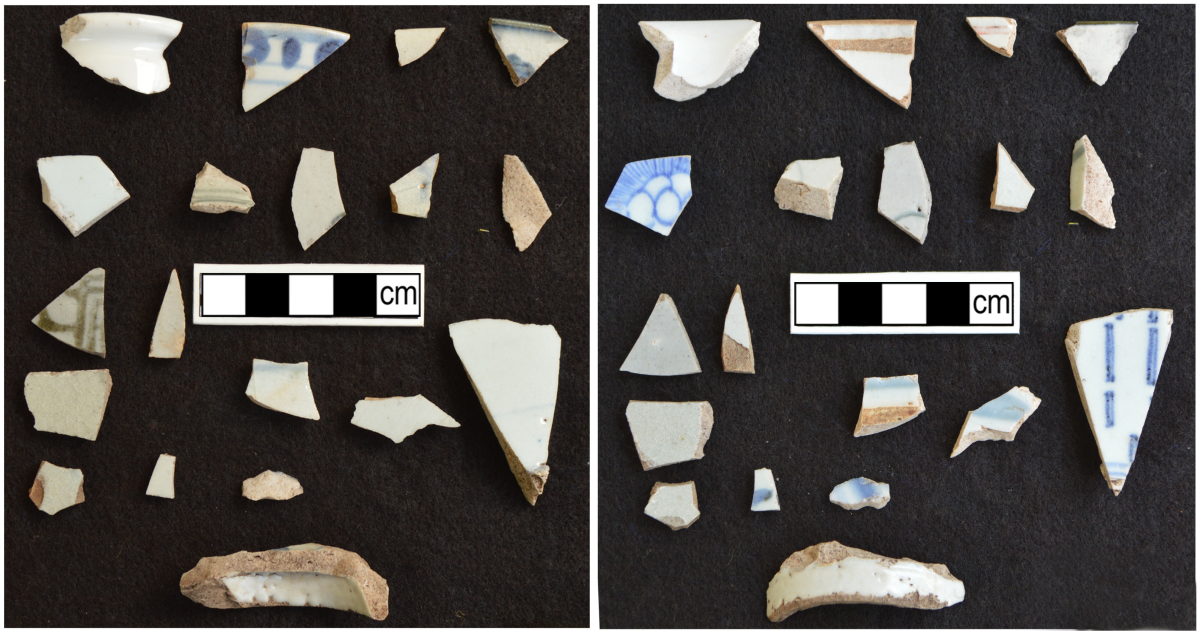


Figure 6.9 Photographs of porcelain sherds from unit 6, level 1 (su204) left: exterior of vessel, right: interior of vessel

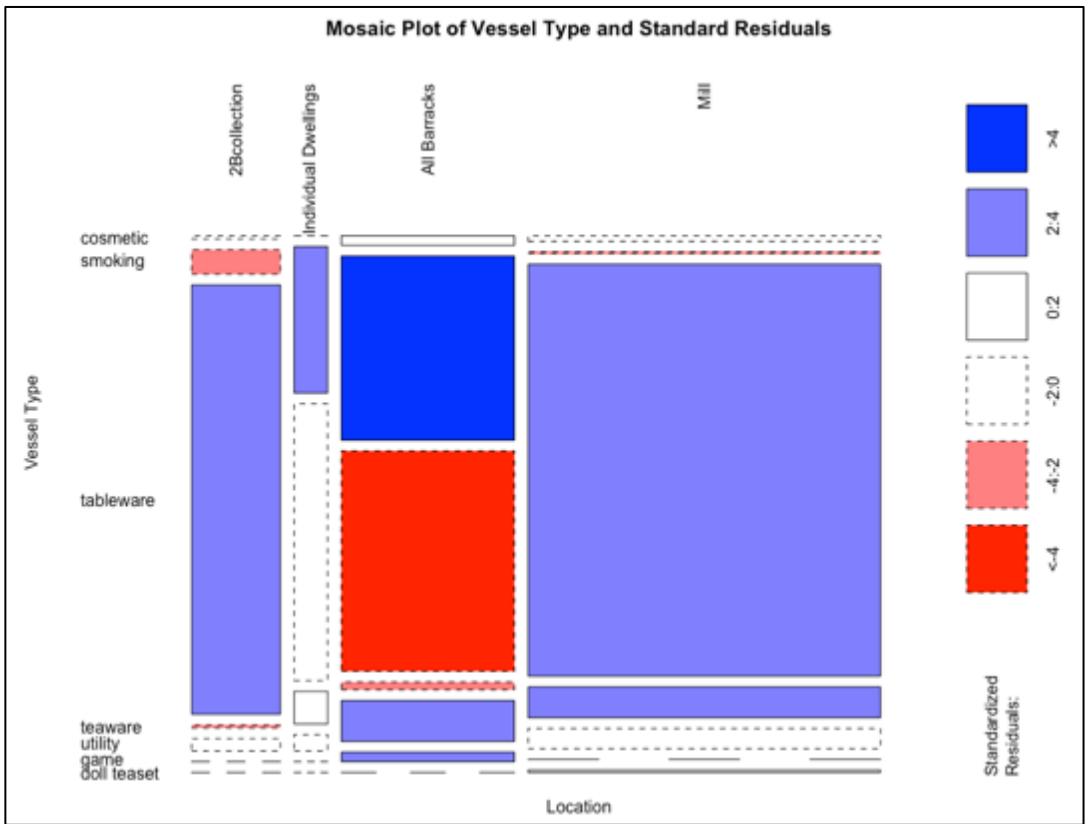


Figure 6.10 Mosaic plot of vessel types

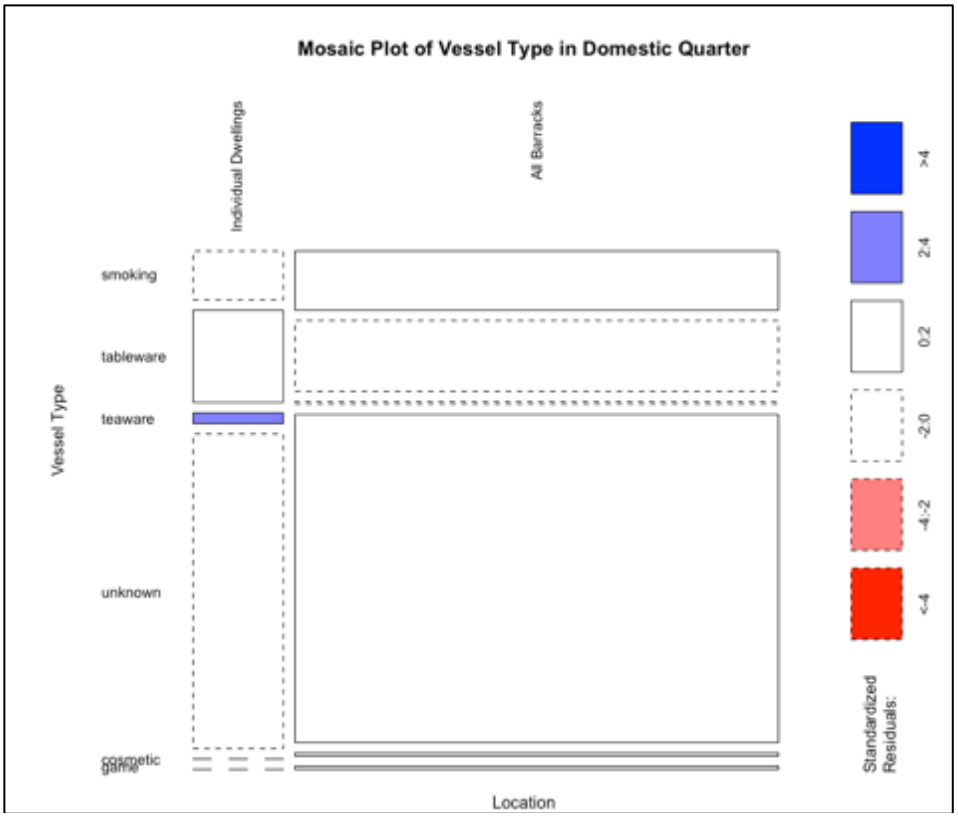


Figure 6.11 Mosaic plot of vessel type clustered by housing style

Figure 6.12 Photographs of kaolin pipes

Figure 6.13 Photographs of fine grained coarse earthenwares

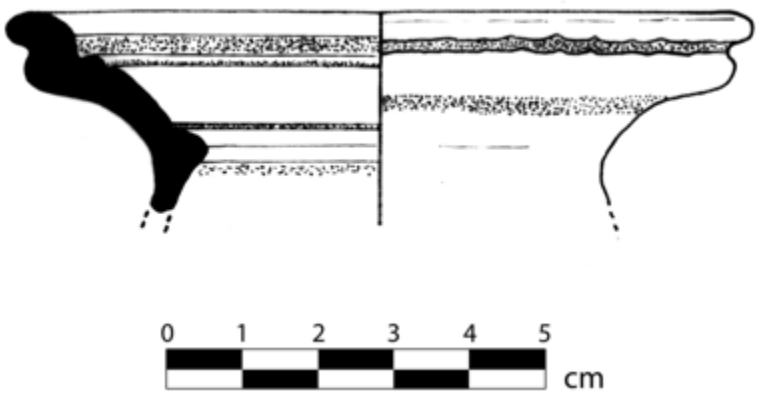


Figure 6.14 Fine grained coarse earthenwares profile drawings

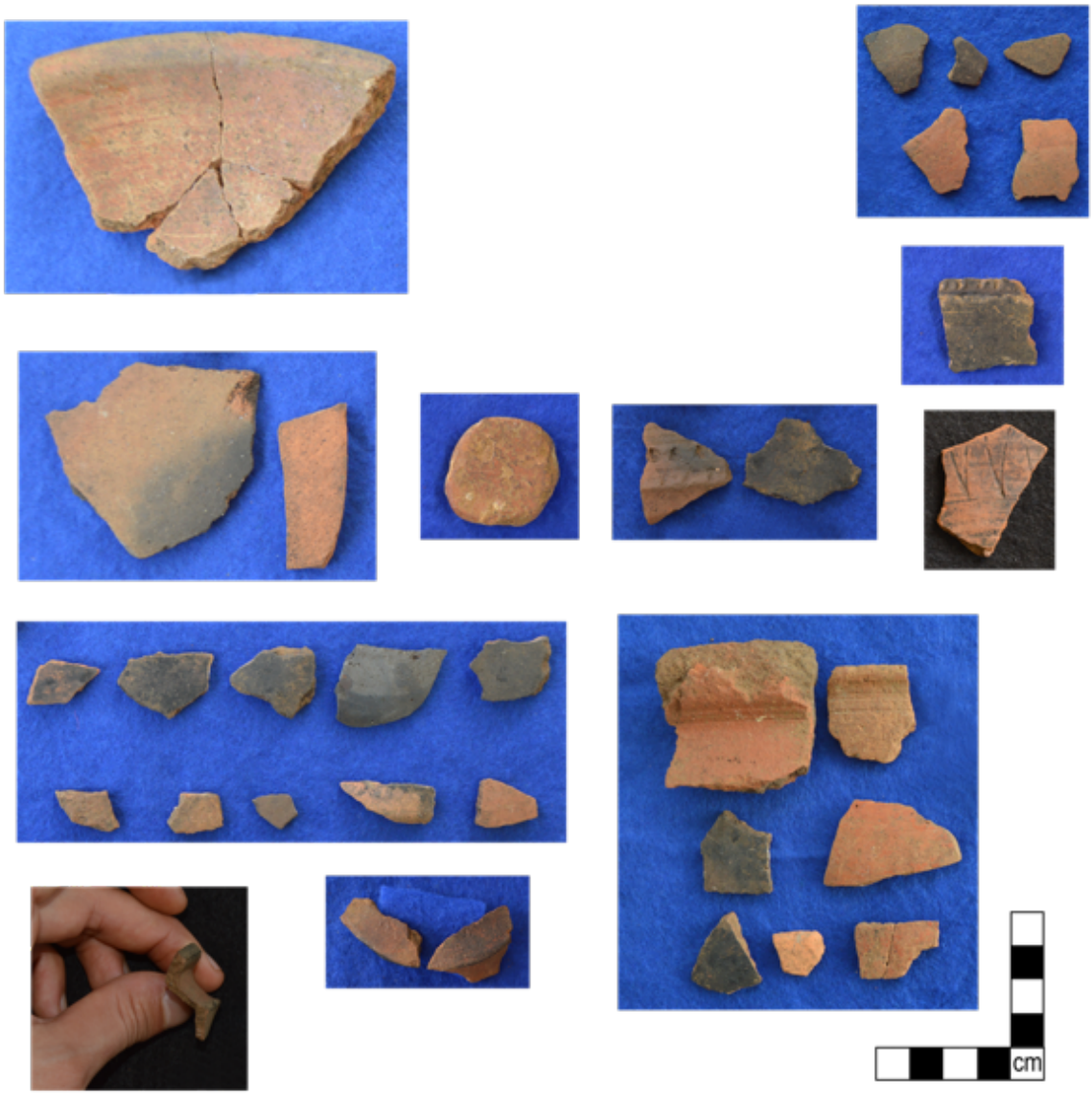


Figure 6.15 Photographs of rough- and medium-grained coarse earthenware

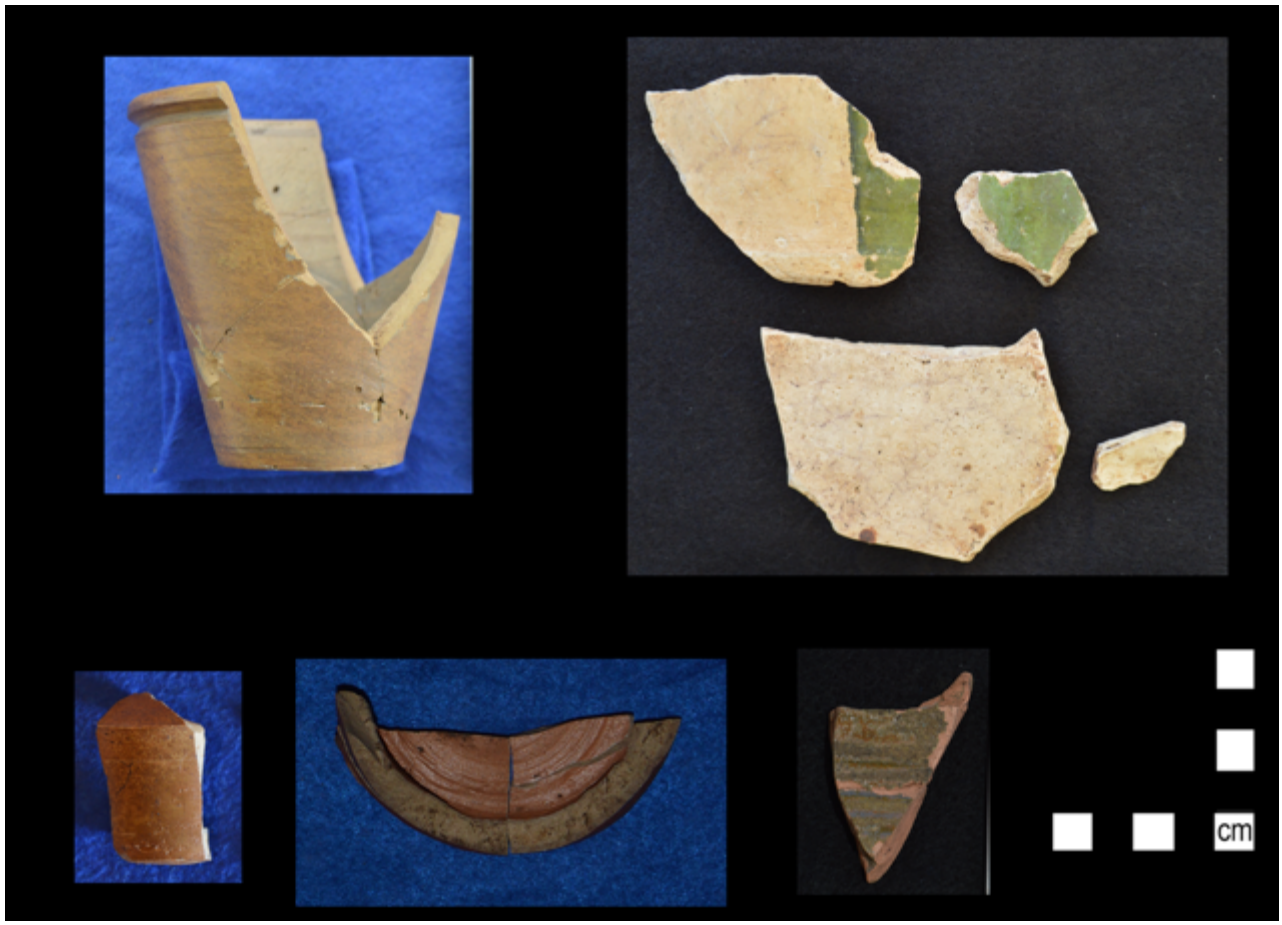


Figure 6.16 Photographs of soft-paste earthenwares and stonewares

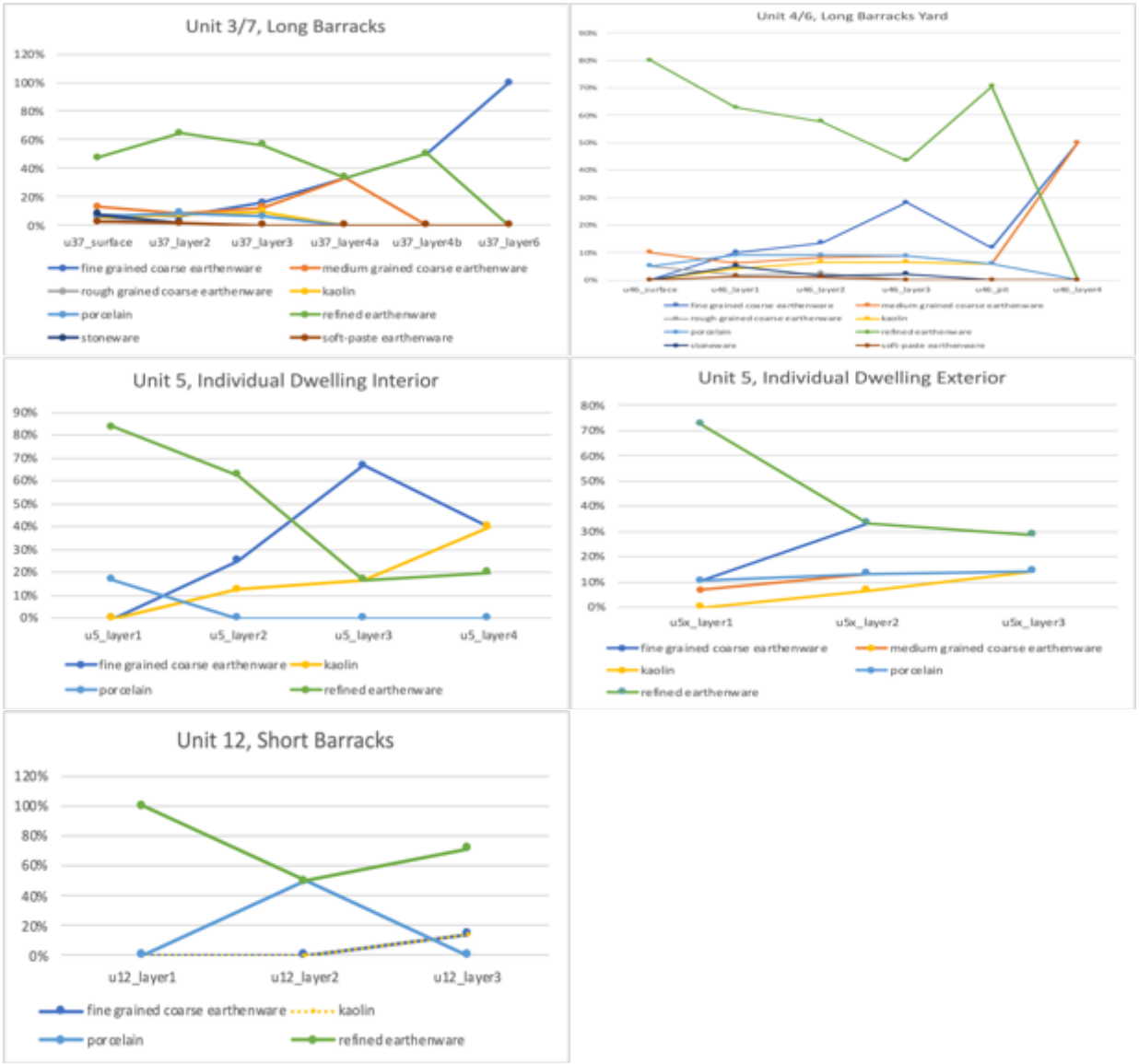


Figure 6.17 Change in proportion of ware types over time.

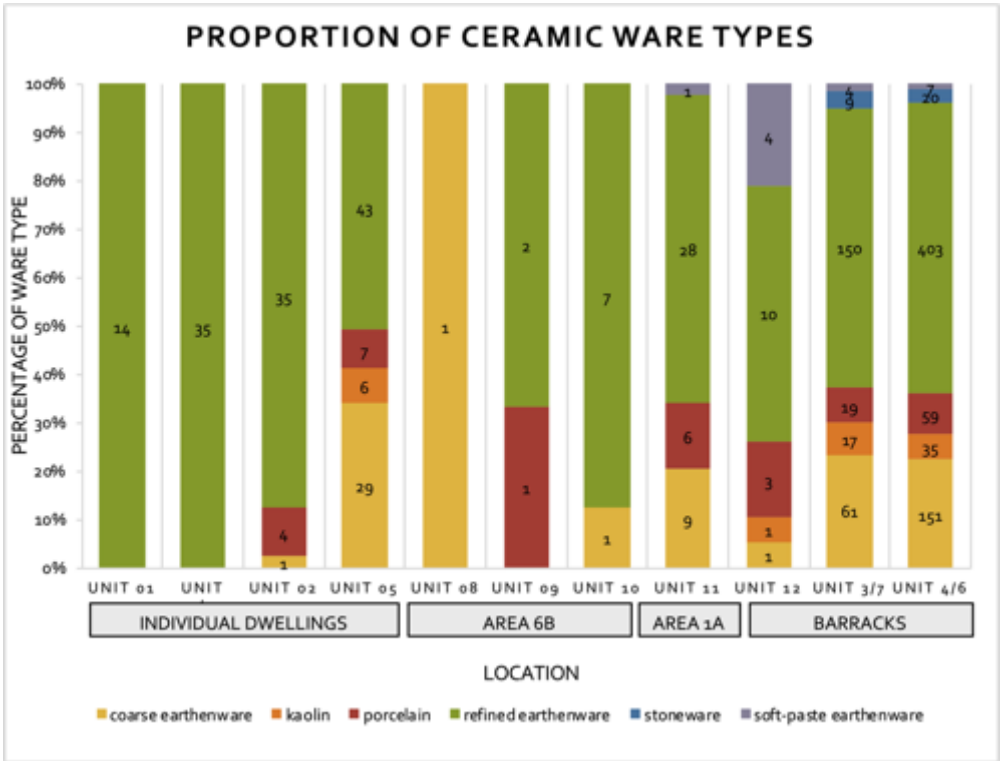


Figure 6.18 Proportion of ware types

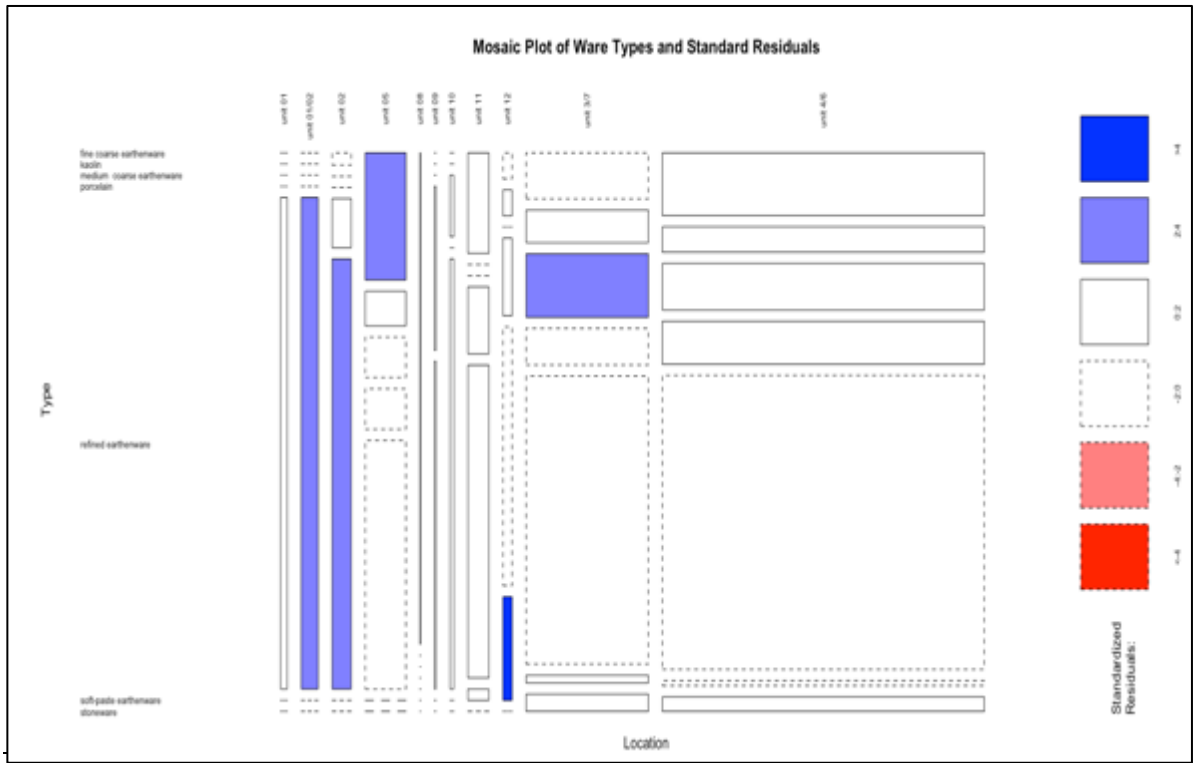


Figure 6.19 Mosaic plot of ware types

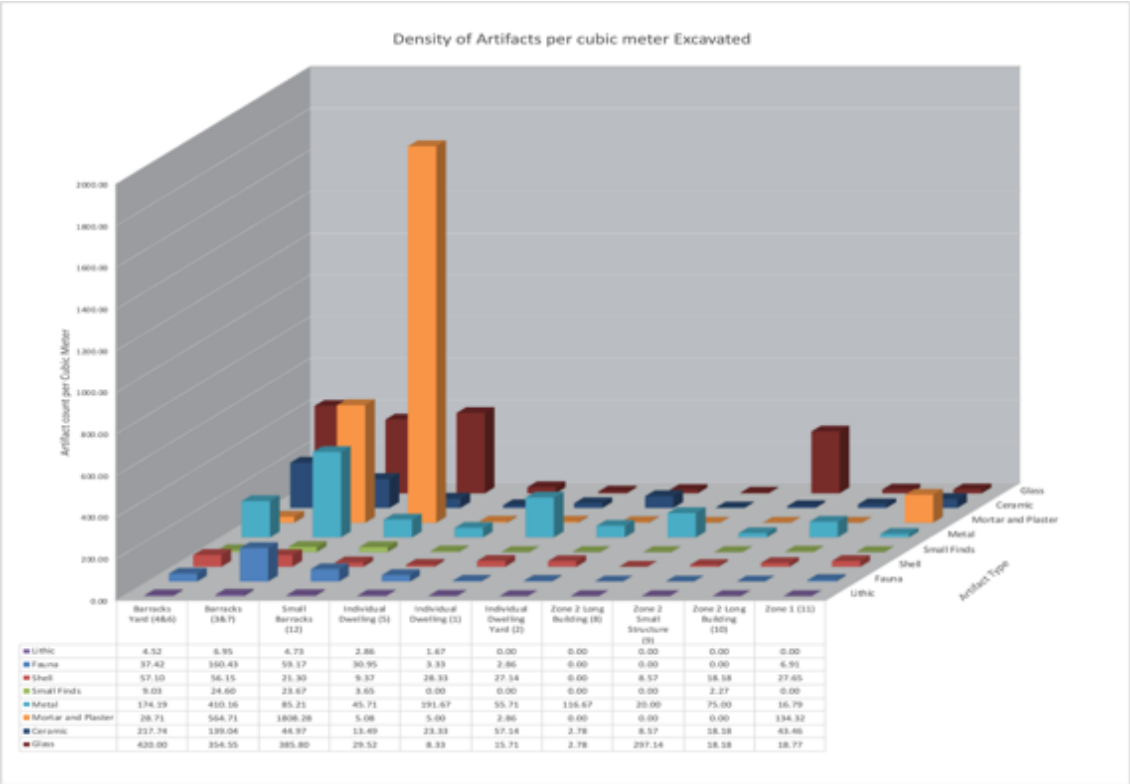


Figure 6.20 Density of artifact types per cubic meter excavated

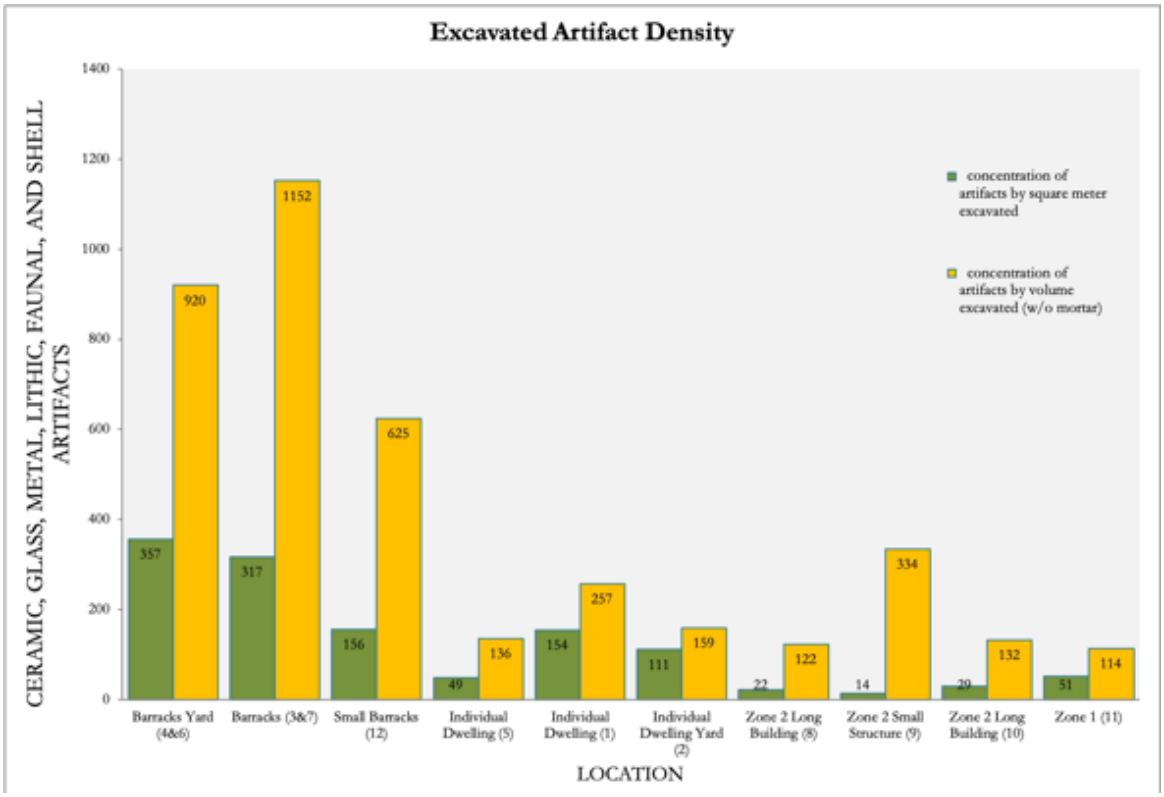


Figure 6.21 Overall density of artifacts per excavation unit

	Location	coarse earthenware	kaolin	porcelain	refined earthenware	stoneware	soft-paste earthenware	Grand Total
Individual Dwellings	unit 01	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	unit 01/02	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
	unit 02	2.5%	0.0%	10.0%	87.5%	0.0%	0.0%	100.0%
	unit 05	34.1%	7.1%	8.2%	50.6%	0.0%	0.0%	100.0%
6B	unit 08	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
1A	unit 09	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%	100.0%
	unit 10	12.5%	0.0%	0.0%	87.5%	0.0%	0.0%	100.0%
	unit 11	20.5%	0.0%	13.6%	63.6%	0.0%	2.3%	100.0%
Barracks	unit 12	5.3%	5.3%	15.8%	52.6%	0.0%	21.1%	100.0%
	unit 3/7	23.5%	6.5%	7.3%	57.7%	3.5%	1.5%	100.0%
	unit 4/6	22.4%	5.2%	8.7%	59.7%	3.0%	1.0%	100.0%
	Grand Total	**21.5%**	**5.0%**	**8.4%**	**61.4%**	**2.4%**	**1.4%**	**100.0%**

Table 6.0 Percent of ware types per unit

SURFACE COLLECTION	coarse earthenware	kaolin	porcelain	refined earthenware	stoneware	soft-paste earthenware	Grand Total
West of Mill (1A)	9.3%	0.4%	27.2%	56.2%	3.1%	3.9%	100.0%
Domestic Quarter (2B)	8.5%	0.8%	7.7%	81.9%	0.5%	0.5%	100.0%
North of Mill (5A)	1.0%	0.0%	23.7%	71.4%	2.0%	1.9%	100.0%
Grand Total	**6.4%**	**0.3%**	**21.2%**	**68.8%**	**2.0%**	**2.2%**	**100.0%**

Table 6.1 Percent of ware types within surface collection areas.

REFINED EARTHENWARES	Individual Dwellings				Barracks			Area 6B		Area 1A	Grand Total
	unit 01	unit 01/02	unit 02	unit 05	unit 12	unit 3/7	unit 4/6	unit 09	unit 10	unit 11	
pearlware											
Sum of Quantity				5		6	28			2	41
Sum of Percent	0%	0%	0%	12%	0%	4%	7%	0%	0%	7%	6%
unidentified white earthenware											
Sum of Quantity						4	11				15
Sum of Percent	0%	0%	0%	0%	0%	3%	3%	0%	0%	0%	2%
whiteware											
Sum of Quantity	14	35	33	38	10	136	364	2	7	26	665
Sum of Percent	100%	100%	94%	88%	100%	91%	90%	100%	100%	93%	91%
yellowware											
Sum of Quantity			2			4					6
Sum of Percent	0%	0%	6%	0%	0%	3%	0%	0%	0%	0%	1%
Total Sum of Quantity	14	35	35	43	10	150	403	2	7	28	727
Total Sum of Percent	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 6.2 Refined earthenware types

Decorations on Refined Earthenwares in tbe Domestic Quarter								
	unit 01	unit 01/02	unit 02	unit 05	unit 12	unit 3/7	unit 4/6	Grand Total
transferprint	2	13	6	15	4	36	126	202
	14%	37%	17%	35%	40%	24%	31%	29%
handpainted	1	9	13	12	2	54	92	183
	7%	26%	37%	28%	20%	36%	23%	27%
undecorated	8	6	3	1	1	28	78	125
	57%	17%	9%	2%	10%	19%	19%	18%
spongeware		2	6	6	1	15	38	68
		6%	17%	14%	10%	10%	9%	10%
Slipware, factory made	2		1	6	2	4	47	62
	14%		3%	14%	20%	3%	12%	9%
unidentified				3		7	10	20
				7%		5%	2%	3%
flow, transfer print blue	1	5	4				5	15
	7%	14%	11%				1%	2%
undecorated yellowware			2			4		6
			6%			3%		1%
unknown, burned							5	5
							1%	1%
shell edge						2	2	4
						1%		1%
Grand Total	14	35	35	43	10	150	403	690

Table 6.3 Refined earthenware decorative types

Mean Ceramic Dates						
	Location	MCD	blueMCD	Percentile Confidence Interval 2.50%	Percentile Confidence Interval 97.50%	Sherd Count
Barracks	Unit 4 & 6	1831	1830	1829	1836	475
	Unit 3 & 7	1847	1858	1846	1876	181
	Unit 12	1868	1862	1851	1884	15
Individual Dwellings	Unit 1	1903	1876	1861	1913	14
	Unit 2	1905	1891	1880	1904	35
	Unit 1 & 2 surface	1913	1909	1902	1915	35
	Unit 5, Interior	1874	1837	1824	1871	19
	Unit 5, Exterior	1887	1840	1827	1874	30
1A	Unit 11	1894	1854	1835	1886	30
6B	Unit 10	1905	1898	1886	1910	7
Surface Collections	5A surface collection	1875	1829	1828	1829	651
	1A surface collection	1872	1830	1829	1834	437
	2B surface collection	1893	1831	1830	1852	309

Table 6.4 Mean ceramic dates, confidence intervals and artifact counts.

TYPES OF REFINED EARTHENWARE AND PORCELAIN VESSELS																	
	unit 01	unit 01/02	unit 02	unit 05	unit 12	unit 3/7	unit 4/6		unit 01	unit 01/02	unit 02	unit 05	unit 12	unit 3/7	unit 4/6	Total Quantity	Percent of Assemblage
	Quantity								Proportion of Unit								
PORCELAIN																	
cosmetic jar							1								0.2%	1	0.1%
round gaming piece						1								0.6%		1	0.1%
tableware				1		2	7					2.0%		1.2%	1.5%	10	1.3%
bowl				*1*		*2*	*6*					*2.0%*		*1.2%*	*1.3%*	*9*	*1.2%*
shallow bowl							*1*								*0.2%*	*1*	*0.1%*
unknown			4	6	3	16	51				10.3%	12.0%	23.1%	9.5%	11.0%	80	10.2%
REFINED EARTHENWARE																	
cosmetic jar							1								0.2%	1	0.1%
round gaming piece						2	2							1.2%	0.4%	4	0.5%
tableware		18	2	13	1	45	75			51.4%	5.1%	26.0%	7.7%	26.6%	16.2%	154	19.7%
bowl				*3*	*1*	*11*	*28*					*6.0%*	*7.7%*	*6.5%*	*6.1%*	*43*	*5.5%*
plate		*18*				*3*	*29*			*51.4%*				*1.8%*	*6.3%*	*50*	*6.4%*
serving dish				*1*								*2.0%*				*1*	*0.1%*
shallow bowl						*1*	*5*							*0.6%*	*1.1%*	*6*	*0.8%*
unknown			*2*	*9*		*30*	*13*				*5.1%*	*18.0%*		*17.8%*	*2.8%*	*54*	*6.9%*
teaware, teacup			3	1			5				7.7%	2.0%			1.1%	9	1.2%
unknown	14	17	28	29	9	99	320		100.0%	48.6%	71.8%	58.0%	69.2%	58.6%	69.3%	516	66.0%
utility			2			4					5.1%			2.4%		6	0.8%
bowl						*2*								*1.2%*		*2*	*0.3%*
jar			*2*								*5.1%*					*2*	*0.3%*
large bowl						*2*								*1.2%*		*2*	*0.3%*
Grand Total	14	35	39	50	13	169	462		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	782	100.0%

Table 6.5 Refined earthenware and porcelain vessel types

Kaolin Pipe Parts	unit 05	unit 12	unit 3/7	unit 4/6	Grand Total
pipe bowl	**4**		**5**	**16**	**25**
molded face of man with crown			3		3
thin incised line at rim				1	1
undecorated			2	11	13
undecorated, burned	2			4	6
heart stamp on nub	1				1
banner with "T F", burned	1				1
pipe bowl and stem			**1**	**3**	**4**
heart stamp on nub, circular stamp "T.D" and swag below				2	2
circular stamp "T.D" and swag below				1	1
"R J M" in shield on front facing stem			1		1
pipe stem	**2**	**1**	**11**	**15**	**29**
brown lead-glazed stem				1	1
cord incised around stem			1		1
incised band of circles, cord cord, circles				1	1
patches of brown lead glaze			1		1
stamped on stem "F. Fiola/ S. Omer"			1		1
undecorated	1	1	5	13	20
undecorated, burned	1		3		4
pipe stem, end				**1**	**1**
brown lead-glazed stem, end also glazed				1	1
Grand Total	**6**	**1**	**17**	**35**	**59**
Percent of Unit Assemblage	**7.10%**	**5.30%**	**6.50%**	**5.20%**	**5%**

Table 6.6 Kaolin pipes

COARSE EARTHENWARES	Sherd Count	Percent of Excavation Assemblage	Average thickness (mm)	Average Mohs Hardness Test
Fine-grained coarse earthenware	144	60.53%	3.98	3.07
Medium-grained coarse earthenware	86	32.89%	4.31	3.38
Rough-grained coarse earthenware	19	6.58%	6.22	4.22
Grand Total	249	100.00%	4.22	3.24

Table 6.7 Coarse earthenware counts and proportions

	Fine Grained Coarse Earthenware	Percent of All Fine Grained	Total Number of Sherds in Assemblage	Proportion of FGCE in Assemblage
unit 02	1	1%	40	3%
unit 05	22	15%	85	26%
unit 12	1	1%	19	5%
unit 3/7	24	17%	260	9%
unit 4/6	86	60%	675	13%
Grand Total	144	100%	1184	12%

Table 6.8 Proportion of fine-grained coarse earthenwares per unit

Units	**All Smoking Paraphernalia**	**Percent within Unit**
unit 01	0	-
unit 01/02	0	-
unit 02	1	3%
unit 05	28	33%
unit 3/7	41	16%
unit 4/6	121	18%
unit 12	2	11%

Table 6.9 Proportion of smoking paraphernalia per unit

Medium and Rough Coarse Earthenwares: Surface Treatments				
	unit 05	unit 3/7	unit 4/6	Grand Total
burnished		2	2	4
burnished			1	1
mica burnishing		2	1	3
incised			4	4
incised annular bands on neck, painted			3	3
incised dashes			1	1
incised, burnished			2	2
incised zig-zag, burnished			2	2
incised, slipped			2	2
incised zig-zag, reddish slip			1	1
triangular punctate			1	1
painted		1	5	6
red paint		1	5	6
slipped	3	12	15	30
brown slip			1	1
red slip	1	10	13	24
reddish brown slip	2	2	1	5
undecorated	4	18	34	56
undecorated	3	13	12	28
undecorated, burned	1	5	20	
undecorated, worn			2	2
Grand Total	7	33	64	104

Table 6.10 Surface treatments on medium-grained and rough-grained coarse earthenwares

Medium and Rough	
Inclusions	**Frequency**
grog	1
round voids	1
not recorded	3
reddish clay pellets	5
black mica	8
organic	8
calcite	10
voids	13
quartz	27
mica	52
sand	56
na	72
Grand Total	**256**

Table 6.11 Inclusions in rough-grained and medium-grained coarse earthenware

Medium and Rough Coarse Earthenwares: Vessel Forms								
	Sherd Count			Proportion of Unit			Total Sherd Count	Total Proportion of Coarse Earthenware
Row Labels	unit 05	unit 3/7	unit 4/6	unit 05	unit 3/7	unit 4/6		
cone			1	0%	0%	2%	1	1%
hollow		10	5	0%	30%	8%	15	14%
hollow closed			2	0%	0%	3%	2	2%
hollow open	3	3	10	43%	9%	16%	16	15%
unknown	4	20	46	57%	61%	72%	70	67%
Grand Total	7	33	64	100%	100%	100%	104	100%

Table 6.12 Medium and rough coarse earthenware vessel forms

Medium and Rough Coarse Earthenwares: Heat Alterations				
	unit 05	unit 3/7	unit 4/6	Grand Total
blackened		5	6	11
blackened deposits		3	21	24
fire cloud	4	4	8	16
unaltered	3	21	29	53
Grand Total	7	33	64	104

Table 6.13 Surface treatment on medium and rough coarse earthenware

Row Labels	unit 11	unit 12	unit 3/7	unit 4/6	Grand Total
lead-glazed redware					9
unidentified vessel	1	4		4	9
salt-glazed stoneware					29
cup				10	10
ink bottle			1	1	2
utilitarian jar or bottle			4		4
unidentified vessel			4	9	13
tin-enamel					5
cosmetic pot			3	1	4
unidentified vessel				1	1
unglazed soft-paste earthenware					2
unidentified vessel				1	1
utilitarian bowl			1		1
Grand Total	1	4	13	27	45

Table 6.14 Soft-paste earthenwares and stonewares

Chapter 7: Archaeology at Bras d'Eau National Park: Summary, and Heritage and Descendant Engagement

Results, Contributions and Future Research

By way of concluding this dissertation, in this chapter I review the results of my research, comment briefly on the future of the national park as a heritage park, and consider possible directions for further research. My current research was influenced by Caribbean and American scholarship that investigates plantation landscapes and the material culture of enslaved and, to a lesser extent, post-abolition laborers. In the introductory chapter, I recounted how previous theoretical and methodological approaches to historical archaeology and the archaeology of plantations are relevant to this project in the western Indian Ocean. These include the ways in which archaeologists have—in efforts to understand plantation life—emphasized identity and the cultural practices of members of the African, European, and Asian diasporas. Although I can highlight specific cultural practices that indentured laborers shared, my intention was never to ascertain or define the material culture traits of the Indian diaspora. Nor did I intend to define an explicit, shared cultural identity of indentured men and women through archaeological and archival research at Bras d'Eau. I relied as I could on South Asian anthropological, historical, and (the limited) historical archaeological research, particularly in terms of understanding indigenous notions of disease and bodily balances. I think, however, the configuration of space and excavated material culture at Bras d'Eau are best appreciated as indicative of the everyday practices of the site's residents and trans-oceanic trade networks, rather than as associated with one particular 'race' or ethnic group. As such, I hesitate to identify

the practices I documented archaeologically as explicitly South Asian, because many are common to the Indian Ocean and its rim more broadly.

European colonists, enslaved Africans and Asians, convicts, sailors, and eventually indentured laborers together formed the social fabric of the colony. Using archaeological methods, I found evidence for the incorporation of these various cultural perspectives into local practice, examples of which are noted below. I employed a broad methodological approach, examining the spatial data, material culture related to domestic life, historical documents from the estate itself, and colonial administrative reports from the period of indenture in Mauritius. This range of data provided the opportunity to look at the daily-life practices at Bras d'Eau at a range of scales—from the regional landscape to the configuration of domestic space, and from general patterning in artifacts to individual, intimate objects found in specific dwellings.

The colonization of Mauritius was unique in that Dutch, French, and British settlers and colonial administrators did not initially see the potential for Mauritius to become a hugely productive plantation island, one that at its height in the 1860s contributed some 10% of the sugar being produced globally. Furthermore, with no indigenous population to colonize, incarcerate, or enslave, foundational social hierarchies were also imported; however, racial, ethnic, and religious divisions and dynamics continually changed over time. As a nineteenth-century plantation site, the archaeology at Bras d'Eau was familiar, given the wealth of research already conducted on colonial plantations in the Caribbean and Americas. However, as a site in the Indian Ocean which had housed a large, mostly South Asian, indentured workforce, I expected different landscapes and material culture to emerge through my research that could potentially generate an alternative plantation model to the iconic "nucleated plantation village" (Prunty 1995 as cited in Singleton 2015a), or the functional plantation model put forth by

Whitney Battle-Baptiste (2011). Indenture as a system of labor was a new kind of capitalist exploitation that required my reconsideration of the nature of power dynamics, social relationships, exchange networks, and cultural practices on the plantation. Mauritian planters' need for a large labor force to cultivate and process the sugar cane increased dramatically after the abolition of slavery. While new technological breakthroughs—steam-powered mills (1768), steam vacuum pans for refining sugar (1813), and mechanized stalk harvesters (1930s-'40s)—certainly changed the production process, harvesting sugar cane still required careful spatial and temporal planning.

During our first season of exploratory work, the road network and nucleated settlement pattern at Bras d'Eau demonstrated that the capitalist ethos of maximizing profit was built into the plantation landscape. For nineteenth-century field laborers, planting, weeding, cutting, and transporting cane stalks remained hugely taxing work. My research questions never centered explicitly on Bras d'Eau as a case study of industrial agriculture in Mauritius and therefore I conducted all excavations in features thought to be domestic. The survey of the site and landscape analysis did allow me to consider how zones of domestic life were situated within the larger estate configuration and local landscape features. Analysis of the surrounding environment, organization of the estate, and the laborers' village formed the basis for understanding laborers' cultural practices and their role in the functioning of the plantation.

Building on previous analytical approaches to the organization of plantation landscapes based on enslaved labor, at Bras d'Eau I found a spatial patterning in which men, women, and children were confined to a single domestic quarter and within barracks structures, perhaps so that plantation owners and overseers could maintain surveillance and control over the workforce. Planters and colonial administrators were also unsure of exactly what to expect in managing the

new, non-enslaved workforce. The influx of indentured laborers at the end of the period of slavery meant that line barracks once inhabited by enslaved people became the quarters of indentured laborers. At Bras d'Eau, the planters decided to construct four parallel line barracks on the plantation, influenced by the legacy of slavery. However, the additional 64 individual dwellings, presumably built by the workforce itself, were strikingly unified in their configuration and orientation, and highlights that men and women living at Bras d'Eau had explicit preferences for housing and private yards. After the decline in the sugar industry in the late nineteenth century, some laborers' quarters in Mauritius developed into fully fledged towns that continue to exist today (Allen 1999: 164; Govinden and Carter 2012). An increasing number of formerly indentured people were able to purchase or lease small parcels of land (subdivisions of larger estates) starting as early as the 1840s (Allen 1999: 139-171). A key question that remains is: How unique is the spatial layout of the Bras d'Eau plantation? While archival documents suggest that indentured laborers re-inhabited housing that enslaved people had previously lived in, we see at Bras d'Eau that though the barracks were inhabited into the indentured period, a larger proportion of the population lived in detached houses in the domestic quarter. It is possible that similar housing styles had also been common for enslaved people, but the archaeological assemblage recovered appeared to post-date the period of slavery throughout the site.

Through spatial analysis and artifact analysis, I argue that archaeologists, including those studying plantation sites, need to pay more attention to the landscapes of health and disease. The plantation layout could also be compared to landscapes of colonial infrastructure. The MACH project has conducted several seasons of reconnaissance work on Île Plat, a small island off the north coast of Mauritius used as a quarantine base for ships arriving in the latter half of the nineteenth century (Seetah et al. 2017). The initial survey and mapping of the site suggests that

racial and ethnic hierarchies and environmental health were considered when designing the landscape, which created spatial inequalities. Christelle Miao Foh (2018: 24) using both archival sources and preliminary survey maps created by the MACH project, found that living quarters for the colonial administers were located on the windward side of the island such that the breeze would carry diseases away; structures used for accommodation or medical treatment for non-European immigrants were found on the leeward side of the island and downwind of the administrative buildings.

The artifact assemblage at Bras d'Eau shows that the lives of indentured men, women, and children were surprisingly rich, particularly in comparison to the scanty allotments listed in contracts provided by the estate. This is not to say plantation life was not filled with hardship. Metal objects, most of which were tools or other equipment, were the most common artifact type found in the domestic quarter. This demonstrates how the materiality of labor permeated the domestic sphere on the plantation. Further, if village configuration in accordance with prevailing winds, and consumption of rice, lentils, fish, and small and medium mammals are an indication that laborers' consciously nurtured a balance of health and disease in their bodies, then it is critical that archaeologists continue to consider non-western frameworks in interpretations of daily life on plantation sites. The large quantities of alcohol bottles and smoking pipes suggest that pain management was an important practice, and the consumption of such substances perhaps also had religious or spiritual implications in addition to social ones. Exemplifying the give-and-take that often occurred with local cultural practices and material cultural practices brought in by immigrants, South Asian ways of smoking, introduced to the Caribbean, South Africa, and elsewhere by indentured laborers, were taken up by local inhabitants. Such objects acquired new names in the local languages that were then used not just by indigenous people, but

by Indians as well, and often lost or gained new religious and medical associations (Du Toit 1977).

Indentured laborer experiences of receiving corporal abuses, withholding of wages by plantation owners and overseers, lack of medical care or substantial sustenance were recorded periodically by colonial officials (Government of India 1839; Stanziani 2012; Sturman 2014). The contents of the reports demonstrate ways in which women and men were subjected to violence and coercion daily, but these surviving material documents themselves can also be interpreted as laborers' efforts to adapt colonial infrastructures to their advantage by asserting their interests and place in the colonies. Similarly, the ceramic assemblage recovered at Bras d'Eau indicates that indentured laborers were active participants in the trade and movement of material goods within the Indian Ocean.

This study pushes historical archaeologists to think critically about the interpretive value we often attach to personal possessions. My comparison of inter-household assemblages revealed consistency in types of artifacts found within the various excavated dwellings, including some idiosyncratic artifacts such as umbrella parts or keys and padlocks typically occurring once per household, may mean that objects 'belonged' to a house or dwelling rather than to an individual person. As such, occupancy in the households was perhaps somewhat fluid, and movement to and from barracks and individual houses and changes in housemates occurred with little proprietary concern over the dwellings themselves. I have been careful to avoid assuming a 'household' consisted of nuclear male-female couple, particularly given the literary and historical attention to the establishment of same-sex relationships and kinship bonds (Ghosh 2008; DeLoughrey 2011; Khan 2016). The impact of the unbalanced gender ratios at plantations,

typically 7 men : 1 woman, on material and spatial practices warrants further exploration, as well as the role of domesticity and kinship in homemaking practices.

I have shown by comparison that many of the types of artifacts found at Bras d'Eau are similar to those found on other archaeological sites in Mauritius. The tablewares, pipes, glass bottles, and buttons that were recovered at Bras d'Eau were also found at a Mauritian village site (Colwell-Chanthaphonh 2014); a colonial fort (Summers and Summers 2009); immigration depot (Summers 2011); and cemeteries (Seetah 2015b). Primarily consisting of imported objects from Europe, Asia, and possibly Australia and eastern Africa, these assemblages bring to light distinctive Mauritian cultural practice, particularly when considered cumulatively. As archaeological research grows in Mauritius and on other islands in the Indian Ocean, the theoretical scope of plantation archaeology will continue to expand.

Contemporary Plantations

An area for further research is in the ways the colonial plantation complex is the antecedent to modern agro-industry. Historians such as Philip Curtin (1998) imply that the plantation complex collapsed with the widespread abolition of slavery in the nineteenth century. Sidney Mintz ends *Sweetness and Power* (1986) with a chapter dedicated to how consumption of sugar came to represent new ways of being in the twentieth century, without considering continuities in the mode of production. In contrast, historian of Mauritius William Storey (1997: 7), argues that plantations did not disappear, but rather planters adapted the plantation complex after the abolition of slavery to new conditions, by employing alternative forms of labor recruitment such as "indenture, tenancy, sharecropping, debt slavery, and 'vagrancy' laws."

Such continuities are evident in everyday life and spatial practices on modern plantations. I briefly consider three comparative case studies here: Hanan Sabea's (2001, 2008) ethnohistoric work on sisal plantations in the Tanga region of coastal Tanzania; Seth Holmes' (2013) ethnography of a Washington state fruit plantation in the US, and Debarati Sen's (2017) ethnography of a tea plantation in Darjeeling, India. Sabea (2008) and Sen (2017) emphasize the colonial origins of the 'orderliness' of space and organization of human labor and time on twentieth-century and modern plantations. In all three cases, the structure of hierarchies are strikingly similar, with pickers, pluckers, and cutters who work in the field holding the greatest stigma based on ethnicity, gender, linguistic knowledge, and age (Sabea 2008: 421; Holmes 2013: 67). Field workers are supervised by field managers or crew overseers, office managers, and finally, plantation owners and spatial practices based on visibility and surveillance (Sabea 2001: 298; Holmes 2013: 67). Social inequalities are reflected spatially as well. Field workers are housed in a designated quarter of the plantation located in marginal spaces, often without electricity, and they lack access to social resources such as healthcare and education (Holmes 2013; Sen 2017: 78). This history and legacy of indenture remains linked to modern labor institutions in ways that we have yet to fully understand and acknowledge. The historical archaeology of plantations is significant because the legacies of coercive systems like slavery and indenture shape the experiences of descendants today.

The Past and Future of the National Park

Over the course of 17 months of fieldwork, I found the mosquito populations ebbed and flowed with the monsoon rains and subtle temperature variations throughout the year. While we

were mapping the ruins, swarms of mosquitos would emerge from the shaded dark corners of the basalt structures. Common house sparrows, tropical doves such as the Madagascar turtle dove, and the endemic Mauritius paradise flycatcher and grey white-eye birds, perched together in the mango orchards and in the last few eucalyptus trees. Endemic fruit bats hung from Australian pines that elsewhere on the island are raised and bought annually as Christmas trees by Christian, Hindu, Muslim, and Chinese Taoist/Buddhist families alike. The mongoose that live among the ruins today are descendants of the first few specimens brought to the island in 1902 by Mauritian Governor Sir Charles Bruce with the unsuccessful intention of eradicating invasive rats that had become pests on sugarcane fields (Cheke and Hume 2008). Occasionally a troop of macaques will wander past, introduced in the 1700s. "The forest is haunted!" my Mauritian research assistants told me, potentially with the ghosts of the enslaved or indentured laborers who worked the land over 100 years ago. When we heard a strange sound coming from the forest, they would often joke about ghosts coming to check out our research. But the only people we would see straying from the park's ancient roads were foragers. We would often see motorcyclists swerving around rough patches of the road, their bikes overflowing with greens for goat feed. One day we encountered a man harvesting a few jackfruits from inside the park. There were only two jackfruit trees in the park that I knew of, even after conducting extensive survey. The man we met was gathering fruits at a third tree in a dense part of the forest. He warned us of a large wasp nest next to the road. When mangos were ripe, for several weeks a couple of men, often with young boys, would drive their trucks into the park to gather the fruits to sell. One day we found vines tied low across the path, likely placed by the children to trip us. Despite the fact that none of us actually were disrupting each other's work, I could not help feeling we were trespassing on

this small group's livelihood. If caught, these men and boys would have been fined in the 1900s, but today the park rangers turn a blind eye as no harm is being done to the endemic species.

Working within the park and engaging with NPCS park rangers, and Mauritian team members and visitors, made all the clearer the reality that different landscapes exist simultaneously within the same space-time continuum (Thomas 2001: 176). To me, Bras d'Eau National Park has come to represent an intermingling of ecological and cultural heritage, taking for granted the Euro-western philosophic division between nature and culture. For NPCS, they hope that the place *could* represent endemic Mauritian species, but are all too aware of how the native biodiversity on the island has dwindled since human settlement. Their perspective has shifted since we started archaeological research in 2012 (see below). For the foragers, the site is part of their livelihood, a managed wilderness where resources are free for anyone who knows where to find them. For the younger Mauritian project members, the site was a classroom, their workplace, and a connection to their ancestors. In 2016, Ashna Darbary, Anusha Brojomohun, Christopher Tenermont, and Nishant Ramdhun published a reflective piece in the Aapravasi Ghat Newsletter recounting their experiences working on the Bras d'Eau archaeology project. They write,

> Like most Mauritians, we thought that archaeology was only about hoeing the earth to find skeletons and valuable objects like gold. We thought it was straightforward work, where we would only have to dig until we get the predetermined results. Archaeology gave us the privilege of exploring a widely romanticized yet misunderstood area of study, while learning about our place in Mauritian culture and history. One can say it is a different kind of treasure hunt altogether: the treasure of knowing where we came from and how we used to be.

For the Mauritian public, the site was a tranquil forest, excellent for day-excursions. On the last point, we saw the perspective begin to change through the public engagement program we

started at Bras d'Eau, supported by the growing collaborative relationships between archaeologists, NPCS, and other local heritage institutions.

Descendant and Public Archaeology

Archaeologists have begun to value multivocalities and their inherent dissonance in constructions of the past, recognizing that there is not just one unified conception, interpretation, or memory about it. The recognition of these varied lines of history is theoretical and methodological; there is diversity in narratives of the past and diversity in the types of sources archaeologists' engage with to articulate these narratives. Africanist historians and archaeologists have been at the forefront of this movement: first, in their efforts to redefine "historical archaeology" through the scrutiny of the biases of colonial documentary sources, and second, through their use of oral histories and oral traditions in archaeological interpretations (e.g. Miller 1980; Vansina 1995; Reid and Lane 2004; Connah 2007; Schmidt and Walz 2007; Robertshaw 2012; Schmidt and Mrozowski 2013). Oral histories are the alternative perspectives indigenous people may have on historical events or life in the past, but oral traditions are passed down from generation to generation and drift into the realm of legend, myth, or folklore (Colwell-Chanthaphonh and Ferguson 2006). Although oral traditions may seem hazy, dubious, and even fallacious accounts of the past, they contain history through symbolic value, and their structure in particular can reflect on social relationships between groups, such as concerning social and political power and land claims (Miller 1980; Schmidt 2006), but all sources of evidence should be analyzed critically (Lane 2004). Rather than verifying or contradicting oral accounts, archaeology is additive (LaViolette 2004; Schmidt and Walz 2007).

The recognition of the contribution of indigenous voices to history, and the integration of oral accounts and ethnographies into archaeological interpretation, have also opened the door for archaeologists to engage with interested communities and initiate dialogues about heritage. Atalay (2012: 27, 207) sees collaboration between archaeologists and descendants as bringing together different forms of knowledge that can be "braided" together, such that "community knowledge intertwines with archaeological data to create new and richly textured interpretations of the past" (e.g. Colwell-Chanthaphonh et al. 2015). Such community projects can give a voice to those who were traditionally not part of the history-making process (Segobye 2009: 173). Archaeology done with and for the descendants of those who lived under regimes of coercion, captivity, and violence has highlighted that slavery and indentured labor continue to impact people's lives in the present, particularly in post-colonial nations. Segobye (2009: 170), in her discussion of the state of heritage in southern Africa, points out that communities have begun to use heritage to "reclaim their identities… in the postcolonial period."

Collaboration and Dissonance

On August 5th 2011 the Mauritian Government proclaimed Bras d'Eau and Mare Sarcelles reserves a national park under the Wildlife and National Parks Act. Shortly thereafter, the *Government Information Service Newsletter* published a short notice announcing "Prime Minister Inaugurates the Bras d'Eau National Park," mentioning the site's marine, fresh water, and terrestrial ecosystems and the importance of protecting Mauritian biodiversity by way of expressing the reasoning behind the creation of the new park (Prime Minister's Office, Government of Mauritius 2011:1). The last two lines of the notice however, acknowledges the coexistence of both native and non-native species: "with a view to further protecting the

reserves, which are habitats of a number of species of birds, such as cave swiftlets (Petite Hirondelle), the Mauritius grey white eye birds (Picpic), and the flycatcher, a critically endangered endemic bird, and harbours a native orchid, the Onnelia Aphrodite. Situated on an area of about 497 hectares at post Lafayette, the Bras d'Eau National Park consists mainly of exotic plantation like mahogany, eucalyptus and araucaria" (p. 2). There was no mention of the past history of the site as a sugar estate nor of the archaeological ruins that exist within, and yet any reference to endemic, native, and exotic species unavoidably alludes to the historical landscape that generated in such tensions in the present.

While I was living there, several Mauritians told me that other Mauritians generally had no interest in their history, culture, or in issues of preservation of archaeological sites. Krish Seetah (2015: 291) describes being deeply troubled by the fact that European researchers told him that the reason they did not collaborate with local experts was due to the lack of interest on the part of Mauritians. The emergent reality, happily, is quite the opposite. The descendants with whom I engaged most closely were the six Mauritian archaeologists who worked with me as research assistants for anywhere from a few months to a full year, and the staff members of NPCS, from the manager of the park, to the park rangers, to the maintenance crew and field workers. From the outset of the project, I never witnessed any 'lack of interest' from those who chose to participate in the project actively as part of the archaeological team, from the park management team who provided us use of their field house, conference room, equipment, and shared their knowledge of the site, or from the hundreds of visitors who came to see and hear about the archaeology at Bras d'Eau.

Initially, one of the main goals was to impress upon NPCS upper level management the value of Bras d'Eau as an archaeological site that encapsulates a regime of labor we have yet to

fully understand, in an understudied region of the world. I hoped at the institutional level, they would see the great potential for developing Bras d'Eau into a 'multipurpose archaeological park' site, not just for the thousands of European tourists who visit the island every year, but a place where Mauritians could engage with their own past. In 2014, during our first exploratory season of research, the archaeology and heritage members of the project expressed dismay and outrage when NPCS lay down concrete foundation and metal frame structure to use as a nursery abutting the west side of the crumbling sugar mill. We lamented the lost potential for conducting research on the mill, and expressed legitimate safety concerns over the placement of the nursery due to the already crumbling, tall stone walls of the mill. MACH team members Saša Čaval, Alessandra Cianciosi and Diego Calaon (2014) explicitly expressed these concerns in the first interim archaeological report they prepared for NPCS. In a presentation to NPCS supervisors at their central office, I showed pictures of beautifully cut rectangular stones with masonry markings that had been recovered when digging for foundation for the concrete, but whose specific provenience was lost because they were removed without documentation. During these meetings, I tried to make clear that despite my continual protests of the planting of new trees or bushes next to the sugar mill or on other archaeological features, my goal was never to halt NPCS plans for the site, but to be able to work together to mitigate the impact of their activities, and ensure preservation of the surface and subsurface archaeological features.

Bras d'Eau site is increasingly being considered as encapsulating both the ecological and cultural heritage of Mauritius. In their Management Plan for 2015-2019, NPCS's vision statement for Bras d'Eau reads:

> To be a place that is a natural, historical and cultural showcase that tells the story of Mauritius, one from which the local community and the country at large will benefit economically and spiritually, and where natural and cultural values are protected now and into the future (p. iv).

It is still implied that the ecological aspects of the park take precedence:

> Culture and nature go together in Bras d'Eau, and in defining the sense of place, they cannot be separated. Both are equally important, yet it is important to undertake ecological restoration work to recover some of the ecological function and habitat that would originally have existed in the national park. Together with the big trees, the tranquillity and omnipresent human history on the Island, recovery of sections of original vegetation is ultimately integral to the overall sense of place and the 'essence' of Bras d'Eau National Park (NPCS 2015: 11).

Understandably, preservation of biodiversity and ecological restoration is within NPCS's expertise, whereas cultural and archaeological research and preservation are not.

What became clear through continued meetings, presentations, and site visits with NPCS staff is their genuine personal and professional interest in the archaeological and historical features of the site—expressed through their questions to me about the history of the site and about what they should do to preserve and share the archaeology at Bras d'Eau with the public. I debated with the directors and where features may have once stood and the function of different structures. I openly shared (and continue to share) the research aims, goals, methods, data, and results with NPCS, including the digital maps of the archaeological features in the park, artifact catalogues, and interpretive information of both the site's history and archaeology. This openness was intended to help NPCS determine how they can proceed with management and development in the park that minimizes their impact on further archaeological research and the heritage value of the park, and improve their engagement with the public.

In practice, the heritage experts and archaeologists disagreed on how to manage the site and preserve the shared vision of an eco-cultural site on the ground. Since the construction of the shade house, staff management have planted some trees near the mill. However, they also critically initiated consultations with me and cultural heritage professionals from AGTF about

where to locate a new concrete and metal framed structure intended to house pink pigeons, one of Mauritius' remaining endemic bird species. They moved the location of the structure based on our recommendations and maps I provided.

The professed institutional and governmental interest in archaeological research seems at times, to be incongruous with the practical reality of managing a National Park. These dissonances demonstrate the complexity of the challenges facing NPCS and their collaborative heritage institutions as the look towards the future plans for managing the park. Moreover, I would argue that it speaks to the importance of Mauritian participation in projects such as this, and the significance of ongoing knowledge sharing between local archaeologists, the NPCS field crew, and park rangers, so that historically silenced peoples and their histories are rendered visible within archaeological endeavors.

Mauritian Archaeology and Public Engagement

Seetah (2015c) has argued that the media is an important means for public engagement and knowledge dissemination, and online publications with comment sections provide an important forum for the public to respond to archaeological projects. *L'Express*, a Mauritian newspaper, published two articles about the project. The first appeared in September 2015 and discussed the aims of the project: to understand life on the former sugar estate and the preliminary understandings of the archaeological remains in the park. The second was published in April 2016 and summarized the results of the survey. The local Mauritian news channel, MBC, filmed a news segment on the Bras d'Eau in November 2015 and included a component on this archaeological project as well. Moreover, I periodically shared site and artifact photos

and updates on social media through Instagram, Facebook and a WordPress blog with which Mauritians continue to engage.

Throughout my research, I provided guided visits of Bras d'Eau and interaction with archaeological artifacts to various interested groups of 15 to 60 people, including members and friends of the Société de Technologie Agricole et Sucrière de Maurice (STASM), Mahatma Gandhi Institute (MGI), Teachers of the North Hiking Group comprised of primary and secondary teachers and their families, several causal hiking or walking groups who found out about the project through friends or colleagues, and student groups from the University of Mauritius and MGI.

The largest event we organized was in the honor of International Day for Monuments and Sites (18 April 2016). The Bras d'Eau archaeology project team organized a public archaeology weekend at the park in collaboration with research historians from AGTF and NPCS. In the visitors' center we arranged a display of different types of artifacts from the site. I created a 20-minute video presentation of the history of the Bras d'Eau Sugar Estate, preliminary results of the survey and archival research, and a brief explanation of the scientific process of archaeological research from survey to mapping to excavation to artifact analysis. I worked with the research assistants so they would be able to answer questions confidently about the artifacts and the slide presentation. Together, we created a script-outline for walking tours of the sugar mill, railroad, laborers' quarter, and well. Tours were offered in Mauritian Creole, English, and French. We advertised the event on Facebook and sent out emails to friends and colleagues. Research assistants Anusha, Sandya, and Ashna placed posters in their villages in front of shops and other publicly frequented areas. Over the weekend, more than 200 visitors participated in the

tours and many more came in the visitors' center to look at the artifact displays and spoke with team members.

Based on the reactions of tour visitors and responses to the press and social media, these public engagements challenged local people's perception that Mauritius has no archaeology to speak of, "other than dodo bones." The majority of visitors, particularly those who had come to Bras d'Eau before, were shocked that there were ruins in the park, and came away with a new appreciation for their country's archaeological heritage. 'Heritage', often perceived as inherently positive, may also commemorate painful, traumatic or violent pasts, forming "negative heritage" (Meskell 2002). To that point, in Mauritius heritage consists not just of the various religions practiced on the island, Kreol language, and the music and dance of *séga* artists, but also of Mauritius' past history of epidemics, environmental destruction, labor exploitation, racial division, violence, and injustice (see Schnepel and Schnepel 2011; Boswell 2006 on aftershocks of slavery in Mauritius). Plantation landscapes encapsulate the daily violence of slavery and labor exploitation, but colonial enterprises also laid the ground work for persisting inequalities (Boswell 1999). In a society that is still racially, religiously, and culturally divided, visits to sites like Bras d'Eau provide an opportunity for reflection on the country's complex past, including its periods of slavery and indenture. Our hope was that after experiencing the archaeology of Bras d'Eau, people might reflect more deeply on the landscapes they live in and legacies of slavery and indentured labor today.

Another result of these large public days and tours is that everyone involved in the archaeological project, including myself, and the staff members at NPCS have come to further appreciate the potential uniqueness of Bras d'Eau as a space for tourists to engage with the sciences on multiple levels, and gain knowledge of its unique ecology and archaeological history.

In June, 2016 the Mauritius Royal Society of Arts and Sciences invited me to give a 45-minute lecture and tour to about 60 of their members. A park ranger and I conducted the tour jointly in order to share knowledge on both the archaeology and biodiversity of the site. While standing among the ruins of the indentured laborers' barracks, three pairs of the Mauritian Paradise Flycatcher were attracted by our voices, and flew over and perched in the mango branches above our heads. This flycatcher is a rare endemic bird that was lucky enough to survive the rapid mass extinction of flora and fauna following human settlement on Mauritius. For many visitors, it was their first time seeing this bird or archaeological ruins. For all present, it made for a powerful statement about the importance of the site, for both its archaeology and natural habitat. Site managers were able to see that the archaeology of Bras d'Eau has value not just to foreign and local academic researchers, but also for all Mauritian people.

Figure 7.0 Photograph of the shade house used as a nursery constructed next to the sugar mill in 2014

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Appendix I: Excavation Report

Excavations in Zone 3 during Field Season 2014

Structure 1, Excavation Units 1 and 2

From July 21 to 24, 2014 two 1m x 1m test excavations were dug, units 1 and 2 in and next to structure 1. Structure 1 was a 5.6 x 6.4-m rectangular 1-room basalt house located 9.5 m from the road. There were no large trees growing inside the structure or directly in front of it, making it a good choice for the first test excavations. A small collapsed 2.7 x 4-m rectangular structure abutted the west wall. Excavation unit 1 was placed in the center of the structure 1. Unit 2 was placed in the space between the road and structure 1, approximately 3 m north of what would have been structure 1's northern wall. First, the ground surface inside structure 1 and the 3 m radius around unit 2 was cleared of vegetation and leaves. The starting elevation in unit 1 and the interior of structure 1 was elevated about 40 cm above the open area just north where unit 2 was situated.

Five stratigraphic deposited levels were identified in unit 1. First, we removed the rocks from the surface and excavated by trowel. The A-horizon organic topsoil, SU 4/19, was dark brown loam and organic matter with inclusions of charcoal (maximum 1cm) and 5 cm-thick roots disturbed the layer. This layer was very rocky with plentiful basalt cobbles (minimum diameter of 4 cm and maximum diameter of 15 cm); some of the loose boulders and cobbles had clearly fallen off the surrounding structure walls. After excavating approximately 10 centimeters by trowel, we used the pickaxe to get through the basalt cobbles and roots that were present throughout the excavation unit. Below SU19, SU 21, soil was a dark brown loam with hardened, red clay inclusions and is very rocky and infiltrated by roots. A concentration of cowrie shells

was found in the northeastern corner of the unit and some charcoal pieces were concentrated in the center of the southern quarter. Several metal artifacts were also recovered from the center of the unit. Below SU 21 SU 23 was identified in center of unit and extending to western limit of excavation. SU 23, was a very compact light reddish brown clayey sandy loam with scattered red flecks of burned basalt and many charcoal flecks and inclusions. Basalt boulders 5 to 15 cm in diameter made up 60% of the context. SU 23 was interpreted as the residual of what was once the compact flooring in structure 1. Despite efforts to place excavation units away from tree disturbance, a deep post-depositional depression, SU 20, likely caused by roots of a tree that once grew inside the structure, cut through approximately one third the volume of the test unit. SU 20 extended through SU 19, SU 21 and SU 23 down to 60 cm bd, and therefore the integrity of these stratigraphic levels was disturbed, particularly on the southern half of the unit. SU 25/26 was a powdery and light-yellow silty loam found next to SU23 and at 50 cm bd on the west side of the unit. The subsoil, SU 27, was a dark brown silty clay loam intermixed with large boulders and open-air pockets.

Within unit 2 three stratigraphic levels were identified: the A-horizon, SU 18, was the topsoil consisting of an organic dark brown loam interspersed with 10-20cm diameter basalt boulders. Below the topsoil, SU 22, the B-horizon, was about 18 cm deep and consisted of reddish brown clay loam with many scattered red clay inclusions and few scattered charcoal flecks. About 70% of the layer consisted of basalt boulders, cobbles and pebbles. As excavations extended deeper, we found that the boulders increased in size and the soil became much looser around the large boulders. SU 24, the C-horizon, consisted of a dark brown loam loosely interspersed between basalt boulders 20-40 cm in diameter. Excavations ended when the soil fill between the basalt was so dispersed there were empty cavities between large boulders and when

we dug for 30 centimeters without recovering any artifacts. The R horizon, as in all excavation units, consisted of a basalt bedrock.

Excavations in Zone 2 during Field Season 2016

Structure 4, Excavation Unit 8

Excavation unit 8 was 1 x 2 m in plan. SU 282, the leaves, twigs, roots, small cobbles and a few boulders that had from walls, were removed first. The topsoil, SU283, was a very dark brown loam mixed with many basalt cobbles, pebbles and broken land snails. SU283 was about 4cm in depth and evenly distributed across top of the unit. Level with the topsoil a small burned patch of soil, 15cm in diameter, was mapped the west side of the unit. This deposit, SU284, was only 1.5cm deep and was determined to have been burned by the field crew when surveying and mapping the area in January of 2016 (eight months earlier), therefore SU 284 was collected with the topsoil. Below the topsoil, the unit was divided into two different stratigraphic layers: SU285 in the NW corner of the unit consisted of very compact dark brown silty loam with hard red clay pieces. East of SU285, SU288 consisted of a dark brown loam and a 5cm thick root ran through the center of the layer. SU288 appeared to cut through or be deposited on top of SU 285, however without an extension of the excavation unit, it was unclear whether there was true superpositioning relationship between the two. Both layers were disturbed by small roots and filled with small pebbles and cobbles. They extended to approximately 10-15cm deep and covered the basalt/silt subsoil. Given subtle difference in soil texture between SU288 and SU285, it is likely that this difference arose from variation in the natural processes of decomposition, particularly given the large root running through SU288. The subsoil consisted of three different stratigraphic units: The subsoil principally consisted of SU298, large basalt

cobbles and boulders. Interspersed between the boulders, SU302 was a strong brown silty clay found under SU288 on the east side of the unit, and SU299 was a dark yellowish brown silty clay found under SU285 on the west side of the unit. Artifacts were concentrated on the surface and in the topsoil, and to a far lesser extent in SU285 and 288.

Structure 5, Excavation Unit 9

Excavation unit 9 was the interior of Structure 5, a small square structure located on the top of outcrop. The stone foundation walls of structure 5 were assigned SU numbers 290 through 295. Artifacts were first collected on the surface as SU 296, the loose leaves, roots, and the loose boulders, were removed. On the east side of the unit SU 300, a dark brown loam with a dense root disturbance, covered the bedrock. Approximately .5 from the west wall of the structure a fissure in the bedrock created a channel extending south from the door opening. This channel was filled with SU 301, a dark brown loam of the same color and consistency as SU 300. When 301 was completely excavated the fissure in the bedrock appeared like a natural step up to the center of the unit. There was no developed topsoil. Due to the heavy bioturbation, no phytolith or pollen samples were collected, however a flotation sample was gathered. The completed excavation resulted in completely exposed bedrock base.

Structure 7, Excavation Unit 10

Intermittent rain showers dampened the soil in patches, making there appear to be multiple stratigraphic units in the profile walls.

Loose basalt rubble (SU311) and leaves (SU310) were cleared from the excavation area first. The topsoil was a very dark brown loam mixed with pebbles and cobbles. The topsoil was only 1 to 6 cm thick and covered a stone flooring made of irregularly shaped slabs of basalt defined as SU313. We extended the excavation of the topsoil 1m to the west and up to the wall to the north to expose more of SU313 and confirm that the slabs were indeed a floor surface. SU313 was only removed and excavated within the boundaries of excavation unit 10. The cracks between the stone slabs were filled with SU314, a dark brown loam. SU314 and the stone slabs covered SU315, a dark yellowish-brown loam interspersed with cobbles and boulders approximately 10 cm deep. SU315 covered the subsoil, SU316, a dark yellowish brown sandy silt.

Excavations in Zone 3 during Field Season 2016

Structure 3, Excavation Unit 5

Structure 5 was an individual dwelling in the northern sector of Zone 3 (Area 2B). The interior, exterior and doorway areas were excavated separately and the stratigraphic units found in each area were assigned distinct identifying numbers, though some of the layers were contiguous. The north wall was not removed during the excavation process. A large amount of basalt was removed with the fill during the excavation process and through sieving. As detailed below, this rubble, large root disturbance, and evidence of past bioturbation made it particularly difficult to identify discrete stratigraphic layers associated with living surfaces and the boundaries between many stratigraphic units were often ill-defined.

Interior

On the interior space of structure 3, the boulders (SU 185) that had fallen from the foundation walls were removed first and leaves and debris were cleared. The O-horizon, SU

224, was made up of very dark brown organic loam containing small basalt rubble (SU 226). This thin topsoil was well mixed with SU 226 and therefore was not evident in profile drawing of the east section because it was disturbed when the boulders were removed. In the southwest corner of the structure, a stone-and-mortar feature was uncovered at the same elevation as 224. This feature was a flat-topped basalt stone (SU 230) with two patches of white lime plaster or mortar (SU 229) on the surface that extending into the structure foundation wall. Initially, we thought this feature was part of the original flooring, however no other stone-mortar features were found in the interior of the house during the excavation. It is more likely that this formed some kind of architectural feature and was left in situ. SU 228 was the first layer under 224 and consisting of a dark brown clay loam with few scattered flecks of compact red clay about 18cm deep. We identified 40 cm around the tree stump in the southeast corner of the excavation block as disturbed and consisting largely of non-anthropogenic fill from the decomposing wood (SU 234). The diameter of SU 234 decreased in size as excavations progressed.

Below SU 228, SU 233 was identified by its dark reddish-brown color with a more clayey texture, hard red clay pieces, and an increase in basalt cobbles in the fill. This layer extended approximately 18cm in depth. The walls of structure 3 seem to have been built on top of SU 233, though, as noted below, the stratigraphy under the southern wall was different from the other two walls. Along the structure's northern wall SU 233 was also cut by a very large root the surrounding disturbed soil, SU 237. SU 237 extended 60 cm from the wall edge.

Under SU 233, SU 238 was identified as a rocky and very compact reddish-brown clay loam, approximately 10 cm deep. The root disturbance SU 237 cut into the top of SU 238 also. Once the root was sawed in half and removed from the excavation block, a new layer, SU 275, was found underneath at 20cmbd and identified as a very dark brown loam with approximately

40% boulders and cobbles. These three main stratigraphic layers, 228, 233 and 238, positioned in the interior of structure 3, where higher in elevation at the center of the unit and sloped downwards towards the walls of the structure.

Along the southern wall of the structure, a trench stratigraphic unit (SU 273) extended north approximately 70cm in plan and was found under 238 and 233 in the south west corner of the unit. This trench was a dark reddish gray clayey silty loam with pebbles, cobbles and many air pockets. SU 243 was identified under 233 and 238 also, as wedge-shaped in plan. Under 273, SU276 was identified next to the south wall as the second layer of the trench, which widened northward and was slightly darker in color with an increasing percentage of basalt. After the remainder of 233 was dug out in the south west corner of the unit, it was clear that 243 and 276 were part of the same layer that formed a trench next to the south and west walls of the structure; SU 243 was identified at a higher elevation because the lower layer of the trench sloped southward towards the southern wall. (Note that SU 273 and 276(243) are not represented in any profile drawings because the profile of the trench was blocked by the tree stump at the east end and stone feature 230/229 at the west end.)

Two stratigraphic units were identified as subsoil. Under SU238 across the center of the unit and under 276 and 275, SU278 was defined by its darker color and very compact brown and red clay loam loosely interspersed between an increased amount of basalt. A large root, SU277, was found cutting through the center of the structure in 278. Patches of subsoil, more uniform in color, were found below SU 278 and numbered 281. No artifacts or features were found in SU 278 or SU 281, and both are considered part of the sterile subsoil.

Exterior

The exterior section of the unit 5 had a topsoil (O-horizon) SU 225, of black loam with many scattered charcoal pieces. Though similar to the top soil found inside structure 3, SU 225 was found to be much darker and extend deeper than the thin topsoil of SU 228. In addition, it sloped down away from the wall, unlike the trenches found next to the walls inside structure 3, which sloped down towards the wall. Below this first layer SU 232 was a reddish-brown clay loam with hard-packed pieces of red clay with scattered charcoal flecks and pieces. In profile under the basalt wall SU 232 was very red and compacted and it was clear that the wall was built on top of SU 232. The soil in the excavated portion of SU 232 appeared darker from runoff, bioturbation and natural mixing from the upper layers. Large basalt boulders, particularly in the western portion of the excavation unit also were uncovered in SU 232 an were unable to be removed. The stratigraphic layers of soil filled the spaces in between large, rough boulders, but this also made is difficult at times to determine precise transitional points between layers. Below SU 232, SU 280 emerged first on the northern portion of the excavation limits as a gray brown loam and was determined to be the subsoil. At 26 cm below datum, a small round charcoal pit, SU 279, was uncovered in the northeast corner of the unit, just to the west of the door opening. The pit cut into SU 280 and extended 18.5 cm deep. All of SU 279 was excavated as a flotation sample. Deeper into SU 280, there are more open-air pockets between the basalt where sediments has yet to accumulate. Excavation ended at SU 280.

Door

The excavation unit was positioned such that the doorway was bisected. Inside the doorway the topsoil was SU 231. As explained above, the topsoil on the exterior of structure 3 (SU 225) was much darker than the topsoil inside structure 3 (SU 224). Many rocks had fallen into the structure, whereas on the exterior a richer topsoil was able to develop over time. SU 231

was a transitional layer between the two, but resembled the topsoil of SU 225 more closely. Large buried boulders in the center of the doorway uncovered just under the topsoil prevented us from excavating down to the same depth as in the exterior and interior of the structure. On the inner half of the doorway below the topsoil, SU 235, was a reddish-brown clay loam with hardened pieces of red sandy clay and scattered charcoal flecks and pieces. This layer is associated with SU 233 in the interior of the structure. SU 235 gave way to a much more compact, and red layer, SU 274, a dark brown clayey loam with scattered pieces of hard red clay. While this layer was only evident in one patch on the east profile wall, the layer extended across the whole doorway where there weren't boulders. SU2 78, the subsoil, was found under 274. The hard, red soils of 274 in the doorway, 238 on the interior, and 232 on the exterior are associated as the building surface on which the structure was erected.

Structure 2, Units 3 and 7

Structure 2 is a segment of the longest barracks in Bras d'Eau. First, leaves, organic debris were cleared from the ground surface inside structure 2. Artifacts on the surface were collected from the whole western interior space of structure 2, including from the surface of unit 3 and 7 (see Fig. 3.8). We removed unburied boulders and cobbles that had fallen from the structure walls and those around the edges of the unit that were likely to collapse inward as excavations proceeded.

Excavation Unit 3

The organic topsoil, SU 200, was a relatively consistent 5-10 cm deep. Below the organic topsoil, the most dominant layer was SU 207, a brown silty loam with pieces of red clay mixed in and some charcoal. On the eastern half of the unit, SU 207 lay directly on the natural

basalt bedrock outcrop, SU 214, exposed at 6 cmbd. The bedrock naturally sloped down into the eastern half of the unit. In the western half of the unit a large root disturbance from the mango tree, SU 220, made it more difficult to determine discrete stratum and it is likely that the surrounding stratigraphic units were disturbed by this bioturbation.

Stratigraphy was more complex in a 70cm band adjacent to the barracks' walls than in the center of the barracks. Within this band, multiple boulders had fallen from the barracks wall (SU167) to form SU 201. As we removed these boulders we found a brown loamy soil, SU 205, filled between and below these boulders. Below 205 and 207, there were seven different deposits of yellow silt and very fine white ash and red clay, in particular concentrations adjacent to the north barracks wall. Stratigraphic units 208, 209, 216, 218, 219, and 221 all consisted of some variation of a light gray very fine silt, usually mixed with a combination of brown loam, yellowish silt, and small dark red clay crumbs (see appendix 1.1 for detailed soil composition). These deposits were plaster or mortar that fell from the stone walls during post-occupational deterioration of the structures. The yellow silt is also possibly decayed vegetal material that accumulated when the walls or roofing collapsed. All of these deposits reacted positively when drops of HCl were tested on the soil during the flotation processing indicating that they contained lime and were not composed of carbon ash from a hearth, however scattered flecks and bits of charcoal we evident in many of these deposits.

SU 208 and 209 were identified on the north side of unit next to the wall between 8 and 5 cmbd. SU 208 was a brown silty loam was mixed with red clay pieces, charcoal flecks, and pieces of mortar. Patches of 208 and 209 were interspersed together and extending 30-60 cm from the wall into the unit (see plan drawing No. 2). These layers, particularly SU 208, were originally thought to be part of the builders' trench, however as the excavation continued it

became clear that the upper deposits next to the wall were soils altered by rocks fallen from the wall (su202). Most of the foundation walls seemed to be dry masonry construction, however the excavations exposed lower portions of the stone walls that had been covered by collapsed rocks. In these sections, red clay soil appeared to have been used as a semi-permanent mortar between large gaps in the rocks, perhaps to provide a flatter surface on which to apply the wall plaster. Two patches of red loamy clay, SU 215 and 217, were also dispersed between the gray-white lime silt that may have been red clay mortar fallen out of the walls when the plaster decomposed.

It is unlikely that the small flecks and pieces of carbonized organic material came from a fire event given their scattered nature and lack of other burned materials. Fire was considered a tool used for clearing of dense underbrush, disposal of trash, and burning of dried sugar cane leaves prior to a cutting—the latter is illegal now due to the danger of the burn getting out of control and reaching residences—all processes that easily caused small carbonized particles to disperse across the landscape. It is also possible the charcoal flecks and pieces were already present in the original mortar; reef coral was burned to produce the lime as a construction material and for processing the sugar cane juice. At the center of the unit 7 SU212 and SU213 were identified under SU 207. SU212 was a brown sandy silty loam mixed and motley with the light gray ashy silt and yellowish-brown sandy silt, likely also associated with the decay and collapse of the upper portions of the structure. SU213 was darker than 212 and without the light gray ashy silt found in 212 with many root runs, associated with the disturbed SU220. Portions of these strata were possibly part of the layer below, SU222, but were churned up due to bioturbation.

Below these deposits in the eastern side we exposed patches of SU222, a very hard packed layer of reddish loam with small flecks of white lime or plaster and charcoal. SU222 was

also at same depth or lower than the exposed bedrock on the western side of the excavation block, layered directly onto the bedrock at low points thus creating a semi-level surface. The bedrock and SU222 likely functioned as the original floor surface. Below 222, 223 was a darker and looser soil that filled in the lowest low holes and cracks in the uneven bedrock. This was the last stratigraphic soil layer.

In unit 3 the excavation walls protruded c. 4 cm from the true stone wall and therefore the profile showing stratigraphic layers were not under the foundation walls, but rather next to them. As soil samples were extracted from these profile walls the bottom of the stone walls were exposed and two additional stratigraphic units were identified under the stone walls, SU 317 and 318. These were hard red clay layers horizontally deposited directly below the wall and on the natural bedrock. They are evidence of the trodden building surface upon which the wall foundations were constructed.

Excavation Unit 7

Excavation of unit 7, the southern extension of unit 3, commenced by following the stratigraphy exposed in the adjoining profile between unit 3 and 7 and new stratigraphic layers were identified where necessary, particularly in the southern half of the unit where the stratigraphy was more complex and layers were not contiguous with those in unit 3.

A similar sediment pattern followed in unit 7 as in unit 3; under the top soil there were several layers of post-habitation fill mixed with depositional layers that were disturbed by bioturbation. We began by removing the boulders and cobbles, SU 202, from the barracks' collapsed southern wall. SU 236 was a brown loamy soil filled in between and below these boulders, comparable to SU 205 in unit 3. SU 236 was removed with the clearance of boulders and not evident in the east and west excavation profiles. Below SU236 there were several layers

of brown loam well dispersed with white lime extending 50-100 cm from the wall, the most dominant being SU 240, a brown sandy loam filled with scattered lime and mortar pieces, 5-10 cm in depth.

SU 244 was a small circular deposit of brown loam similar to 207 with more lime and mortar mixed in, extending only down 4 centimeters. Unlike, the 70 cm contiguous to the northern wall, the area near the southern wall on had three deposits associated with post-occupational collapse: SU 241, a 35 cm wide patch of white lime and mortar, SU 245, a dark yellowish-brown silt mixed with the light gray lime silt and charcoal, and SU 258, a small circular deposit red clay found under 245, 10 cm in diameter. This depositional pattern suggests that the south wall of structure 2 was not plastered or mortared as much as the north wall. Below these silty, ashy layers, we identified as SU 257, a dark yellowish brown clayey silty loam with many small charcoal pieces and flecks of white lime and small scattered hard pieces of red clay. This stratum seemed to correspond with SU222, the hard-packed flooring layer, also intermittently deposited in the unit, suggesting the flooring was disturbed, perhaps not just from roots, but also from boulders in the collapsed walls as well. In the center of the unit, 212, 213 and 222, first identified in unit 3, were all present under 207.

In the south east corner, under SU 240 and 257, SU 260 was a very hard packed red clay with dark yellowish-brown silty clay loam and scatter charcoal flecks. In the north excavation profile this layer appeared directly below the lowest row of stones in the wall and could correspond with SU 318 and 319 in unit 3, the layers interpreted as the trodden surface the stone walls were built on. This is supported by the fact that though SU260 sits 10-20 cm above the natural bedrock on the southern side of the unit, due to the irregularity of the basalt it is actually roughly at the same horizontal level as SU318 and 319.

Also below 207 was SU 261, a dark reddish brown loam with ashy-gray undertone, scattered flecks of white lime or mortar and charcoal, and few inclusions of red hard-packed clay. SU265 was uncovered under SU257 and 260. It is a very hard dark yellowish brown sandy silty loam hard and compact with scattered charcoal flecks and small pieces and scattered white lime flecks. It was unclear during excavations what kind of depositional event this strata represents. It is possible they make up an older, disturbed floor surface that was not present in Unit 3 due to the root disturbance and higher basalt bedrock.

The lowest stratigraphic layers in unit 7 also lay on the bedrock at particularly low points. The bedrock in the southeast corner of unit 7 was 20 cm lower than the western side of the unit and SU259 filled in the corner below SU265. A deep hole in the bedrock in the center of unit 7 was in the filled with SU223, first identified below SU222 in unit 3.

Barracks Yard: Excavation Unit 4 and 6

The ground surface was cleared of fallen leaves and several large boulders and cobbles that had clearly fallen from the collapsed southern wall of structure 2 (SU 168), particularly on the north half of unit 6. Artifacts on the surface inside each unit were collected.

Stratigraphy was straightforward in unit 4. The O-horizon, SU 204, was a black loam mixed with charcoal and small flecks of white. At just 20cm below the datum, SU 204 was found to be covering the basalt bedrock, SU 210, in the south east corner of the unit. In the northern portion of the unit, SU 204 ended between 18 to 20cm below the datum covering a new level, SU206. During excavations of SU 204, excavators noted that the eastern third of the unit was slightly darker in color (2.5YR2.5/1 reddish black) within each stratigraphic layer. This differentiation was originally attributed to the fact that soil in the eastern quadrant of the unit was

unintentionally soaked from periodic rains, however through excavation of unit 6 a charcoal rich stratigraphic layer, SU 242, was identified in this area in plan, and after excavations were complete it was clear in the profile that SU 242 was also in unit 4 between SU 204 and 206. Artifacts collected from SU 242 in unit 4 are therefore mixed with SU 204. For analysis purposes, these two stratigraphic units will be considered as a continuous occupational layer, as noted below.

Throughout unit 4 SU 206 was found below SU 204. SU 206 was a slightly more compact dark yellowish-brown silty loam with charcoal, compact red clay pieces, and small pieces of white deposits, likely lime or coral. SU 206 was still dense with artifacts. Basalt cobbles were well distributed throughout the layers, though contiguous rows of small boulders were apparent in the south, west and north excavation profiles between 20 and 30cm below datum. This rough layer of basalt cobbles would have aligned with the high basalt bedrock exposed in the east side of the unit.

SU 206 covered more of the natural bedrock (SU 210), and a new layer, SU 211. SU211 was identified as siltier and darker than SU206 as a dark brown silty loam with scattered charcoal flecks and pieces and was substantially disturbed by 5 to 10cm thick roots. At its lowest, this layer extended down 51cm below the datum, making it 28cm thick at the maximum depth. As noted earlier, SU210, the basalt bedrock, was exposed at 20 cmbd and sloped down towards the west and northwest extents of the excavation unit. Therefore, 204, 206 and 211 were deposited directly on top of the bedrock in different areas around the unit. On the east side of the unit, the bedrock was so high that there were not any deposits of SU211. The silty yellow subsoil, SU227 (analogous to SU272 in unit 6), was uncovered only in the deepest crevices in the bedrock below SU211.

Excavation Unit 6

The stratigraphy in unit 6 was more complicated than in unit 4, due to several new features and the unit's proximity to structure 2. The ground surface of unit 6 was mostly covered in stones that had fallen from structure 2 and more basalt cobbles were found throughout. The same top layer, SU 204 was excavated, though the layer increased in thickness from about 10 cm to 22 cm closer to the structure wall on the north half of unit 6. Under 204, the majority of the unit was filled with SU 206. Along the west side of the unit SU250 was originally identified as a darker layer under SU206, however the profile helped determine that SU250 was essentially the same as SU206, but had two medium roots running through, which darkened the soil.

Two different stratigraphic units were identified at the same level as 206 just below the previous layer 204. In the north east corner SU 239 was a brown sandy silt loam starting 12 cm below the datum. SU 239 was round in plan, extended about 60 cm into the unit, and 20 cm in depth. SU239 was very similar to SU206 but was more yellow in color and had a crumbly texture. Basalt cobbles overlapped the boundary between 239 and 206 in multiple places, further complicating our ability to distinguish between the two.

As mentioned earlier, the charcoal deposit, SU242, was identified at 17 cm below the datum and originally measured 32 cm in diameter. Charcoal from SU242 was scattered beyond this originally defined shape to cover 206 and extended in the southeast corner of the unit about 80cm in diameter. The bedrock was exposed 20 to 30 cm below the datum in this corner, however directly under the circular deposit of 242, a round post hole was cut *into* the bedrock. The cut of the post hole (SU 263) was 20 cm in diameter and went down 35 cm into the bedrock. The hole was filled with crushed basalt gravel and a dark reddish gray sandy clay, (SU264).

There were two layers that were mixed with white ash and charcoal identified just below SU 206. SU 251 was uncovered in the south east corner of the unit. This was an irregularly shaped layer (*see drawing no. 14)*, roughly square in shape and consisted of an ashy charcoal mixed with burned lime and very dark gray and dark brown silt loam. SU 251 was on top of SU 255 (see below). SU252 and 254 spread from the central concentration of fine white ash. SU 252 was identified 22cm below the datum in the northeastern quarter of the unit as a brown loam heavily mixed with grey and black ashy soil. This layer represents that top of a series of seven different stratigraphic units that seem to have been either a hearth, burned pit, or midden with several layers of very fine white ash or lime and charcoal. Together, these layers form *feature 10*. The fine white ash from the central pit spread to cover the whole northeast corner of the unit. These layers were cut into SU 211, 225 and 267, the main stratigraphic layers that filled the remainder of the unit (see feature 10 description below). As found in unit 4, SU 211 continued under SU 206 as the main stratigraphic layer in the unit, apart from mixed white ash midden or pit in the eastern edge. In the center of the north half of the unit, SU 255 was also defined as under 206. SU 255 was a very dark brown sandy silty loam with many scattered charcoal flecks and pieces and flecks of white lime. SU 255 and 211 were level and part of the same depositional phase, but SU 255 had white lime flecks in the fill that likely originated from the mortar in the stone wall of the barracks structure. In the middle of SU 211 on the west side of the unit, SU 256 was a small round concentration of fine white ash 12cm in diameter. Below SU 255 and 211 the soil lightened, and was closer in color to the natural yellow silt subsoils found elsewhere. Under 255 and 211 in the northwest corner of the unit SU267 was a dark yellowish brown slightly compact sandy silty loam with scattered charcoal flecks and pieces and may pebbles and cobbles. There was a small round concentration of red clay, SU266, in SU267.

As mentioned earlier, feature 10, a midden or fire pit, cut into the lower two stratigraphic layers—SU211/255 and 267. Below SU252 in the same 80cm by 100cm corner of unit 6, SU254 was identified as dark grayish brown sandy silty loam with fine white lime flecks and deposits and many scattered charcoal pieces and flecks. SU254 continued to extend down about 10cm on the north half of the deposit, but on the south half of the deposit, 24 cm below the datum more concentrated fine white and red deposits were uncovered under SU254. The main deposit was SU253, a grey very fine ash or burned lime with pieces of charcoal. Small concentrations of SU268, red sandy silt, were found within 253 deposit. SU253 was about 11 to 15 cm thick. In the north corner of the unit below SU254, SU269, a fine grayish brown and white ash mixed with a dark yellowish brown sandy silt loam, spread out from the concentrated deposit of SU253. SU269 was found to cut into and cover the last principal stratigraphic layer, SU267. Feature 10 continued deeper on its southern border with SU270, a charcoal and light gray ash deposit with a round shape in plan about 3cm thick. The bottom of the feature was lined with a dark brown silty loam, SU271, similar in texture, but much darker than the subsoil (SU272) found covering the bedrock elsewhere in the unit at the same level. SU267 was covering the bedrock and subsoil, SU272 (same as 227 in unit 4), a dark yellowish brown clayey silt.

Short Barracks Interior: Structure 9, Excavation Unit 12

Several large boulders had fallen from the wall into the east room, particularly from the east wall and the normal tree leaves and other organic matters covered the surface.

The topsoil, SU 326, was a dark brown loam about 3 cm thick. In the northeast corner of the excavation unit we discovered a tenrec hole that was not evident on the surface, but cut down into the top three stratigraphic layers about 30 cm. Just below the topsoil a horizontal layer of

fill, SU 331 had a very mottled texture with a base of very dark brown loam scattered flecks of lime and mortar, with some areas with heaver concentrations of white lime and some compact red clay pieces. The layer extended evenly across the unit 10 cm in depth. As SU 331 leveled out, the next layer, SU 332, was similarly mottled as the previous layer but was much lighter with a dark yellowish brown clayey sandy silt base mottled with yellowish red hardened clay and very few flecks and pieces of lime and mortar. SU 332 extended down 12cm with a few more basalt cobbles than the upper layers.

Throughout SU 332 there were multiple deposits of fine white powder, some mixed with charcoal and lime mortar. Between SU 331 and 332, SU 335 was a 2 to 3 cm thick lens, rounded in plan and extending about 40cm into the unit from the northern limit of excavation. It consisted of the same dark yellowish brown clayey, sandy silt as SU 332, but had a greater concentration of ash, lime mortar, burned coral and charcoal. Against the southern section wall a small 20cm diameter patch of gray ash, SU 333, extended down almost the entire depth of SU 332. In the center of the unit, 4 cm into SU3 32, SU 336 was another grayish white deposit of fine white ash and charcoal pieces that extended 9 cm and just under these fine deposits, SU 337 was a white lime mortar deposit. SU337 and the remainder of SU332 were sitting on top of the subsoil, SU338, a moderately compact dark yellowish brown slightly sandy silt with multiple large loose boulders. The subsoil was 22 cm deep on top of the smooth natural basalt bedrock.

Excavations in Zone 1 during Field Season 2016

Excavation Unit 11

Unit 11 measured 1.5 x 1.5 m. The ground surface around unit 11 was level and cleared of large boulders, likely used to construct the walls. The topsoil (SU320) was removed first: a black

loam, 30-40% of which had roots running through. Below the topsoil, SU322 was a dark yellowish-brown sandy silt that gradually lightened in color the deeper we excavated. At the top of SU322, two ashy burned features were also uncovered at 9 cm below datum (bd). These features were originally thought to be a single feature, however, after removing a 5 cm thick root that cut between the two features, it was determined that they were separate pits, both round in plan. SU321 was a dark gray ash with small charcoal bits and burned lime that filled the cut SU325 and was 50 cm in diameter positioned on the north side of the unit. SU323 was darker than SU321; the soil was a dark yellowish brown mixed with dark gray ash with small charcoal pieces and burnt lime. SU323 filled cut SU324 and was on the south side of the unit. SU321 was 32 cm in diameter, but was originally assumed to be an ashy lens because the texture was so light and the edges of the feature mixed with the surrounding SU322. As such, 20 cm of SU321 was excavated before determining that both pits should be bisected to get a profile of their shape. We excavated the east half of each pit. We found that only 6cm of the bottom of the feature remained. The pit profile was not drawn, however the section allowed us to determine that the feature had a rounded base. Maximum depth of the pit was 26cm. The surface of SU323 was identified in plan at 11cm below datum. Part of SU323 was in the southern profile wall of the excavation unit. To determine the type of feature we had found and the edges of the feature, 8 cm were excavated from the surface and it was determined to be 50cm in diameter. SU323 was bisected north-south and the profile of the pit was drawn. It extended down to 42 cm bd , so maximum depth of the pit was 32 cm. SU322 continued below both pit features. Flotation and macrobotanical soil samples were collected from both SU321 and SU323.

Appendix II: Macrobotanical Report

Macrobotanical remains gathered from flotation samples were analyzed by Jacob Morales, University of Palmas de Gan Canaria, Spain. The following table and photograph of results are drawn from the unpublished report on preliminary analysis of the macro-botanical remains from the 2016 season at Bras d'Eau, Mauritius completed by Morales.

Figure 1. Plant remains at Bras d'Eau: a, *Oryza sativa* (rice); b, *Oryza sativa* (rice); c, Indeterminate type *Passiflora* (passionfruit type); d, *Lathyrus cicera/sativus* (grass pea); e, *Acacia* sp.; f, cf. *Cajanus cajan* (pigeon pea).

Area	1a	2b	2b	2b	2b	b	2b	2b	2b	2b	2b	2b	2b	2b	2b	2b	2b	2b	2b			
Unit	11	6	3	3	7	3	6	7	7	6	6	6	6	7	6	6	6	12	ext	1a		
Stratigraphic Unit	323	206	207	209	217	225	239	240	245	251	252	253	254	257	267	268	269		331	335	**total**	
volume of sediment, in litres	5	16	16	4,5	3	11	3	7,5	3,5	2	6,5	23	9	15	11	2	3		6	2	**149**	**%**
Plant list																						
Oryza sativa , grain (rice)	-	1	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1		2	1	**7**	**17.5**
cf. *Cajanus cajan* , seed (pigeon pea)	-	-	1	-	-	-	-	2	1	-	-	-	-	5	-	-	-		-	-	**9**	**22.5**
Lathyrus cicera/sativus , seed (grass pea)	-	-	-	1	-	-	2	1	-	1	1	-	-	1	1	-	-		-	-	**8**	**20**
Legume, indeterminated	-	-	2	1	1	-	-	-	-	1	-	3	1	3	-	-	-		1	-	**13**	**32.5**
Indeterminate type *Passiflora,* seed	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-		-	-	**1**	**2.5**
Acacia sp.,	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	**2**	**5**
total	-	**3**	**3**	**2**	**1**	-	**2**	**3**	**1**	**2**	**1**	**3**	**1**	**12**	**1**	-	**1**		**3**	**1**	**40**	**100**
seed density per litre of sediment	-	**0.18**	**0.18**	**0.44**	**0.33**	-	**0.4**	**0.4**	**0.28**	**1**	**0.15**	**0.13**	**0.11**	**0.8**	**0.09**	-	**0.33**		**0.5**	**0.5**	**0.26**	-
Indeterminated fragments	-	14	2	1	3	-	5	1	3	-	2	3	-	7	-	3	2		7	-	**53**	-
Insects																						
Sitophilus cf. *oryzae* (rice weevil)	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-		-	-	**2**	-

Table 1. List of macro-botanical remains recorded at Bras d'Eau 2016.

Appendix III: Pollen Report

The following tables are drawn from the unpublished Archaeological Excavation at Bras d'Eau National Park, Mauritius Pollen Assessment report, completed by Dr. M. L. Cárdenas of Quarternary Scientific (QUEST), September 2017.

Table 1: Results of the pollen assessment from Bras d'Eau National Park, Mauritius

	Sample label	**BDE 67**	**BDE 71**	**BDE 77**	**BDE 81**	**BDE 83**	**BDE 89**	**BDE 91**	**BDE 93**	**BDE 95**	**BDE 96**	**BDE 100**	**BDE 102**	**BDE 103**	**BDE 105**	**BDE 107**
Family	**Common name**															
Trees																
Myrtaceae	cinnamon myrtle family			3												
Moraceae/Urticaceae[+]	ficus family	1		3		1						1	1			3
Pinaceae	pine family					1										
Apocynaceae	dogbane family			1												
Sapindaceae	soapberry family															
Amaranthaceae/Combretaceae[+]	amaranthus family															
Herbs																
Poaceae	grass family	1		5		2			1							7
Asteraceae	daisy family			1												
Aquatics																
Cyperaceae	sedge family			1												
Spores																
Polypodiaceae	ferns		1	3		2				1		1				1
Trilete	fern			2												
Unidentifiable		1		1			2									
Degraded		1		15	4	2	2		5		3	1	1			13
Total Terrestrial Pollen		3	0	13	0	4	2	0	1	0	0	1	3	0	0	10
Concentration*		1	0	1	0	1	1	0	1	0	0	1	1	0	0	1
Preservation**		1	0	1	0	1	1	0	1	0	0	1	1	0	0	1
Microcharcoal Concentration***		4	5	5	5	4	4	5	4	3	5	4	5	5	5	4
Suitable for further analysis		**NO**	**NO**	**?**	**NO**	**?**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**?**

Table 1 (continuing): Results of the pollen assessment from Bras d'Eau National Park, Mauritius

	Sample label	BDE 109	BDE 111	BDE 114	BDE 119	BDE 122	BDE 126	BDE 128	BDE 129	BDE 130	BDE 141	BDE 145	BDE 146	BDE 150	BDE 154	BDE 156
Family	**Common name**															
Trees																
Myrtaceae	cinnamon myrtle family															1
Moraceae/Urticaceae[+]	ficus family	4		1	2		8	2		1				1	2	
Pinaceae	pine family															
Apocynaceae	dogbane family															
Sapindaceae	soapberry family			1												
Amaranthaceae/Combretaceae[+]	amaranthus family			1												
Herbs																
Poaceae	grass family	1	1		1		1			1	1	2				
Asteraceae	daisy family												1			
Aquatics																
Cyperaceae	sedge family															
Spores																
Polypodiaceae	ferns		1		2				2			2	1			
Trilete	fern	1	1						1							
Unidentifiable							3			1		4			1	2
Degraded		4	3	1	11	1	3	1		1		4	1	1	5	
Total Terrestrial Pollen		5	1	3	3	0	12	2	0	3	1	6	1	1	3	3
Concentration*		1	1	1	1	0	1	1	0	1	1	1	1	1	1	1
Preservation**		1	1	1	1	0	1	1	0	1	1	1	1	1	1	1
Microcharcoal Concentration***		4	5	5	3	5	2	4	5	5	4	5	5	5	5	5
Suitable for further analysis		**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

*Key: * Concentration: 0 = 0 grains; 1 =1-75 grains, 2 = 76-150 grains, 3 =151-225 grains, 4 = 226-300, 5 =300+ grains per slide; **Preservation: 0 = absent; 1 = very poor; 2 = poor; 3 = moderate; 4 = good; 5 = excellent; ***Microcharcoal Concentration: 0 = none, 1= negligible, 2 = occasional, 3 = moderate, 4 = frequent, 5 = abundant.*

[+] These families cannot be differentiated without a scanning electron microscope analysis.

Appendix IV

Catalogue of ceramic types and production beginning and end dates used to calculate Mean ceramic dates (MCD) and BLUEMCDs.

Ware	Genre	BeginDate	EndDate
American Stoneware	Not Applicable	1750	1920
American Stoneware	Blue and Gray	1781	1920
American Stoneware	Handpainted Blue	1781	1920
Astbury-Type	Not Applicable	1725	1775
Bennington/Rockingham	Not Applicable	1830	1900
Black Basalt	Not Applicable	1750	1820
British Stoneware	Not Applicable	1671	1900
Coarse Earthenware	Not Applicable		
Creamware	Not Applicable	1762	1820
Creamware	Molded Edge Decoration, other	1765	1820
Creamware	Slipware, factory made	1785	1820
Creamware	Handpainted, Polychrome Warm	1795	1820
Indian smoking pipes	Not Applicable		
Ironstone/White Granite	Flow, transfer print purple/black	1840	1860
Ironstone/White Granite	Handpainted, Polychrome Cool	1840	1920
Ironstone/White Granite	Luster Decoration	1840	2000
Ironstone/White Granite	Molded Edge Decoration, other	1840	2000
Ironstone/White Granite	Not Applicable	1840	2000
Ironstone/White Granite	Overglaze, handpainted	1840	2000
Ironstone/White Granite	Slipware, factory made	1840	2000
Ironstone/White Granite	Transfer Print Under, black	1840	2000
Ironstone/White Granite	Transfer Print Under, blue	1840	2000
Ironstone/White Granite	Transfer Print Under, brown	1840	2000
Ironstone/White Granite	Transfer Print Under, light blue	1840	2000
Ironstone/White Granite	Transfer Print Under, polychrome	1840	2000
Ironstone/White Granite	Transfer Print Under, purple	1840	2000
Ironstone/White Granite	Victorian Majolica	1850	1899
Jasperware Type	Not Applicable	1774	2000
Kaolin	Not Applicable	1750	1950

Martincamp Stoneware	Not Applicable	1600	1914
Pearlware	Handpainted Blue	1775	1820
Pearlware	Molded Edge Decoration, other	1775	1830
Pearlware	Not Applicable	1775	1830
Pearlware	Shell Edge, blue	1775	1830
Pearlware	Shell Edge, green	1775	1830
Pearlware	Shell Edge, unid.	1775	1830
Pearlware	Handpainted, Polychrome Other	1780	1840
Pearlware	Luster Decoration	1790	1830
Pearlware	Slipware, factory made	1790	1830
Pearlware	Handpainted, Polychrome Warm	1795	1830
Pearlware	Transfer Print Under, blue	1795	1830
Pearlware	Transfer Print Under, light blue	1795	1830
Pearlware	Transfer Print Under, green	1795	1830
Pearlware	Pearlware, Sponge	1795	1830
Pearlware	Transfer Print Under, black	1809	1825
Pearlware	Transfer Print Under, brown	1809	1825
Pearlware	Transfer Print Under, purple	1828	1830
Pearlware	Transfer Print Under, red	1828	1830
Pearlware	Handpainted, Polychrome Cool	1829	1830
Porcelain	Does Not Contribute to MCD		
Porcelain, Chinese	Handpainted Blue	1660	1860
Porcelain, Chinese	Not Applicable	1660	1860
Porcelain, Chinese	Overglaze, handpainted	1660	1810
Porcelain, Chinese	Canton	1785	1853
Porcelain, English Bone China	Handpainted Blue	1794	2000
Porcelain, English Bone China	Luster Decoration	1794	2000
Porcelain, English Bone China	Molded Edge Decoration, other	1794	2000
Porcelain, English Bone China	Not Applicable	1794	2000
Porcelain, English Bone China	Overglaze, handpainted	1794	2000
Porcelain, English Bone China	Transfer Print Over	1794	2000
Porcelain, English Bone China	Transfer Print Under, black	1794	2000
Porcelain, English Bone China	Transfer Print Under, blue	1794	2000
Porcelain, English Bone China	Transfer Print Under, light blue	1794	2000
Porcelain, English Bone China	Flow, transfer print purple/black	1840	2000
Porcelain, English Bone China	Decalcomania	1880	2000
Porcelain, English Soft Paste	Not Applicable	1745	1795

Porcelain, Japanese	Handpainted Blue	1870	2000
Porcelain, Japanese	Not Applicable	1870	2000
Porcelain, unidentifiable	Molded Edge Decoration, other		
Porcelain, unidentifiable	Not Applicable		
Porcelain, unidentifiable	Overglaze, handpainted		
Porcelain, unidentifiable	Transfer Print Under, light blue		
Porcellaneous/English Hard Paste	Handpainted, Polychrome Cool	1820	2000
Porcellaneous/English Hard Paste	Handpainted, Polychrome Other	1820	2000
Porcellaneous/English Hard Paste	Luster Decoration	1820	2000
Porcellaneous/English Hard Paste	Not Applicable	1820	2000
Porcellaneous/English Hard Paste	Overglaze, handpainted	1820	2000
Porcellaneous/English Hard Paste	Transfer Print Over	1820	2000
Porcellaneous/English Hard Paste	Transfer Print Under, blue	1820	2000
Porcellaneous/English Hard Paste	Transfer Print Under, purple	1820	2000
Porcellaneous/English Hard Paste	Decalcomania	1880	2000
Post-Medieval London-area Redware	Not Applicable	1600	1800
Redware	Not Applicable	1700	1900
Redware, refined	Luster Decoration	1780	1900
Redware, refined	Not Applicable	1780	1900
Redware, refined	Slipware, factory made	1780	1900
Redware, refined	Yellow Printed Brown/Black Ware (Portebello)	1780	1900
Refined Earthenware, modern	Decalcomania		
Refined Earthenware, modern	Handpainted, Polychrome Other		
Refined Earthenware, modern	Not Applicable		
Refined Earthenware, unidentifiable	Not Applicable	1745	2000
Refined Earthenware, unidentifiable	Shell Edge, blue	1775	2000

Refined Earthenware, unidentifiable	Shell Edge, green	1775	2000
Refined Earthenware, unidentifiable	Shell Edge, unid.	1775	2000
Refined Earthenware, unidentifiable	Slipware, factory made	1785	2000
Refined Earthenware, unidentifiable	Transfer Print Under, blue	1794	2000
Refined Earthenware, unidentifiable	Spongeware	1795	1940
Refined Earthenware, unidentifiable	Transfer Print Under, light blue	1795	2000
Refined Earthenware, unidentifiable	Transfer Print Under, black	1809	2000
Refined Earthenware, unidentifiable	Flow, unid.	1840	2000
Refined Earthenware, unidentifiable	Handpainted Blue		
Refined Earthenware, unidentifiable	Handpainted, Polychrome Cool		
Refined Earthenware, unidentifiable	Handpainted, Polychrome Other		
Refined Earthenware, unidentifiable	Handpainted, Polychrome Warm		
Refined Earthenware, unidentifiable	Luster Decoration		
Refined Earthenware, unidentifiable	Molded Edge Decoration, other		
Refined Earthenware, unidentifiable	Overglaze, handpainted		
Refined Earthenware, unidentifiable	Yellow Printed BrownBlack Ware (Portebello)		
Refined Stoneware, unidentifiable	Not Applicable		
Slipware, North Midlands/Staffordshire	Not Applicable	1670	1795
Stoneware	Not Applicable	1600	1900

Stoneware, unidentifiable	Handpainted Blue		
Stoneware, unidentifiable	Not Applicable		
Tin Enameled	Handpainted	1600	1802
Tin Enameled	Not Applicable	1600	1900
Unidentifiable	Not Applicable		
Whiteware	Handpainted Blue	1820	2000
Whiteware	Handpainted, Polychrome Other	1820	2000
Whiteware	Handpainted, Polychrome Warm	1820	2000
Whiteware	Molded Edge Decoration, other	1820	2000
Whiteware	Not Applicable	1820	2000
Whiteware	Overglaze, handpainted	1820	2000
Whiteware	Shell Edge, blue	1820	2000
Whiteware	Shell Edge, green	1820	2000
Whiteware	Shell Edge, unid.	1820	2000
Whiteware	Slipware, factory made	1820	1880
Whiteware	Transfer Print Under, blue	1820	2000
Whiteware	Handpainted, Polychrome Cool	1829	2000
Whiteware	Spongeware	1830	1925
Whiteware	Transfer Print Under, unknown	1830	2000
Whiteware	Transfer Print Under, black	1830	2000
Whiteware	Transfer Print Under, brown	1830	2000
Whiteware	Transfer Print Under, green	1830	2000
Whiteware	Transfer Print Under, light blue	1830	2000
Whiteware	Transfer Print Under, pink	1830	2000
Whiteware	Transfer Print Under, polychrome	1830	2000
Whiteware	Transfer Print Under, purple	1830	2000
Whiteware	Transfer Print Under, red	1830	2000
Whiteware	Printed shell edge	1830	1860
Whiteware	Flow, handpainted blue	1840	2000
Whiteware	Flow, transfer print blue	1840	2000
Whiteware	Flow, transfer print purpleblack	1840	2000
Whiteware	Luster Decoration	1840	1870
Whiteware	Victorian Majolica	1850	1899
Yellow Ware	Not Applicable	1830	1940
Yellow Ware	Shell Edge, blue	1830	1940
Yellow Ware	Slipware, factory made	1830	1940
Yellow Ware	Spongeware	1830	1940

Does Not Contribute to MCD	Does Not Contribute to MCD		
Omer Pipe	Not Applicable	1765	1921